WIN-DIGIPET

PREMIUM
EDITION 2021

The Compendium

Version 2021
Premium Edition

Editorial

W i n - D i g i p e t 2021 *Premium Edition*

CONTROL SYSTEM FOR MODEL RAILROADS USING

DIGITAL-SYSTEMS AND INTERFACES OF

MÄRKLIN, ESU, TAMS-ELEKTRONIK, UHLENBROCK, FLEISCHMANN, ROCO, TRIX, MÜT, RAUTENHAUS, LITTFINSKI DATENTECHNIK, STÄRZ, CT-ELEKTRONIK, MASSOTH, LENZ, THORSTEN MUMM, FALLER, D&H-MTTM, MODELLEISENBAHN CLAUS

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**Programme-Version 21.0 - 32 Bit for operating systems
Microsoft Windows / Win 7 / Win 8 / Win 10 / Win 11**

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Copyright	
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My special thanks apply to Mr. Markus Herzog; Dueren, for his ideas and concepts for advancing Win-Digipet and for his in programming.

I would also like to thank my beta-testers and Mr. Bernd Senger for his efforts writing this manual.

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0. CONDITIONS OF USE

This program is the exclusive property of me, Dr. Peter Peterlin, Tilsitstrasse2a, D 50354 Hürth, Germany.

The purchase of this program confers to you, the buyer, and only the right to use the program, not the property thereof.

Neither the program nor any program file thereof nor this manual may be altered in whatever manner.

It is strictly prohibited to pass or transmit this program to third parties or persons, not even for testing purposes.

A demo-version of Win-Digipet available for testing and evaluation, is explicitly labelled for this purpose and may be passed to a third party.

The demo-version controls not more than 12 solenoid devices and 4 locomotives; only a maximum of 20 timetable or tour automatic lines is possible. The track diagram has a size of 50x30 symbol fields.

Despite outmost care with creating and testing the program, errors therein can unfortunately not be excluded. Should errors caused by the program itself occur, I shall do my level best to eliminate them free of charge as fast as possible. Additional information may be found in the Internet at address http://www.windigipet.de/ and menu item Download.

Nevertheless, with the change of the program version and payment of the suitable update price the delivered data medium (USB stick) has to be sent in any case back to me.

Errors caused by incompetent handling of the data medium are at buyer's charge.

Any liability is expressly excluded for errors, mishaps and faults of any kind in and by the program and its manual.

Copyright covers all and any part of this manual and the program.

Tip!

In this manual there are many coloured images with details which may not be seen clearly in a self-printed manual. In this case, please open the manual on the USB stick (Manual 2021.pdf) or press the F1-button for help.

Important notice regarding copyright!

You can always download the most recent version of the manual from the homepage of

Win-Digipet. This PDF-file may also be printed for private use, if you are the owner of the program **Win-Digipet**. Transfer and selling of the printing version are not allowed.

Version 2021 Premium Edition

Chapter 1

1. CONCEPT; REQUIREMENTS AND INSTALLATION

The first chapter of this manual deals with the program philosophy of **Win-Digipet**. You will learn how the individual parts of the program are structured and how they depend on each other.

Before installation, which concludes this chapter, please check the hardware and software compatibility of your computer with the hardware or operating system requirements specified in this chapter.

1.1 Conception of the program

1.1.1 General information

Win-Digipet is a modern, far-reaching, intelligent, very user-friendly program for controlling a model railway layout equipped with digital components from the manufacturers:

Ansaloni	Games On Track	Open DCC
BiDiB project	Helmo	Piko
Blücher Electronics	Infracar	Rautenhaus
CAN-Digital	KM1	Roco
Doehler &	LDT	RZ Tec
DC-Car	Lenz	Staerz
Digikeijs	Lokstore Digital	Tams
DinaSys	Märklin	Trix
ESU	Massoth	Uhlenbrock
Faller	Modeleisenbahn Claus	Zimo
Fleischmann	MÜT	

or other compatible systems. The list of manufacturers and compatible components is constantly being expanded.

Win-Digipet (32 bit) was programmed for computers on which the **Microsoft Windows** operating system® is installed.

Current common versions of Windows are**:**

- 🚂 Microsoft Windows 7®
- 🚂 Microsoft Windows 10®
- 🚂 Microsoft Windows 11®

In principle, **Win-Digipet** can also run on older Windows installations such as Windows XP, but these should no longer be used for security reasons. Microsoft no longer provides support for these versions of the operating system. They are also no longer included in the regular centrally provided updates, which can be security relevant.

We recommend the use of one of the above-mentioned versions of the Microsoft operating system.

This version of **Win-Digipet 2021 Premium Edition** offers a comprehensive and convenient solution for practically all control tasks on digital model railway layouts of any size.

1.1.2 The three pillars of Win-Digipet

Behind every model railway control software is a corresponding philosophy. In the case of **Win-Digipet,** we are talking about the so-called 3-pillar philosophy. philosophy. In principle, the entire program is based on the 3 basic pillars:
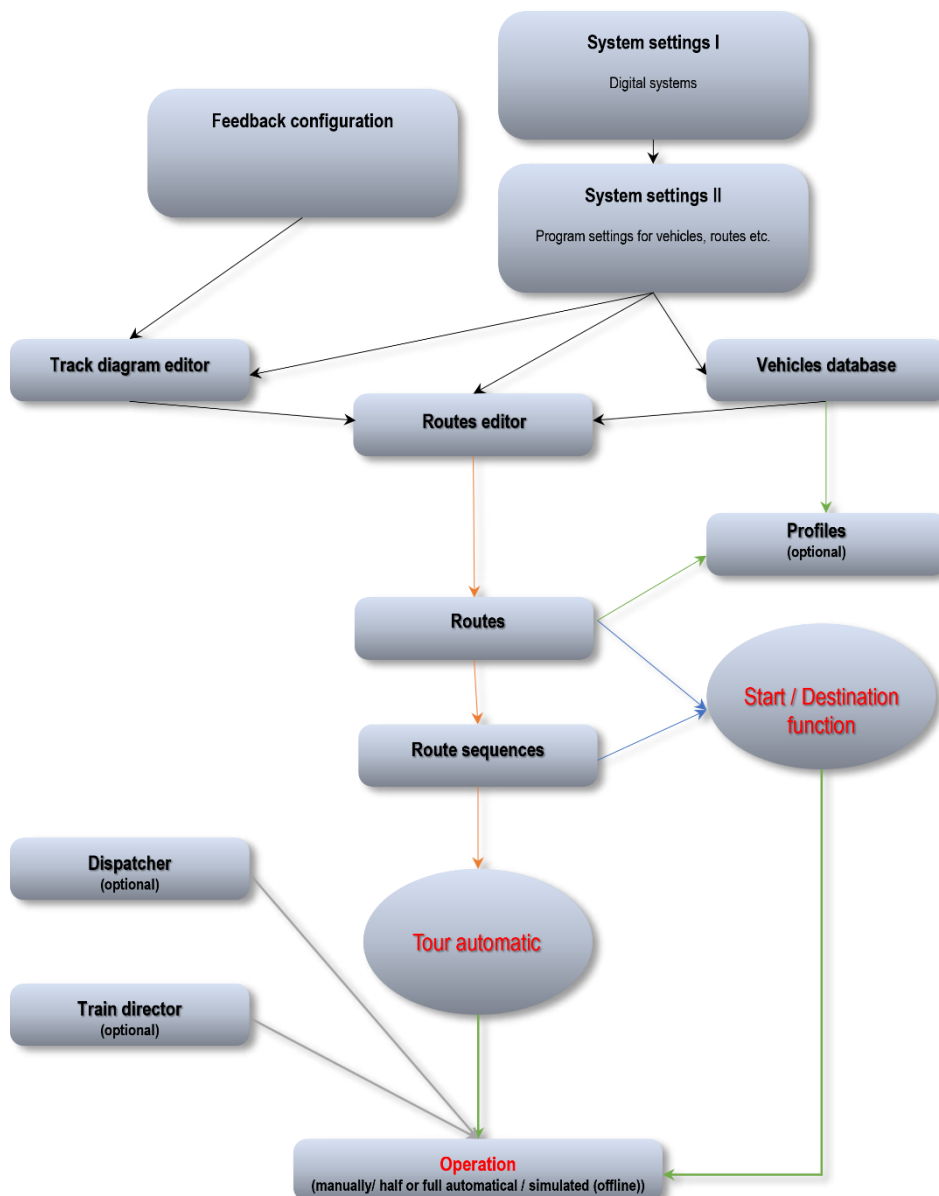
Fig. 1.1   The three pillars of Win-Digipet (track diagram, routes, vehicles)

🚗 Vehicle database with all your vehicle data such as locomotives, cars, wagons and functional models

- 🚂 Track diagram with all the details of your model railway layout (solenoid items, feedback contacts)
- 🚂 Route database with a list of the individual block routes or road sections.

You can only control your digital model railway layout with **Win-Digipet** if this information has been entered correctly.

All other functions in the program, such as route sequences, profiles, automatic operation, as well as control of turntables, transfer cars, train lift systems, cranes and cars, require the aforementioned three pillars in order to function correctly in conjunction with **Win-Digipet.**

For this reason, you should proceed very carefully when creating the data for these three pillars; the smooth operation of your model railway layout later on will be the reward for the effort made.

1.1.3 Operation of the program

The operation of **Win-Digipet is** designed for use with a mouse or an alternative digital pointing device (e.g. touchpad). In principle, you can also access all menu entries using your computer's keyboard. Using a mouse is faster and also more convenient if you click directly on the icons.

In the graphically orientated parts of the program, however, the individual symbols can only be selected with the mouse.

Tool tips have been incorporated throughout the program. have been incorporated throughout the program. These "small" information windows are displayed when you move the mouse over an icon, a button or a list entry in a table, for example, without pressing one of the mouse buttons.

In the individual parts of the **Win-Digipet** program (e.g. vehicle database, routes editor, profile editor, etc.), you can jump from field to field using the **Tab key** or the **up** and **down arrow keys.** You can return to the previous field by pressing the Shift **and Tab** keys. The active field lights up. A switch, e.g. On/Off, is activated with the **space bar.**

In the main program and in the track diagram editor, you can close active windows with the **ESC** (Escape) **key.**

Within a scroll window, you can scroll line by line using the **up** and **down arrow keys.** You can also use the mouse to scroll line by line within a scroll window. If you click on the lower horizontal frame bar, it moves forwards, if you click on the upper horizontal frame bar, it moves backwards.

The **PgUp** and **PgDown** (image↑ and image↓) **buttons** scroll page by page.

The texts in text fields must be entered using a keyboard, even when using the mouse.

In all parts of the program, you can use the F1 key to access the context-sensitive help function of **Win-Digipet**.

Function button	Function
F1	Help function
F2	all locomotive controls are minimised and arranged at the top
F3	all locomotive controls are minimised
F4	all locomotive controls are closed
F5	increases the zoom factor (Zoom +) of the track image
F6	Reduces the zoom factor (zoom -) of the track image
F7	Opens the "Journey sequence inspector" window
F8	Stops all locomotives or starts them up again
F9	Triggers an **emergency stop**
F10	
F11	jumps back and forth between open windows

1.1.4 Working with Win-Digipet

No programming knowledge is required to work with **Win-Digipet.** All entries are made on screen using the various editors and convenient wizards. In many cases, **Win-Digipet** will also inform you directly of any incorrect entries.

You can also have your entries checked with the help of powerful check routines.

1.2 HARDWARE, DIGITAL SYSTEMS, CONNECTIONS

1.2.1 Hardware requirements for Win-Digipet

Minimum:

- Operating system: Microsoft Windows® / Win 7 / Win 8 / Win 10 / Win 11
- Processor: Pentium IV 2 GHz
- Memory: 1024 MB (or minimum requirement of the operating system used)
- Graphics card: Resolution 1,280*1024, True Colour
- Connections: USB
- DVD/CD-ROM: (optional)
- Sound card: (optional)
- Hard disc: :> 200 MB free
- Accessories: Mouse, Keyboard
- Internet browser: Internet Explorer V8.0 or higher or alternative browser
- OPTIONAL: DirectX: > V7 (optional, if sound card available)

Recommended:

- Operating system: Microsoft Windows® 10 / Microsoft Windows® 11
- Processor: Dual core processor
- Memory: 2048 MB
- Graphics card: 1920*1080 Full HD, True Colour
- Connections: USB, Ethernet
- DirectX: :> V7.0
- DVD/CD-ROM: (optional)
- Sound card: 100% DirectX V7.0 (or higher)
- Hard disc: :> 200 MB free
- Accessories: Mouse with 3 buttons, keyboard (optional joystick)
- Internet browser: Microsoft Edge, Google Chrome, Mozilla Firefox or similar.

In Windows set the following screen settings:

- Resolution: at least **1024 x 768** pixels (preferably a higher resolution)
- Colour palette: True Colour 32 Bit
- Font size: Normal size 96 dpi or 100% - **important!**

The settings for the font size on the Windows desktop can be found in different places depending on the Windows version used.

Under the current Windows 10, for example, you can find the corresponding settings in the

Settings→ System→ Display→ Scaling & arrangement

Here you should select the standard resolution of 100%.

You can recognize whether you have selected the correct setting "Small fonts or "Standard resolution" by looking at the **Win-Digipet** display. The program appears strangely distorted and the texts in the dialogue fields do not fit into the intended fields or are wrapped. In this case, you should check the font size settings.
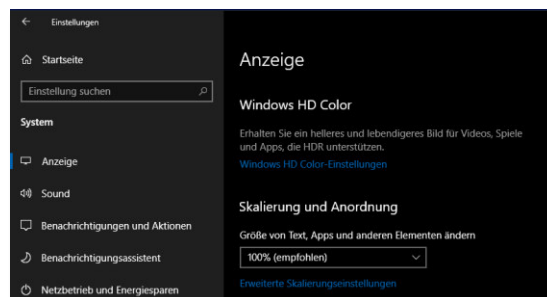
Fig. 1.2   Setting for the font size in Windows 10 (German Windows version)

1.2.2 Digital control of the model railway layout

For digital control of your model railway layout you need the following things...

- a digital system
- Locomotives and vehicles equipped with digital decoders.
- digitized turnouts, signals, etc. and feedback-capable tracks or feedback contacts in the roads.

Win-Digipet currently supports the digital systems and interfaces listed in section 3.1. You can control your digital model railway system directly with each of these command stations. In addition to their performance, they differ mainly in the supported protocols such as DCC, Motorola, MFX, BiDiB or Selectrix as well as in the type of connection to a computer.

Please refer to the operating instructions for the respective control panel or the manufacturer's website to find out how to connect your control panel to the computer.

To ensure correct interaction with **Win-Digipet,** we recommend that you always install the latest software or firmware for your digital system.

Please refer to the manufacturer's operating instructions or the instructions on the Internet to find out how you can convert your non-digitalized vehicles, Turnouts, signals, turntables or transfer tables for digital operation.

So that the control software can recognize where the vehicles (locomotives, carriages etc.) are located on your model railway, it is absolutely necessary to install so-called feedback contacts on the tracks or in the roads. A distinction is made between two types of contacts, permanent and momentary contacts. The characteristic difference is that, unlike permanent contacts, momentary contacts only trigger for a brief moment and are then

inactive again. A typical example of momentary contacts are so-called reed switches, which are activated, for example, by magnets mounted under the vehicles.

Permanent contacts from feedback sections are more suitable for controlling your model railway layout, as they trigger a permanent contact when the track section is occupied, which is processed by the program. This contact remains active until the corresponding track section is released again by the vehicle. With 2-rail tracks, the contact is signalled as permanently occupied by current-consuming vehicles; with 3-rail tracks (Märklin system), this takes place via earth contacts through non-insulated axles.

If you are also planning to use "moving" cars on your model railway layout, you will definitely not be able to avoid installing momentary contacts. However, **Win-Digipet** also offers you a wide range of options for controlling your road vehicles for this purpose.

You can find out how to create these feedback sections for the various track or road systems in the extensive workshops on the **Win-Digipet** website or in the manufacturer's instructions, of which there are many.

	If possible, you should set up your tracks or roads with almost seamless feedback monitoring.
	The basic rule here is: The more the better, because the feedback contacts are the "eye of the computer", so to speak.
	However, it is not absolutely necessary to install a feedback contact every few centimetres. We will have to come back to this topic several times in the course of this manual, then you will recognize where it makes sense to use more or fewer feedback contacts on your model railway layout.

1.2.3 The Win-Digipet homepage on the Internet

If you have an Internet connection, you can open your browser in the "Help" menu under "Service Homepage" and go directly to the **Win-Digipet** Service Homepage. (https://www.windigipet.de) directly.

Innovations are presented there, free update options are available and there is a forum for individual questions. You can also access various tutorial videos via the homepage, which are stored in a separate channel on the "YouTube" video service. These video sequences deal with individual topics for the tasks in **Win-Digipet**, graded according to experience level.

1.3 Installation, Start and help

1.3.1 General Information

This manual assumes knowledge of the Windows operating systems and their operation is assumed. When "Windows" is mentioned in this manual, this term includes Windows 7, Windows 8, Windows 10 and Windows 11.

The terms "click" and "double-click" mean actions with the left mouse button. If actions are to be carried out with the <u>right mouse button</u>, the <u>right mouse button</u> is underlined in the text.

This Manual describes...

- 🚂 Menu commands such as <File> <Save>
- 🚂 Input or selection fields are in *"inverted commas"* and italics.
- 🚂 Button names are enclosed in **'*apostrophes*'** and italic /bold.

If you read something in this manual about a radio button, these are selection Turnouts, whereby the selection is limited to one entry from a list.

*Fig. 1.3 Example of a "radio button" in a **Win-Digipet** dialogue box.*

When this manual refers to solenoid device decoders, this means, for example, the Märklin k83 decoders. The same applies to the switching decoders, which are also called k84 decoders at Märklin, for example.

And when you read something about track occupancy detectors modules, this refers to the s88 feedback decoders from Märklin, and other track occupancy detectors from other manufacturers such as Viessmann and, as well as the track occupancy detectors of the LocoNet system or the BiDiB system or Lodi system

If you then read something under the term vehicles, this naturally refers to all rail or road-related vehicles with MM, MFX, DCC, BiDiB and Selectrix decoders that you can control on your model railway layout.

1.3.2 Back up the existing data

If you have already worked with a previous version of **Win-Digipet,** you should perform a data backup according to section 2.2.3 or an automatic backup according to section 3.7.4 <u>before</u> installing **Win-Digipet 2021 Premium Edition.**

1.3.3 Saving the symbol tables

If you have copied the symbol tables supplied with a previous version of **Win-Digipet** into your own tables and changed them or created your own symbol tables, you should also **save** these tables, as **Win-Digipet 2021 Premium Edition** supplies new, supplemented symbol tables and installs them automatically.

1.3.4 Close all applications

To ensure correct installation of **Win-Digipet**, please close all open applications before installing **Win-Digipet.** This also applies to applications that were started via the autostart function, such as Microsoft Office. You should close these applications manually in the Windows taskbar.

1.3.5 Installation of Win-Digipet 2021 Premium Edition

The **Win-Digipet 2021 Premium Edition** program is supplied with a USB stick and a "Quick Start" booklet. This electronic medium contains all the program files required to install and operate **Win-Digipet.**

In addition to the program files, the USB Stick also contains the documentation for the program, a selection of images and sound files that you can use for your **Win-Digipet** installation.

The documentation is published in PDF format . You can view them on your computer using a free PDF viewing program such as Acrobat Reader and print them out if required. However, please note the scope of the documentation and critically check whether a (complete) printout makes sense.

In addition to this (comprehensive) manual, the documentation includes a number of treatises on complex parts of the program. Example projects are supplied with all written elaborations, which you can use to easily understand the situations described in the texts and images.

It is by no means necessary to read the complete manual at the beginning. The information it contains would overwhelm any beginner. For this reason, sections of this manual

- For advanced users on the left with an orange bar

- For users who see themselves as professionals or experts, with a purple bar

The USB stick is protected against unauthorized copying for copyright reasons. This copy protection checks the legal license of your **Win-Digipet** installation at irregular intervals. The USB stick must be plugged into your computer for this purpose. We recommend that you generally leave the stick in a USB port.

Insert the USB Stick with the **Win-Digipet** software into a free USB port on your computer.

In general, the USB Stick should be displayed as a new drive in Windows Explorer after a short recognition time.

Open Windows Explorer and search for the drive icon of the **Win-Digipet** USB stick. Double-click on the drive icon to display the contents of the data carrier.

The installation file is located in the root directory of the USB stick and is named SETUP.

Double-click on the SETUP file with the left mouse button to open the program and the installation dialogue similar to that shown in Fig. 1.4 is displayed.

Win-Digipet uses the convenient "Windows Installer" for the installation. It registers all files to be copied in a database so that all files belonging to the program in question are removed from your system in the event of uninstallation.

The "Windows Installer" requires at least 200 MB of free hard drive space on your **C:\ hard drive** to unpack and process the installation routine.

During the installation process, all files are processed in a temporary directory and automatically deleted again after successful installation.

*Fig. 1.4   Initial Window of the **Win-Digipet** installation dialogue*

At the start of the installation, the so-called "InstallShield Wizard" checks whether the "Windows Installer" is present on your system; if not, it will be installed automatically. This may require you to restart your computer.

After this possible restart, the installation will continue automatically. As a rule, you only need to click on **'Next'** or **'OK'** and the installation will continue until it is complete.

	Initial installation:
⚠️	The installation path for **Win-Digipet** is **C:\WDIGIPET** in the *"Select target path"* window. The recommendation is to use this path for installation.
	If you want to change this suggestion, click on **'Change'** and then overwrite the default C:\WDIGIPET with the drive letter and the desired directory name in the "Select directory" window. Confirm with **'OK'**.

If you have a previous version of **Win-Digipet,** you **must** enter the directory in which your previously used **Win-Digipet** version is located in the installation path.

Data already recorded on your layout will not be overwritten. Existing databases for track layout, locomotives, routes, etc. are **automatically** converted to the new **Win-Digipet 2021 Premium Edition** version when prompted. Please confirm all these prompts with **'OK'** or **'Start'**.

Finally, the installation program places an icon for the Win-Digipet **Start Centre** on your desktop. The Start Centre is also entered in the **Win-Digipet** program group in the Start menu.

Symbol	Description of the
 WDP Premium Startcenter 2021	The start centre of the **Win-Digipet 2021 Premium Edition**. All functions for starting the system and office version of **Win-Digipet are** located within the Start Centre. All additional programs, for example for backing up data or creating projects, are also combined under the Start Centre interface.

> ⚠️ At the end of the installation process, the computer should be restarted. This will ensure that the configuration files have been created correctly and that **Win-Digipet** has been entered in the Windows registry.

You have now installed **Win-Digipet** on your computer and can begin with the quick start.

When Win-Digipet is started for the first time, the original USB stick must be inserted in a free USB port.

Later, the stick is automatically requested by the program at intervals of a few days. You should therefore store the stick very carefully if you do not leave it plugged in. We recommend that you simply leave the stick plugged into the USB port.

Version 2021 Premium Edition

Chapter 02

2. THE START CENTRE

2.1 General information

In the first chapter of this manual, we dealt with the installation of **Win-Digipet.** Once you have successfully completed all the installation steps and the computer has been restarted, you can now start **Win-Digipet** for the first time.

A new icon was created on the Windows desktop of your computer during installation: The **Win-Digipet 2021 Start Centre.**

The various tasks with the individual **Win-Digipet** program components can be carried out very conveniently from the Start Centre.

Now start the Start Centre by double-clicking on the corresponding icon. After starting, the Start Centre interface appears as shown in Fig. 2.1 is shown.

2.2 The action tabs in the Win-Digipet 2021 Start Centre
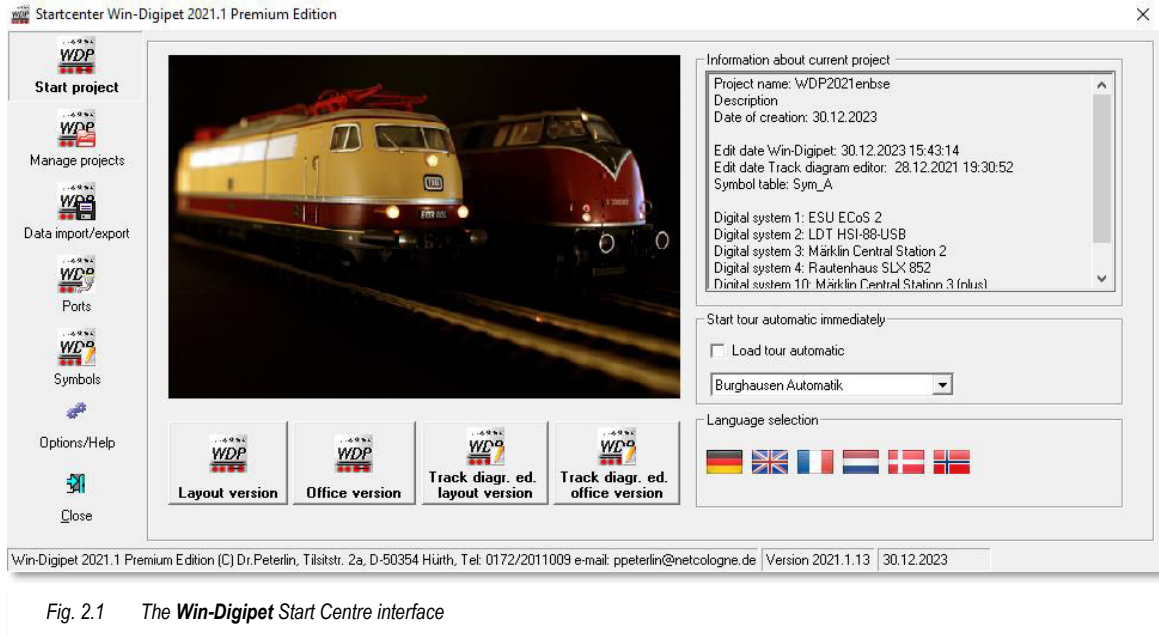
Fig. 2.1   The **Win-Digipet** Start Centre interface

On the on the left-hand side of the window you will see a toolbar with the individual action tabs in **Win-Digipet**. This action tab bar is always displayed within the Start Centre, regardless of which action icon you have just selected. Click on one of the icons to switch between the individual actions and the start centre offers you the necessary options for further processing via various buttons.

The middle and right-hand side of the Start Centre window changes depending on the selected action tab.

We will take a closer look at the individual actions during this chapter. The following table shows the connection between the actions mentioned and the associated program parts of **Win-Digipet.**

Action register	Description of the
WDP Start project	The "Start project" action tab takes you to the buttons for starting the **Win-Digipet** main programme or the track diagram editor.
	The "Start project" action tab is displayed as standard when the Start Centre is called up.
WDP Manage projects	The "Manage projects" action tab takes you to the Projects programme section, which is the project management in **Win-Digipet**. Here you can create new projects or load, copy, or delete existing ones.
WDP Data import/export	The "Data import/export" action tab contains the data maintenance section of the programme. Data backups of your projects can be created here and restored if required.
WDP Ports	The "Interfaces" action tab shows you the interfaces available in your computer for connecting your digital systems.
WDP Symbols	The "Symbols" action tab contains the programme parts Track symbol editor and Function symbol editor. You can use these two editors to change symbols in the respective group or add new symbols.
Options/Help	The "Options/Help" action tab contains some repair options as well as the settings for the behaviour of the Start centre. There is also a collection of links to **Win-Digipet** content on the Internet.
Close	Here you leave the **Win-Digipet** start centre.

If you have already worked with previous versions of **Win-Digipet,** you will certainly recognise the individual parts of the programme. In previous versions, all programme icons were stored as individual icons on the Windows desktop or in the Windows Start menu. With the Start Centre, you gain more clarity in both places.

The following sections describe the individual views of the Start Centre and will guide you through your first steps in **Win-Digipet 2021.**

2.2.1 The "Start project" action tab. "

Fig. 2.2   The action tab "Start project"

The display of the action tab "Start project" is the standard view of the Start Centre. In addition to the action tab bar on the left-hand side of the dialogue, you will find four buttons in the middle area (see Fig. 2.2).

- 🚂 'Layout version'
- 🚂 'Office version'
- 🚂 'Track diagram editor layout version'
- 🚂 'Track diagram editor office version'

A simple click on the *'System version'* button starts the main **Win-Digipet** programme. When you start the programme for the first time, the **original Win-Digipet USB stick** must be inserted in a USB port on your computer; later, the programme will automatically request it every few days.

The second button **'Office version'** button also starts the main **Win-Digipet** programme. The main difference, however, is that the office version of the programme can be run without a connection to the model railway layout. In the office version, it is also not necessary to use the WDP USB stick to be inserted in the computer.

You therefore have the option of installing **Win-Digipet** on a second computer (e.g. a laptop) and making your entries away from your model railway layout. Later we will deal in detail with the subject of data backup and data transfer. You want to use the entries made on the mobile device on your model railway layout.

The third and fourth buttons *'Track diagram editor layout version'* and *'Track diagram editor office version'* are used to call up the track diagram editor. Here too, the office version is used to call up the track diagram editor without a connection to a digital system.

You can also call up the track diagram editor later from the main programme. The track diagram editor is one of the three basic pillars (see section 1.1.2) in **Win-Digipet**. With its help you can design a logical image of your model railway layout for control with **Win-Digipet**. You have already familiarized yourself with parts of the track diagram editor if you have worked through the quick start to Win-Digipet **2021.**

	Important note!		
	Layout version	→	**Win-Digipet** is operated with a connection to the system. The original USB stick is required to query the copy protection.
	Office version	→	**Win-Digipet** is operated without a connection to the system. The programme is otherwise fully functional. The original USB stick is **not** required.

In the top right-hand section, you will find some important information about the current (loaded) project (cf. Fig. 2.2). This information includes the name of the project, the date it was created and last edited and details of the digital system(s) used.

When using several digital systems or special hardware (e.g. measuring systems for the speed of vehicles), it may be useful to deactivate these (temporarily) before starting **Win-Digipet** in each case. You can do this here in the info list by clicking on the corresponding entry and activating or deactivating it with the left or right mouse button. A deactivated digital system is listed in red text colour with the corresponding reference to the deactivation.

The deactivated digital system is now not checked when **Win-Digipet** is started. The deactivated entry remains in place even if the Start Centre is restarted until you reactivate the digital system. A deactivated digital system can also be activated while the programme is running.

The area below the project information contains a list field. If the option is activated, this is used to immediately call up a so-called automatic Tour (FAM) when **Win-Digipet is** started. In the Fig. 2.2 this list field is not empty; there an automatic journey has been created.

You will see several flags in the bottom right-hand area. Behind them are the different language versions of the programme. If you select one of these flags, the corresponding version will be loaded the next time you start **Win-Digipet.** All menus and program dialogues will then be available in the selected language.

2.2.2 The "Manage projects" action tab.
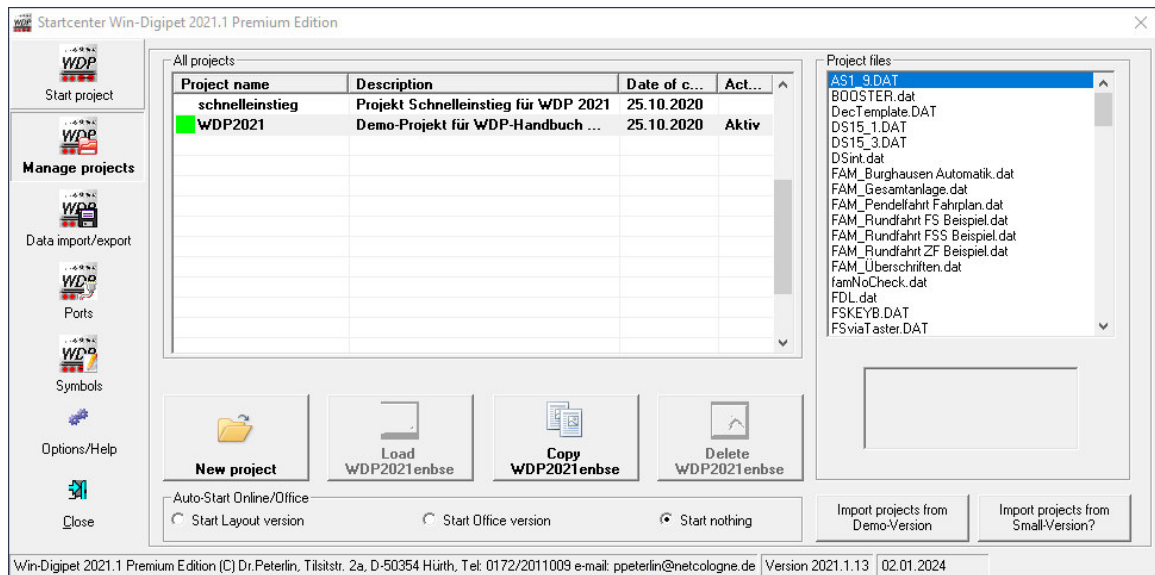
*Fig. 2.3   The project management in the **Win-Digipet** start centre*

The programme **Win-Digipet** offers you an administration of the projects on your computer here in the Start Centre.

To control your model railway layout with **Win-Digipet,** all details are stored in a so-called project. Normally you will work with one project, i.e. "your" project.

The representation in Fig. 2.3 shows the project management. In the centre of the window, you will see a list of the projects available in **Win-Digipet.** In our example here, only the sample projects from the **Win-Digipet** USB stick are available. No project of your own has been added yet.

Over time, however, it may prove useful to continue the work you have started in a new project. You may also want to test any changes or additions to your system in the control programme first and create a separate project or try out the changes first with a backup copy of your project.

In addition, projects from other users or any examples from the **Win-Digipet** homepage can be loaded onto your computer and edited. The **Win-Digipet** data carrier also contains further projects for demonstration purposes, which you can load into your programme installation.

Please note, however, that projects from other users will not normally match your model railway layout. You should therefore start these projects without a layout connection in the office version of **Win-Digipet.**

> ⚠ The WDP2021 project is labelled as "active". This means that you can have many projects installed on the hard drive, but only one project can be the "active or current project".
>
> A project **must be** the "active" project. A project marked as active cannot be deleted.

The four buttons below the project list have the following meaning.

- 🚂 **'New project'**
  This button is used to create a new, empty project.

- 🚂 **'Load project'**
  At this point, a project that already exists in **Win-Digipet** is loaded. This project becomes the "active" project after the loading process.

- 🚂 **'Copy project'**
  This button is used to copy an existing project completely into a new project. You must assign a new (not yet existing) name and an optional description to the new project in the subsequent dialogue. We recommend that you give each new project a meaningful name and description.

- 🚂 **'Delete project'**
  Here you can delete projects that are no longer required. Please note, however, that as mentioned above, you can only remove an inactive project from the **Win-Digipet** project list.

Except for the **'New project'** button, the respective project name is written out in full on the buttons (e.g. WDP2021 in **Fehler! Verweisquelle konnte nicht gefunden werden.**)

In the lower section, you will also see an auto-start function for projects. This function includes the start of an existing, newly created or copied project in the office or system version. The default setting here is "Start nothing".

On the right-hand side of the project management window, you will find a list of all files that belong to the selected project. This file list is more of an informative nature at this point. The files cannot be edited or deleted here. However, you can check whether the vehicle images are available in your project, for example. If you click on an image file in the file list, the vehicle image is displayed below the file list.

2.2.2.1 Create a new project.

Switch to the "Manage projects" action page in the Start Centre and click on the "New project" button. After a prompt, the dialogue box shown in Fig. 2.4 opens.

Enter a project name that is as self-explanatory as possible of no more than 16 characters and a meaningful description of no more than 50 characters in the field below. At this point we have chosen the name "smalltown" as our first system controlled with WDP. Entering the project name is mandatory, entering the description is optional. However, it is also advisable to enter a description, as this makes it easier to find the correct project from the project list later.
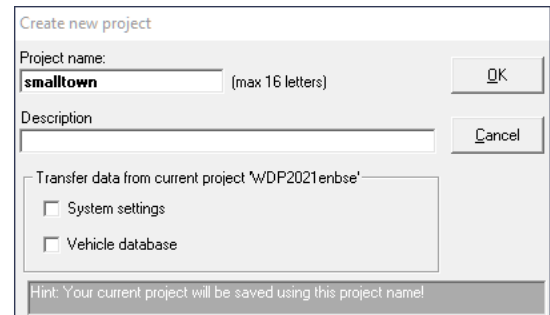
Fig. 2.4   The "Create new project" dialogue.

The characters for the project name must be alphanumeric; special characters and spaces are not permitted at this point and will be rejected by the programme.

You should make sure now that you use a meaningful, project-related name for your project. When working with **Win-Digipet** later and possibly with several projects in the course of time, you will not be happy with names such as "layout1, layout2 or Test".

The two selection options (checkboxes) for transferring the system settings and the vehicle database can be deselected for the moment. These checkboxes are intended for cases in which you are starting a new project but want to transfer the programme and hardware settings as well as your vehicle database from your previous system project.

You **only** need to enter the project name **once** at the beginning of your entries. After entering the project name and confirming with the '*OK*' **button,** the project you have just created will become the "active" project and, unless you select another project, will be started automatically each time **Win-Digipet** is called up. This applies to both the system version and the office version of **Win-Digipet**.

All further programme starts are carried out according to section 2.2.1 in the Start Centre with the '**Start project**' task group. You will be taken **directly** to the main programme of **Win-Digipet**.

The current project created in this section (smalltown) starts with an empty track diagram and you can start editing your project. It is advisable to adhere to the following sequence:

- Entering the data for your digital model railway layout in the **Win-Digipet** system settings
- Recording the data of your vehicles in the vehicle database
- Capture your track diagram with the track diagram editor and
- Recording the routes for the individual block sections or road sections.

2.2.2.2 Starting your existing project from a previous version

After the installation start **Win-Digipet** with the data of your previous project according to section 2.2.1 in the Start Centre with the **'Start project'** task group. You will be taken **directly** to the main programme of **Win-Digipet**.

To process your project data from a previous version of **Win-Digipet** (versions 8.x, 9.x, Pro X.x, 2009.x, 2012.x, 2015.x or 2018.x), some databases are converted after the programme is started for the first time. These are adapted to the structure required for **Win-Digipet 2021.** Your data will not be lost during this process. Please note, however, that this data can then no longer be used for one of the previous versions of **Win-Digipet.** During the programme start you will also briefly see the start screen[1] .

Fig. 2.5 The Win-Digipet start screen (symbolic illustration)

Once **Win-Digipet** has booted up completely, you should now see your track image on the screen as usual.

You **do not** need to make any further settings to work with the programme, but you should enter or check the path to the vehicle images from **Win-Digipet** (see section 3.10).

---

[1] Image via <Help> <About...>, the last digits of the version number may differ from yours

If you have previously used a **Win-Digipet** version prior to **Win-Digipet 2012 Premium Edition** and have driven your locomotives according to speed steps, you will only be able to drive with speeds according to km/h with the current version **Win-Digipet 2021 Premium Edition**, a return to driving according to speed steps is not possible.

2.2.2.3 Delete project.

If you want to delete a project, you can do this using the *'Delete project' button.* On the button, the word 'Project' is replaced by the name of the project selected in the project list.

Deleting a project means that the project selected in the project list is removed from the project list and all files belonging to the project are deleted from the hard drive.

> ⚠️ The **current** project cannot be deleted!

2.2.2.4 The project list contains several projects.

Only one of several projects can only ever be loaded in the main programme. All projects are saved in their own project directories. You can use project management to activate another project **before** starting the **Win-Digipet** main programme.

In the project list, select the project that you want to make the current project and click on **'Load project'**. The name of the selected project is displayed on the button.

2.2.2.5 Storage of project data

In This description assumes that you have installed **Win-Digipet** in the default directory (C:\WDIGIPET) on your hard drive. If this is not the case, you must change the placeholders (...) in the following directory details accordingly.

The current project data is in the subdirectory ...\PROJECTS in a directory with the project name. The vehicle images are stored in this directory in a subdirectory ...\LOKBILDER.

2.2.2.6 Transfer project data from the manual

Win-Digipet 2021 provides you with all the project data required to produce this manual, as well as most of the images and descriptions. You should therefore download the "WDP2021" project (cf. Fig. 2.3). This will allow you to better understand the many descriptions in this documentation in the **office version** of **Win-Digipet.** You will then always see everything in full size and not, as here in the manual or the online help, in sections and reduced in size. As mentioned at the beginning, you can always access the online help by pressing the F1 key.

2.2.3 The "Data import/export" action tab

Behind The "Data import/export" action tab hides a powerful option for backing up project data in various ways and restoring it if necessary.

Win-Digipet recognizes two different scenarios for backing up your valuable data:

- 🚂 the automatic backup when exiting the main programme.

- 🚂 the backup on demand, i.e. at the request of the user of **Win-Digipet**
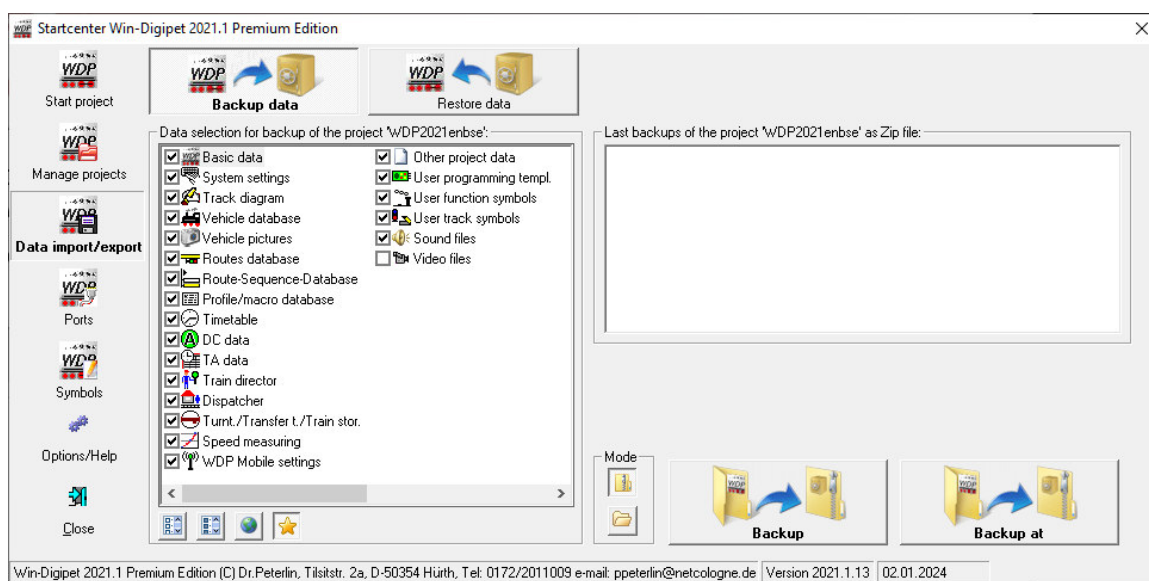
*Fig. 2.6   The "Data import/export" action tab in the **Win-Digipet** start centre*

The settings required for the automatic backup of project data when the programme is closed will be explained in detail later in the section xx . At this point, we will focus on the options for backing up data at the user's request using the Start Centre. You can use this part of the programme to conveniently backup and restore your own recorded data.

Other ("third-party") projects, such as demo projects on special topics from the **Win-Digipet** homepage on the Internet, can also be easily and conveniently loaded onto your computer using the data maintenance tool.

> **Remember!**
>
> ⚠️ Only the **current project** (you can see it in Fig. 2.6 on the left above the box "Data selection for saving the WDP2021 project") is saved with the data maintenance programme section.

2.2.3.1 Save project data.

In the left-hand window area, you can select or deselect the data to be backed up by simply clicking with the mouse. By default, the last selection used is ticked in the "Data selection..." box and thus selected. You are only guaranteed to have a complete backup of your project data if you select all entries.

If you want to make your project data available to another user, for example, it may make sense to deselect the track diagram symbols. These are usually available to the recipient of the data and therefore do not need to be present in the backup. However, this only applies if you are using the symbols provided by **Win-Digipet** as standard and have not added or changed your own symbols.

There are four buttons below the selection list that allow you to quickly preselect the data to be backed up.
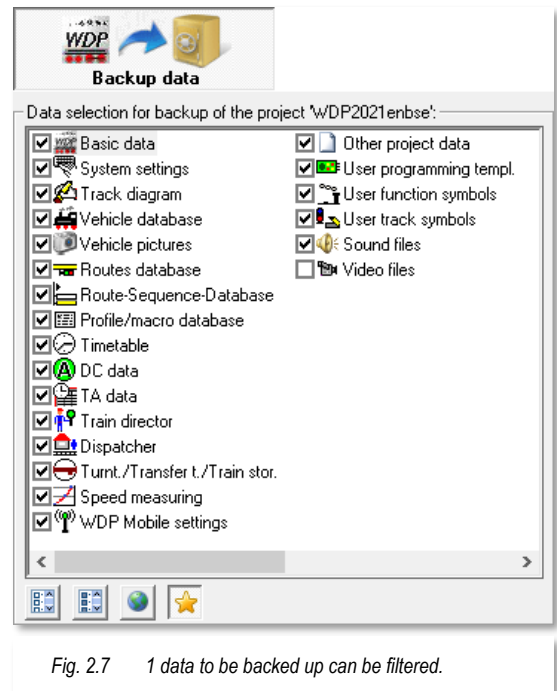
Fig. 2.7   1 data to be backed up can be filtered.

You can choose between one of the following four variants:

- 🚂 Select Nothing
- 🚂 Select all
- 🚂 Minimal (e.g. forum)
- 🚂 Own selection

You can start the actual backup using the buttons on the right-hand side of the window. Two modes are available here.

- 🚂 The data backup in a compressed zip file
- 🚂 The data backup to a folder

With the **'Save' button,** the backup is made in the target directory of the last data backup performed. If you select the '**Save as' button,** you have the option of using a dialogue to specify the destination of the data backup to be created. Both procedures are the same in both modes.

The option of backing up to a so-called ZIP file or restoring the data from such a file saves storage space on the backup medium, as all data is stored in compressed form.

In addition to the internal hard drives, you can also select external hard drives, USB sticks or any existing network drives as storage for backups.

The recommendation at this point is clearly for a compressed backup, as it is also easier to keep track of the data backups created.

In the case of a non-compressed backup, the individual files are backed up or copied to a

Fig. 2.8   Starting a data backup in zip mode

selected directory. If a data backup already exists in the selected target folder with this backup method, you will be notified of this by the programme. You then have the option of overwriting the existing data backup or specifying a new destination for the data backup.

In addition to the buttons mentioned, this dialogue shows you the last data backups per mode with the target paths used in list form. This gives you a very simple overview of your data backup activities.

Immediately after clicking, the "Save as" window opens, displaying the files already present in the selected directory.

The "*File name:*" input field already contains a suggested name for the file. The file name suggested by **Win-Digipet** Data Maintenance contains some essential information that could be very important if you need to restore your project later. The recommendation is to accept this suggestion for the file name and to save the file under this name in the selected destination by clicking on the **'Save'** button.

The file name is composed as follows:

WDP_DATENSICHERUNG_	Project name_	dd_mm_yyyy_	hh_mm
Identification of the data maintenance programme section[2]	Name of the project	Date of the backup	Time of the backup

A progress bar, based on the representation of the processing of a route in **Win-Digipet**, also shows the progress of the backup process graphically. At the end of the backup, you are informed of the completion with the message *"Done"*.
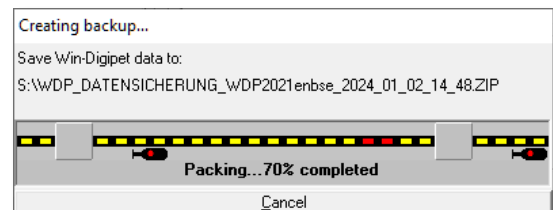
Fig. 2.9   A data backup is created

> You should create a "small data backup concept according to which you back up your data. In Chapter 3 of this manual, we provide you with some considerations for this.
>
> Please bear in mind that data loss is always a painful experience. The project data for your system often contains several weeks and months of work. It is therefore definitely worth giving some thought to data backup.

2.2.3.2 Restore your own project data.

Naturally you can also restore backed up data from your project at any time. This is done in the same dialogue as the data backup described in the previous section.

Instead of the *'Save data'* button (see Fig. 2.8), select the *'Restore data' button*. A dialogue window as shown in **Fehler! Verweisquelle konnte nicht gefunden werden.** is displayed as shown in Fig. 2.10.

---

[2] Datensicherung is the German word for ‚data backup'

The two large fields show you the last data backups (of all projects) that were carried out with your **Win-Digipet installation.**

The top list shows data backups that were created using the Start Centre's data backup function.

The lower list contains data backups that were saved with the automatic data backup when **Win-Digipet** was shut down. These backups are only available in compressed format as zip files, while the upper list can also contain data backups in a directory. In the adjacent graphic you can recognise this by the small icon in front of the list entry. The example graphic also shows you that data backups from various projects have obviously been backed up automatically.
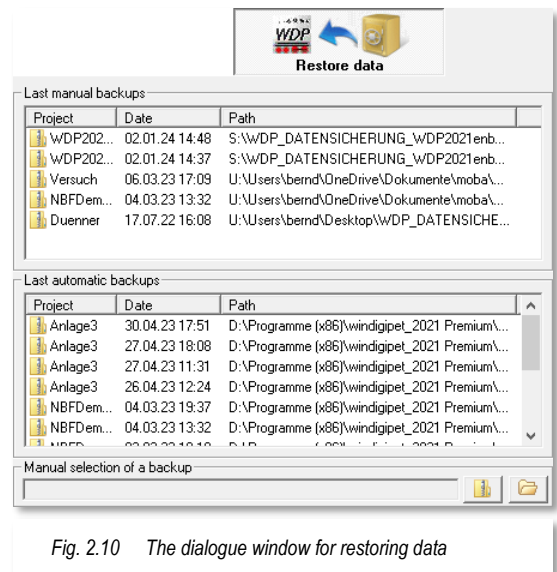
Fig. 2.10   The dialogue window for restoring data

The dialogue window is completed by a selection field in which you can manually select a data backup from a data carrier of your choice. The two modes, compressed zip file or file directory, are also available here.
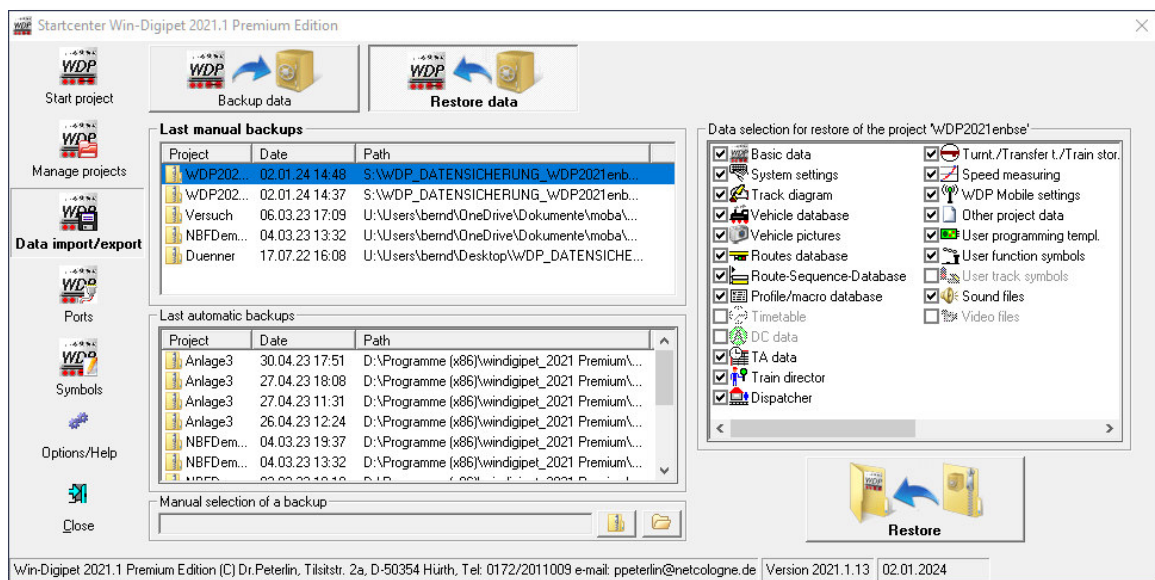
Fig. 2.11   A data backup file has been selected for restoration

As soon as you select a data backup in one of the list fields or from a directory, the contents of the selected data backup are displayed in the right-hand part of the dialogue window.

You can use the tick boxes to decide whether you want to restore all existing content or only parts of the data backup. To do this, simply tick or untick the relevant data. Data that does not exist in a backup is also not offered for restoration and you cannot tick the corresponding boxes.

The 'Restore' button starts the actual restore process. After a confirmation prompt or a warning (see Fig. 2.12) that you could possibly overwrite current project data, the progress of the restore is also displayed again in a progress window (cf. Fig. 2.9).
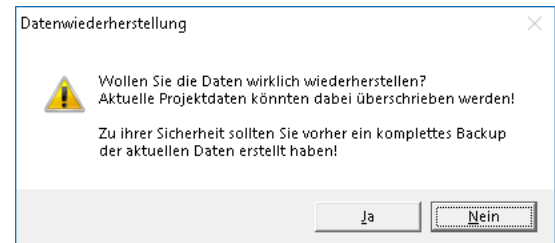
Fig. 2.12 Security prompt before restoration

Please note that restoring from a backup file overwrites the data of the **current** project.

Make sure that you restore a data backup of the **current** project and not of another project.

However, you can not only restore the data of a current project. It is also possible, for example, to copy the track diagram and/or the vehicle database with the vehicle images of another project into the current project if the project currently in use has just been **newly** created.

If you want to copy back the vehicle database, you should always copy the vehicle images as well. As both data belong together, the vehicle images would otherwise not be displayed in the vehicle database.

	Important notes on restoring data!
	⬤ **Win-Digipet sets** the target directory for the data to be copied itself.
⚠	⬤ When selecting data, always only select data from the current project and never data from another project, otherwise the entire project may become unusable.
	⬤ Do you work with two computers with the office version of **Win-Digipet** installed on one of them? If you have deleted data on the system PC (or office PC), this data will be restored from a data backup of the office PC or (system PC). To keep the data consistent, always delete data on both PCs.

2.2.3.3 Restore external project data.

Naturally you can restore backed-up data from another of your own or third-party projects at any time.

Here you need to consider whether it is a...

- ⬤ Own existing project
- ⬤ own project that **no** longer exists or
- ⬤ external project

If the project is your own but not currently active, start as described in section 2.2.2 by starting the project management in the **Win-Digipet** Start Centre and load the desired project.

However, if it is your own project that no longer exists or a third-party project, you must **always** create a **new project.** You can assign any project name, but you must **not transfer any** system or vehicle data and must not change the default setting "**Do not start anything**", as the data should be overwritten immediately with the data to be restored.

After creating the new empty project, which has now become the current project, transfer the "external" data in the same way as described in section 2.2.3.2 into the newly created, empty project.

Only with this procedure will you have or keep flawless projects, because otherwise data will be mixed. The effects would then affect the automatic functions of **Win-Digipet** in particular.

The variant described above is particularly recommended for beginners and less experienced computer users.

An abbreviated method for restoring external project data should be briefly mentioned here. Once again, we will use the method shown in **Fehler! Verweisquelle konnte nicht gefunden werden.** The current project is currently "WDP2021enbse". We now select project data from the lower list with the project name "bsekmh5", knowing full well that by restoring the selected data to our current project "WDP2021enbse" we would overwrite it and thus render it unusable. We start the restore and again receive the security prompt from Fig. 2.12. We answer this with '**Yes'**. Instead of starting the restore, the program
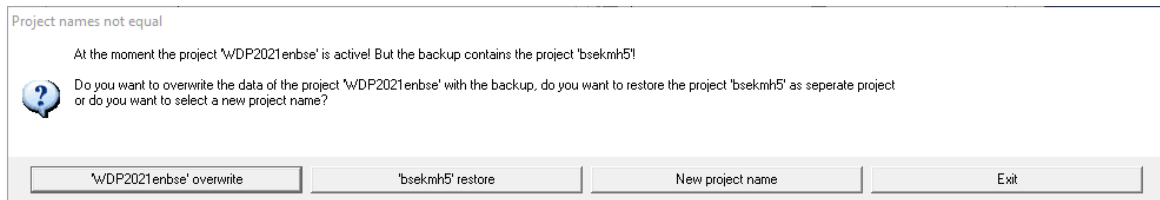
Fig. 2.13 **Win-Digipet** *has identified the recovery data of a third-party project*

displays another dialogue.

In addition to the option of overwriting the current project (WDP2021enbse), this also offers the option of restoring the external project (in this case bsekmh5). If this does not exist, it is created again by clicking on the **'Restore bsekmh5'** button. You also have the option of creating a new project name for the external project data.

2.2.4 The "Ports (Interfaces)" action register
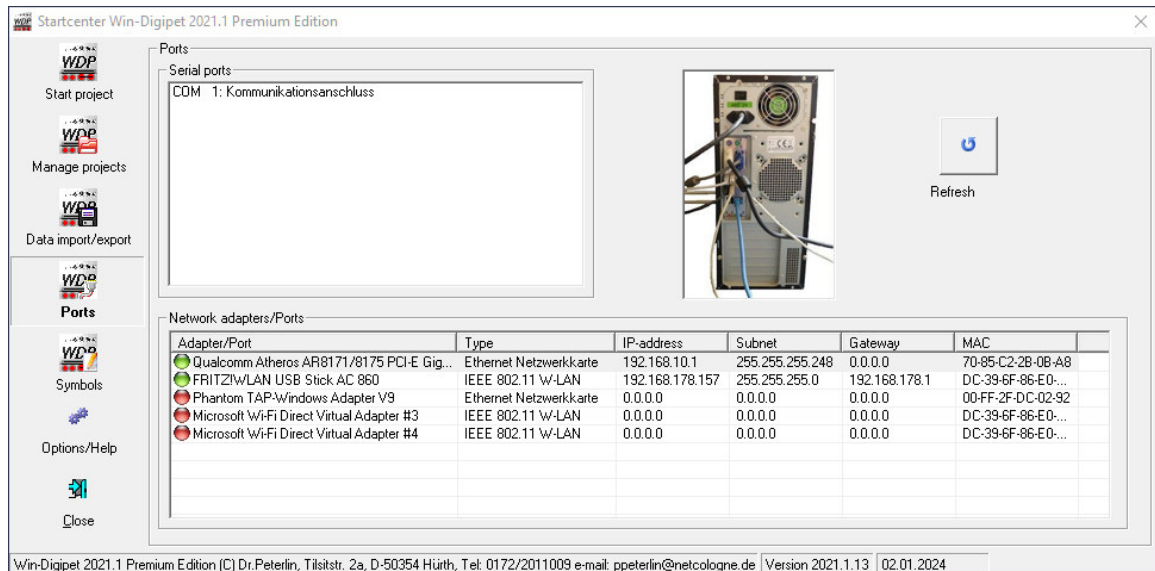
*Fig. 2.14   The "Ports (Interfaces)" action tab in the **Win-Digipet** start centre*

The Ports (Interfaces) action tab provides information about the serial interfaces or network adapters available on your computer.

2.2.4.1 Serial ports available in the computer

In the upper area of the window (see Fig. 2.14) labelled "Serial ports" all the so-called COM ports of your computer are listed. Older systems will have up to four COM interfaces installed here. These interfaces are usually labelled "COM1:" to "COM4:".

Newer devices often no longer have serial interfaces at the factory (cf. **Fehler! Verweisquelle konnte nicht gefunden werden.**). However, many digital systems still work with serial connections, so you should consider using a serial interface card if necessary.

So-called USB serial adapters, which convert a USB interface into a COM port, also offer a remedy here. However, it has been shown in the past that not all adapters work without errors. It is therefore preferable to use an interface card if possible.

The USB serial adapters require driver software from the manufacturer. The software then emulates a virtual COM port on the physically existing USB port. You will then also find the virtual COM interfaces in the list of serial interfaces. Virtual COM interfaces can often be recognized by the fact that they are displayed with an interface designation greater than COM4. The name of the connected device can also often be found after the interface designation for virtual COM interfaces. This is not technically possible with physically existing "real" serial interfaces.

Some digital systems are connected to the computer via a USB connection. Just like the adapters mentioned above, these digital systems also require driver software from the

respective manufacturer. After installing this driver software, they are listed in the list of serial interfaces in the same way as the prementioned adapters. The problems with the adapters mentioned above do not usually occur with a USB connection, but there are installation problems with the driver software of some manufacturers in connection with Microsoft Windows 10® or Windows 11®

2.2.4.2 Network adapters available in the computer

The lower part of the Interfaces action card displays information on the network interfaces available on the computer.

A table is displayed that shows the hardware information for the adapter as well as the addressing configured for these interfaces.

The image shown in the example (see Fig. 2.14) manages several network interfaces. The connection to the digital centre is implemented as an Ethernet network adapter, i.e. wired.

Users have experienced difficulties in the past, particularly when connecting digital systems that work together with the computer via a network, as it is essential that the devices are addressed correctly. The table shown here provides you with the information you need to address your digital control centre correctly.

In chapter 3 on the **Win-Digipet** system settings, we will go into the special features of individual digital control interfaces when connecting them to the computer.

2.2.5 The "Symbols" action tab
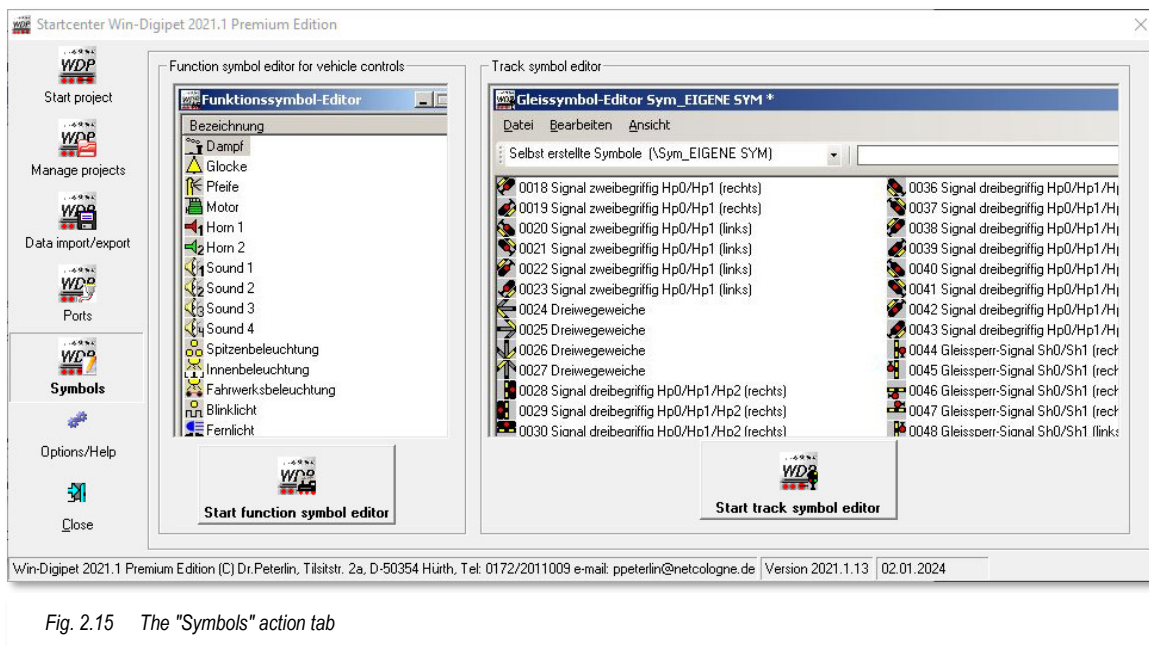
Fig. 2.15   The "Symbols" action tab

In this action tab contains the buttons for the two additional **Win-Digipet** tools "Track symbol editor" and "Function symbol editor" are located in this action tab.

In principle, both programs are small pixel-oriented drawing application that can manage the symbol tables contained in **Win-Digipet.** On the one hand, the symbol tables for drawing the track layout (track symbol editor) can be customized and, on the other hand, the function symbols for your vehicles (function symbol editor) can be changed.

At this point in the **Win-Digipet** manual, it would be completely misleading to go into more detail about the possibilities of the two programs. In the Tips & Tricks section of the Win-Digipet **forum** you will find an essay on the two additional programs

2.2.6 The "Options/Help" action tab

The Options/Help action tab offers you some setting options for the Start Centre as well as repair options for the **Win-Digipet** databases.

This window also contains some links to the **Win-Digipet** pages on the Internet.

Win-Digipet Online	
Homepage	The **Win-Digipet** website
Win-Digipet Forum	The user forum offers the opportunity to exchange ideas with other users.
Win-Digipet YouTube channel	Video tutorials on YouTube on a wide range of topics
Win-Digipet Downloads	Programme updates, workshops etc. for free download
Win-Digipet Mobile	**Win-Digipet** on your smartphone

The use of these links requires an internet connection of your computer on which **Win-Digipet** is installed.
You can also download a screensaver with the theme **Win-Digipet** and install it on your computer. Please note that support for this tool is only available via the e-mail address provided.
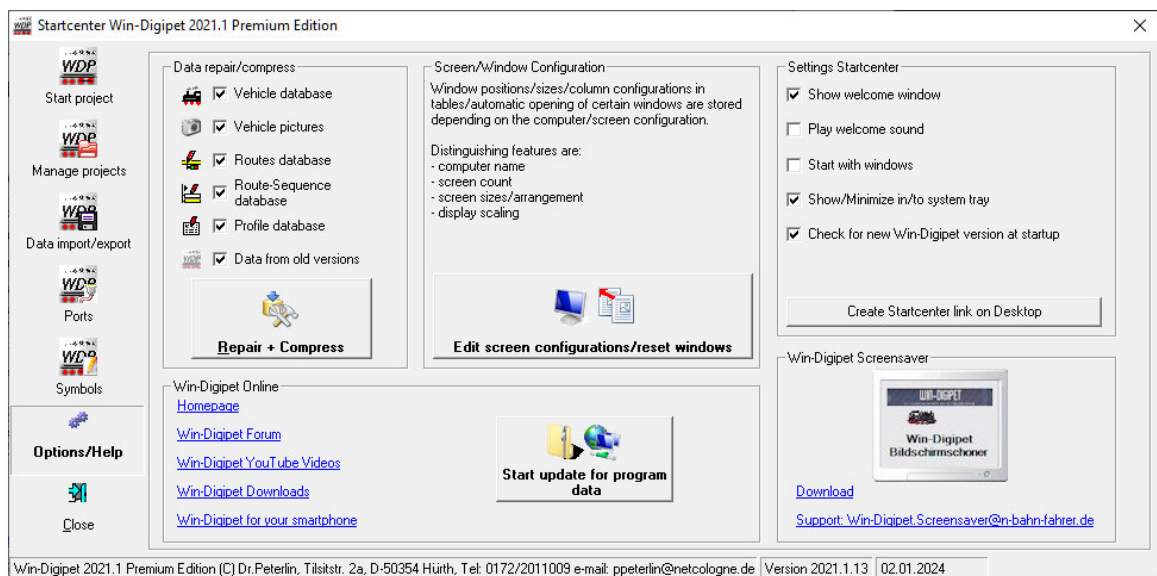
Fig. 2.16   The "Options/Help" action card

With the help of the *'Start update for programme data'* button you can always keep your **Win-Digipet** installation up to date. Clicking on this button opens a dialogue which offers you the option of searching for available updates on the **Win-Digipet** server or installing them from a downloaded file. The respective files can be found in the download area of the **Win-Digipet** website at www.windigipet.de.

Fig. 2.17   The dialogue for installing updates
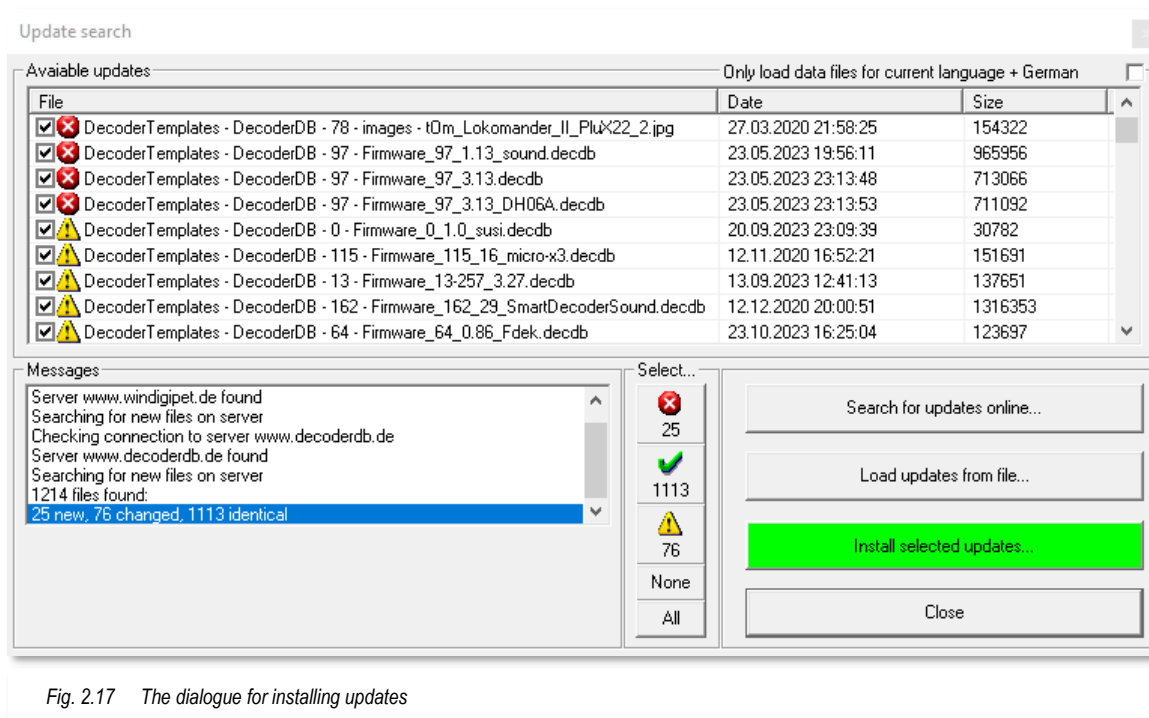
After selecting the desired files, they can be copied to your system using the *'Install selected updates'* button.

Win-Digipet recognizes whether the files are new, updated, or identical (already installed) versions.

> At the beginning of this chapter, you read that **Win-Digipet** offers several language variants, which you personally do not need. You can limit the downloads for the update function to the currently set language plus German (mandatory)

In addition to the links to the **Win-Digipet** offers on the Internet explained above, there are also links in the *'Options/Help'* action tab (cf. Fig. 2.16) there are three further topics.

2.2.6.1 Repair/compress databases

The *'Repair + Compress'* button helps you to tidy up your **Win-Digipet** installation a little. The following actions are carried out by selecting the checkboxes:

- All files in the locomotive images folder that do not match any vehicle in the current vehicle database are moved to the subfolder "Trash\<project name>\locomotive images" in the WDP directory.

- In the locomotive images folder, all images in JPG format that match a vehicle in the current vehicle database and are larger than 800x600 pixels are reduced to a maximum of 800x600 pixels.

- If symbol tables of a resolution level are available in the graphic formats BMP and PNG, the BMP files are moved to the "Trash\Symbols\Symbol table name" folder in the WDP directory.

- If there is only the BMP file for a symbol table in one size, it is converted to PNG and the BMP is deleted.

- Files from old versions of **Win-Digipet** are deleted (this does not affect your project data!)

"Repairing" a database means that you can fix the database if an error occurs.

Compressing" a database means that data records you have deleted while working with **Win-Digipet** are permanently deleted.

- Deleted data records are only noted in the programme as "marked deleted" and remain internally; the size of the database does not change.

- Only when the database is compressed are the data records labelled internally as "marked deleted" where actually removed and the database becomes correspondingly smaller.

As both points alone do not really make sense, they have been combined and the selected databases are corrected by clicking on the *'Repair + Compress'* **button.**

After a short time, you will receive the message "Databases have been successfully repaired and compressed!".

2.2.6.2 Reset window positions.

In this complex also contains the *'Edit screen configurations / Reset windows'* button so that you can reset the window positions after closing **Win-Digipet** if necessary.

It may happen that you no longer see an open window (e.g. Routes Editor, Tour Automatic Editor etc.) on the screen because you have accidentally moved it beyond the edge of the screen. This happens particularly frequently when working with two screens on the system version and a laptop with only one screen for the office version. As **Win-Digipet**

memorizes the position of the individual windows, one or other window can quickly find itself in a screen area that is not available in the office version.

In this case, you can use this button to reset the moved window or other views to the default position (top left) or view **after closing Win-Digipet**.
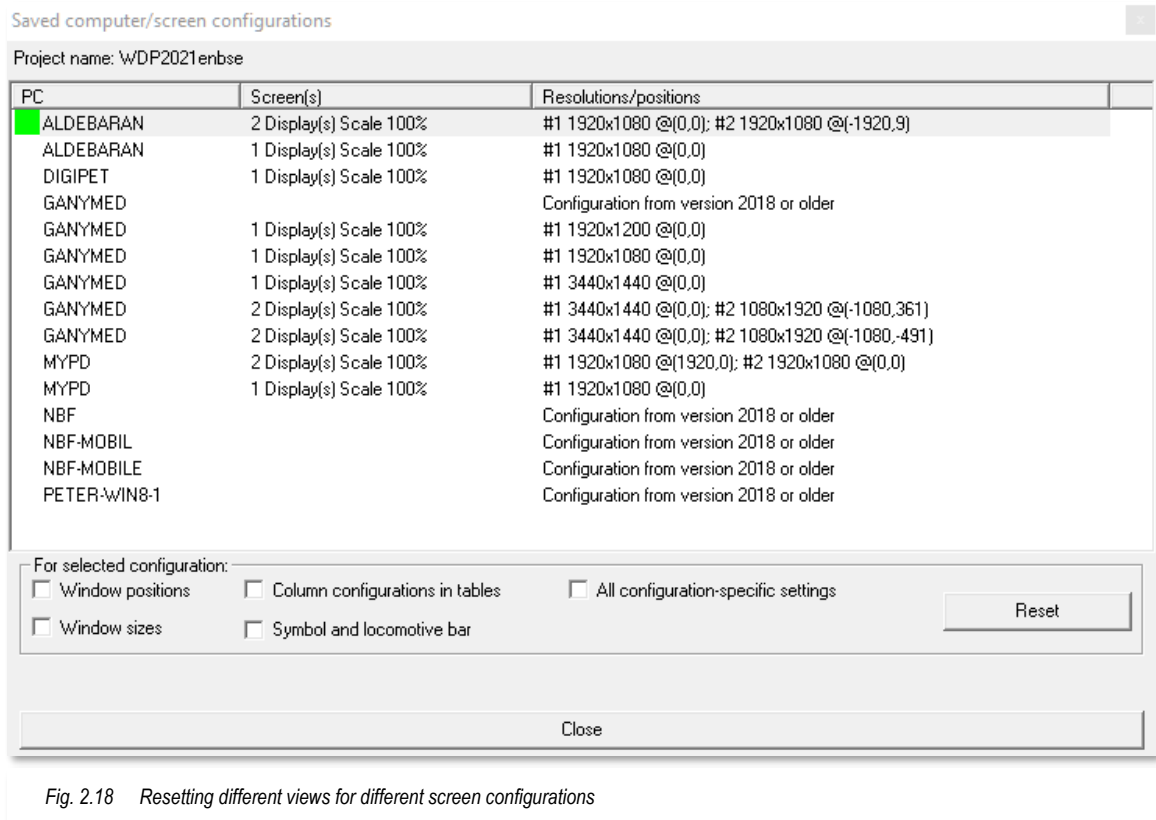
Fig. 2.18   Resetting different views for different screen configurations

Win-Digipet memorizes various screen configurations. These can be changed as shown in Fig. 2.18 in a table and reset in detail for the selected configuration.

We will encounter this dialogue window again during this manual when we deal with the main menu of **Win-Digipet.**

2.2.6.3 Start centre settings.

At this point (cf. Fig. 2.16) some Start Centre settings can still be selected by setting or removing the ticks.

- **Show welcome window**
  When the **Win-Digipet** Start Centre is started, a "Welcome" window is displayed.

- **Play welcome sound**
  You can select whether the welcome sound should be played or not.

- **Start with Windows**
  The Start Centre is called up when Windows is started and is then immediately available without any further clicks.

- **Show/Minimize in/to system tray**
  When the main program, the track diagram editor or the two symbol editors are started, the Start Centre is minimised in the list of open applications, the so-called system tray, and continues to run in the background. The Start Centre is automatically reactivated from the system tray when the called program is closed.

- **Activate scrolling under (action) tab SYMBOLS**
  In the "Symbols" action tab, constantly changing images are displayed for the editors.

- **Check for new Win-Digipet version at startup.**

- You can create a Start Centre shortcut on the Windows desktop.

Version 2021
Premium Edition

Chapter 03

3. SYSTEM SETTINGS AND FEEDBACK CONFIGURATION

Now that you have installed **Win-Digipet** in the previous chapters and have been able to try out how to use the Start Centre, the following chapters will discuss the functions of **Win-Digipet** in detail.

In chapter 1 we recommended a logical sequence for editing projects in **Win-Digipet** in connection with the 3-pillar graphic. We will now follow this recommendation by taking a detailed look at the system settings section of the programme in this chapter.

In the system settings you can define how **Win-Digipet** should behave when instructions are repeated unchanged. How **Win-Digipet handles** the connected hardware or any additionally installed programmes from other manufacturers is also configured in the system settings.

After you have started **Win-Digipet** using the Start Centre in the system or office version, all parts of the program are loaded. After the loading process, you are in the main programme. As is usual in many Windows programmes, the menu and toolbars with the most important commands and icons for calling up the various parts of the programme also appear at the top of the screen in **Win-Digipet.**

*Fig. 3.1   The menu, icon, and locomotive bar in the main programme of **Win-Digipet***

You can see the meaning of the individual symbols as a tooltip with a yellow background.as soon as you point the mouse pointer at an icon. The icons on this and all other toolbars in the programme are virtually self-explanatory. For this reason, their meanings are not explained in detail throughout this manual.

If you have not yet entered any data, an empty track image will appear on the screen after starting the programme.

The system settings can be accessed via the leftmost icon 🖳 in the toolbar. As an alternative to using the icon, you can select the "System settings" entry in the "File" menu. A new "System settings" window appears.

The system settings view consists of several tabs. These are divided into the main groups in the lower section of the window:

- 🚂 Hardware
- 🚂 Programme settings
- 🚂 External software

Each of these main group tabs can contain several sub-tabs. These sub-tabs are displayed at the top of the window. They contain the actual **Win-Digipet** settings customised to your requirements, grouped thematically.

3.1 Hardware – Digital systems tab

On this tab is used to define the essential data relating to the digital system(s) you are using for the model railway layout. Up to 12 digital systems can be managed in **Win-Digipet 2021 Premium Edition.**

> ⚠️ When transferring data from an older programme version, please check the entries on the "Digital systems" tab and change them if there are any discrepancies!

The setting options on the individual tabs are explained in the following sections. Before we start with the "Digital systems" tab, let us look at the various options for connecting digital control centres to the computer.
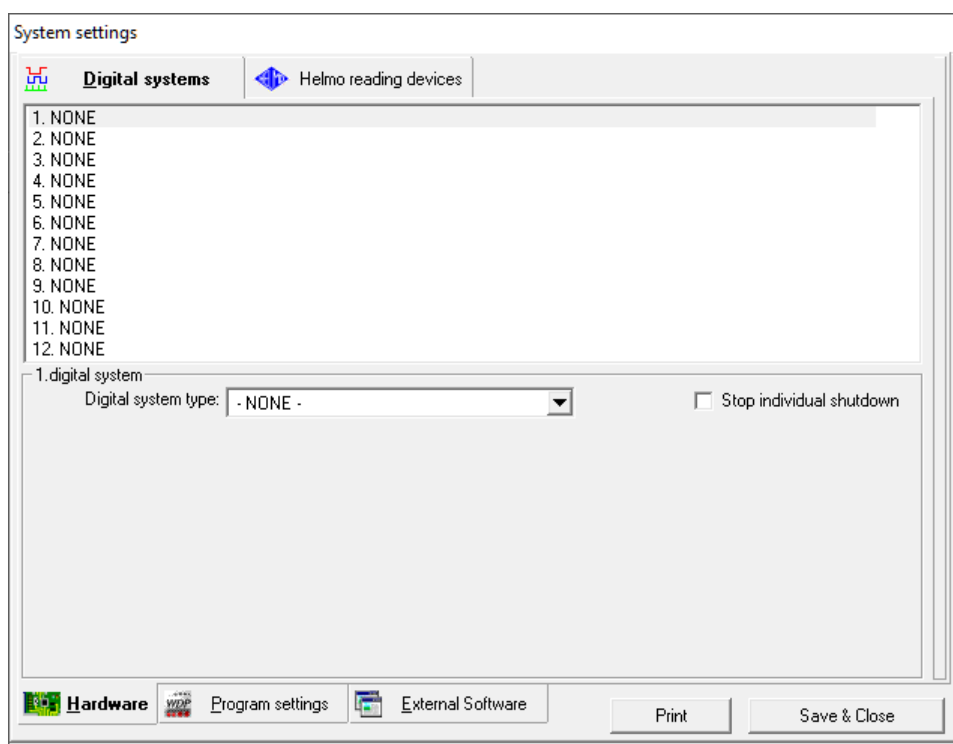
Fig. 3.2   The "empty" digital systems tab

3.2 Connection of the digital centre via a serial or USB interface

The most common forms of connecting digital systems to the computer today are:

- serial interface,
- USB interface,
- Network connection

The type of connection depends on the device used. Please be sure to follow the instructions in the operating instructions for your digital system.

Just a few years ago, most of the digital control centres available on the market were connected to the computer via serial interfaces. Many of these control centres (e.g. Uhlenbrock Intellibox) are still in use today.

Over time, the serial interfaces have been replaced by the more modern variant in the form of the so-called USB interface. USB interfaces are managed internally in the PC in a similar way to serial interfaces, i.e. a serial interface is emulated (simulated) using driver software supplied by the manufacturer of the control centre.

The "old" serial interfaces are usually installed as 9-pin plug connections on the computer system. The designations for these serial interfaces, which you should also find in your Windows, are usually COM1 to COM4.

For the above-mentioned digital systems with USB interface, you must first find out which interface the driver software has assigned or which virtual COM interface is used. The numbering of the COM interface can have a value up to COM256.

Select your own interface from the list and click on it. You can easily find out which interfaces are available on your computer and to which the digital system is connected via the **Win-Digipet** Start Centre in the Interfaces action tab.

3.3 Connection of the digital centre via a network

Digital control centres such as the ESU ECoS, the Märklin Central Station 2 or Märklin Central Station 3 have so-called Ethernet network interfaces and are connected to the computer via a network cable or integrated into an existing network. These networks are referred to as LAN (Local Area Networks)

In principle, several preconditions must be met to successfully set up a network connection. These concern...

- the correct cabling
- the correct addressing of the devices in the network and
- the correct configuration of the firewall on the computer system.

3.3.1 The cabling

If you have connected your PC and your network-compatible digital centre directly to each other, this is known as a peer-to-peer (back-to-back) network. In Fig. 3.3 shows the principle of such a network.

Fig. 3.3   Simple peer-to-peer network

Fig. 3.4   Network with several clients and one switch
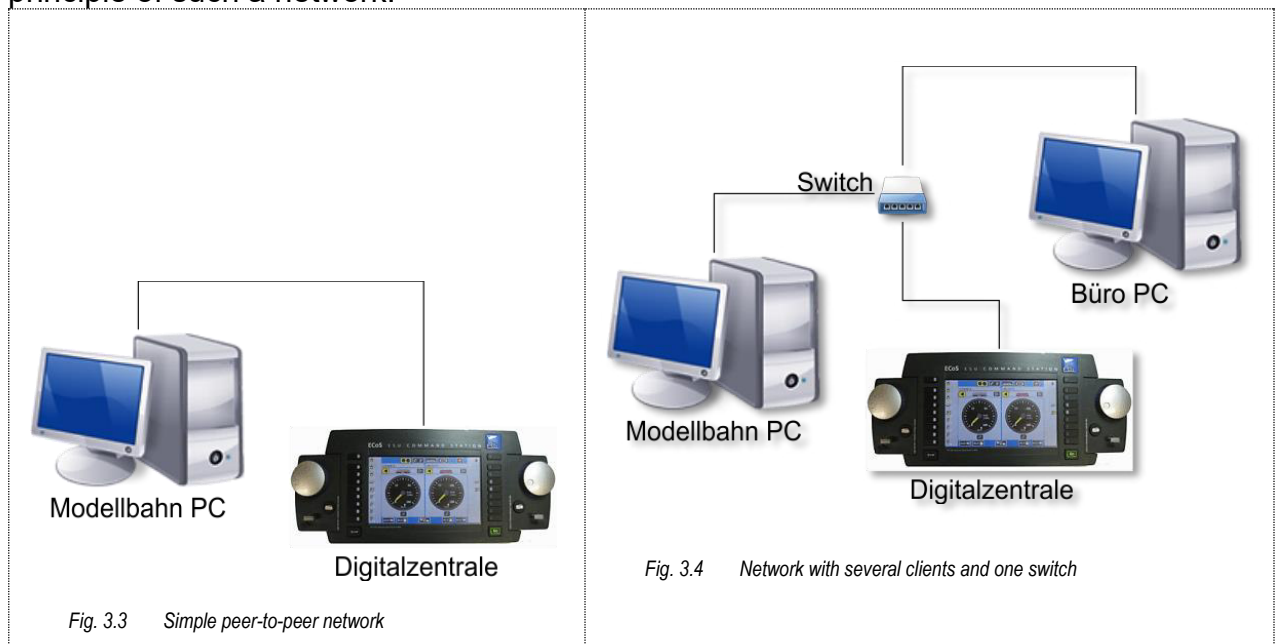
According to the pure theory of network technology, you must use a so-called "cross-over cable" here. However, modern network cards are often able to recognise incorrect cables and swap the individual wires using software. With the help of the **Win-Digipet** network wizard, you can recognise the use of the correct cable. This part of the programme is explained in detail in this chapter.

The network shown can only manage two devices in this form. If you want to expand the network with additional wired devices, you must integrate a so-called switch into the network.

You can use "normal", non-crossover network cables of category 5 (Cat.5) or higher for cabling all devices that you have connected to each other via a switch or router.

In Fig. 3.4 the network has been expanded to include another computer. This could also be a network-compatible printer etc., the principle remains the same.

All three devices in this case are in the same network and can communicate with each other if the addresses are assigned correctly. The switch acts as a distributor, so to speak.

The following two examples essentially reflect the most common network setups in the home.

The representation in Fig. 3.5 shows a router in the network. This provides access to the Internet for all devices. This router has two connections. One to our local network and another to the Internet provided by the Internet service provider.

In this example, the office PC does not have a wired connection, but is connected to the network via a wireless connection (Wi-Fi). to the network. Depending on the local conditions, the switch shown here could be omitted in this example if all wired devices are connected directly to the router.

Fig. 3.5   Network with Internet connection

Many routers have such a switch integrated. However, all devices are still in the same network and can communicate with each other as well as with the Internet.

The last of our examples (cf. **Fehler! Verweisquelle konnte nicht gefunden werden.**) shows the division into two networks compared to the previous configuration ration.

A network between the digital centre and the model railway PC. The second network includes all devices except for the digital centre. This means that the model

Fig. 3.6   Two networks; the model railway PC with WLAN connection to the Internet

railway PC has two network connections. In this case a wired and a WLAN wireless connection.

The communication options of the devices represented here have changed to the effect that the digital centre can only communicate with the model railway PC and has no connection to the Internet. All other devices have no access to the digital centre. However, all devices except the digital centre still have a connection to the Internet.

3.3.2 The addressing

In principle each address may only occur once in a network.

With a simple peer-to-peer connection (cf. Fig. 3.3), this is relatively easy to organise, but if you are operating a small network with several devices, you will need to pay a little attention to the assignment of addresses.

In connection with **Win-Digipet**, the IP address set in the respective control centre must always be entered in the **Win-Digipet** system settings and not the IP address of the computer.

If you have also connected your PC to a WLAN network, please ensure that you use different IP address ranges for the connections. The so-called subnet mask regulates the number of possible addresses in a network. As a rule, the subnet mask you use will be 255.255.255.0, which allows 255 addresses to be defined in a network. The first and last addresses must not be used as these are reserved by the IP protocol for special tasks.

Addressing examples for the devices shown in the figures Fig. 3.3 to Fig. 3.6 could look like the network configurations shown in the following table. The addresses used in your network may be in completely different address ranges. All subnet masks in the addresses shown are 255.255.255.0.

You will recognise that all addresses in the first 2 bytes begin with 192.168. This range, along with a few others, is labelled as a private range by default. These address ranges are not passed on (routed) on the Internet. This allows you to map private networks that are not visible on the Internet.

	Fig. 3.3	Fig. 3.4	Fig. 3.5	Fig. 3.6
M Rail PC	192.168.1.50	192.168.1.50	192.168.1.50	192.168.2.50
				192.168.1.50
Digital system	192.168.1.53	192.168.1.53	192.168.1.53	192.168.2.53
Office PC		192.168.1.99	192.168.1.99 (WIFI)	192.168.1.99 (LAN)
Switch		No address	No address	No address
Router			192.168.1.1	192.168.1.1
Internet			From the ISP[3]	From the ISP

3.3.3 The network configuration step by step

During configuration of a network connection, problems occur time and again. The network wizard was created in **Win-Digipet** to support the selection and assignment of network addresses.

This wizard offers you support with the configuration for the Märklin Central Station 1 and 2 digital control centres as well

Fig. 3.7   Calling up the network wizard.

as the ESU ECoS 1 and 2 or the ESU Central Station Reloaded.

You can access this via the button marked in Fig. 3.7. This button can be found in all setup dialogues for the digital control centres just mentioned. The following sections describe the procedure for successfully setting up a network.

3.3.3.1 Interface for the interface (network)

The control centres, which are connected to the computer via a network cable, require a network connection. You must therefore install a network card on your PC if it is not already present.

---

[3] ISP - Internet Service Provider

There are the following options for connecting the control centre to the computer:

- via a direct cable connection
- via (DSL) router
- via network switch

If you want to connect the digital system directly to the PC, you will generally need a cross-over cable, as explained above. However, if you connect the digital system via a switch, for example, you will need normal patch cables for Category 5 (Cat. 5) or higher networks.

In all cases, a network connection must be set up on the model railway computer. The following pictures show what this can look like.

3.3.3.2 Network connection via network cable

A network card is built into your model railway PC. If not, you will need to install such a card yourself or have one installed. Many modern PCs already have this network card integrated on their motherboard.

Next, you need to set up a so-called LAN connection in the system settings of the Windows operating system. The different versions of Windows differ from each other here, we show the setup here as an example for Windows 10.

You can access the system-relevant settings in Windows 10 in the Start menu under the gear icon. In the window that appears, the various topics are divided into individual groups. For the network configuration of your computer, select the "Network and Internet" area here.

You should use a wired connection for the connection between your digital centre, as a wireless connection (WLAN) is always very dependent on environmental influences and an error-free connection cannot always be guaranteed.

As a result, select "Ethernet" on the left-hand side and then "Change adapter options" on the right-hand side of the window.

You will then be shown the Fig. 3.9 window showing the network connections available in the computer system.
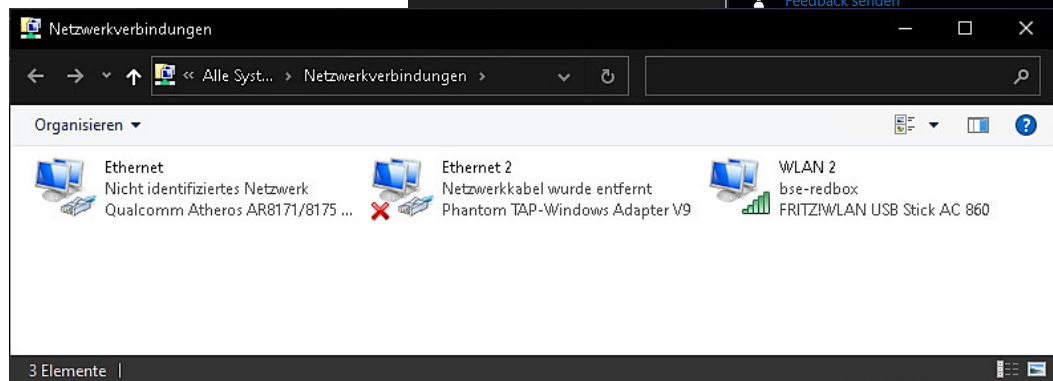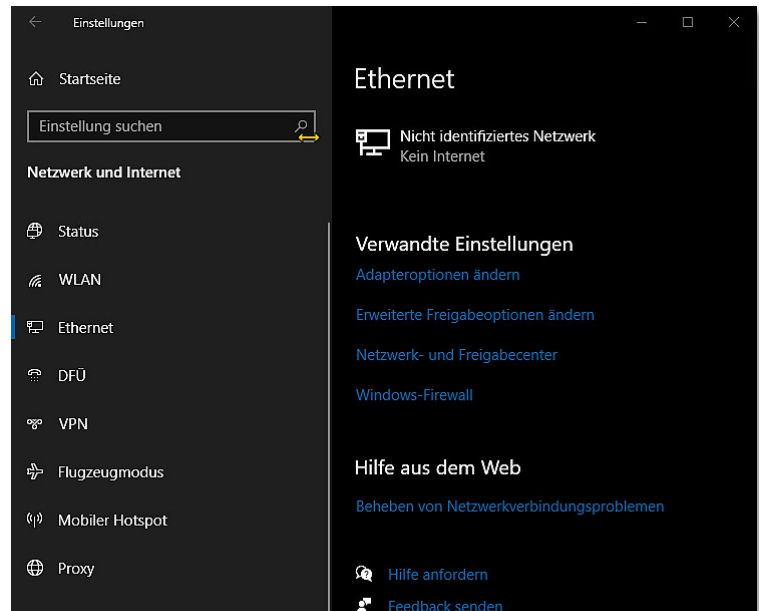
Fig. 3.9   The network adapters in the computer

If several connections are displayed, select the desired entry with the mouse, in the example the entry "Ethernet" and then click with the right mouse button and select Properties.

In the properties dialogue box, select the highlighted entry to assign an IP address of version 4 and then click on the **'Properties'** button.

Please ensure that you assign an IP version 4 address, as addressing according to IP version 6 is not yet supported by any of the digital control centres mentioned.

In the properties dialogue (see Fig. 3.11), you must then make the corresponding settings. This is the only way to establish a connection to the digital centre.

At this point, we will use the network 192.168.1.0 with a standard subnet mask 255.255.255.0 as an example.

The entire address consists of 4 bytes and is made up of a network part (3 bytes here 192.168.1.0) and a device part (1 byte here 192.168.10.50 or 192.168.10.53).
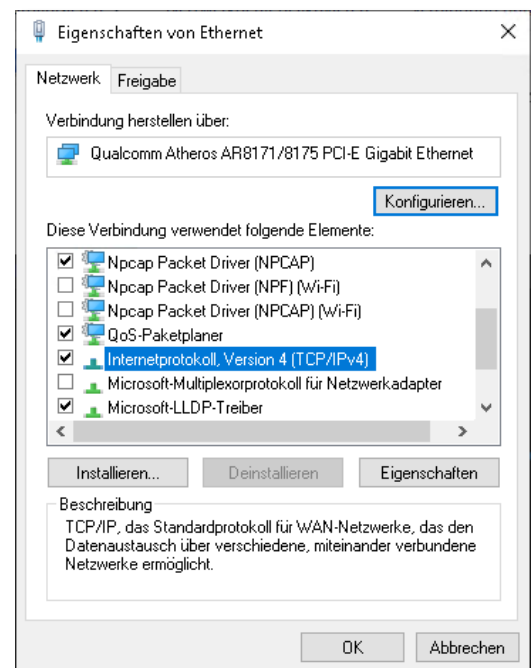
Fig. 3.10   The dialogue for the properties of a network connection

A Märklin Central Station 2 was delivered with a factory pre-configured IP address 192.168.1.53. If you want to retain this value, the address of your computer must necessarily be in the network 192.168.1.0. As an example, the IP address 192.168.1.5 could be used for the PC.

You should now enter an IP address for the PC, as shown in Fig. 3.11 can be seen. You can freely select the last number (here 50) from a range between 1 and 252; this is then the device-specific part of the IP address.

3.3.3.3 Network connection via a (DSL) router

Your model railway PC has a network card installed. If not, you will need to install such a card yourself or have one installed. Next, you must set up a so-called LAN connection to the (DSL) router in the system settings of the Windows operating system.

To do this, have the operating system display the following information as described in section 3.3.3.2 to display the network connections.

The settings under the LAN connection properties must be made as described in detail in the previous section.

In contrast to the above, the IP address etc. is assigned directly from the router to the PC. The so-called DHCP[4] protocol, which is generated by a corresponding server, is responsible for this. This server is in the programme code of your router.
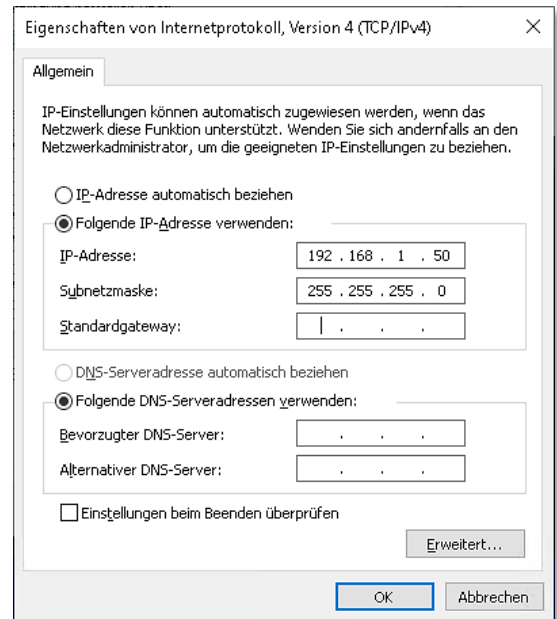
Fig. 3.11   Assigning an IP address.

This also explains why you usually must assign addresses manually in a network without a router, as there is usually no DHCP server in the network.

As a result, the PC is assigned an address from the address range. According to our addressing concept for the Fig. 3.11 in the table above, our model railway PC will be assigned the address 192.168.1.50 with the subnet mask 255.255.255.0, for example.

All other settings that may also be transferred via the DHCP protocol are no longer relevant for the operation of **Win-Digipet** and are ignored here.

3.3.3.4 Set up digital system with network interface in Win-Digipet

The dialogues shown below are displayed by **Win-Digipet** for entering addresses for the individual control panels equipped with a network interface.

---

[4] DHCP - Dynamic Host Control Protocol

You must adapt the default IP address 127.0.0.1 to your circumstances. Based on our addressing concept above, we use the address 192.168.10.2 for our digital centre. The network wizard will help you select a valid and suitable address in your configuration. You will find the wizard button in each of the dialogues shown.

The dialogues also contain fields with so-called TCP ports are also shown in the dialogues. You must not change these fields, otherwise communication with the digital system you are using will not be possible.

🚋 ESU ECoS, ESU ECoS 2, Märklin Central Station reloaded
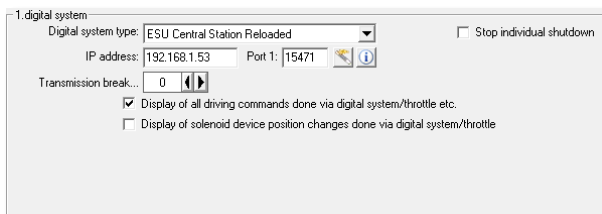
Fig. 3.12   Settings for the ESU ECoS 1 / Central Station reloaded.
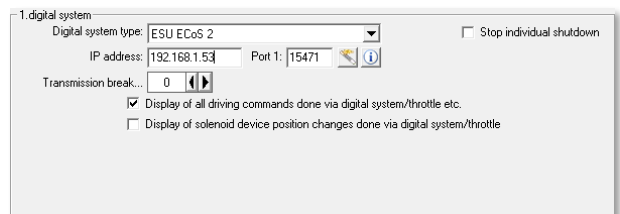
Fig. 3.13   Settings for the ESU ECoS 2

🚋 Märklin Central Station 2 or Märklin Central Station 3 (plus)
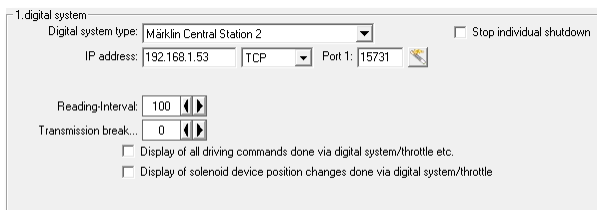
Fig. 3.14   Settings for a Märklin Central Station 2
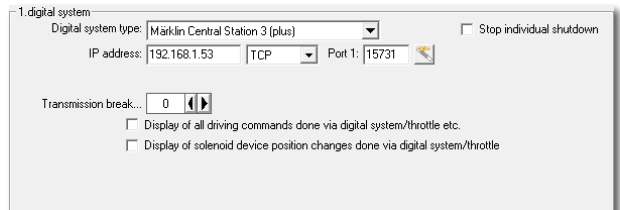
Fig. 3.15   Settings for a Märklin Central Station 3 (plus)

3.3.3.5 Configuration with the help of the network wizard

To start the wizard click on the icon . The wizard is then loaded with the following selection options.

- Direct network connection via cable between control centre and PC

- Network connection via cable between control centre and router

- Network connection via cable between control centre and network switch

The individual connection options are explained in detail in the following sections. In principle, the following configurations show the examples from the figures Fig. 3.3 to Fig. 3.5 again.
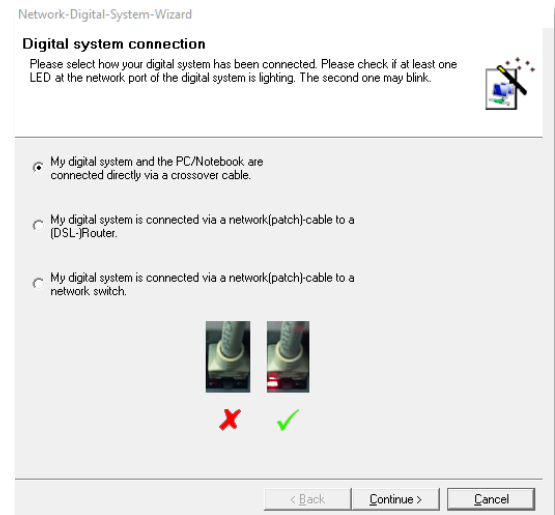
Fig. 3.16   Various connections in the network wizard

3.3.3.6 Direct connection via a cross-over cable

Use this option if the control centre and PC are directly connected.

However, before you move on to the next window, you should always carry out a visual inspection of the interface on your control centre or PC. As shown in the window, one of the interface LEDs must light up permanently if an Ethernet interface with a plugged-in cable and correct cabling is used. The second LED flashes briefly at regular intervals. The colours of the LEDs may vary depending on the product.

If this is not the case, please check that the cabling is correct, you may have overlooked the need for a crossover cable or the cable you used was intended for a different purpose than a network connection (e.g. ISDN cable). If the cabling is not correct, the steps described below will not work.

After these checks, click on the *'Next'* button to proceed to the next input screen.

The network card with the settings described in section 3.3.3.2 is displayed.

If several network cards are displayed, select the network card to which the control centre is connected.

Below the list field, you will see the IP address set for the selected connection.

The button under the list field updates the display of the network card list.

Click on the 'Next' button to go to the next input screen.

The dialogue in Fig. 3.18 displays all addresses in the network that you could use for addressing your control centre. Addresses that are no longer free are shown accordingly, such as the address 192.168.10.1 in this example, as this address is already being used by the model railway PC in this example.

Select the desired address (e.g. 192.168.10.2) and then click on the 'Ping' button to check the availability of this address in your network.

With the 'Ping' a defined data pattern is sent to the selected address and a response with the same data pattern from the remote system is expected within a certain time. If there is no response, this is interpreted as a free address. A positive response from the remote system indicates an address that has already been used, which **Win-Digipet** acknowledges with a corresponding message.

If the address you have selected is already in use (remember that each address may only occur once in a network), you must select an alternative entry from the address list and repeat this test. An exception to this is if, for example, the selected address (192.168.10.2) is already entered in the digital centre. In this case, the control centre responds correctly to the request, and you are already well advanced in setting up your network.

Clicking on **'OK'** confirms the message, closes the window and clicking on the 'Next' button takes you to the next window of the wizard.
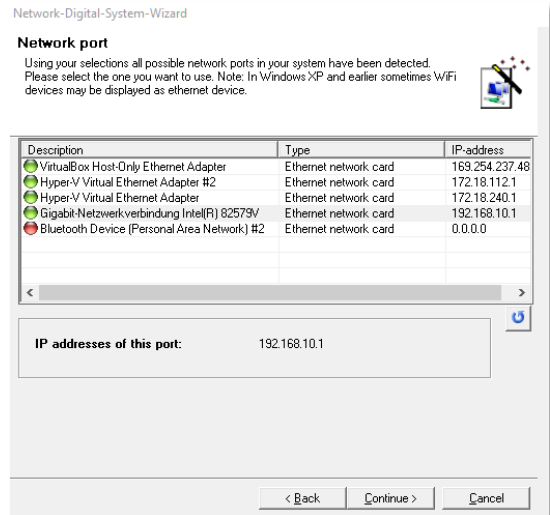
Fig. 3.17   Selecting the interface connected to the digital system.
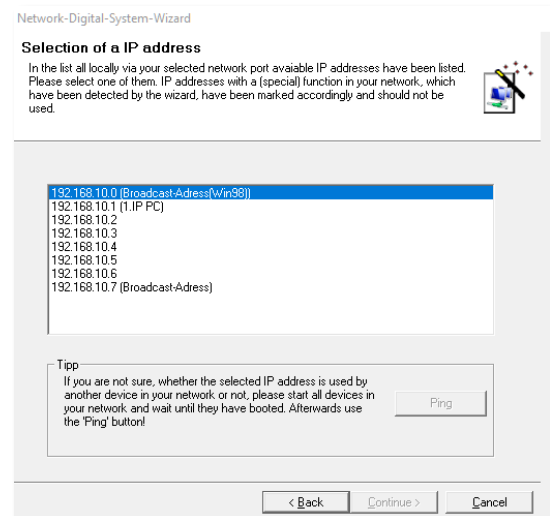
Fig. 3.18   Selecting an IP address.
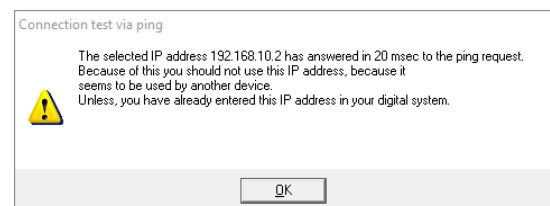
Fig. 3.19   The selected IP address is already in use.

The settings that you should set on your control centre, in this example Märklin Central Station 3, are now displayed here (cf. Fig. 3.20).
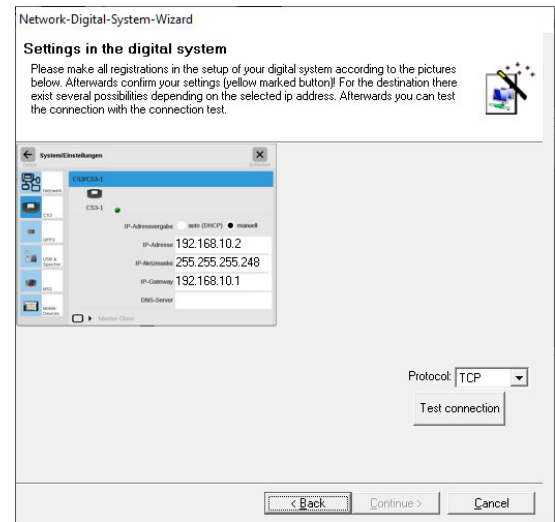
Fig. 3.20 The network wizard displays the necessary settings in the digital control centre (e.g. Märklin Central Station 3)

The digital control centres are also subject to constant further development by the manufacturers. It is therefore possible that the display images shown may no longer look 100% the same over time. The functionality will still be the same.

Once you have made all the settings, you can click on the 'Test connection' button to see if everything is working properly. In contrast to the ping test carried out on the previous card, the TCP port number required for operation with **Win-Digipet** is now addressed.

If this connection test fails, it may be because the settings have not been applied correctly. After making the settings on the control centre, restart it and try again.

Another reason may be that the firewall used on your PC is blocking the connection to the digital centre. You can test this by temporarily switching off the firewall software.

With a direct connection it is not so important, with all other connection options please note that your protection function against possible attacks is not given for this time.

If everything is OK, **Win-Digipet** will confirm this with a success message, and you can exit the network wizard by clicking the *'Finish'* button*.*

The selected and successfully checked IP address has been entered by **Win-Digipet**.

Click on *'Save'* and *'Close' to* exit the system settings and you can now control your system via the connected digital centre.

3.3.3.7 Network connection via cable between control centre and router

The second selection in the initial dialogue of the network wizard (see Fig. 3.16) supports you in configuring a network connection with a router in the network. In principle, this example is shown in Fig. 3.5 is shown in principle.

As with the point-to-point connection described in the previous section, you should also carry out a visual inspection of the interface of your control centre for this configuration. As already explained above, one of the interface LEDs must light up permanently if the Ethernet interface has a plugged-in cable and is correctly wired. The second LED flashes briefly at regular intervals. The colours of the LEDs may differ depending on the manufacturer. If this is not the case, please check that the cabling is correct; you may have used a crossover cable or the cable you used was intended for a purpose other than a network connection. If the cabling is not correct, the steps described below will not work.

After these checks, click on the **'Continue'** button in the dialogue and proceed to the next input screen.

On this page you specify how your PC is connected to the (DSL) router.

If the PC is connected to the router via cable, the first selection is correct.

Click on **'Next'** to go to the following page and the network card with the connection to the (DSL) router will be displayed.

As already shown in Fig. 3.17 the IP address of the network card is displayed.

In the subsequent dialogues, select a free IP address from the list as you did for the first connection type and test it with the ping test.

Fig. 3.21   How is the PC connected to the router?

If your PC is not connected with a network cable, but e.g. via a Wi-Fi USB stick, select the second selection option via the radio button (see Fig. 3.21) for the connection to the router.

> At It should be noted at this point that the operation of Wi-Fi depends very much on the local conditions. In unfavourable conditions, there may be delays in transmission or the connection may be interrupted, resulting in the possible loss of commands between the PC and the digital control centre. As a result, vehicles may drive over your system in an uncontrolled manner, causing damage or causing such damage.
>
> It is therefore not possible to recommend the operation of a digital control centre via a radio network.

In the example of the Fig. 3.22 the WLAN network connection is displayed as expected.

The IP address automatically assigned by the router via DHCP The IP address 192.168.178.157 automatically assigned by the router is displayed and clicking on *'Next'* takes you to the following page.

On this page, the necessary settings in your digital control centre are displayed again in the form of a graphic. You can access this dialogue in both the wired and wireless scenarios mentioned above.

On the digital central unit in this example of an ECoS 2, you must now read the IP address assigned to the central unit by the (DSL) router and enter it in the lower, still empty field. This IP address must always be different from the IP address assigned to your PC (cf. Fig. 3.22 - 192.168.178.157), otherwise it would not be possible to establish a connection.

After entering the first digits (192.168.178 in the example), the right-hand side of the input screen is automatically filled in with the information shown in the image above. You should then enter these details on the digital centre or check or change them if entries have already been made there.

Once you have made all the settings, you can click on the *'Test connection'* button to try out the functionality.

If this connection test fails, it may be because the settings have not been applied correctly. After making the settings on the control centre, restart it and try again.

Fig. 3.22   The list of networks shows a Wi-Fi connection.
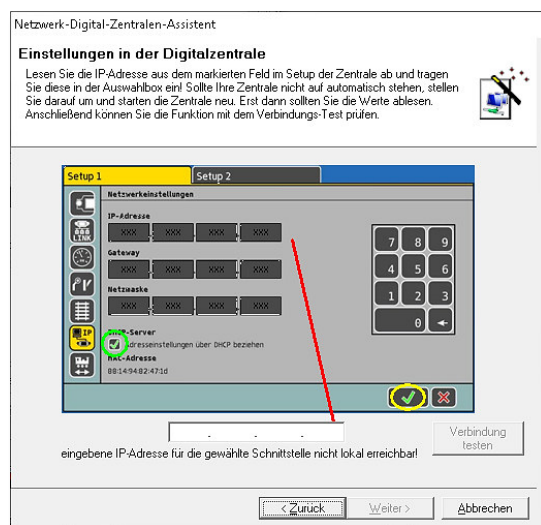
Fig. 3.23   Automatic address assignment (in German)

Another reason may be that the firewall used on your PC is blocking the connection to the digital centre. blocks the connection to the digital centre. You can test this by temporarily switching off the firewall software. Please note that you will not be protected against possible attacks during this time.

If everything is OK, **Win-Digipet** will confirm this with a success message, and you can exit the network wizard by clicking the *'Finish'* button*.*

The selected and successfully checked IP address has been entered by **Win-Digipet**.

Click on *'Save & Close'* to exit the system settings and you can now control your system via the connected digital centre.

3.3.3.8 Network connection via cable between control centre and network switch

If your control centre is connected to a network switch, then select the third option of the network wizard.

As already explained in the two previous sections, please check the LED on the interface of the digital centre or the LED for the port you are using on the front panel of the switch at this point.

The other dialogues essentially correspond to those described in section 3.3.3.7. It will therefore not be described again here.

Unlike a router, a network switch does not usually have a DHCP server for automatic address assignment. You must select a free IP address from the dialogue and enter it in your digital control unit as described above.

3.3.3.9 Network connection to other digital control centres

The explanations in the previous sections also apply in principle to the other control centres such as ESU ECoS, Central Station Reloaded and Märklin Central Station, only the windows with the settings in the digital control centre look slightly different.

Digital systems from other manufacturers (e.g. Tams mc^2, or the Loco Buffer) also offer the network connection. You will find the corresponding configuration options in the settings of the respective digital system.

3.4 Connected digital system / supported digital control centres.

The number of digital control centres and other hardware on the model railway market is constantly increasing. For this reason, new command stations are constantly being integrated into the programme for cooperation with **Win-Digipet.** However, the integration of the hardware requires, among other things, the disclosure of the interface protocol on the part of the manufacturer, without which communication between the control centre and **Win-Digipet** is not possible.

With the **Win-Digipet 2021 Premium Edition** version, the functionality of the software has also been expanded to support new components.

The following digital systems and other hardware are currently supported by **Win-Digipet:**

Manufacturer	Name of the system
Various manufacturers	Loco buffer
Fichtelbahn	BiDiB interface
Blücher	GBM16XN
Ansaloni	Roller stand
CAN digital railway	CC cuts, PC cuts, USB speedometer knife
CT electronics	ZF5
DCC++	DCC++ (beta), DCC++ EX (beta)
Digikeijs	DR5000, DR5088RC
DinaSys (former)	Turntable Controller
Döhler & Haas and MTTM	Future Central Control, D&H Programmer
Electronic Solutions Ulm (ESU)	ECoS, ECoS 2, Central Station Reloaded
Faller	PC module 161351
Fleischmann	TWIN-CENTER
GamesOnTrack	

Manufacturer	Name of the system
Helmo/Littfinski Datentechnik (LDT)	System Inter 10 (for feedback)
Infracar, Karsten Hildebrand	Infracar system (for car control)
	ISA MBT
KM1	SC7
KPF Zeller	SpeedCat Plus
Lenz	LAN/USB interface, LI100(F) / LI101(F) / LI-USB
Littfinski Data Technology (LDT)	HSI-88 & HSI-88 USB (for s88 feedback)
Lokstore digital	LoDi-Rector, LoDi-S88 Commander, LoDi-Shift Commander
ls-digital	µCon-Manager, µCon-MiniManager, µCon-S88 Master
Marion Zeller	Max
Massoth	DiMAX
Märklin	6020/6021, Interface 6050/6051, Central Station, Central Station 2, Central Station 3 (plus)
MD-Electronics	mXion 30Z, mXion MZSpro
Model railway Claus	DCCar
modellplan	Digital-S-Inside, Digital-S-Inside 2, SwitchCom
MÜT	Multi Control 2004
OpenDCC	BiDiB-IF2, GBMboost, Z1 P50X
Piko	SmartControl
Rautenhaus	RMX 952, SLX 825, SLX 852

Manufacturer	Name of the system
Roco/Fleischmann	Z21
Schmidt electronic	FETM
SRCP	JSP USB-SRCP Server (Beta), SRCP Interface (Beta)
Staerz	SX bus interface, ZS1 and ZS2 control centre
Tams	Master Control, RedBox, mc² BiDiB/P50X, RC-Link Interface, Tams ZEUS BiDiB
Trix	Selectrix
Uhlenbrock	Intellibox (IB I, IB II, IB-COM, IB Basic), DigiTest, USB LocoNet® 63120
Zimo	MX10 (beta), MXULF (beta), MXULFA (beta)

If you are already using more than one digital system to control your model railway layout, then the digital systems must be entered in the same order as before.

As a rule, you do not need to change anything when updating from a previous version of **Win-Digipet**, as your old data is automatically adopted by the programme.

However, if you were to enter the digital systems in reverse order when making a change, you would have to change the controlling digital system in the vehicle database and in the track diagram editor for all vehicles or all solenoid items or simply change the order of the entered digital systems in the system settings and save them again

With the help of structured list field in the centre of the tab, you can select the digital system(s) you are using and enter them in the previously selected line with a click.

Depending on the digital system selected, additional dialogue boxes are displayed below the selection list box. These primarily relate to the connection type of the selected digital centre to the computer.

After entering the digital system, **Win-Digipet** must be closed and restarted with the changed system settings. You will receive the dialogue shown in Fig. 3.25 and after *'OK'* and a further confirmation prompt, **Win-Digipet** is closed and can be restarted.

Only after restarting **Win-Digipet will** the digital systems selected above also be available for the entries of the feedback modules used.
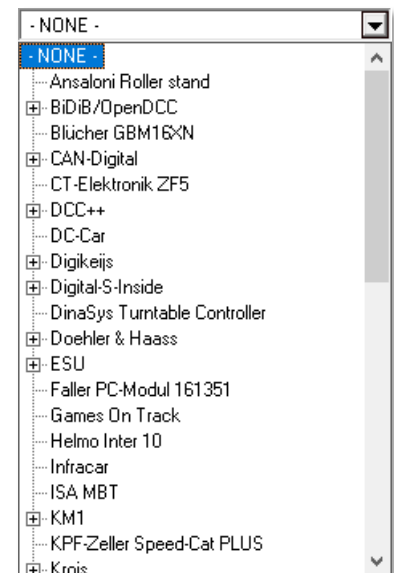
Fig. 3.24   *Structured selection list of supported digital systems.*
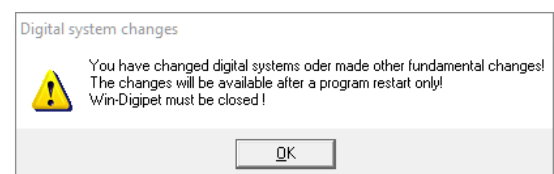
Fig. 3.25   **Win-Digipet** *must be closed after making changes to the hardware.*

3.4.1   *Digital systems and other supported hardware in detail*

Instructions for installing the individual digital control centres supported by **Win-Digipet** or other hardware on your computer system can be found on the **Win-Digipet** website in the user forum/digital control centres. A detailed description of each digital system is not provided here due to the highly dynamic nature of this topic.

3.4.2   *Individual shutdown of digital systems in the event of an emergency stop*

If the *"Stop individual shutdown" option* is ticked for the selected digital system, a general emergency stop is no longer triggered in the event of a stop message from this digital system, but only the affected system is set to "Red condition" in **Win-Digipet.** Without this option, all installed digital systems are stopped in the event of an emergency stop.

While a digital system is set to "Stop", no solenoid circuits are sent there, routes that use this system are not started. Circuits that are executed via bus (e.g. SX bus or CAN bus) are an exception here; all others are temporarily stored as when a booster is switched off.

3.4.3 No interface assignment

For all the settings shown in the above sections for the supported digital systems with serial or USB connection, the "COM port" list field contains the setting *"NONE"*.

This information can be used to test the programme.
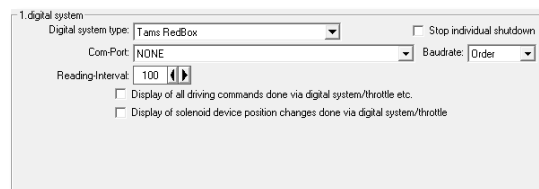
Fig. 3.26   No connection has been assigned to the digital system.

3.4.4 Transmission speed (baud rate)

When selecting the digital system the default setting for the baud rate is made. You can set this according to the capabilities of the digital system used and your requirements.

With some digital systems, the baud rate is automatically set to a defined value of e.g. 57,600 baud with the Tams RedBox (cf. Fig. 3.26) when it is connected via the USB cable, regardless of the value you have set in **Win-Digipet**. With some other digital systems, it is not possible to change the transmission speed.

3.4.5 Read-in interval

With some digital systems you will find an option to set the read-in interval. Here you determine how quickly, for example, the connected feedback modules are read out and displayed. Settings between 100 msec and 2,000 msec are possible. The default setting is 100 msec, which means that all feedback from the connected digital systems on your installation is read ten times in one second. The lower you set this value, the faster the queries are made. However, a value that is too low can lead to the interface being blocked and/or incorrect screen displays.

If you use several digital systems to control your model railway layout, you can also set the interval for the feedback signals differently. For example, you use an Intellibox to control the vehicles and switch the solenoid items, but an HSI-88 should be used to analyse the feedback decoders. In this case, the value for the Intellibox read-in interval should be 2000 msec. This will reduce the load on the computer system, **Win-Digipet** and ultimately also the Intellibox.

We recommend that you try out a few settings to find out what your system can handle.

> With other digital systems, the "Read-in interval" setting option is hidden in the system settings. In these cases, **Win-Digipet** automatically recognises when a new read-in is necessary.

3.4.6 Transmission pause

With some digital systems you will find an option to set a value for a "transmission pause". Select between 0 msec and 100 msec, the default setting is 10 msec. If solenoid items are switched incorrectly or no switching occurs at all, you must increase the value set here.

This is a global setting for all solenoid items of the selected digital system and must be made for all digital systems entered, as this setting can also be different for the systems.

3.4.7 Feedback from the digital system

The majority of the digital systems mentioned above can report all movement and positioning commands back to the computer. There is real feedback between the systems and the computer. Tick the appropriate checkbox(es) for displaying the positioning and movement commands (see Fig. 3.26).

3.4.8 Position display of the solenoid devices via keyboard

For many digital systems synchronisation between the digital system and **Win-Digipet is also** possible by ticking the corresponding box in the settings dialogue for your digital control unit (see Fig. 3.26).

If you activate *"Display of solenoid position changes done via digital system/throttle"*, changes to the position of the solenoid items are also displayed on your screen via manual keyboard entries.

3.4.9 Screen and position display via control panel or keyboard

When the *"Display of all driving commands via digital system/throttle etc." is* activated, all manual inputs on external drive controllers are displayed on the screen (cf. Fig. 3.26). If, for example, you turn the speed controller on the control centre or the control panel, the current speed is also displayed on the rotary control of the large vehicle control unit, as are lights, any special functions and direction changes.

You can always see which digital systems allow the above settings when selecting the desired digital system.

3.4.10 Initialisation of feedback for Loco Net systems

For digital systems, that support the Loco Net bus, you can optionally set up an additional initialisation request to be sent when feedback modules are initialised.

When using many modules, some manufacturers have found that not all occupancy messages are displayed correctly. An additional initialisation command might be solving this hardware problem.

3.4.11 Save settings.

If you have made changes to the settings for the digital system(s), you must then click on the '*Save & close'* button.

A restart of **Win-Digipet** with the changed system settings is then necessary.

Only after a restart of **Win-Digipet** are the entries for the digital systems available in the configuration dialogue for the feedback modules.

We will deal with the topic of feedback modules in the following section.

Win-Digipet saves all data of the current project in the Project.xml file. This is in the Projects subfolder of the **Win-Digipet** main folder in a subfolder labelled with the name of the project. All settings for the current project are saved and updated in this folder.

Please do not attempt to change or delete values in these entries. This should only be done in the event of problems after consulting the programme author.

3.5 Configuration of the feedback modules

After you have connected your digital system or several digital systems to **Win-Digipet** in the previous sections, in this section we will deal with the configuration of the feedback modules in **Win-Digipet**.

> In the previous versions of **Win-Digipet**, the feedback modules were recorded in the "System settings" section of the programme. This procedure was changed with the **Win-Digipet 2021** version. The reasons for this are a simplification of the configuration and a better graphical representation of your feedback configuration.

Win-Digipet offers the option of managing many feedback modules. This means that even large model railway layouts can be controlled. A total of up to up to **3968** feedback contacts can be carried in **Win-Digipet.**

Once you have exited and restarted **Win-Digipet** after entering the settings for the digital system, please do not switch back to the system settings. Instead, you will find the icon "Feedback configuration" in the main toolbar of the programme or an entry with the same title in the "File" menu. Click on the icon or on the entry in the menu.
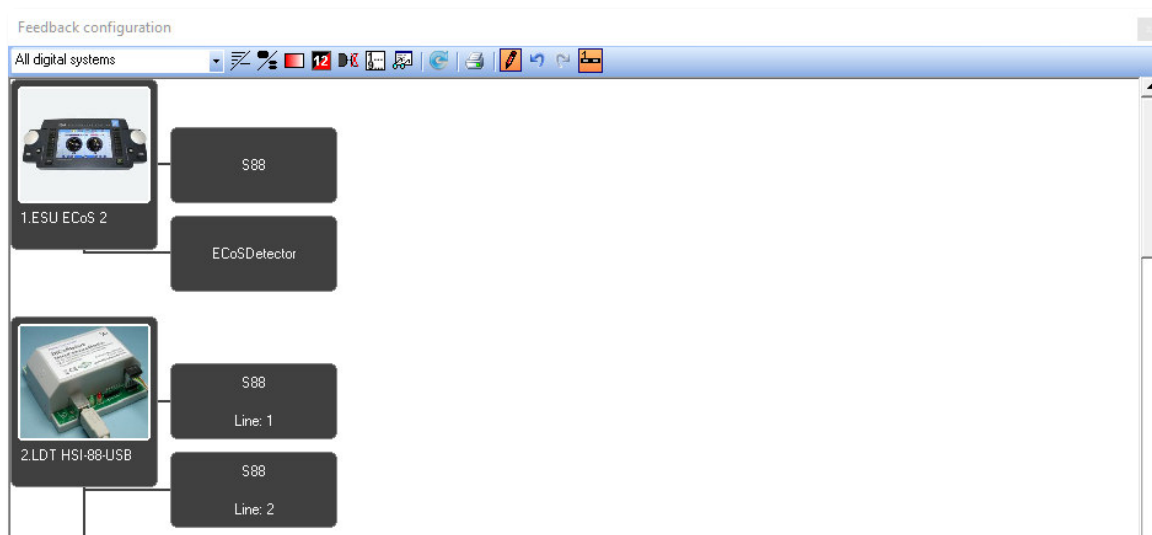
Fig. 3.27   The "Feedback configuration" dialogue window with the recorded digital systems

The "Feedback configuration" dialogue is displayed (see Fig. 3.27). In this window, you can see the digital system(s) that have been set up. In our example, several digital systems have been entered. The first digital system is an ESU ECoS 2, and the second digital system is an LDT HSI-88-USB.

The included feedback bus systems were also assigned to the digital systems. For example, in the graphic for the ECoS 2 you can see an S88 feedback bus as well as a so-called ECoS detector, which in this case was registered on the ECoS 2.

The second digital system LDT HSI-88-USB has an S88 bus that is divided into three strands (lines). These three strands are shown graphically in the configuration dialogue. In Fig. 3.27 you can recognise line 1 and 2.

The upper part of the window contains a toolbar with various icons, which we will discuss later in this section.

3.5.1 Enter feedback modules in the tab.

We now want to check the feedback modules used on your model railway layout. and assign them to the digital systems digital systems. To do this, you must switch to edit mode in the "Feedback configuration" dialogue window. To do this, click on the pencil icon 🖊 in the dialogue toolbar.
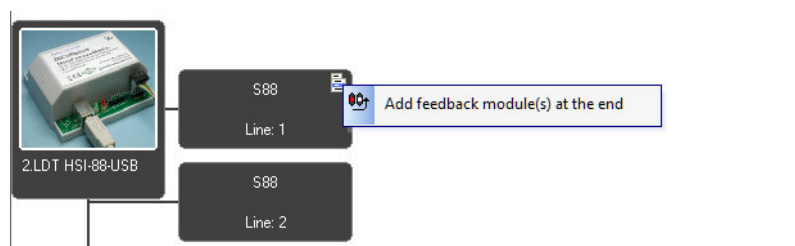
Fig. 3.28   One or more feedback modules are to be added to the S88 bus.

After switching to edit mode, a stylised list symbol 📋 is displayed as soon as you point with the mouse to a feedback bus assigned to the digital system. At this point, we take the S88 line 1 of the HSI-88-USB and want to add a feedback module to this line. To do this, click on the list symbol and select the entry "*Add feedback module(s) at the end*" from the menu that appears. This menu is context-related, i.e. depending on the digital system used, further entries may appear at this point. However, this entry should always be present.

Selecting the menu item opens a list window in which the modules on the selected line or feedback bus can be recorded. It is important to note how many inputs the module or modules to be recorded have. As a rule, this will be 8 or 16 inputs. You can record different modules in this window. In the example shown here for the S88
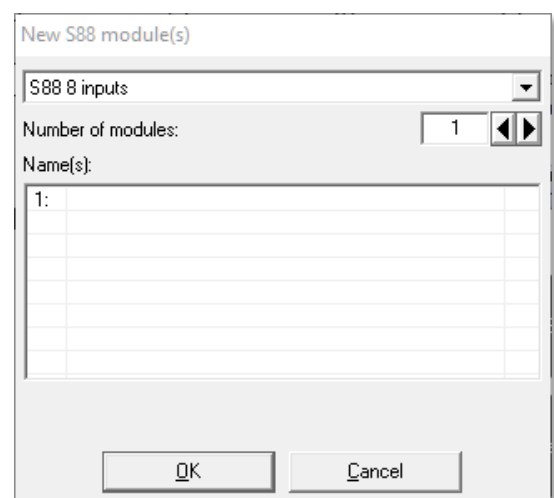
Fig. 3.29   Adding new feedback modules.

bus, the order in which the modules are lined up on the line is very important.

> In the previous versions of **Win-Digipet 2021,** the feedback modules were divided into steps of 8 connections each. This meant that a module with 16 connections was entered in Win-Digipet as two modules with 8 connections each.
>
> This has been cancelled with this 2021 version; the modules are now entered with the actual number of connections corresponding to the hardware.

With other bus systems such as LocoNet or the Lenz system, the sequence is less important as the modules in these systems are clearly addressed.
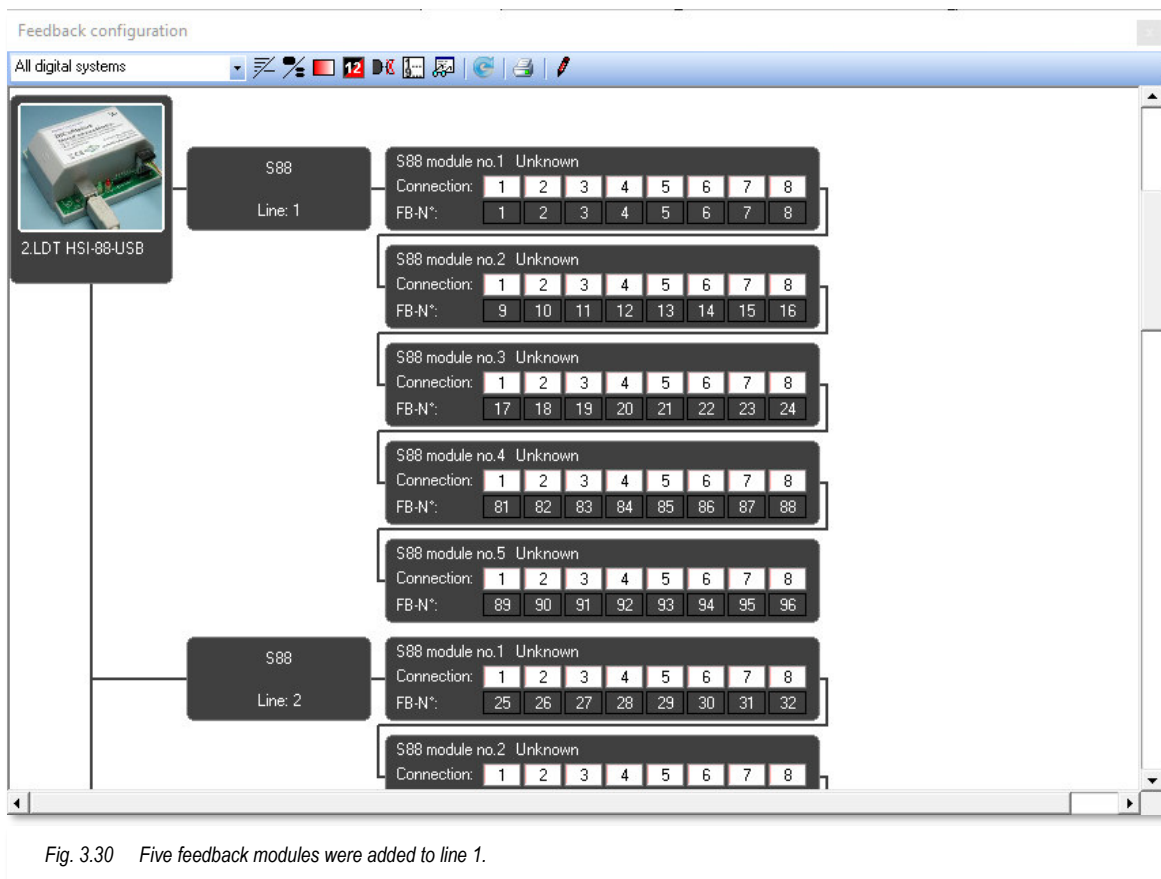
Fig. 3.30   Five feedback modules were added to line 1.

The dialogue window now offers you the following setting options. Firstly, you define the number of modules to be recorded and as already mentioned, the number of inputs for each module. Optionally, you can also assign a name to each module. We recommend that you use this option for a spatial assignment of the modules (e.g. main station or depot), as the module can be easily localised in the event of a fault.

A look at the Fig. 3.30 shows that a total of five feedback modules, each with 8 inputs, have been added to the first line on the HSI-88-USB. This image comes from the demo project for the **Win-Digipet 2021** version, which you will find on the USB stick.

If you now point the mouse at one of the added feedback modules, the small list icon 📇 will appear again. Here, too, a context-related menu is hidden in which you can make further entries for the selected feedback module.

The menu entries are self-explanatory, i.e. you can use the menu to add or remove additional modules to certain positions in the (here) S88 bus. Two feedback modules, each with eight inputs, can also be combined into one module with 16 inputs. But be careful, this should correspond to the situation on your system! Under the *"Edit"* menu item, you can assign a name to the feedback module or change an existing name.
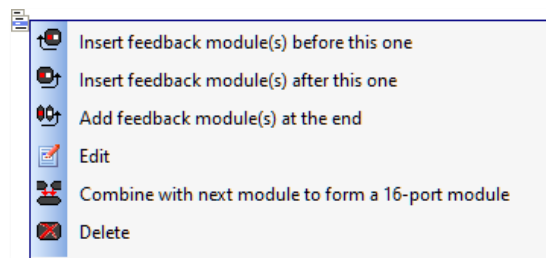
Fig. 3.31   Menu for a feedback module

3.5.2 Assign feedback contact numbers (RMK) to the modules.

After you have added one or more feedback modules to the respective feedback bus, no feedback contact numbers have yet been entered at their connections. Here (cf. Fig. 3.32), a module with 8 inputs has been added to the S88 bus on a Märklin Central Station 2. Contact numbers are now to be assigned to these connections.

Click with the <right mouse button> in an empty field in the "RMK" line. Please remember that you must be in edit mode 🖊 of the "Feedback configuration" dialogue. The three menu items for assigning feedback contact numbers are self-explanatory:
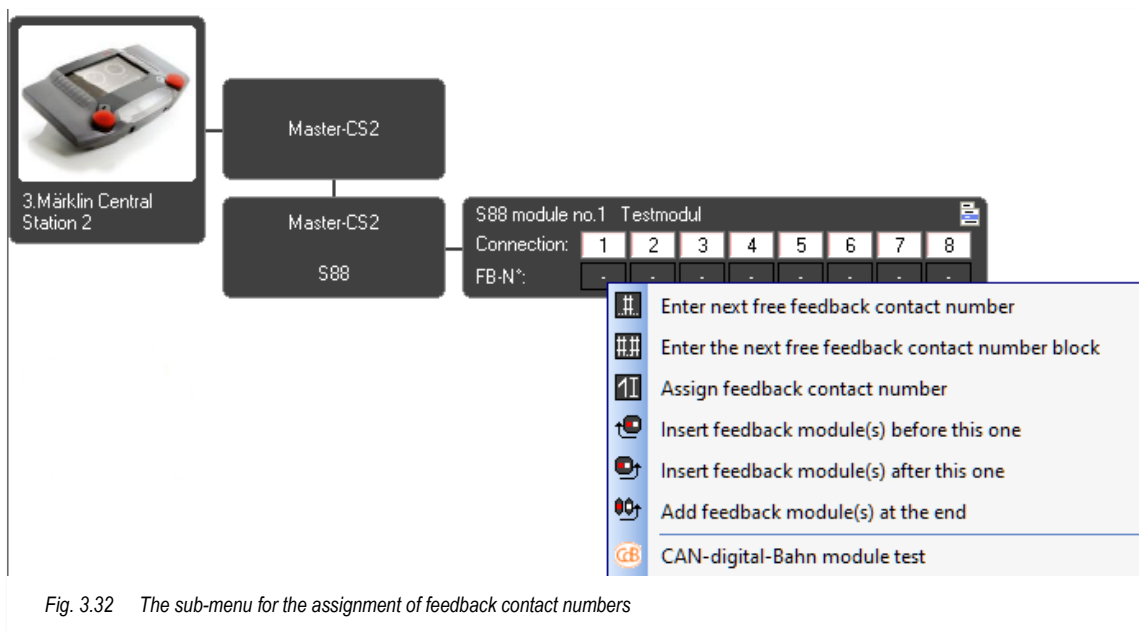
Fig. 3.32   The sub-menu for the assignment of feedback contact numbers

🚂 **Enter next free feedback number**
When this menu item is selected, the first free feedback contact number (FB-N°) of the entire Win-Digipet feedback configuration is entered.

🚂 **Enter the next free feedback number block**
This menu item enters the next free feedback contact number block (here eight FB-N°) in ascending order, starting with the first free feedback contact number of the entire Win-Digipet feedback configuration.
However, you can also assign the next free numbers to only some of the connections by simply marking the desired connections with the mouse while holding down the left mouse button.

🚂 **Assign feedback contact number**
This allows the feedback contact numbers to be freely assigned individually for each connection. The feedback contact numbers of the connections do not have to be in the same order. To avoid incorrect entries, e.g. double assignment of numbers, a dialogue window with feedback contact numbers that are still free or have already been assigned is displayed here. In this dialogue window, you can search for and assign free individual or blocks of feedback contact numbers. The numbers that have already been assigned are also displayed in a list with the feedback contact number and connection position (see Fig. 3.33).
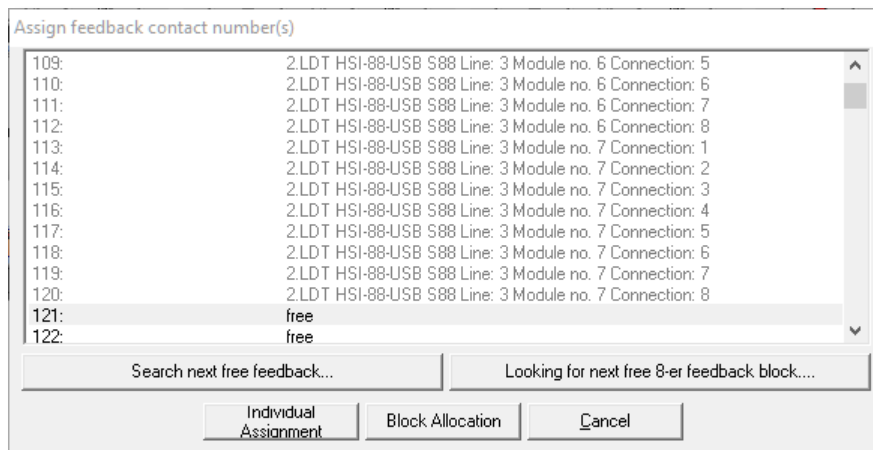
Fig. 3.33   Dialogue for free feedback number(s) assignment

With the menu item <Delete FB assignment> menu item, you can change the numbering of the contacts. Normally, the contacts are automatically numbered in ascending order (see Fig. 3.30). Assuming you have added new modules to your line and do not want to change the existing contact numbering, you can assign contact numbers at this point that have not yet been used but are out of sequence.

To assign a new feedback contact number to the selected connection, you must first delete the previously assigned number and then assign a new number. To assign a new number, you can choose between the:

- next free feedback contact number
- an individually selected feedback contact number

If you decide on an individual assignment at this point, a further dialogue box (see Fig. 3.33), in which all previously assigned contact numbers are listed with the respective connection number (module/connection). An already assigned name of the feedback contact is also displayed. The assignment itself can be made here as an individual or block assignment.

Further settings are possible for the feedback modules and the feedback contacts they contain. Some of these are irrelevant if you are still at the beginning of your work with **Win-Digipet** and are only important for users who have already used a previous version and therefore have a finished track diagram in their project.

For example, by left-clicking on a feedback contact number (FB-N°) and holding down the mouse button, you can drag the contact number

Fig. 3.34   Context menu for a feedback contact entry

into other **Win-Digipet** editors (e.g. the routes editor) where contact numbers need to be entered. A click with the right mouse button on a feedback contact number causes a context-related menu to appear again.

3.5.3   The toolbar of the "Feedback configuration" dialogue

As already mentioned above, the "Feedback configuration" dialogue window offers you further setting options in a toolbar. These are in detail:
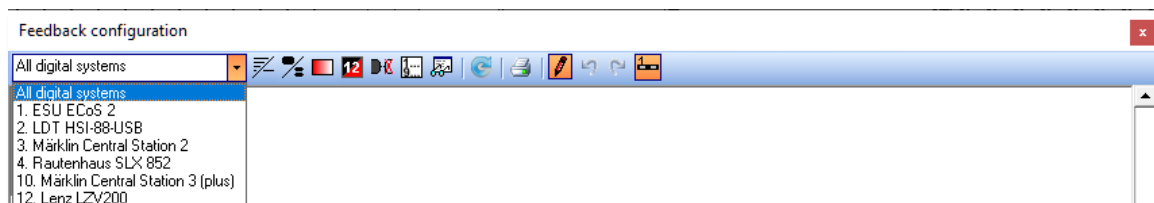
Fig. 3.35   The toolbar of the "Feedback configuration" dialogue window

- **Digital systems list field**
  This list field contains all configured digital systems. You can display the feedback configuration either for all digital systems or filtered for each digital system. To do this, select the corresponding entry in the list.
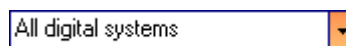
🚃 **Display all modules of a device/bus/line in one line**

In the example graphic above (see Fig. 3.30), the feedback modules are lined up one below the other. This function can be used to display them next to each other.

🚃 **More compact module representation**

The feedback modules are displayed in less detail (e.g. without numbering).

🚃 **Luminescent occupancy message display**

The display of an occupancy message slowly fades out. This function is suitable for detecting short "bouncing" occupancy signals that may not be triggered by vehicles.

🚃 **Dark representation**

The module connections are displayed with either a white or black background and complementary font colour.

🚃 **Hide unused strings/buses**

Feedback buses or lines for which no feedback modules have been entered can be hidden.

🚃 **Use continuous numbering for S88/L88/LocoNet**

The numbering is set to continuous (consecutive).

🚃 **Display feedback log**

The feedback entries from the Win-Digipet logbook are displayed and can be used for troubleshooting.

🚃 **Print function**

The feedback configuration can be printed out.

🚃 **Edit mode**

In this mode feedback modules can be added, deleted or the numbering adjusted.

🚃 **Display feedback numbers in the track diagram**

Feedback contact numbers that are assigned in the track diagram are displayed on the track diagram symbols. This function is only available if the "Feedback configuration" dialogue is in edit mode.

3.5.4 Examples of different feedback systems

Below we show you examples of the feedback configuration on various common digital control centres. The procedure for setting up the feedback configuration is almost identical for all the examples shown.

- 🚂 Setting up the digital system in the Win-Digipet system settings
- 🚂 Adding modules to the corresponding feedback bus of the digital system
- 🚂 System-dependent addressing of the added feedback modules
- 🚂 Numbering of the connections (allocation of the feedback contact numbers)

3.5.4.1 Example of a feedback configuration on Märklin Central Station 3 (plus)

The example below shows a section of a feedback configuration on a Märklin Central Station 3 (plus) digital control centre.

You can see that in addition to the 9 feedback modules on the S88 bus of the Central Station, an L88 module has also been registered via the CAN bus of the digital control centre. This L88 module, here with device no. 114, manages additional S88 feedback modules via its line No. 2.

Fig. 3.36   The feedback configuration on a Märklin Central Station 3 (plus) (German version)

3.5.4.2 Example of a feedback configuration on the RS bus

In example, you can see a feedback module with eight connections on a Lenz LZV200 digital control centre. The module has been assigned the name "first module" with the RS bus-specific address "1". The Fig. 3.37 shows the addressing dialogue for the connected feedback module.
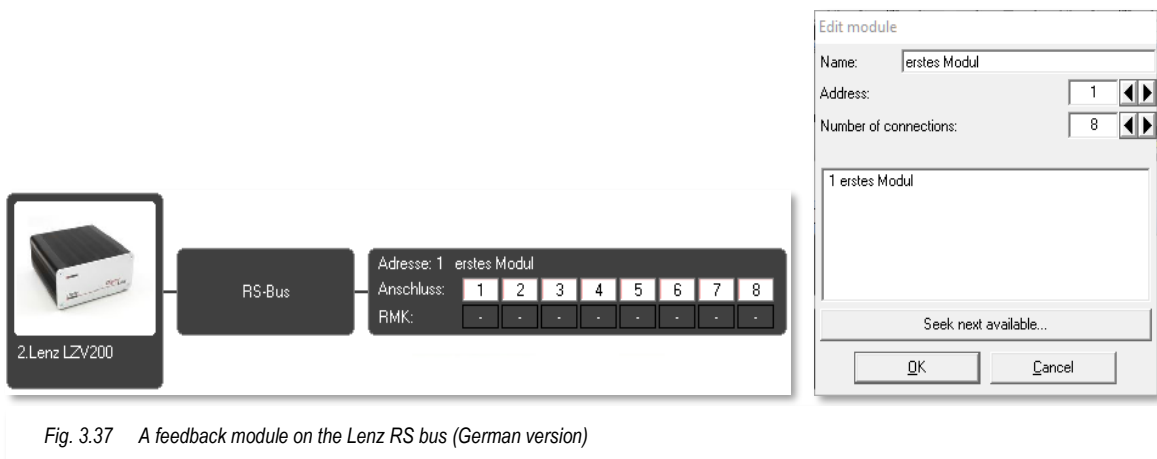
Fig. 3.37   A feedback module on the Lenz RS bus (German version)

3.5.4.3 Example of a feedback configuration to LocoNet

The example in Fig. 3.38 shows a special case of the manufacturer Digikeijs. Here, an S88 feedback module has been inserted behind a LocoNet feedback module from the manufacturer. In this example, there is no S88 feedback module on the s88 bus of the digital centre.
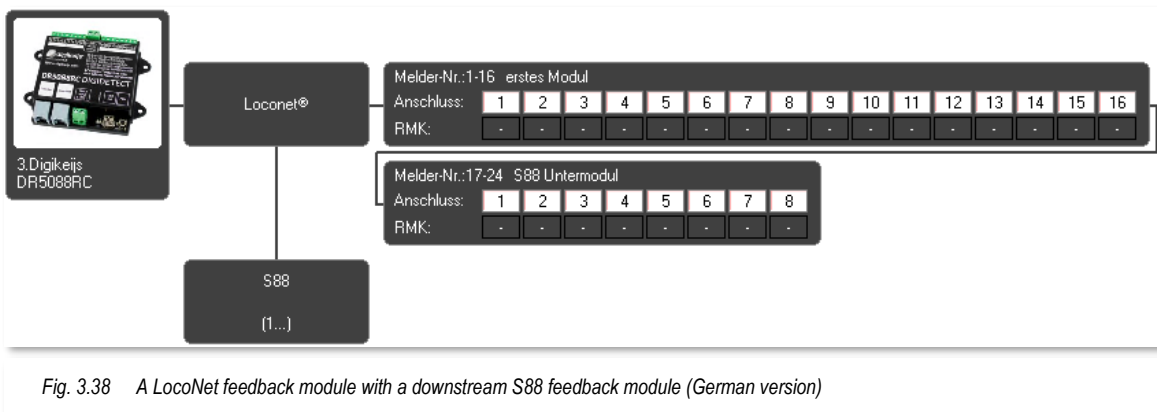
Fig. 3.38   A LocoNet feedback module with a downstream S88 feedback module (German version)

3.5.4.4 Feedback configuration example on a z21 digital centre

In this example, a Roco-Fleischmann z21 digital control centre is used. Two feedback modules, each with 8 connections to the LocoNet and R-Bus, are connected to this digital system.
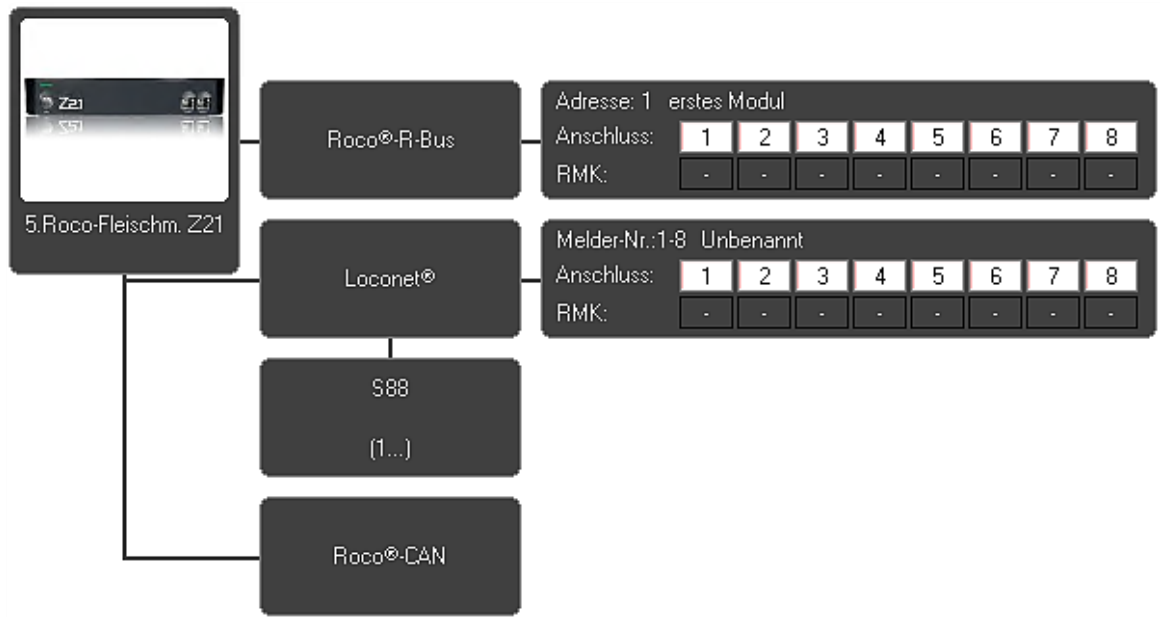
3.5.4.5 Feedback configuration example BiDiB

The example in Fig. 3.41 shows an excerpt from a feedback system on the BiDiB bus system. One of the advantages of such a system is that the modules used can be read in and entered automatically.

Fig. 3.40   Section of a feedback configuration on the BiDiB bus (German version)

3.5.5 Save entries of the feedback modules

When dialogue window, the changes made are automatically saved. It is not necessary to restart **Win-Digipet**.
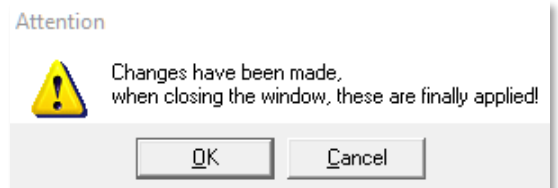
Fig. 3.41   Exiting the feedback configuration.

3.6 Hardware tab - Helmo readers
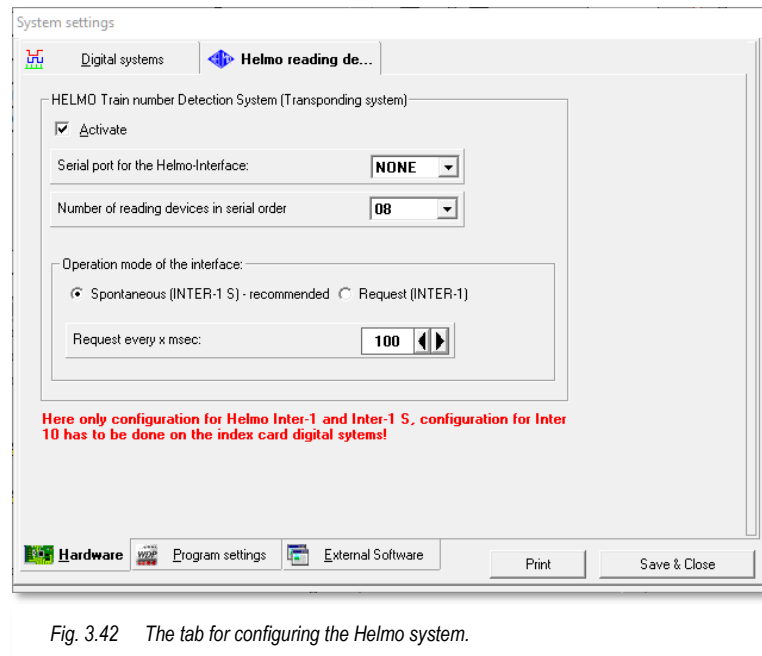
Fig. 3.42   The tab for configuring the Helmo system.

The Helmo train number identification system uses special readers under the rails and a transponder on the locomotives to enable the locomotive addresses to be read out precisely when passing over these readers. A maximum of 30 readers can be placed under the system. Further information can be found on the manufacturer's website: www.ldt-infocenter.com

This readout is communicated to the programme via an interface and a separate COM interface. Three HELMO interface types are offered, which handle the readout differently:

- **Inter1-S**
  This interface sends every change to the readers without being requested - i.e. without a programme request. This is the significantly faster and recommended method, as no additional data, which inflates the data traffic, has to be sent to request the changes.

- **Inter1**
  This interface only works via a data request by programme. The request time can be set individually.

- **Inter10**
  The Inter10 interface is not entered on this card, but on the "Digital systems" tab with the "Helmo Inter 10" list selection

Only when you have activated a HELMO interface is the corresponding button activated in the main programme and the number of readers entered is displayed and set to query function.

3.7 Programme settings - General tab
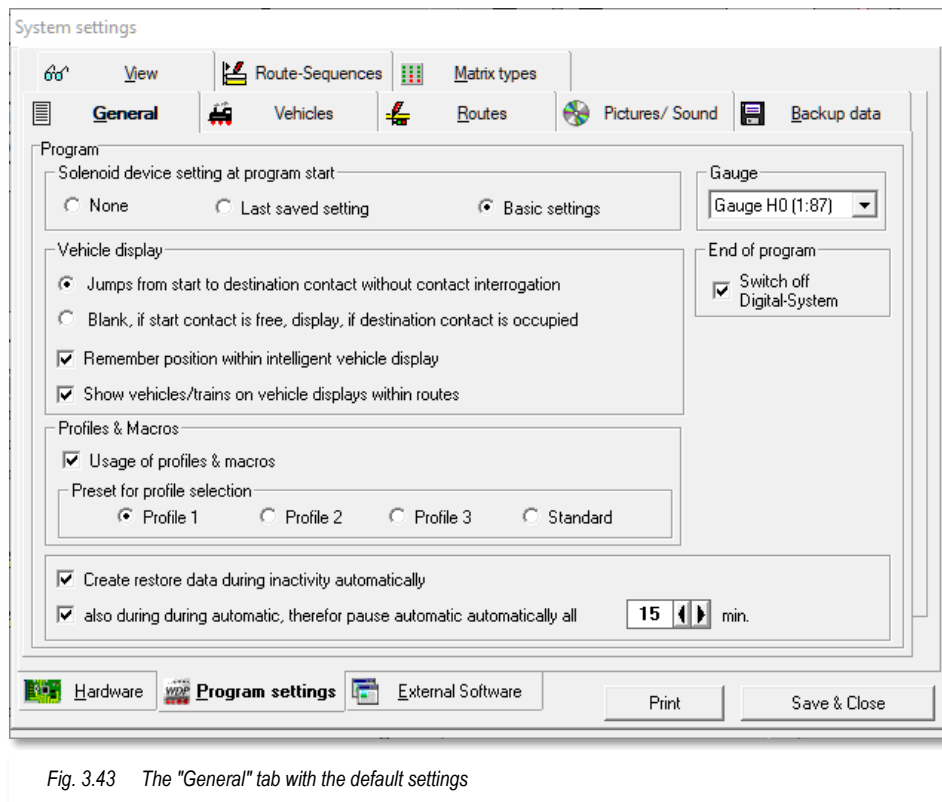
Fig. 3.43   The "General" tab with the default settings

The *"Programme settings"* main tab is divided into eight sub-tabs. When the tab is opened, the *"General"* sub-tab is displayed by default.

> It is not necessary to confirm each tab under Programme settings and External software with **'Save & close'.**
>
> Once you have made all the entries, save them by clicking on the **'Save & close' button** and exit the system settings.

3.7.1 Solenoid device setting at programme start.

This setting influences the solenoid device switching at the start of the programme. You can choose between the following options:

- None – means do not switch any solenoid items).

- Last saved setting – means switch to the last saved position if the position of the solenoid devices is to be adjusted to the screen display or

- Basic settings – means to switch to the stored home position.

The last two settings delay the start of the programme, but the selection is useful if you frequently set solenoid items manually or via the keyboard while the programme is not running.

With the option of switching the solenoid items to the saved home position, you create a defined starting situation for the beginning of operation with **Win-Digipet**.

3.7.2 Settings under "Vehicle display"

Here you set whether you want to run the vehicle display with contact enquiry or not.

- **If not, select "jumps from start to destination contact without contact interrogation".**
  In this case, the vehicle number is deleted from the start vehicle display when a route is executed after leaving the start contact and immediately entered in the destination vehicle display.

- **If yes, select "Blank, if start contact is free. Display if destination contact is occupied".**
  Here, the vehicle number is deleted from the start vehicle display when a route is executed, and the start contact is left and entered in the destination vehicle display when the route is cancelled, and the destination contact is occupied.

The first option gives you greater security if the moving vehicle stops during a journey and possibly no longer triggers a contact. Even if the existing route is (accidentally) cancelled manually, a vehicle number is still entered in the destination vehicle display.

- **Remember position within intelligent vehicle display**
  By setting this option, **Win-Digipet** saves the stop position of a vehicle or train on an intelligent vehicle display. This gives you the option of placing several vehicles or trains in a row on one vehicle display.

- **Show vehicles/trains on vehicle displays within routes**
  When this option is activated, the real vehicle position is shown in the vehicle displays or tracking displays when using Railcom®, for example. The display is shown in black on the destination vehicle display and in grey on the vehicle displays within the route.

3.7.3 Usage of profiles & macros

Here you activate the use of profiles & macros. **Win-Digipet** profiles as the assignment of events when processing routes. Macros are recurring sequences that can be called up manually via a function key, via the dispatcher or automatically in a profile, for example.

The menu command <File><Profile Editor> and the corresponding icon in the toolbar are only active if you tick this box. The profiles are available in the start/finish function and in all **Win-Digipet** automatic functions.

> Once you have ticked this box to create profiles, it makes no sense to remove it again later. The created profiles are still available.

The radio button "Preset for profile selection" makes a preselection. This is used both in the start/destination selection and in the automatic journey function (Tour-Automatic). The specification made here is later entered as the default entry for a new line for a journey.

If a "Profile 1, Profile 2 or Profile 3" does not exist for the selected route, "Standard" is automatically used. With the "Standard" setting, the global settings are executed in the selected route.

3.7.4 Automatic backup of recovery data

Actually programme or computer crashes are not supposed to happen, but they do happen. When operating the model railway layout with **Win-Digipet** in earlier versions, it was necessary after a crash to restore the state of the vehicles or trains on the model railway layout to the state it was in when **Win-Digipet was** last started or to place the vehicles or trains on the track diagram on the vehicle displays in the same way as they were in when the crash occurred. Both methods required extensive clean-up operations.

To counter this, an option to restore data can be activated in the system settings. The programme saves the status of the system at intervals of 60 seconds.

The data is saved for possible recovery:

Fig. 3.44   Activate the backup of restore data.

- The track layout
- The vehicle display
- The position of the intelligent Turntables / Transfer tables
- The states of the dispatcher
- The condition of the vehicles
- The vehicle tractions formed
- The condition of the joystick(s)
- The system settings

However, the automatic backup of recovery data only takes place if:

- No route is active
- The simulation is switched off

In addition, none of the following editors may be open:

- Routes editor
- Route sequence editor
- Tour-automatic editor
- Profile or macro editor
- Editor for the intelligent turntable / Transfer table
- The processing of vehicles

After a programme or system crash, you as the user will be informed when **Win-Digipet** is restarted that recovery data is available and will be loaded automatically.

Another option that can be set in relation to the recovery data in the system settings is the option to save recovery data even during automatic operation.

Fig. 3.45   Restart with recovery data

However, the problem with an active automatic journey system is that some route is normally always active, and it would therefore not be possible to save recovery data.

If this option is set, the automatic journey is paused at an adjustable interval of 1-120 minutes, whereby the default value here is 15 minutes. An active automatic journey is paused when the interval point is reached and only resumed when everything has come to a standstill, and it has been possible to save recovery data.

An icon is also displayed in the main toolbar, in whose tooltip (hover over the icon with the mouse) you can read the last automatic save and trigger a save by pressing the icon.

Fig. 3.46   Icon and tooltip for recovery data
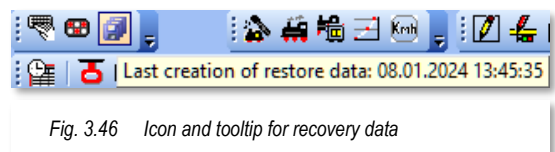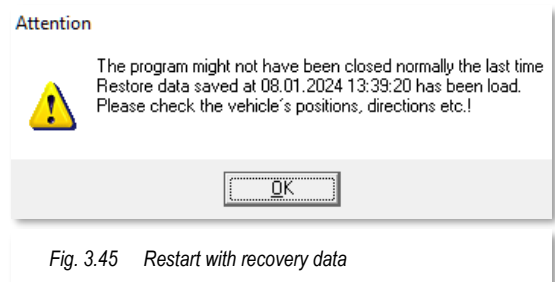
3.7.5 Nominal size (Gauge)

Here you set the Gauge for your model railway layout. The default setting is H0 gauge (1:87), which probably applies to most layouts.

Click on the small downward arrow to access the other nominal sizes.

If, for example, you have also built a small narrow-gauge line in N gauge on your H0 gauge layout, then leave the H0 gauge as the setting, as this nominal size specification is then the default setting in the vehicle database and is required for calibrating the vehicles and travelling by speed.

If required, the individual nominal size can be defined for each vehicle in the vehicle database.
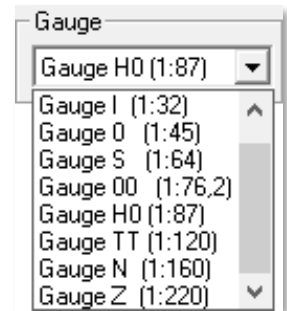
Fig. 3.47   Gauge setting

3.7.6 "End of programme" settings

The activation of this function switches the connected digital systems to "STOP" mode when **Win-Digipet** is closed. This means that there is no track voltage after the end of the programme until the digital control unit is switched on again.

3.7.7 Recommended settings on the "General" tab.

In Fig. 3.48 you can see the settings recommended by the author of this manual on the tab. There will certainly also be good arguments in favour of selecting alternative settings.
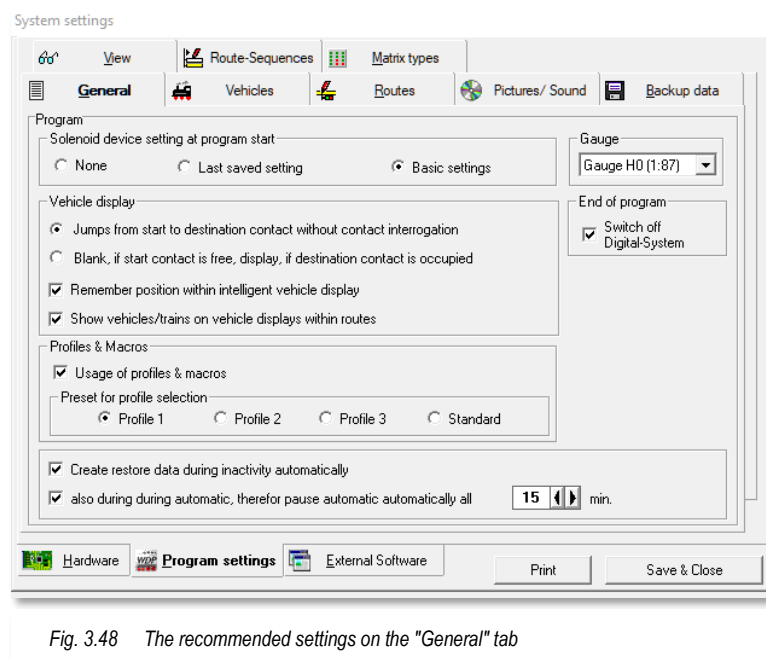
Fig. 3.48   The recommended settings on the "General" tab

- The selection of the default setting at programme start is ticked, as the safety aspect has higher priority than the extended programme start time.

- The reason for the direct jump in the vehicle display has already been explained in section 3.7.2.

- The use of profiles is activated. In the course of your work with Win-Digipet, you will certainly notice that the number of profiles required is considerably smaller than in previous versions of the programme. However, the use of macros opens up many new possibilities for controlling vehicles and trains.

3.8 Programme settings - Vehicles tab

Fig. 3.49   The "Programme settings - Vehicles" tab with the default settings
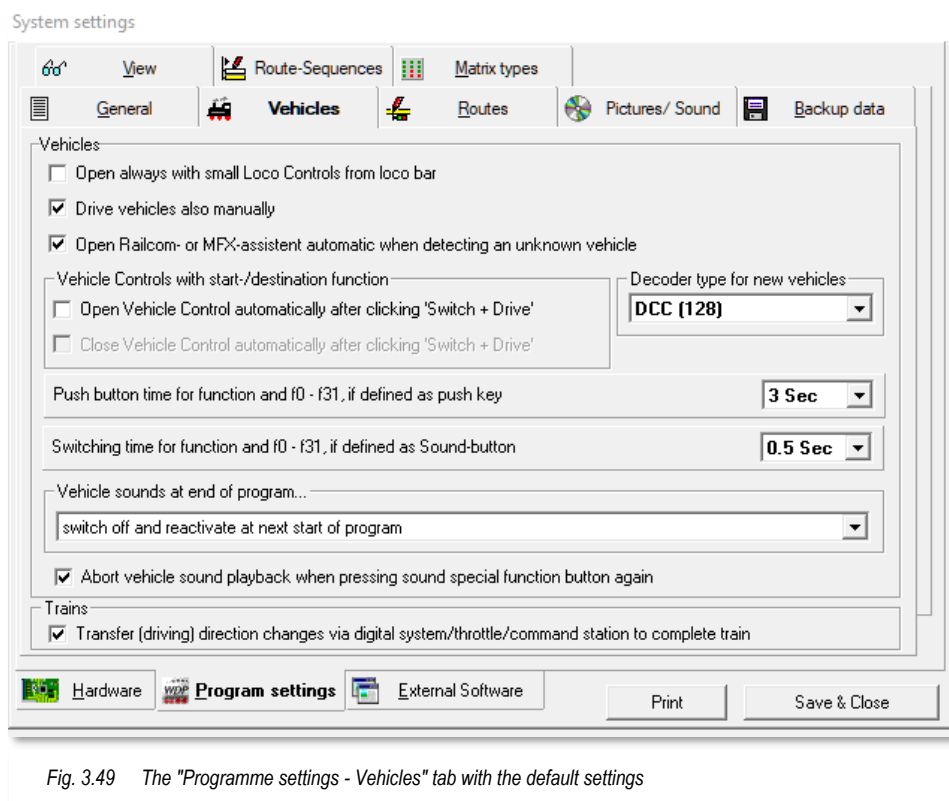
3.8.1 Settings in the "Vehicles" block

By ticking the first checkbox of this block, you can specify that the vehicle controls are opened in the small window ("Mini") as soon as you click on vehicles in the vehicle bar with the left mouse button. Otherwise, they will be opened in the large window ("Maxi").

Fig. 3.50   Basic settings for the vehicles
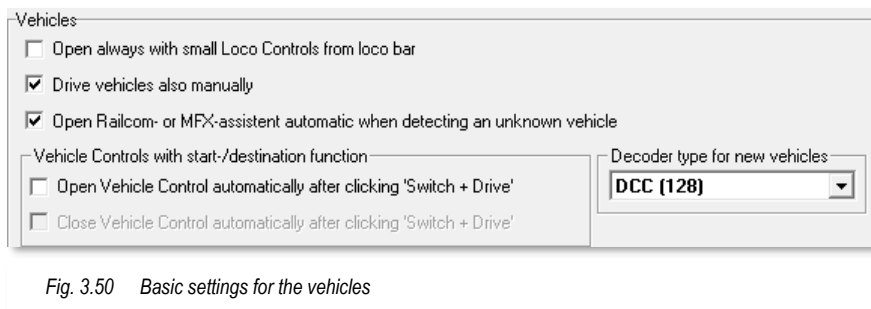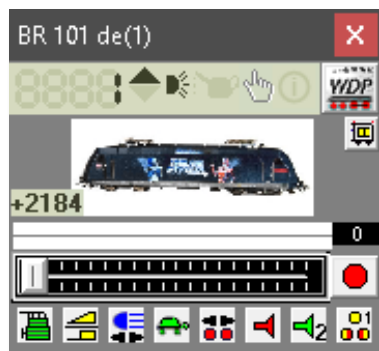
Fig. 3.51   The "mini" Vehicle Control

Fig. 3.52   The vehicle control "maxi"

If you set a route with the start/finish function and a vehicle, identified by its digital address or the train name, is on the vehicle display of the start contact of the selected route, you can use the second option here to specify that the associated vehicle control is opened at the same time when the vehicle starts.

When this function is activated, *"Close vehicle control automatically after 'Switch + drive'* can also be selected. Depending on your instructions, the associated vehicle control can be automatically closed again when the vehicle has reached its target feedback contact.

3.8.2 Preselection of the decoder type for new vehicles

In this selection list field (cf. Fig. 3.50), you can predefine which protocol is set when a new vehicle is created. You can, of course, define the data format in the vehicle database individually for each vehicle later.

3.8.3 Vehicles can also be driven manually.

Tick this box (cf. Fig. 3.50) to make an additional button visible in the vehicle controls.

Click on the small hand (see Fig. 3.53) in the address line of a vehicle control "Maxi" or "Mini", you can control a vehicle manually within **Win-Digipet** without control by the computer on the system.

The purpose of this switch is to allow you to transfer control of a vehicle from **Win-Digipet** to you and back again during automatic operation.

The computer sets the routes and you as the driver control the vehicle either via the digital control centre's speed controller, the vehicle control unit, a joystick, or a mobile device (e.g. smartphone).

So that you can see immediately which vehicle is being controlled manually, the vehicle appears in the vehicle bar with a red frame (any yellow frame is covered if the maintenance interval has been exceeded).

Fig. 3.53   Manual control of a vehicle

> Clicking on this button stops a moving vehicle immediately and you must control the locomotive manually.
>
> You must then ensure that the vehicle comes to a stop within a set route and before a signal indicating a stop. Only you now have control of the vehicle.
>
> This function is therefore not intended for you to control a moving locomotive yourself, e.g. to accelerate or decelerate the vehicle briefly for whatever reason, as you can do this at any time without this switch in Vehicle Control.

3.8.4 Open Railcom or vehicle assistants automatically

A tick at this point opens the corresponding wizard for entering the vehicle when a new locomotive is automatically recognised. You can then enter the relevant data there very quickly. If you are using RailCom or mfx-capable vehicles on your layout, it is advisable to activate this function.

3.8.5 Switching time for the vehicle functions defined as buttons f1 – f31.

The definition as a button or sound button generally means that a command field switched on with a mouse click switches itself off again automatically after an (adjustable) period - the second mouse click to switch it off is therefore not necessary. This is useful, for example, for vehicle functions such as whistles or similar.

In the vehicle database, you can specify whether such functions are defined as buttons or sound buttons or not. If the functions are defined as buttons or sound buttons, they are deactivated again after the times set here.

You can set the times for different types of pushbuttons separately in **Win-Digipet**, as there are always problems with different types of locomotives, car, and function decoders.
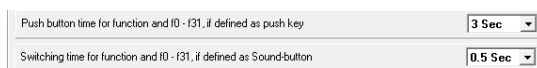
Fig. 3.54   *The switching times of push-button functions*

The time for the button (e.g. Telex clutch) can be set from 1 sec to 8 sec.

You can set the time for the sound button (these are generally only the sound functions of the decoder) in a range from 0.1 sec to 2 sec.

You must find out the correct value by testing, as the locomotive, car and function decoders react differently. For example, a locomotive sound that is played twice would indicate that the switching time defined for the sound buttons is too long.

3.8.6   *Handling of vehicle sounds at the end of the programme.*

With the help of you can use a selection list to specify how **Win-Digipet** handles the activated sound functions of your vehicles when the programme is closed (status of the F buttons assigned to sound functions). The individual options are shown in Fig. 3.55 illustrated.
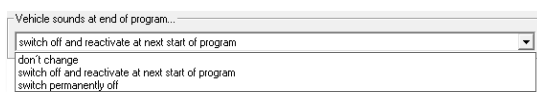
Fig. 3.55   *The options for locomotive sounds at the end of the programme*

    Selecting "don't change" means that the activated sound functions remain switched on even after Win-Digipet is closed.

    The second selection "switch off and reactivate at next start of program" means that no sounds are active when the control program is switched off and these may have to be switched on via the digital control unit. When Win-Digipet is restarted, all the last activated sound functions are active again.

    If you select "Switch permanently off", the next time you start Win-Digipet all sound functions of the vehicles will be switched off and you may have to reactivate them.

The last tick in this block offers the option that vehicle sounds that are currently being played are immediately interrupted and restarted when the same function key is pressed again.

3.8.7   *Setting options for trains*

If you are driving a train with several locomotives in traction manually with the help of a hand controller or the control centre, you control the leading locomotive.

In the checkbox in the Trains block on the tab, you can specify whether the turn commands entered at a control centre or manual controller should be forwarded to all vehicles in a

train. The forwarding of commands also applies to speed changes; these are converted by **Win-Digipet** into the appropriate value in kilometres per hour and forwarded to the vehicles in the train set. The forwarding of speed changes and turn commands, triggered at the control centre or another driving device, are not executed if the measurement window for locomotives is open.

3.8.8 Recommended settings on the "Vehicles" tab.

Fig. 3.56   Recommended settings for the "Programme settings - Vehicles" tab.
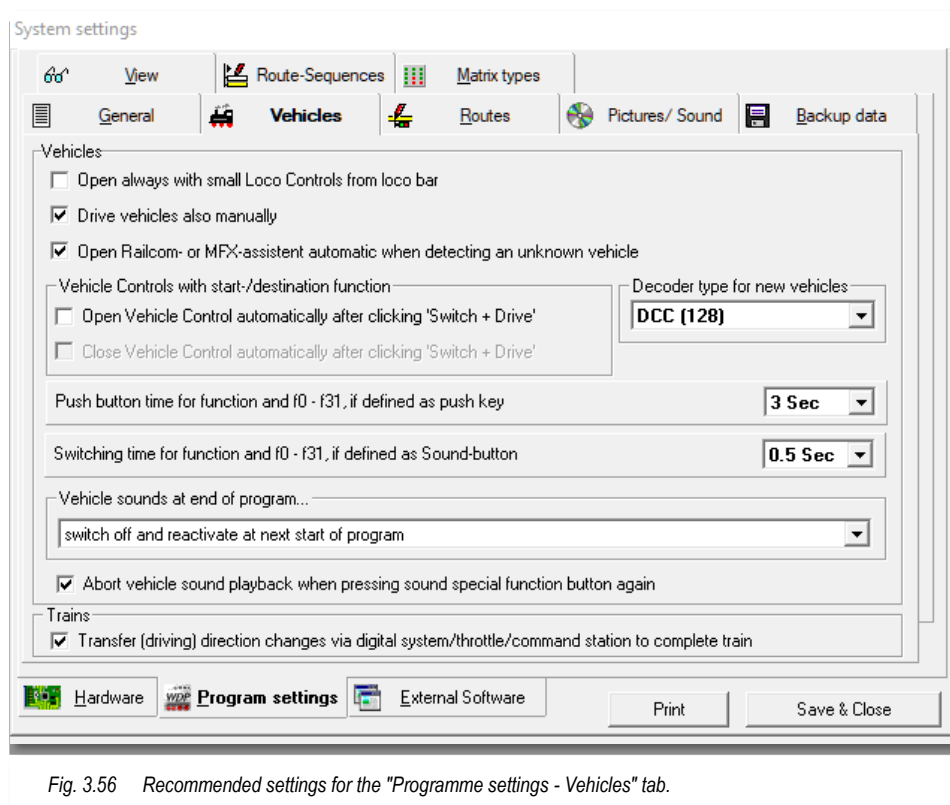
The manual author's recommended settings for this tab are as follows:

- to the settings for the manual control of vehicles. Here, Win-Digipet offers you the option of "being the train driver yourself" and letting Win-Digipet take over the tasks of the "dispatcher".

- The option to open the vehicle assistant automatically only makes sense if RailCom or mfx-capable vehicles are in use on the model railway layout.

- The preselection is individually dependent on your model railway layout.

- The option selected here to switch off the vehicle sounds at the end of the programme and reactivate them the next time the programme is started is personal. At this point, you must decide for yourself which of the options offered is your favourite.

Cancelling and restarting vehicle sounds is particularly suitable for longer sound sequences.

3.9 Programme settings – Routes tab
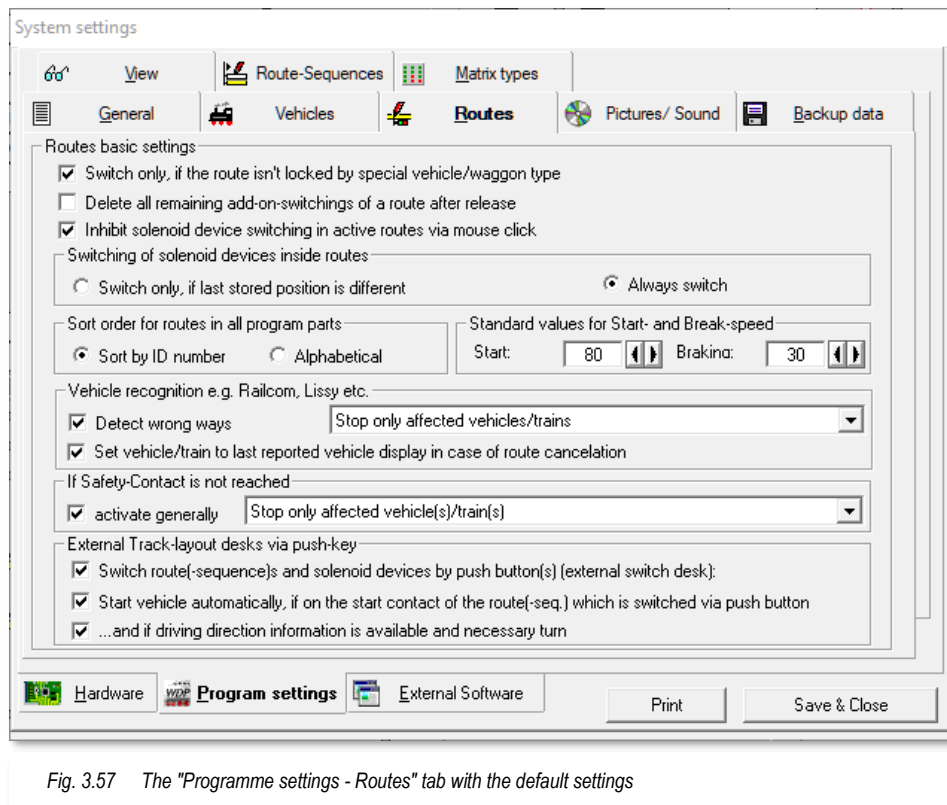
Fig. 3.57   The "Programme settings - Routes" tab with the default settings

The settings on this tab concern the default settings for the processing of routes in **Win-Digipet**. A route in **Win-Digipet is** the path between two vehicle displays.

3.9.1 Switch only, if the route isn't locked by special vehicle/waggon type (matrix check)

If you tick this function, a check is made before each route is executed to ensure that it is not blocked for a specific vehicle type (e.g. electric locomotive not permitted on tracks without overhead lines). If you deselect this function, this general check is omitted. All entries in the routes editor, in the vehicle database or in the automatic journey planner that are created for this purpose are ignored.

3.9.2 Delete all remaining add-on switching's of a route after release.

This means that after reaching the target contact of a route, any "leftover" sequential circuits are deleted. If you detect such residual sequential circuits, in most cases this means that either the route has not been configured correctly or there is a (feedback) problem with the system. You can use this system setting to activate a kind of "universal amnesty".

> You should handle this function with appropriate sensitivity, as it can also be used to compensate for any errors you may have built in yourself, making them very difficult to detect.

3.9.3 Inhibit solenoid device switching in active routes via mouse-click.

If this switch is activated, all solenoid items that are to be switched manually with a mouse click within a currently active route are blocked for safety reasons. A corresponding message informs you of this.

3.9.4 Switching of solenoid devices inside routes

If you select the function *"Switch only, if last stored position is different"*, only the solenoid items whose positions - defined by the route - are different to the positions stored internally as the last known position in the programme are switched when setting routes.
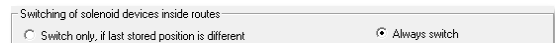
Fig. 3.58   Solenoid devices in routes to be set.

This function reduces data traffic, which benefits older digital control centres that still work with slow interface speeds. The execution of other commands is many times faster, as solenoid items whose positions are already correct are not switched again.

> If solenoid items have been changed manually or the routes have been tested by programme, this function may cause difficulties or even accidents.
>
> The safest way to avoid such a situation is to carry out a home position of all solenoid items before starting the automatic drive.
>
> The execution of the basic setting function at programme starts (see sections 3.7.1 and 3.7.7) gives you more security here.

And a note for owners of the Uhlenbrock Intellibox I:

> You can further speed up the execution of solenoid device switching if you have not connected any keyboards to the Intellibox and set the special option 33 =0 (zero). There is then no feedback from the solenoid positions to the keyboards; this offers an additional time advantage.

3.9.5 Sorting sequence of routes in all programme sections

Here you determine whether the routes are to be displayed sorted by ID numbers or in alphabetical order in all route lists of the individual programme sections.
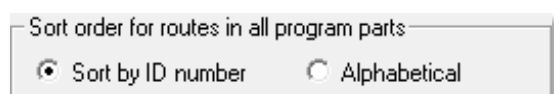
Fig. 3.59   Sorting the routes.

3.9.6 Standard values for starting and braking speed

The values entered here for the start and braking speed in km/h are automatically adopted during fully automatic route creation in the routes editor or when you click on the 'Default' button.
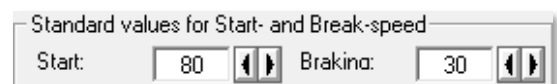
Fig. 3.60   The starting and braking speed in the routes

3.9.7 Recognising wrong way driving by means of vehicle detection.

With Suitable hardware (e.g. Railcom-capable feedback modules, Uhlenbrock Lissy) can be used to recognise incorrect movements of your vehicles/trains. The tick here in the checkbox determines the behaviour of your vehicles in the event of a detected wrong turn.
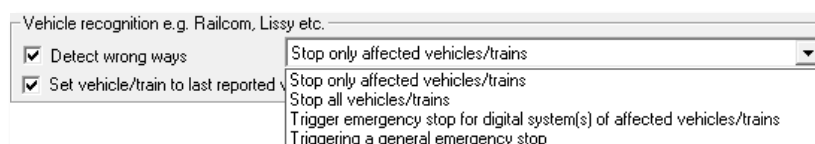
Fig. 3.61   The behaviour of vehicles when wrong-way driving is detected.

When the function is activated, four selection options are available in a list:

- 🚂 Only affected vehicles/trains stop
  The vehicle or train in a recognised wrong-way journey is stopped

- 🚂 All vehicles/trains stop
  All moving vehicles/trains are stopped
  …

🚂 **Trigger an emergency stop for the digital systems of the affected vehicles/trains**
An emergency stop is triggered for the digital system to which the vehicle or train is assigned.

🚂 **Trigger general emergency stop**
An emergency stop is triggered for all digital systems

If the route is cancelled, the vehicle can be automatically set to the last reported vehicle display by activating the option offered here.

3.9.8 If the safety contact is not reached
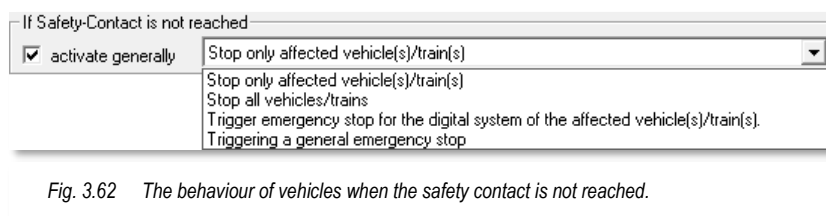
Fig. 3.62   The behaviour of vehicles when the safety contact is not reached.

As Since "wrong runs" can occur from time to time on the model railway layout due to points that do not switch, this function has been installed for the minimum protection of your trains.

You can enter a "safety contact" in the routes on the "Options" tab of the routes editor. The function of this "safety contact" in a route is described in detail in the chapter 7.

If you now tick "activate generally", the three options described in section 3.9.7 which you can select according to your requirements.

> ⚠ The "activate generally" switch should be used with caution, because first and foremost the hardware, the points, should function perfectly.

Although this function does not protect against a possible crash on the system, it can help to minimise the consequences.

You must decide for yourself which of the three switches to activate, but you should only set an emergency stop in exceptional cases. It is better to stop all vehicles here, because then all stop commands are sent to the vehicles before everything "stops" due to an emergency stop.

3.9.9 Set routes/route sequences via external buttons.

The first switch of this block generally activates the switching of routes/route sequences via external track diagram control panels using feedback buttons. The necessary contacts are assigned in the routes editor or route sequence editor.

The option to enter contacts in the editors is only active if this function is activated in the system settings.

If you are not using any external track diagram control panels, please leave this switch deactivated.

Fig. 3.63   Various options for external track diagram control panels
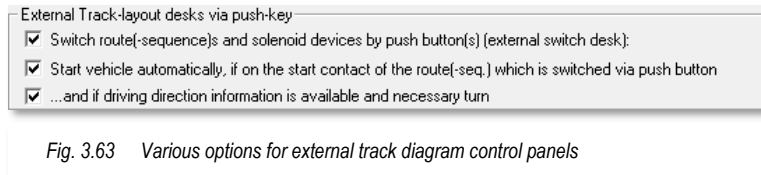
If you have selected shown in Fig. 3.63 and tick the second option, the vehicle will also start and drive automatically after the route or route sequence has been set, whereby all additional sounds etc. entered in the route speeds or the profile will be executed.

The third option offers the possibility of turning the vehicle automatically if the direction of travel information is available and necessary. This option can only be ticked after the second option has been activated.

3.9.10 Recommended settings on the "Routes" tab.
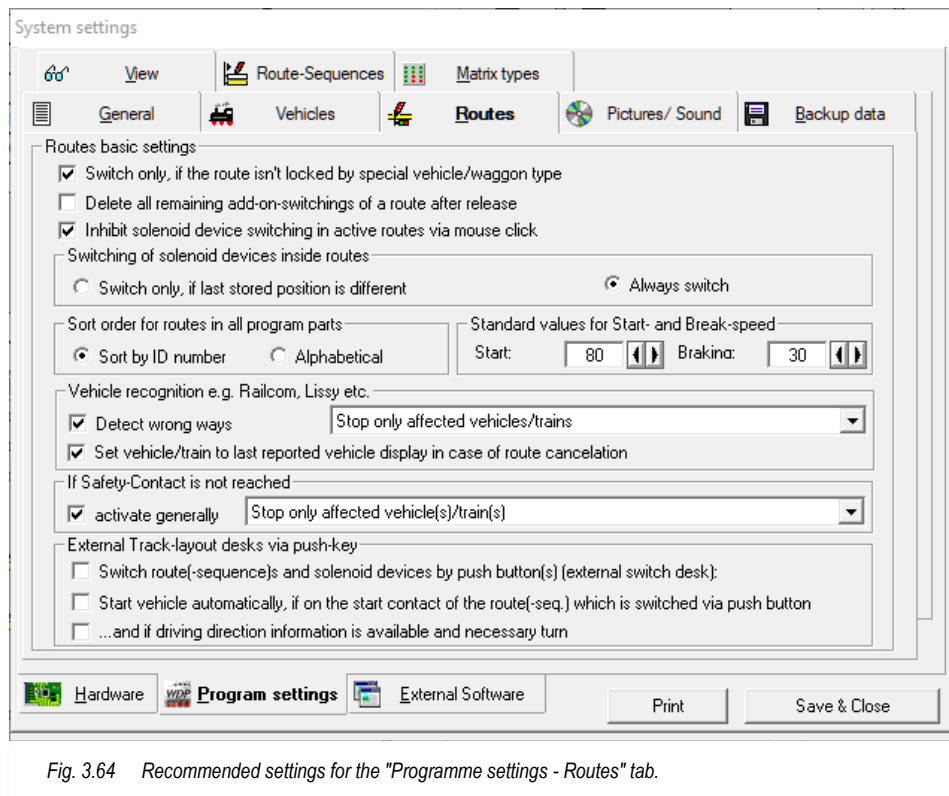
Fig. 3.64   Recommended settings for the "Programme settings - Routes" tab.

The recommendation of the author of this programme documentation for the settings on this tab is to leave the default settings as they are for the time being. The default values for the start and braking speed can be carefully adjusted after a few tests. In Fig. 3.64 the default value for the starting speed has been adjusted to 80 km/h.

However, regarding turnout solenoid that do not switch at times, it is recommended that all solenoid items within a route are always switched.

3.10 Programme settings – Pictures / Sound tab
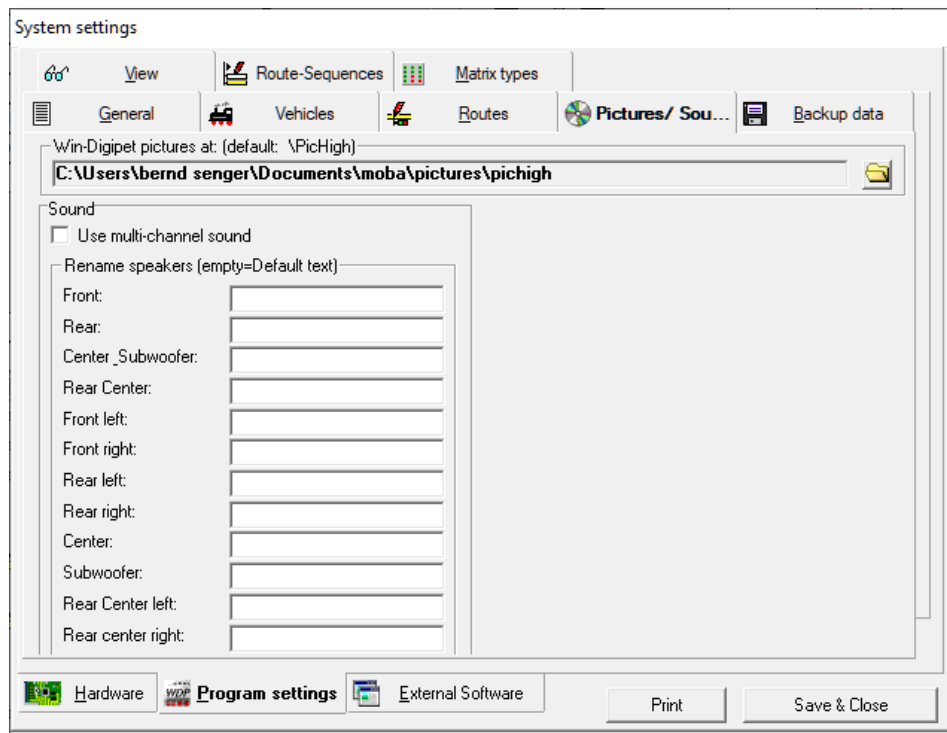
Fig. 3.65   The "Programme settings - Pictures/Sound" tab with the default settings

On tab, you must specify the exact path to the **Win-Digipet** vehicle images (e.g. C:\Wdigipet\PicHigh). This is the only way **Win-Digipet** can find the images.

If you often work with the office version and do not always want to take the original **Win-Digipet** USB stick with you, copy the entire PicHigh folder from the USB stick to your hard drive. In this case, you must then select the path to the images on your hard drive.

Under "Sound", you have the option of using multi-channel sound if DirectX version 7.0 or higher is installed on your computer. Up to 16 channels can be played simultaneously. This means that a sound in progress is not cancelled if, for example, another sound is triggered by a contact event.

You can customise the names of the individual speakers according to your own ideas.

3.11 Programme settings - Data backup tab

3.11.1 Automatic data backup at the end of the programme
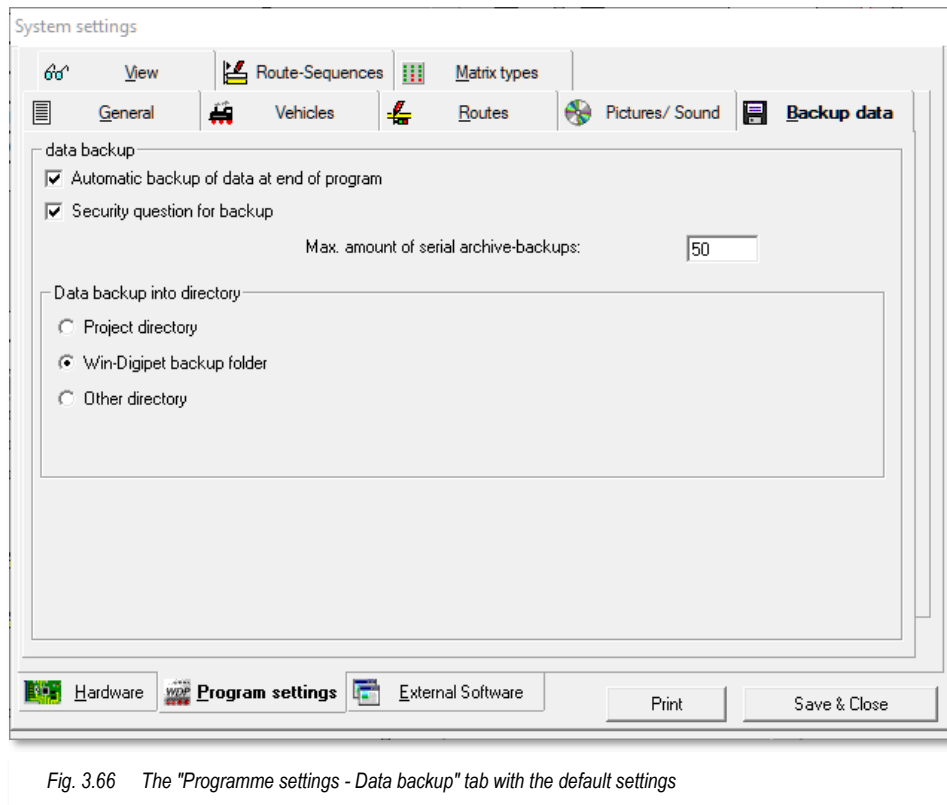
Fig. 3.66   The "Programme settings - Data backup" tab with the default settings

This tab is used to define the settings for **regular** automatic data backups. It is strongly recommended that you consider creating a data backup concept. Especially if you are working with several projects or are constantly making changes to your project, you should tick the box *"Automatic backup of data at end of program"*.

It can save you from a painful data loss!

The second tick *"Security question for backup"* causes a security prompt for data backup to be displayed again at the end of the programme.

You can also decide here where the data should be backed up to...

- in the project directory
- in the **Win-Digipet** backup directory
- in another directory

The data is saved in a compressed ZIP file.

3.11.2 Data backup to the project directory

Tick the checkbox *" Automatic backup of data at end of program" is* ticked, the backup in the project directory is immediately selected as the default setting.

When **Win-Digipet** is closed, the data is then automatically saved in a compressed ZIP file in the project directory:

C:\WDIGIPET\PROJEKTE\<name of the project>

You must decide for yourself whether you want to tick the second box "Security prompt for data backup". In most cases, this makes a lot of sense, as it allows you to decide for yourself whether to back up your data when you exit **Win-Digipet.**

3.11.3 Data backup to the Win-Digipet backup directory

In In contrast to the data backup to the project directory described above, the data backup to the **Win-Digipet** backup directory uses the path:

C:\WDIGIPET\BACKUP\<name of the   project>

3.11.4 Data backup to another directory

If you want to back up data to a directory of your choice, select the radio button next to *"Other directory"* and click on the button to select the desired storage location. After confirming with *"OK"* in the Windows dialogue window, the selected directory is displayed in the list bar.
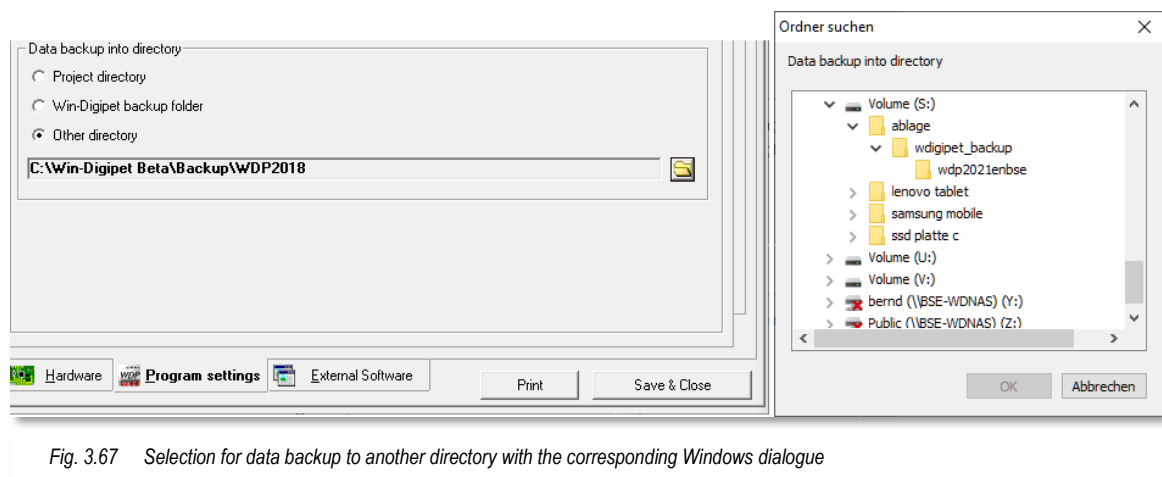
Fig. 3.67   Selection for data backup to another directory with the corresponding Windows dialogue

You can use all drives on your PC or laptop for data backup. You can also select all network drives, if available. **Win-Digipet** also automatically creates a ZIP file of your project in this selected directory.

3.11.5 Naming convention for automatically generated backup files

Win-Digipet creates a ZIP file with the following name (syntax) in the selected backup directory:

WDP_BACKUP_<name of the project>_<date>_<time>_<file no.>

The sequence number is automatically assigned from 0001 to 9998 and reset to 0001 once the highest value has been reached.

The values for the date and time are set using the syntax dd_mm_yyyy_hh_mm.

A backup file of the demo project would then have the following file name:

Name	Änderungsdatum	Typ	Größe
WDP_BACKUP_WDP2021_2020_12_23_14_29_0001.zip	23.12.2020 14:29	ZIP-komprimierte...	2.384 KB

Fig. 3.68   A data backup displayed as a compressed ZIP file in Windows Explorer (German version)

3.11.6 Maximum number of consecutive archive backups

Regardless of which selection you have made for backing up your project data, you can enter a number between 1 and 9998 in the *"Maximum number of consecutive archive backups"* input field. A number between 5 and 20 should usually be sufficient. A higher number of backups may be useful for beginners.

Entering *"20"* in the "Maximum number of consecutive archive backups" field in this example means that a maximum of 20 old backups of this project are kept. If the 21st backup is now created, the oldest backup is automatically deleted so that the upper limit is maintained.

However, if you reduce the number of backups from 8 to 6 after some time, for example, so that more than one old backup would have to be deleted during the next backup, a confirmation prompt appears.

After confirmation, the surplus old backups are deleted, and a new one is created.

You can access the archive backups at any time via the "Data import/export" action tab in the **Win-Digipet** Start Centre.

3.11.7 A simple data backup concept

Basically it can be said that 100 per cent protection against data loss (this does not only apply to **Win-Digipet** data, by the way) cannot be guaranteed with reasonable effort. However, the risk can be massively minimised if you take a few basic precautions.

Create a small data backup concept. This should include considerations on the following points:

- When should be secured?

- What should be secured?

- Where should be secured?

These three questions are easy to answer. The question about the timing is already answered after reading the previous sections and would read:

Every time the programme ends!

The answer to the second question is no more difficult to find:

All my working data of my projects!

However, you will need to consider the answer to the third question a little more carefully. These considerations can also lead to a reconsideration of the first question.

A backup to the project directory can quickly become confusing if many archive backups are stored. A backup to another directory for backups only would be more appropriate here. Furthermore, this backup directory should be located on a different drive (possibly on a network drive) to prevent loss in the event of hardware defects.

The action tab for importing and exporting data can also be found in the Start Centre. This allows you to create additional data backups at regular intervals, for example, and store them on an external medium (e.g. USB stick).

Taking all the above criteria into account, you have already achieved maximum data protection. In short, this means.

- Automatic data backup of the respective project at the end of the programme

- Regular additional data backup of all project data via the Start Centre

- Automatic backup to a second data carrier

- Save additional data backups on an external medium

3.12 Programme settings – View tab
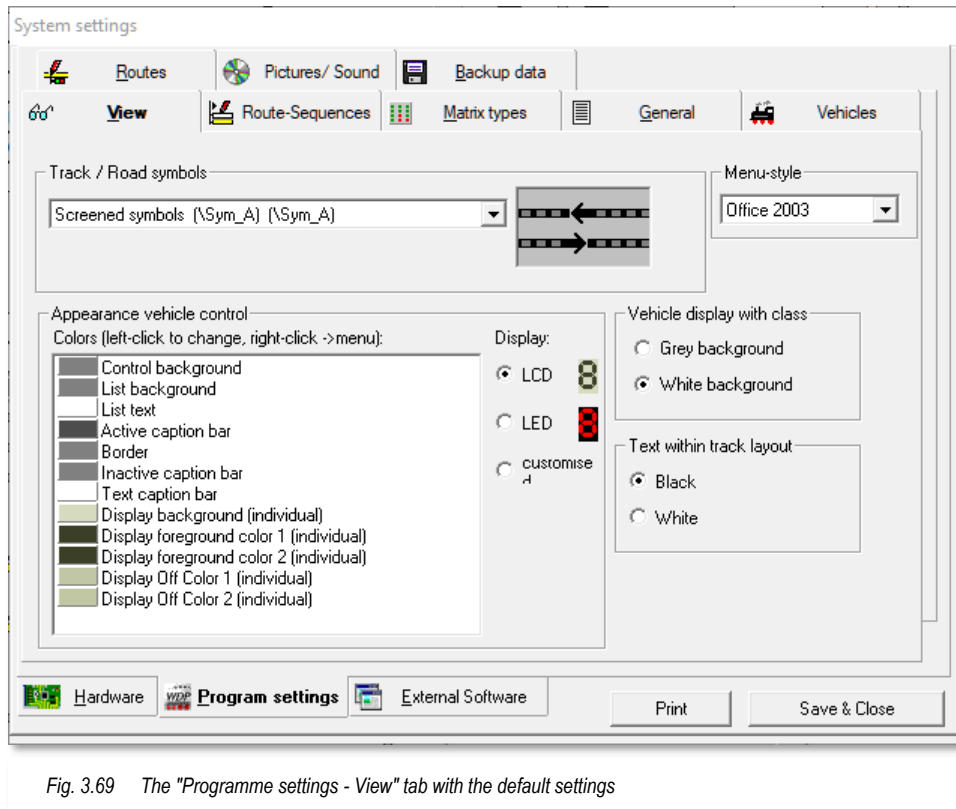
Fig. 3.69   The "Programme settings - View" tab with the default settings

3.12.1 Settings under "Track symbols/road symbols"

There are over 25 different symbol tables available in the main programme and in the track diagram editor for displaying the track diagram.

These are...

🚂	3D symbols	Sym_3D
🚂	Screened symbols	Sym_A
🚂	Symbols ADIF Espanol	Sym_ADIF
🚂	Street and railroad symbols	Sym_Auto_Bahn
🚂	Screened symbols	Sym_B
🚂	Railroad and street symbols	Sym_Bahn_Auto
🚂	Railroad and street symbols	Sym_Bahn_Auto_B
🚂	Screened symbols Belgium	Sym_Bel_A
🚂	Symbols with signals in the centre of the track	Sym_C

🚂	German railway symbols	Sym_DB
🚂	DB standard symbols 2	Sym_DB_2
🚂	Symbols with signals in the centre of the track	Sym_C
🚂	Drawn through symbols Denmark	Sym_DK_B
🚂	Alternative symbols FS	Sym_FS_A
🚂	Screened symbols FS	Sym_FS_L
🚂	Screened symbols Italia	Sym_Italia_A
🚂	Screened symbols Netherlands	Sym_NL_A
🚂	Screened symbols Spain	Sym_RENFE_A
🚂	Screened symbols Suisse	Sym_SBB_A
🚂	Screened symbols Suisse with car symbols	Sym_SBB_A_C
🚂	Screen symbols Suisse red/green visual impairment	Sym_SBB_A_G
🚂	Drawn through symbols Suisse	Sym_SBB_B
🚂	Alternative symbols	Sym_SP
🚂	Alternative symbols 2	Sym_SP2
🚂	Alternative symbols 3	Sym_SP3
🚂	User symbols	Sym_U

3.12.2 Display of the vehicle controls

Here you can select the display in the vehicle controls between an LED, an LCD-based design, or an individual design to suit your personal taste.

In addition, the vehicle controls can be customised as far as possible in terms of their colour scheme. To do this, click with the <left> mouse button in the colour field of the design element to be changed and select your favourite colour from the colour spectrum. A click with the <right> mouse button in the colour field restores the standard colour of the selected design element.
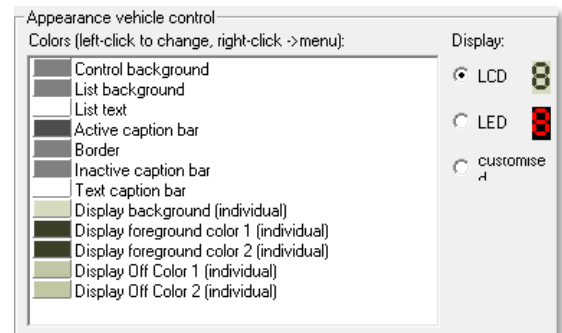
Fig. 3.70   List of design elements of a vehicle control

Very "innovative" colour schemes are certainly possible for displaying the vehicle controls, as shown in the example. However, please note that you want to control your model railway layout with **Win-Digipet** and must also recognise something during operation.

If your colour scheme proves to be unsuitable for everyday use, you can reset the colours of the vehicle controls to the default values as explained above.

Incidentally, the colour settings affect both the large and the small vehicle controls.
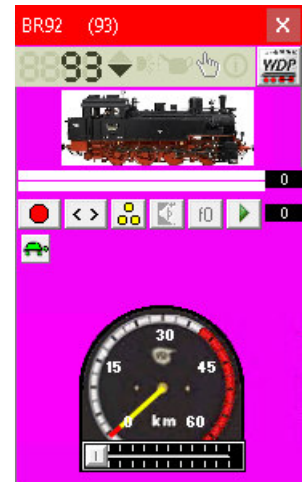
Fig. 3.71   Colour-coded vehicle control

3.12.3 Select menu style.

The layout of **Win-Digipet** can be set to 4 different versions here.

By default, the current Office 2003 style is set, which is also used for the example graphics in this programme documentation.

The choice of menu style depends on personal taste and has no influence on the various programme functions.
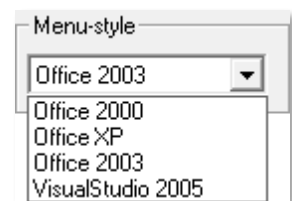
Fig. 3.72   Select menu style.

3.12.4 Background colour for vehicle display with series.

In the track diagram of **Win-Digipet** you can also place 3 vehicle display symbols with the same feedback contact number, as shown in Fig. 3.74.

Fig. 3.74 Placement of different types of a vehicle display in the track diagram editor

Fig. 3.73   A vehicle display consisting of three symbols shown with a grey background.

You can then set the background colour of these vehicle displays in the system settings.

The various representations of vehicle displays with a registered vehicle or train show the two Fig. 3.73 and Fig. 3.75

Fig. 3.75   A vehicle display consisting of three symbols shown with a white background.

With the single symbol, only the digital address of the vehicle is displayed and with the triple symbol, the model designation or train name that you have entered in the vehicle database or in the train composition.

3.12.5 Settings under "Text colour in track image"

Here There is a choice between black and white text colour. This allows the text to stand out from the basic colour of the track diagram, especially with the DB exampled symbols. The text background is also transparent for better visualisation.

3.13 Programme settings - Route sequences tab
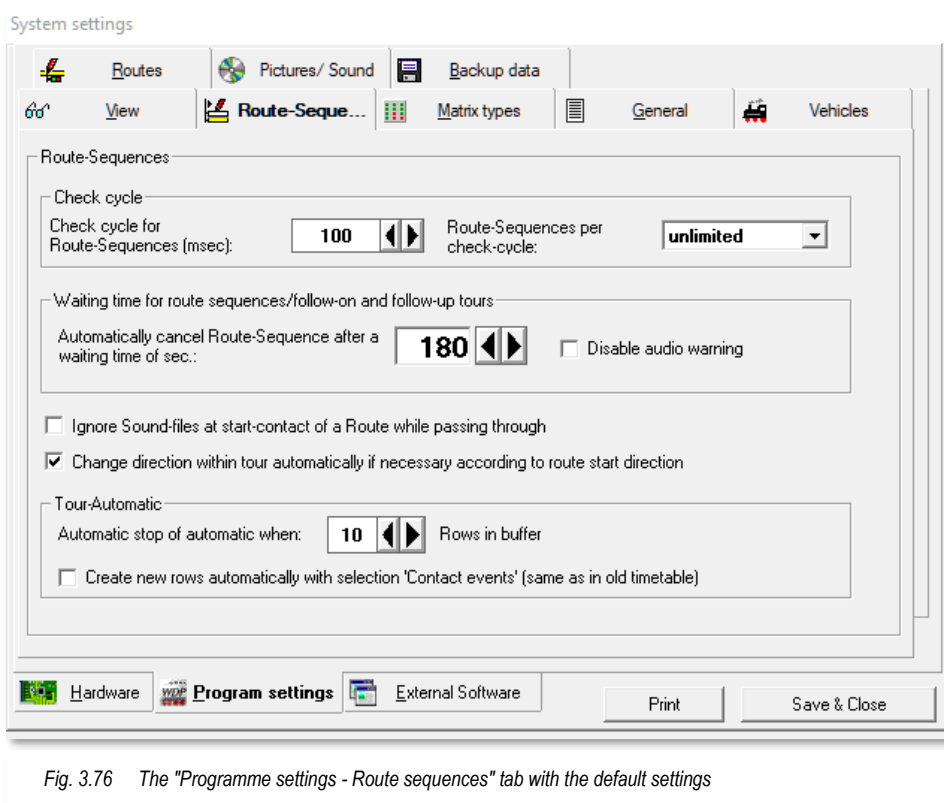
Fig. 3.76   The "Programme settings - Route sequences" tab with the default settings

3.13.1 Check cycle for route sequences

With you determine the frequency of the check as to whether the test contact in a route within a route sequence has already been reached. From this moment, the next route in the route sequence is then searched for and, if possible, already set.

The shorter this time value is set, the more frequently this check is carried out. However, this also increases the processor load. A value of 250 msec may well be better than the default value of 100 msec, but this always depends on the processor performance of the computer and the size of the system.

You can therefore only find the ideal value for your installation or computer system by experimenting.

3.13.2 Route sequences per check cycle

With this setting you can further restrict the test cycle in the route sequences and thus further reduce the load on **Win-Digipet** and your PC.

The default setting is "Unlimited", but you can also set the number of route sequences per test cycle from 1 to 100.

Here is a small example of these settings:

You have entered 25 route sequences in your automatic system and 5 route sequences are entered in the *"Route sequences per check cycle"* selection field, then the first 5 route sequences are queried and processed in the 1st cycle, after which the PC has time again for other tasks in **Win-Digipet** until the next 5 route sequences are queried and processed in the 2nd cycle, after the time defined in the check cycle has elapsed.

This setting can possibly further reduce the processor load on your computer, and you should test this yourself, if necessary, especially on a PC with low processor performance and little RAM.

3.13.3 Automatically end route sequences after a waiting time

With you specify the time after which a route sequence should be ended because it cannot be continued. Reasons for not continuing can be...

- 🚂 following route not yet released
- 🚂 Route blocked for the train (Attention! Correct the error in the route sequence!).

If the route sequence cannot be continued within the specified time, you will receive a warning message and a warning tone ("Ding-Dong"). This can also be switched off by ticking the "Disable audio warning" box.

The affected route sequence itself is handled differently...

For positioning and driving:

🚂 the route sequence is stopped

🚂 the route sequence in the "Tour Event Inspector" is marked with a red hourglass

🚂 the vehicle number remains "GREEN"

🚂 There is no warning by means of a message or sound

In an automatic journey without a tick next to "With route sequence/connecting journey run-down time":

the route sequence is stopped

the route sequence in the "Tour Event Inspector" is only highlighted in red

the vehicle number remains "GREEN"

There is no warning by means of a message or sound

In an automatic journey with a tick next to "With route sequence/follow-up timeout" without an alternative route:

the route sequence is stopped

the route sequence in the "Tour Event Inspector" is marked with a red sand clock

the vehicle number is changed from "GREEN" to "BLACK" or "WHITE"

A warning is issued in the form of a message or sound if not suppressed

You must remove the obstacle for the stopped route sequence, mark the route sequence in the tour event inspector and restart it with the button ▶ or you must continue driving the vehicle by manually setting a route or route sequence, whereby the route sequence is automatically deleted in the tour event inspector.

In a route with a tick next to "With route sequence/follow-up timeout" with an alternative route with a new route/route sequence using automatic routes, the...

the route sequence is stopped

the route sequence in the "Tour Event Inspector" is marked with a red sand clock

the vehicle number is changed from "GREEN" to "BLACK" or "WHITE"

A warning is issued in the form of a message or sound if not suppressed

the route sequence initially remains in the tour event inspector and is automatically deleted as soon as the automatic journey has set the new route.

A short waiting time can possibly make traffic flow more smoothly here if, as in the last case, the route sequence is ended, and you have entered another travel option at this contact in the automatic journey and this could be set by the automatic journey (this can be a route or new route sequence via another non-blocked route). In this case, the unfinished route sequence is also deleted in the route sequence inspector.

You set the default value of 300 seconds according to your requirements and the conditions of the existing model railway layout. You can only find the most favourable value for you by trial and error.

3.13.4 Ignore sound files at the start contact of a route while passing through

This function in **Win-Digipet has** been created for the sequence control of route sequences with profiles. For example, if you have entered a sound file (arrival announcement at the following platform) in a profile at the start contact of the entry route, you can now decide whether this announcement should be played at the entry signal when a train passes through in the route sequence.

3.13.5 Change direction within route sequence automatically if necessary to route start direction.

Ticking this option allows you to turn automatically within a route sequence. To do this, the programme evaluates the start direction of the next route to be set within a route sequence and turns the train if necessary.

3.13.6 Number of rows in the route buffer

Routes, that could not be set within an automatic journey at the specified time (timetable) are stored in a "route buffer".

If the buffer is full, the automatic journey stops automatically.

Under "Rows in buffer", select its size between 1 and 100 lines; the default is 10 lines.

3.13.7 New lines in an automatic journey

When this function is activated, new lines are created in an automatic journey with the "Contact events" option. This option is like the automatic timetable in earlier versions of **Win-Digipet**.

3.13.8 Recommended settings on the "Route sequences" tab.

The recommendation of the author of this programme documentation for the settings on this tab is to leave the default settings for the time being.

The default values for the test cycle can be adjusted after a few tests on older, no longer powerful computers.

You should activate the tick to ignore sound files when using profiles.

The option for turning within route sequences is aimed at advanced users, who can use it to realise route sequences for turning or shuttle trains, for example.

3.14 Programme settings - Matrix types tab
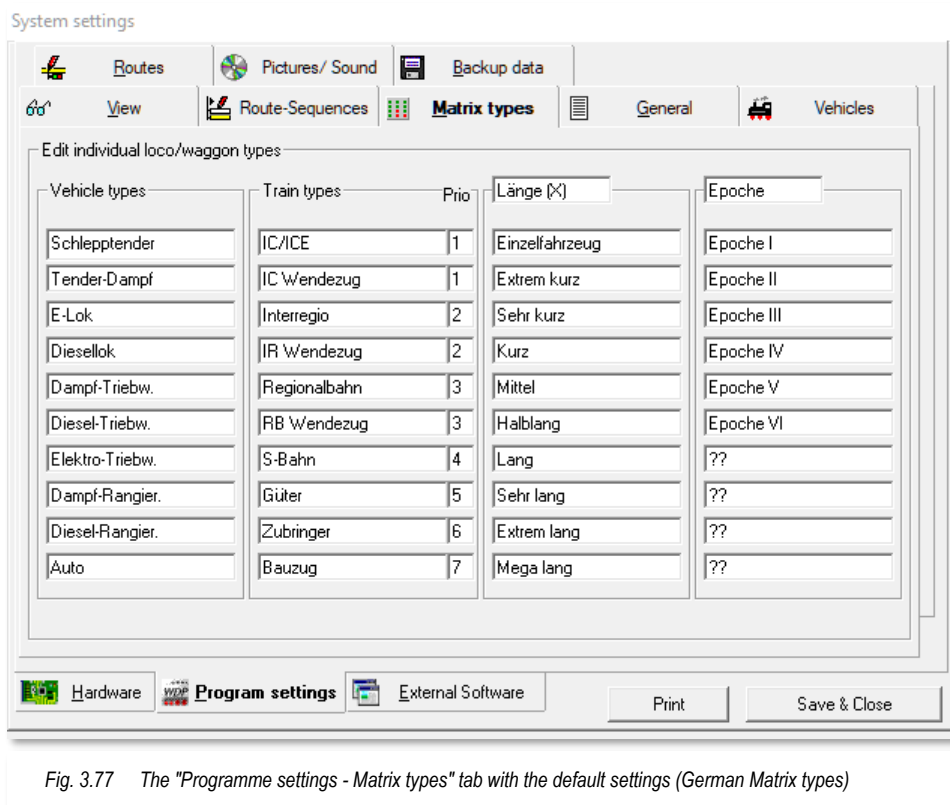
Fig. 3.77   The "Programme settings - Matrix types" tab with the default settings (German Matrix types)

The global settings, which vehicle/train types, length (X) and epochs you use, are made and saved here. You can overwrite the default texts as you wish. You will find the vehicle or train types and length (X) entered here in the matrix types in the vehicle database and in the routes editor for blocking routes for certain matrix types.

There you can block routes for certain vehicle or train types, but also for trains whose lengths exceed a maximum.

The column designations of the matrix types of Length (X) and Epoch can be changed according to your own requirements.

In the narrow *"Prio"* column , you can enter values from 1 to 10. This information is considered by the control system in an automatic journey. A train with a higher priority (lower value) will then be considered sooner than a train with a lower priority (higher value) for the same destination. If, for example, an ICE and a regional train are waiting on two station tracks to exit into the 1st block, the ICE would be given priority to exit if it has a higher priority.

3.15 External software tab
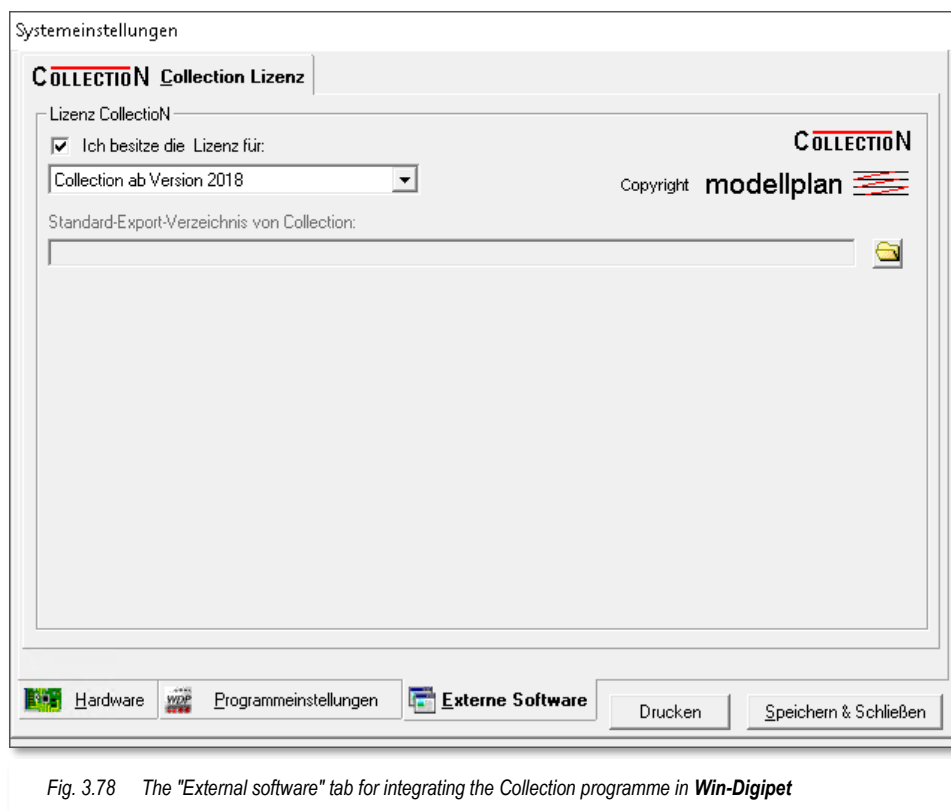
*Fig. 3.78   The "External software" tab for integrating the Collection programme in **Win-Digipet***

Win-Digipet allows you to display each vehicle with an image. To do this, it is necessary to enter the image data into your system.

Win-Digipet supplies the image data for the Märklin locomotives with catalogue numbers 26xx, 36xx, 37xx and 39xx, i.e. a database with **375** images. This database contains all the above-mentioned locomotives and all digital Märklin train sets as of 2005. The pictures of locomotives produced after 2005 are no longer supplied for licence reasons.

There are also various external programmes on the market. The "CollectioN" database, produced by the Goeppingen-based company modellplan, is currently widely used.

The current "CollectioN" version contains the figures and illustrations of all 00 and H0 locomotives, train sets, passenger and freight cars built by Märklin from 1935 to February of the current year of issue.

The "CollectioN" software from modellplan was reprogrammed in significant parts with its 2018 version. With this restructuring, access to the CollectioN databases by **Win-Digipet** was no longer possible. Access to previous versions up to CollectioN 2017 is not affected by this.

The functionality of CollectioN has been changed by the manufacturer to the effect that direct access to the databases is no longer possible. To use the contents of the CollectioN

database, it is necessary **to** export the individual data records for **Win-Digipet.** A file pair consisting of an XML and a PNG file is exported to a specified directory for each data set.

In the **Win-Digipet** system settings, you can select which version of CollectioN you are using. A distinction is made between the versions up to and including 2017 and the versions from 2018 onwards.

When using the 2018 version, you must use the directory selection to set the file path to the files exported from CollectioN.
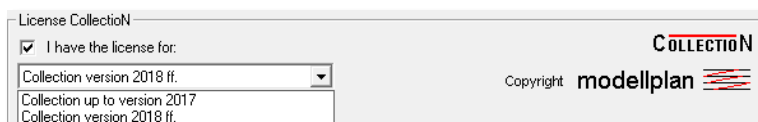
Fig. 3.79   Selecting the installed CollectioN version.

In the **Win-Digipet** vehicle database, you can then assign the exported files to your vehicles on the CollectioN tab.

3.15.1 Installing the "Collection" software

If you have purchased the "Collection" database from modellplan, insert it into your DVD-ROM drive and **first** carry out the installation according to the Collection programme documentation.

3.15.2 Integration of the "Collection" software

Now click Now click on the "Program settings - Collection licence" tab and tick yourself as a licensee in the top left-hand corner.

In the top field of this tab, select the subdirectory containing the Collection executable programme file (.exe) and click on it. In the line above the directory window, you will then find the directory name in black letters (e.g. C:\COLLECTION\MAERKLIN\HO).

If the message: "Collection (.EXE) not found!" appears, the attempt to access the Collection database has failed Please check the installation path of the Collection software in this case.

> Please note that with every annual update of the "Collection" software, a new directory is created with the corresponding year. This means that all new locomotives entered in the "Collection" tab must also be exported to **Win-Digipet.** The file path must then also be changed in the system settings.

In the lower field of this tab, select the exact directory path of the collection images. The selected directory name is then also displayed in black in the line above the directory window.

You can copy the image data from the Collection CD to your hard drive. You should create a corresponding subdirectory and save the image data there. The directory path of the right-hand window should of course then refer to this directory.

3.16 Print, save and exit system settings.

On each of the tabs described in the previous sections, you will find a button for printing the settings. This print function creates a document with graphics of the system settings tabs with the current settings.

You can print this document on paper or save it as a PDF document on your computer using an appropriate printer driver.

To exit the system settings, click on the **'Save & *close'*** button to return to the main **Win-Digipet** programme.

Version 2021
Premium Edition

Chapter 04

4. VEHICLE DATABASE

In this part of the programme your locomotives, wagons, road vehicles and trailers, functional models and other vehicles are recorded and managed. An unlimited number of vehicles can be recorded. This number includes a total of up to 999 vehicles on the layout. Of these, 250 can be managed as active locomotives or road vehicles i.e. you can run this number of vehicles on your model railway layout at the same time.

With the **Win-Digipet** control concept, the special functions f0 to f31 can also be recorded and switched[5] .

Win-Digipet provides you with an impressive overview of all your vehicle data, to which you can also assign a coloured image.

Self-driving vehicles are conveniently controlled in **Win-Digipet** by the so-called vehicle controls, which you can display on the screen in three different sizes ("Maxi", "Mini" or "Micro") depending on the requirements of operational practice.

Furthermore, you can always move and control up to a maximum of 20 vehicles at once directly via the quick control bar without having to open a vehicle control. Your settings are automatically synchronised "et vice versa" with any open vehicle control.
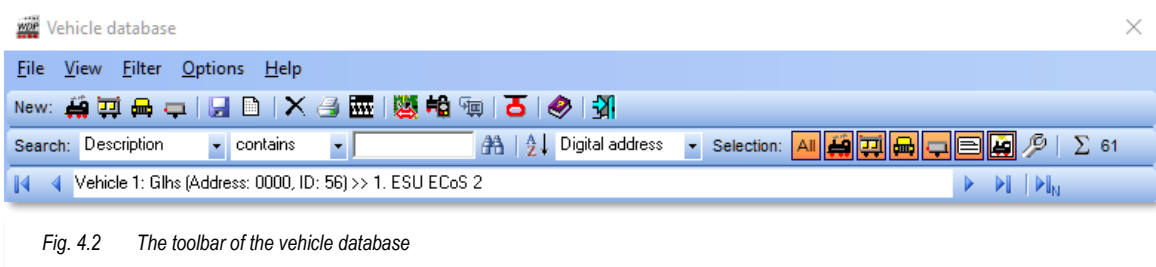
Fig. 4.2   The toolbar of the vehicle database

Fig. 4.1   A vehicle control in processing mode

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5 Depending on the digital system used and the track protocol.

4.1 Updating previous versions

When updating a previous version of **Win-Digipet,** all your recorded values are usually transferred. However, we recommend checking or re-entering the following settings for your vehicles.

- Decoder types
- Function (f0) and special functions (f1-f31)[5 above])
- First drive stage forwards/reverse
- Maximum forward/reverse speed
- Accelerating and braking
- Function decoder
- and the matrix types.

Not only locomotives and/or road vehicles and cranes are recorded in the vehicle database, but also individual wagons or trains (wagon groups) or trailers for road vehicles with and without function decoder(s).

Why is this necessary, you may ask?

Quite simply because you can not only drive over the layout with locomotives or road vehicles, but also in combinations of trains or, as an example, with vehicle trailers on lorries.

In the versions prior to **Win-Digipet** 2012, the entire train set, i.e. locomotive and attached carriages, was always recorded with a locomotive, and also controlled via the model railway layout. You can continue to do this if you never or only rarely want to rearrange your train sets. However, if you wanted to run a train (group of wagons) defined by you sometimes with the locomotive and sometimes with another locomotive, you would have to change the data.

You had to make these changes in the previous locomotive database if the locomotive type and/or wagon type and/or length (X) changed as a result.

If you want to run with such changing train compositions on your model railway layout, then since the last version you have the option of entering the locomotives and the individual carriages or trains (carriage groups) individually.

The definition of the train length via a matrix column labelled "Length (X)" loses its significance with the introduction of the real train length (LoB – length over buffer). For this reason, you can change the train length in the system settings (see section 3.14) you can also change the column designation.

When entering the data, you must distinguish which vehicle type (rail or road vehicle) is to be entered in the database. Then decide between creating the following vehicle types:

- of a single locomotive
- a train consisting of a locomotive and attached wagons.
- a single wagon or train (wagon group)
- a road vehicle
- a trailer for a road vehicle
- a crane

In the following descriptions, we will differentiate between railway vehicles and road vehicles and, in both groups, between individual wagons or a train (wagon group) or trailers for road vehicles.

To anticipate at this point, the cranes and other functional models are not recorded and managed as locomotives, but as wagons. For example, you can also use several cranes of the same type and control them independently of each other.

To open the vehicle database, click on the 🚂 icon in the main **Win-Digipet** toolbar. Once opened, the first vehicle in the vehicle database is displayed with its data.
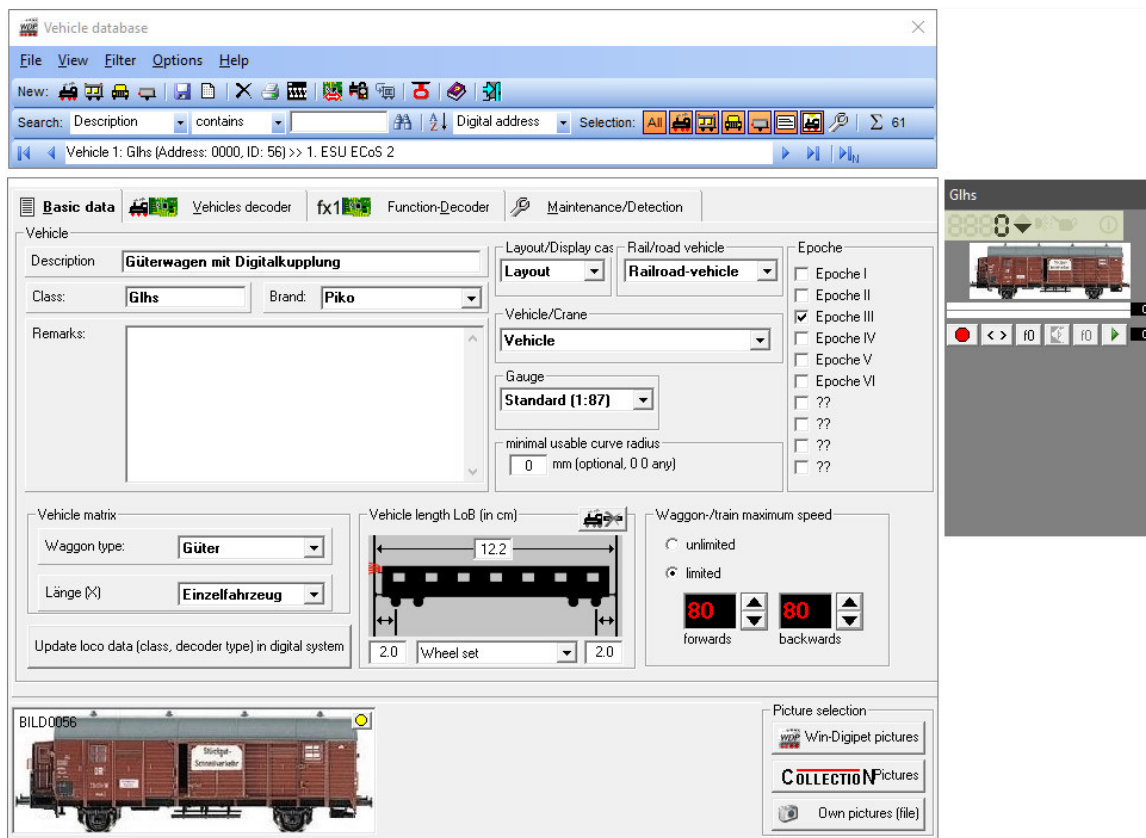
Fig. 4.3   1 the first call, the first data record of the vehicle database is displayed

We use the demonstration project (WDP2021) on the **Win-Digipet** data carrier for this programme manual. This makes it very easy for you to follow all processing statuses.

At the start of a <u>new</u> project, the vehicle database only contains two sample locomotives. However, if you no longer wish to use the sample data, simply overwrite it with the corresponding data for your vehicle. You can enter an unlimited number of locomotives in the vehicle database, but no more than 250 active vehicles.

4.2 Enter new vehicle.

Before you enter a new vehicle in **Win-Digipet**, you are faced with the basic question of the type of vehicle. **Win-Digipet offers** you the following categories here:

- New locomotive
- New wagon/train
- New (powered) road vehicle.
- New trailer for a road vehicle

In the toolbar of the vehicle database you will find the corresponding icons for the above-mentioned categories, or you can select the category of your vehicle from the file menu of the vehicle database.

Fig. 4.4   The vehicle categories

Click on the desired icon in the toolbar of the vehicle database and click on 'Yes' in the following confirmation prompt. Enter the data for your vehicle in the input mask that appears. We will create a new locomotive at this point and select the corresponding icon .
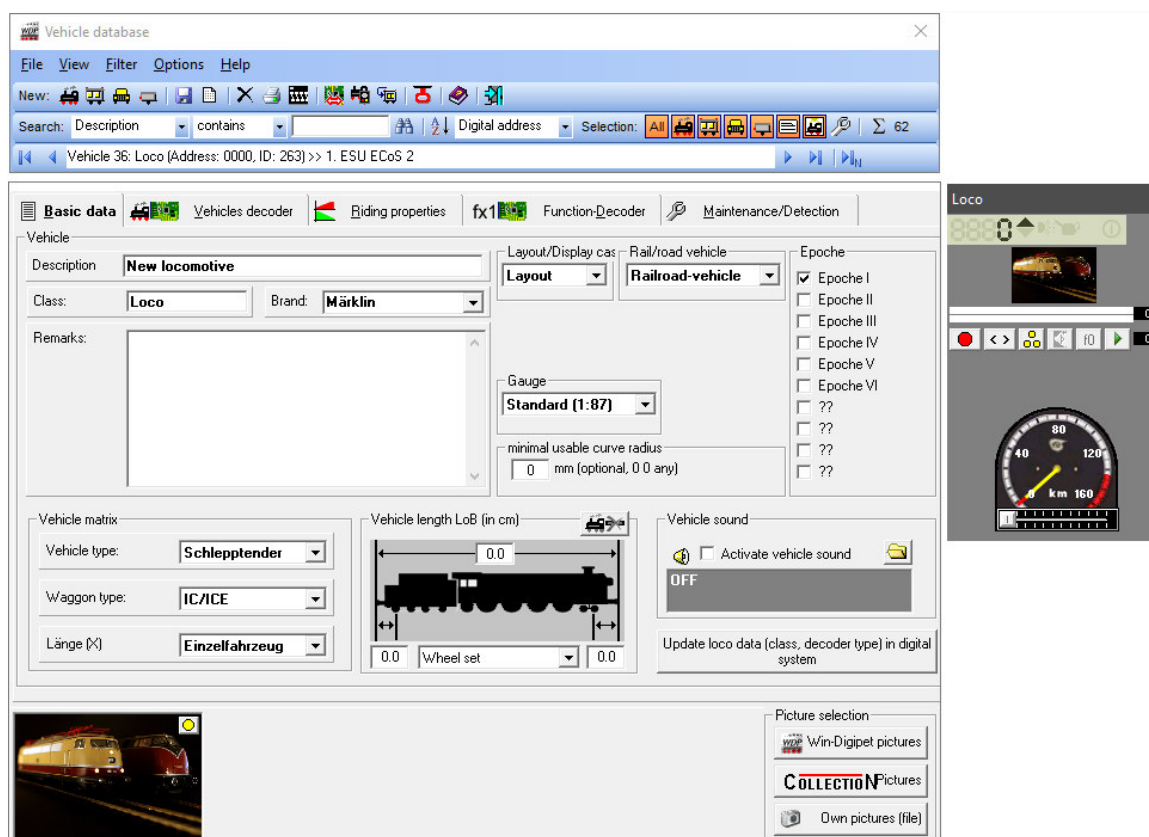
Fig. 4.5   A new data set for a locomotive

4.3 Define the image of the vehicle.

First of all, you should select an image that matches the vehicle to be recorded. The following options are available to you for this purpose...

- Win-Digipet pictures
- CollectioN pictures
- Own pictures.

4.3.1 Win-Digipet pictures and CollectioN pictures

Click in the vehicle database below on the button *'Win-Digipet pictures'*. A list of 375 Märklin digital locomotives of the 26xx, 36xx, 37xx and 39xx series up to the year 2005 will open.
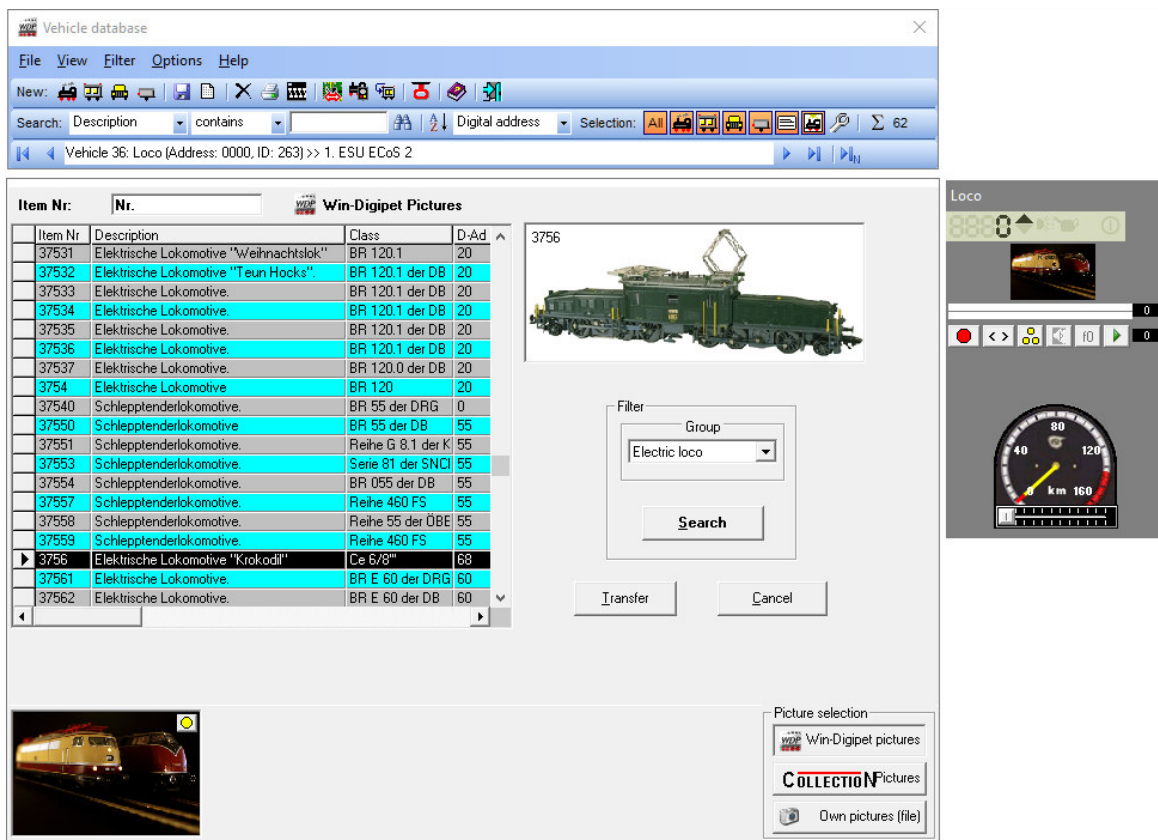
*Fig. 4.6   The list of locomotive images on the **Win-Digipet** data carrier*

You can refine this list to specific types of locomotives using 'Filter'. Select the desired locomotive type from the *"Group"* selection list and then click on *'Search'*.

You will immediately see the filtered group (here 'Electric loco') in the list window on the left.

Now click on the list line that describes your locomotive; you will see its image in the top right-hand corner. After clicking on *'Transfer'*, you will be asked whether the saved data for this locomotive should be transferred automatically.
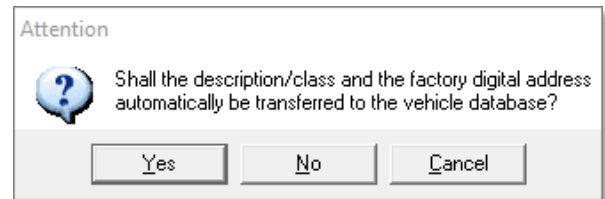
If you are using Märklin locomotives, you will usually click on *'Yes'* here and the data will

then be entered in the corresponding fields on the "*Basic data"* tab. However, the images can also be used for locomotives from other manufacturers; in this case, simply adapt the existing vehicle data to the properties of your locomotive.

Proceed in the same way for the images in the CollectioN database if you have previously installed the programme and image files. Please follow the instructions in the System settings chapter (3) of this documentation .

4.3.2   Own illustrations

If you already have If you already have your own images of vehicles, click on the "Own pictures" tab at the bottom right of the vehicle database (cf. Fig. 4.6) and then click on the '*Browse'* button on the left.

The "*Open"* window will appear, and you can search for the images of your locomotives already saved in the directories of your computer system.

These images can either be in BMP format or in the less memory-intensive JPG or PNG formats.

In addition, the format should preferably have a width to height ratio of 5:2 to prevent distortion in the image display. A size of 352x142 pixels with a maximum resolution of around 72 dpi has proven to be practicable at this point. The direction of travel of the vehicle should always be from left to right.

Once you have found a suitable image for the vehicle, click on the *'Open'* button, the selection window will close, and the selected image of the vehicle will be displayed.

In the "Image caption" field you can add an appropriate caption to the graphic and insert it into your vehicle database by clicking on the '*Apply'* button.

> **Win-Digipet** automatically enters "BILD xxxx"" in the "*Image caption"* field, whereby "xxxx" is replaced by the sequential ID number of the vehicle to be recorded in the database.

The picture caption is inserted in the top left of the picture and should not be too long. The Märklin article number is always inserted as the caption for all pictures supplied by **Win-Digipet.**

If you delete the default image caption, the text "No image" will later appear at the top left of the image.

4.3.3 Export of vehicle images to the Märklin Central Station 2

The images stored in the vehicle database in **Win-Digipet** can be easily transferred to the Märklin Central Station 2.

To do this, click on the following icon in the toolbar of the vehicle database 🖼. The link manager opens (see section 4.5.7) with the 'Image export for control centre' button. Click on this button to save the images of all the locomotives previously selected in the upper window as graphics in the file format "PNG" in the directory C:\WDIGIPET\PROJEKTE\<project name>\LOKBILDER\Export_CS2.

The images are transferred to the Märklin Central Station 2 using a USB stick. You must create a subfolder "Icons" in the main directory on this stick. Copy the images you have just created into this subfolder and insert the USB stick into the USB port on the back of the Märklin Central Station 2.

> ⚠ The main directory of the USB stick must not contain any firmware data for the Märklin Central Station 2 (except for the CS2 firmware version you are currently using).

Now switch to the <setup> menu on the Märklin Central Station 2 and select the <Update programme> menu item. The images are now transferred and are available in the Märklin Central Station 2.

In the picture selection of the Märklin Central Station 2 you will then see the pictures transferred to the respective vehicle and can now be assigned to the corresponding vehicle.

Fig. 4.8   Transferring3 from a USB stick to a Central Station 2 (screenshot shows the CS2 interface in German version)

4.3.4 Export of vehicle images to the Märklin Central Station 3 (plus)

The images stored in the vehicle database in **Win-Digipet** can be easily transferred to the Märklin Central Station 3 (plus).

To do this, click on the following icon in the toolbar of the vehicle database ![icon] . The link manager opens (see section 4.5.7) with the 'Image export for control centre' button. Click on this button to save the images of all the locomotives previously selected in the upper window in the directory
C:\WDIGIPET\PROJEKTE\<project name>\LOKBILDER\Export_CS3
as graphics in the file format "PNG".

The images are transferred to the Märklin Central Station 3 using an SD card. You must create a subfolder "CS3\lokicons" in the main directory. Copy the images you have just created into this subfolder and insert the SD card into the card slot on the back of the Märklin Central Station 3 (plus).

4.3.5 Export of locomotive pictures from Win-Digipet to ESU ECoS 2

The vehicle images stored in the vehicle database in **Win-Digipet** can also be transferred to the ESU ECoS 2.

To do this, click on the following icon in the toolbar of the vehicle database 🚂 . The link manager opens (see section 4.5.7) with the 'Export images for control centre' button. Click on this button to save the images of all the locomotives previously selected in the upper window in the directory C:\WDIGIPET\LOKBILDER\Export_ECoS2 as graphics in "BMP" format.

To transfer the images to the ESU ECoS 2, start your web browser and establish a connection to the ESU ECoS 2 (here e.g. http://192.168.10.2).
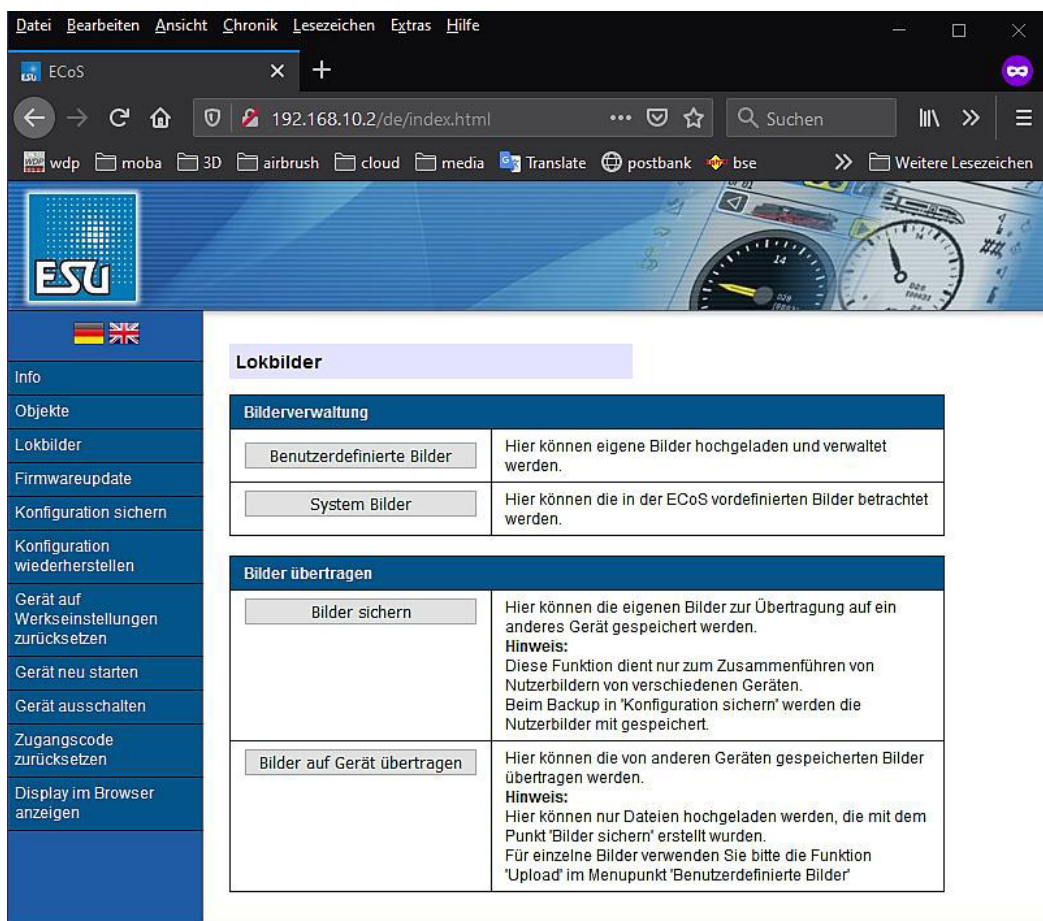
Fig. 4.9   4 web interface of an ECoS 2 digital centre (screenshot shown in German version)

You can then use the menu commands of the ECoS software to transfer the saved images from **Win-Digipet** to the ESU ECoS 2 individually. Further information can be found in the ECoS operating instructions supplement "User-defined locomotive pictures" on the manufacturer's website: www.esu.eu

4.4 Vehicle database - basic data tab

This tab essentially contains the basic data for a vehicle, in our case a locomotive. The image of the vehicle is also defined here, as already discussed in the previous section.

We use the 01 0525-4 data set from the enclosed demo project (WDP2021) for the explanations in the following sections.
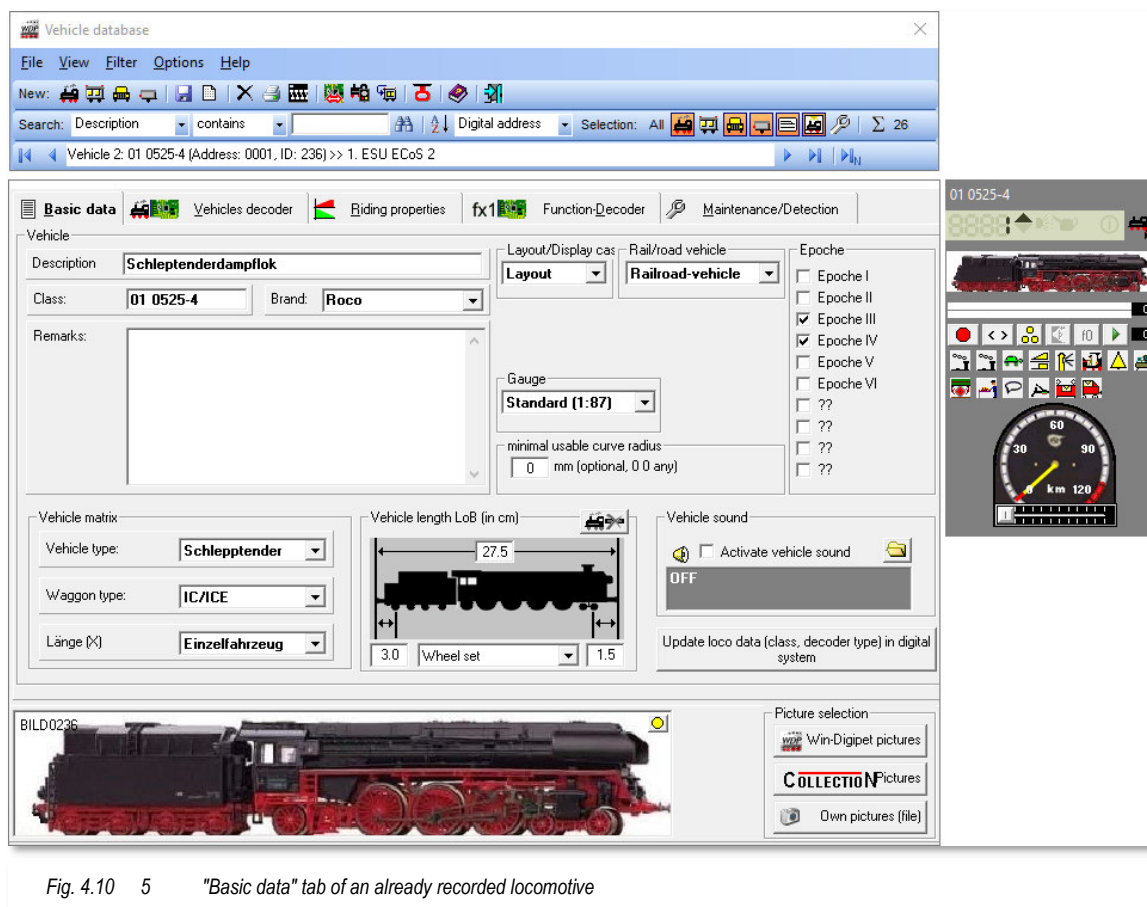
Fig. 4.10   5   "Basic data" tab of an already recorded locomotive

4.4.1 Description, model series, brand, remarks

In the "Description" field, enter a description of the vehicle. If necessary, this can be taken from the CollectioN database or from the descriptions of the images supplied in **Win-Digipet.**

However, you can also enter your own description, as in our example "Schlepptenderdampflok (the German word for steam locomotive with separate tender)". A maximum of 60 characters are permitted in this field.

The entry in the "Class" field is mandatory. A maximum of 9 characters are permitted here, e.g. 01 0525-4. If you have not made any entries in this field, **Win-Digipet** acknowledges this with a corresponding error message when the data record is saved.

Special characters that are not permitted and are used internally in the programme are automatically blocked.

> Enter the locomotive number printed on your model in the "Class" field, e.g. "01 0525-4".
>
> This has the following advantages:
>
> - 🚂 This locomotive number can be used to clearly identify the locomotive, even if it was not operated on the layout for a long time.
> - 🚂 the locomotive can be found quickly when sorting by series in the vehicle database.
> - 🚂 When selecting in the profile editor, the locomotive can also be found quickly

Always enter all your existing vehicles (including those in the display case) in the vehicle database so that you have the digital address immediately to hand later.

In the "Brand" input field enter the manufacturer of the locomotive. A maximum of 8 characters are possible. You can of course also select a make from the predefined manufacturer list using the right arrow button.

In the "Remarks" field, you can enter details and information about the vehicle, such as date of purchase and price, special features, etc.

Additional documentation can therefore be omitted under certain circumstances. Please note, however, that **Win-Digipet** does not provide a search function for the "Remarks" field.

4.4.2 Matrix types, vehicle length LoB and vehicle sound

In the left block of the graphic, you define the details for the so-called vehicle matrix. With the help of three list fields, you can determine which categories the vehicle belongs to in relation to the locomotive/wagon type or to which length category – Length (X). You have already defined the entries for the list fields in the system settings according to section 3.14 in the system settings. You can select the entries using the down arrows in the three list boxes.
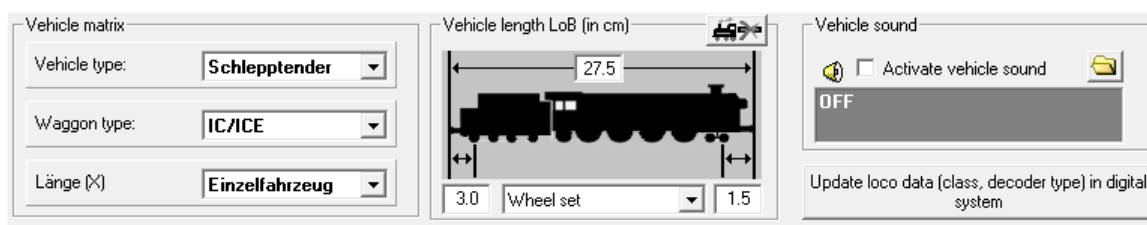
Fig. 4.11   Excerpt from the tab - Basic data with the settings for the vehicle matrix, vehicle length (LoB) and the vehicle sound.

However, you can also disregard the length category if you are using the true lengths in **Win-Digipet.** This matrix category is then available for other divisions and can also be renamed in the system settings.

In the "Vehicle length (in cm)" field enter the length of the individual vehicle (locomotive), the entire train set, the individual wagon, or the group of wagons. The vehicle length LoB (length over buffers) is measured here from buffer to buffer, i.e. from the start to the end of the vehicle. Also take the length of the coupling distance into account here, as the coupling distance is added to the individual measurements of length over buffers when trains are put together. This means that the overall dimension is greater than the sum of the individual dimensions.
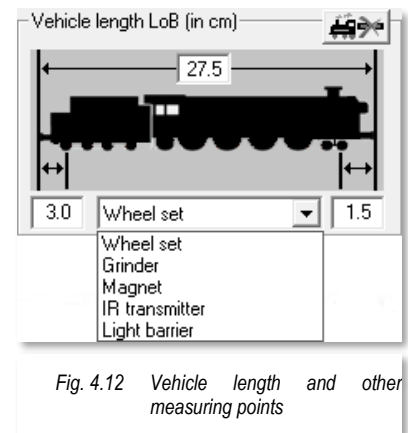
Fig. 4.12   Vehicle   length   and   other measuring points

> In the graphic with the stylised trailing tender locomotive, the direction of travel is always from left to right and you should also create your own pictures in this way.

For the other two value fields, you can select one of the options from a list. As standard for rail-bound vehicles, you will enter the distance between the buffer and the first live axle (wheelset) here. Another option here is the distance from the buffer (start or end of the vehicle).

- To the grinder
- To a magnet
- To an infrared transmitter

can be selected. The dimensions are taken into account later when the vehicles are stopped and are extremely important, for example, when reversing trains in reverse.

You should activate the button if the vehicle does not trigger any feedback. For example, this applies to wagons equipped with plastic axles. However, you should still enter the lengths of these vehicles here, as these are taken into account in the length calculations of the train or vehicle compositions.

> If you work with track occupancy detectors (current sensors) on your model railway layout, the first or last axle is not always capable of feedback (depending on the model).
>
> In this case, measure the distance from the buffer to the first live axle, both at the front and rear. Enter these distances in the fields.
>
> In case you are still running on Märklin metal track and have also realised the feedback signals with track occupancy detectors (current sensors).
>
> Here you must measure the distance from the buffer to the slider and enter the dimension for the front or rear. Here you also select the "Grinder" entry from the list shown in **Fehler! Verweisquelle konnte nicht gefunden werden.**Fig. 4.12.

In the right-hand part of the Fig. 4.11 you can define and activate a vehicle sound for the vehicle if desired. This function makes it possible, for example, to link a special sound directly to the relevant vehicle control.

Tick the "Activate vehicle sound" box and select the desired sound using the *'Browse'* button. The sound can be stored in any directory of your computer system.

If you have selected a sound, the sound button is activated immediately in the vehicle control and the sound can be switched on and off there.

You can remove a defined vehicle sound by removing the tick in the "Activate vehicle sound" field.

The bottom right button (see Fig. 4.11) is used for the individual transfer of a vehicle data record to a connected digital control centre that supports this function (e.g. ESU ECoS 2).

4.4.3 Layout/display case, gauge, curve radius and era

With the list selection "Layout/showcase" you can determine whether the locomotive belongs to the vehicles that you are currently using on your digital model railway.

Only the vehicles with the "Layout" identifier are included and activated in the main programme. In the introduction to this chapter, we explained that a total of 999 vehicles, 250 of which are locomotives, can have the "Layout" identifier, i.e. active, at the same time. These can be operated with the vehicle control.

The second list field defines whether it is a rail or road vehicle.
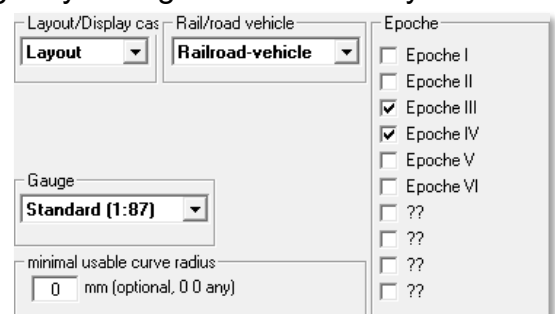
Fig. 4.13   6 from the Basic data tab with various settings.

In the "Gauge" list field list field, the default setting from the system settings (see section 3.7.5) is adopted. Only if you use N-gauge locomotives for narrow-gauge lines, for example, but otherwise use the H0 nominal size, change the default setting for individual locomotives accordingly here. This information will

be considered later when calibrating and when running the locomotive when calculating the driveway.

The field for the minimum curve radius field is virtually self-explanatory and is used for vehicles that have difficulties with tight track radii due to their design. In the track diagram editor, you can see below how you can assign corresponding radii to the track diagram symbols. A vehicle will only be able to run on a track if the curve radius is greater than or equal to the value entered here. The number "0" ignores the curve radius.

In the "Epochs" selection field, you have the option of assigning the vehicle to one or more corresponding epochs. You can use this function later in the automatic journey function. The last four categories are not pre-assigned. You can assign them as you wish in the system settings.

4.5 Vehicle database - Vehicle decoder tab
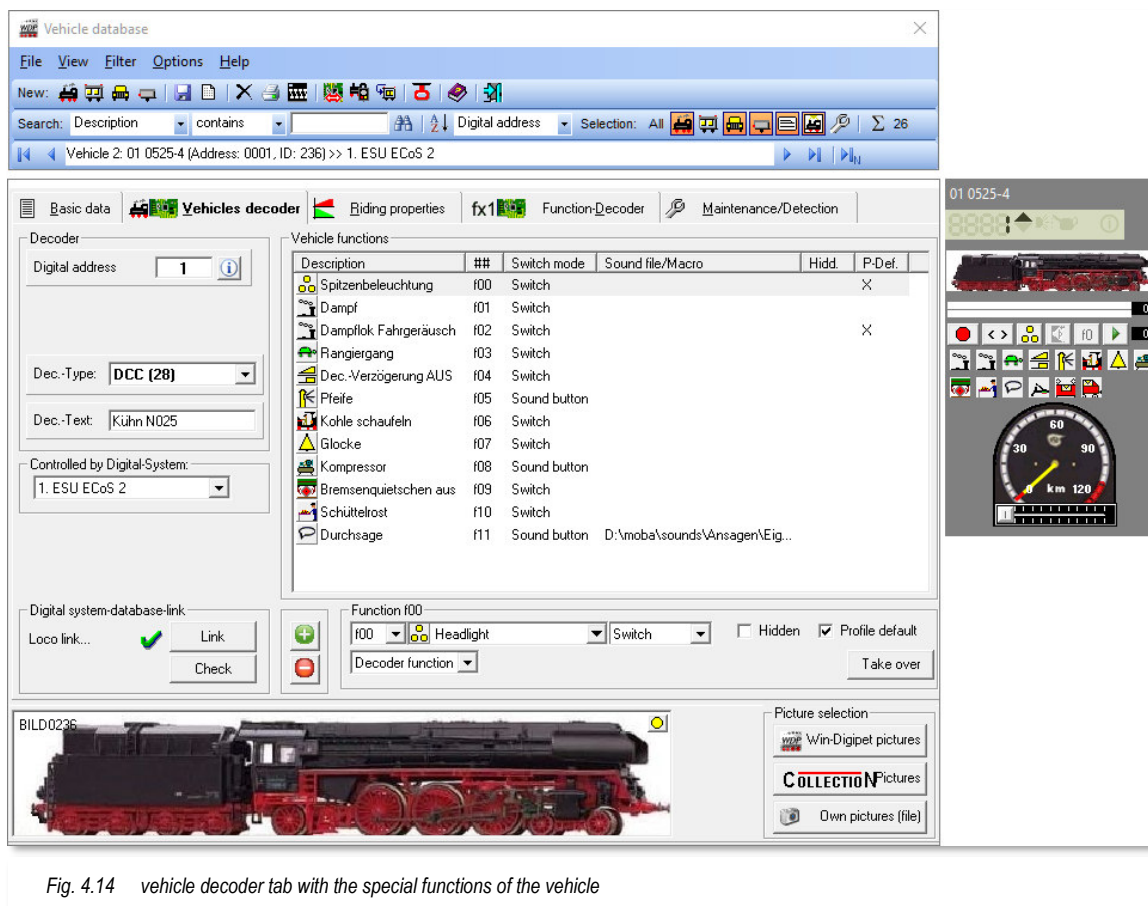
Fig. 4.14   vehicle decoder tab with the special functions of the vehicle

As the name of this tab suggests, all relevant settings for the decoder installed in the vehicle are entered here.

4.5.1 Digital address

In the "Digital address" input field enter the digital address of the vehicle to be detected. The digital address must be identical to the address programmed in the decoder. Decoders that support the mfx protocol are an exception here. However, we will ignore these at this point for the time being and deal with them in a later section.

When driving with **Win-Digipet**, the digital address is usually the vehicle number if you use the right-hand vehicle display shown in the following images. In the large vehicle displays, either the model designation from the vehicle database (cf. Fig. 4.15) or the train name (cf. Fig. 4.16) from the train composition programme section.
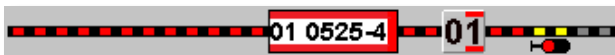
Fig. 4.15   Digital address and series in the train indicator

Fig. 4.16   Digital address and train name in the vehicle display

Here in the two example images, both details of the locomotive from the vehicle database data set shown above are displayed. To be able to display this in the track diagram, we have used a little trick by assigning the same feedback address to both vehicle displays.

You can find out which digital addresses you can use with your digital system in the description of your digital system or in chapter 3 of this programme documentation.

Click on the button 🛈 next to the "Digital address" field shows you a list of addresses already used in the digital system. In addition to the active vehicles ("System"), the list also shows you the digital addresses used for inactive vehicles ("Display case").
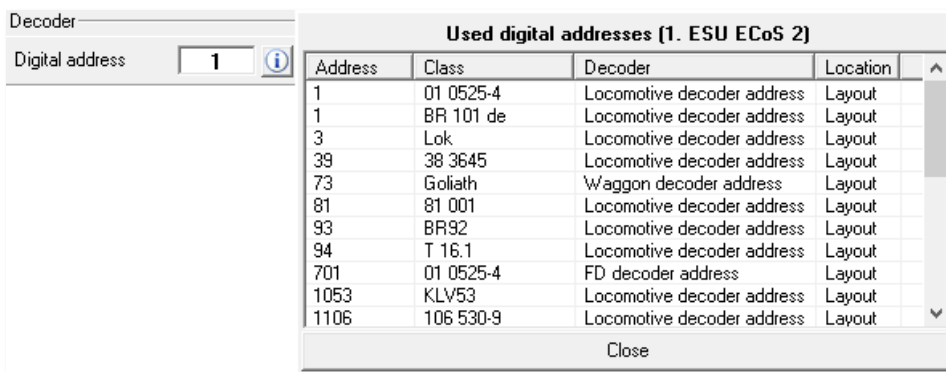
Fig. 4.17   7 of addresses already used in the digital system

	Note for users of the DCC protocol:
⚠	Fixed addresses are provided for controlling an analogue locomotive in the following systems: Märklin Digital: Address "80" Lenz Digital-Plus: Address "0".

	Important - only for the Märklin Digital System 6050/51:
⚠	You must not use digital address 68 as it is used internally in the programme.

4.5.2 Microswitch positions for Märklin locomotives

After entering the digital address, you can display the positions of the 8 microswitches on older Märklin locomotive decoders in a window.

If you click on the ▦ icon in the toolbar, the small "Vehicle decoder" window appears. If you click on the individual microswitches in this window, the digital address changes in the vehicle control and in the "Digital address" input field.

Invalid combinations of microswitch positions are indicated. Only valid addresses of the Märklin digital system (1 - 80) are displayed correctly. Addresses above 80 are ignored.
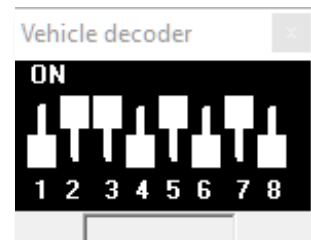
Fig. 4.18   8 the micro switches of a Märklin locomotive

4.5.3 Decoder type, decoder text, own description

The specification of the decoder type is necessary and important for all **Win-Digipet** functions.

Click on the arrow next to "Decoder type" to display a selection list. Select the decoder type (or the protocol type) which is installed in the vehicle to be recorded. The numbers in brackets indicate the number of possible speed steps for each type.

Which protocols you select depends on the digital control centre used. Please refer to the relevant operating instructions for information on the track protocols supported by your system.
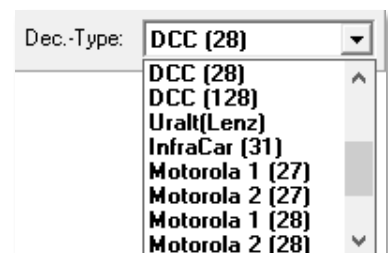
Fig. 4.19   9 of decoder types

The decoders that require the "ancient" Lenz protocol include the first DCC Märklin decoders and the decoders that used to be installed in Arnold locomotives. If you have selected this type of decoder, speed level 1 is also sent when turning. These decoders require speed level 1 when turning, otherwise there is no change of direction.

Important note for ESU, Märklin and Tams control centres!

If you use these command centres to control your locomotives, you have the option of selecting the decoder type in six (6) further versions at the end of the decoder list. This has become possible because these control centres in Motorola format can send not only 14, but 27 or 28 or 128 speed steps in mfx data format.

You can enter further information about the vehicle decoder used in the *"Decoder text"* memo field. For example, you could enter the type of designation of the decoder. You can also have the memo field described by the decoder programmer included in **Win-Digipet.**

You will receive a corresponding query in the programmer when programming a vehicle or function decoder.

4.5.4 Notes on decoder settings

Again, and again there are always questions about decoder settings, especially regarding the Motorola protocol. The following table shows a small list but does not claim to be exhaustive.

Decoder type	For use with:
Motorola 1 (14)	Old Märklin 6080, Delta decoder, Tams LD-W1 and old Uhlenbrock decoders
Motorola 2 (14)	Newer Uhlenbrock decoders, "PIC" decoders from Märklin (used e.g. in the more recent hobby locomotives)
Motorola 2 (27a)	Märklin 6090x decoders, old Tams LD-W-2 and Märklin mfx decoders that do not run under Motorola 2 (27b)
Motorola 2 (27) with the ESU ECoS	Märklin 6090x decoder, old Tams LD-W-2
Motorola 2 (27b)	Märklin mfx decoder, Kühn decoder, ESU Lokpilot/Loksound 2.x/3.x/4.x decoder
Motorola 2 (28) with the ESU ECoS	Märklin mfx decoder, Kühn decoder, ESU Lokpilot/Loksound 2.x/3.x/4.x decoder
MFX (128)	Märklin mfx decoder, locomotive sound mfx decoder from ESU
Motorola 1 FD	some Märklin models with FD decoder of older design e.g. dancing carriages

> When using the following digital control centres, the decoder settings for the Motorola protocol should be entered in the vehicle database according to the list in the table.
>
> - ESU ECoS,
> - ESU ECoS 2,
> - Central Station Reloaded,
> - Märklin Central Station,
> - Tams Red Box / Tams Master Control,
>
> If different settings are used, the wrong values are transferred when the data is transferred from the vehicle database to the above-mentioned control centres.

4.5.5 Digital system for controlling the vehicle.

When If several digital systems are used on your model railway layout, you can select the digital system that is to take over control of the recorded vehicle in the "Controlled by digital system" selection list using the down arrow. The prerequisite for this is that you have also integrated this digital system in the system settings.

4.5.6 Functions f1-f31, sound settings

In the vehicle database many additional functions can be controlled for each vehicle or function decoder. The prerequisite for this is that both the decoder and the digital control centre used support the control of the decoder functions. The additional functions f1 to f31 can be entered in **Win-Digipet.** The number of functions supported by your digital system can be found in the description of your digital system or on the **Win-Digipet** website.

When you create a new vehicle, the vehicle function (f0) - the headlights[6] - is already preselected. If this function (f0) is assigned elsewhere on your vehicle (e.g. with the Telex coupling), you must adapt this function accordingly.

After converting the vehicle database from older versions of **Win-Digipet** (version 9.2 and older), you must always reset the function (f0) and the special functions (f1 to f28). This ensures that the new pictograms are also displayed correctly in the vehicle controls.

The following image shows the "Vehicle decoder" tab with the vehicle functions again using the example of the steam locomotive (01 0525-4) already used in the previous sections. Here, 10 functions are available in addition to the "Centre lighting" function.

---

[6] Corresponds to the Head Lights on a Road Vehicle
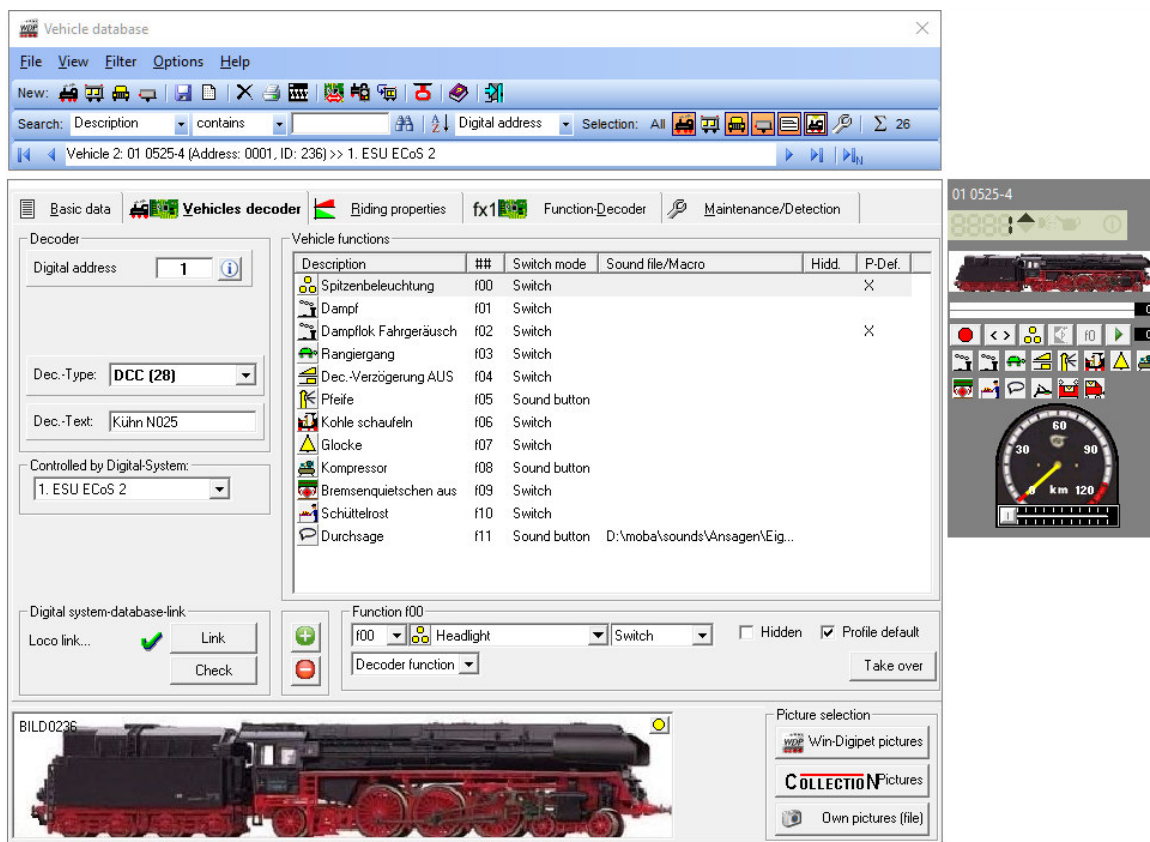
Fig. 4.20 A total of 11 vehicle functions have been assigned to the locomotive on the tab

The functions are added, edited, and also deleted from the vehicle using the dialogue boxes below the list. Let us look at the fields in detail.

If a new or additional function is to be added to the vehicle, click on the button , to remove a function from the list, click on the icon after you have selected the desired function in the list.
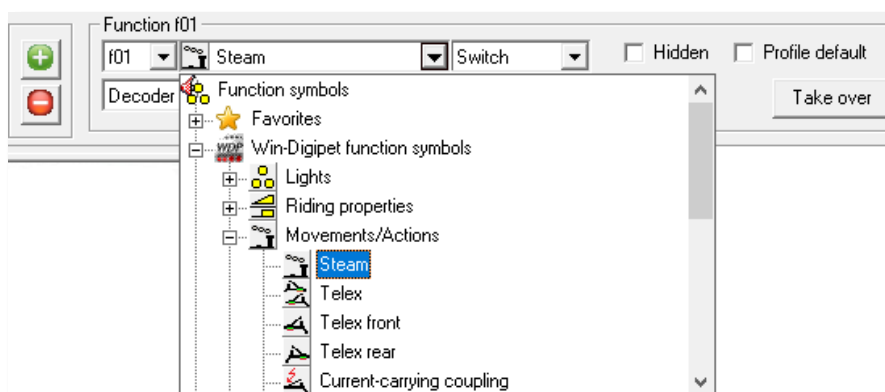
Fig. 4.21 Structured list for selecting the vehicle functions

The order in which you enter the functions does not matter, **Win-Digipet** will display them in ascending order in the list of vehicle functions.

The functions are selected from a structured list in which the individual symbols are sorted by topic group. Select a symbol by clicking on the desired entry. This is then entered in the selection field and transferred to the function list of your vehicle using the *'Apply'* button.

You can select a symbol directly by typing in the first letter. **Win-Digipet** then jumps to the next entry with the selected initial letter.

Function symbols that you use frequently for your vehicles can be saved as favourites in the "Function symbol editor" add-on program in the Start Centre. These favourite symbols then appear in the "Favourites" theme group.

In the graphic Fig. 4.21 you can see the function f01 marked as an example. In our case, this function f01 triggers the steam. The functions can be configured on any button, simply select between f01 and f31 from the list. However, it is important that the corresponding function in your decoder is also triggered via this number. This is known as function mapping. The function mapping is carried out in the vehicle decoder. If required, you can use the **Win-Digipet** decoder programmer for this.

Several function symbols for vehicles are defined as sound symbols or can be created as such using the function symbol editor. Such sound functions are labelled with an (S) in the vehicle database. These vehicle functions are considered when switching off (Switch off all vehicle sounds) via the toolbar of the main programme.

Several functions are already stored in the name and symbol list. However, you can also create your own pictograms with the function symbol editor and add them to the list. You can customise the labelling of the function by right-clicking on the text and selecting *'Rename'.*

You can also do the same by selecting the list entry with the left mouse button and then clicking the left mouse button again. After a short moment, the description is editable and can be accepted after the change by pressing the Enter key or clicking the left mouse button.

The original name can be restored by simply clicking on the original entry again in the selection list and then clicking on the *'Apply'* button.

You must confirm the changes by clicking on the *'Apply'* button. Only then will the details in the function list be updated and you can immediately test the newly created function in the vehicle control that appears.

4.5.6.1 Functional properties

With the help of the third selection list in this row, you define whether the function selection is a switch, a button or a sound button.

What does this distinction mean?

🚂 **Switch**
You can switch a function on with a switch and switch it off again with another click.

Fig. 4.22   Functional properties

🚂 **Push-button**
The function is only switched on with a push-button and is automatically switched off again after the time defined in the system settings. Automatic clutches, where the coil may burn out under continuous load, will thank you for the automatic switch-off.

🚂 **Sound button**
A sound button works in the same way as a push-button, only the time is defined shorter. This means that a sound function is not triggered a second time. The switch-on time for the sound button is also defined in the system settings.

🚂 **Customised push-button**
With the "Individual push-button" setting, you can freely determine the switching time of the function in steps of 0.1 seconds using the arrow buttons displayed.

4.5.6.2 Function types

By default, the programme selects that the entered function is a decoder function. **Win-Digipet** also offers you other options (see Fig. 4.23).

Fig. 4.23   Possible actions of a function button

🚂 **Decoder function**
The Function is executed by the decoder (e.g. whistle of a sound decoder, smoke generator etc.)

🚂 **Sound file**
Win-Digipet plays a sound file via a loudspeaker connected to the computer when the assigned function key is activated. This file can be stored in any accessible directory.

🚂 **Vehicle/train macro**
This selection allows you to execute programmed, recurring sequences in so-called macros using a function button.

4.5.6.3 Selecting a sound file

After you have specified that the function to be recorded is the playback of a sound file, you must determine the directory path to this file.

To do this, click on the symbol next to the grey selection field and then select a sound file in the window as is typical for Windows. Finish the input by clicking on the *'Take over'* button.
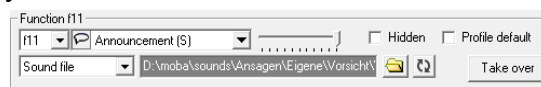
Fig. 4.24   10 a sound file

You can see the name and path of the entered sound file in the list field next to the vehicle functions and in the lower sound field highlighted in grey. If this path is very long, you may only see part of it, but if you hover over the field with the mouse, the entire path will be displayed.

The symbol allows you to repeat the playback process. After activating the symbol, the selected sound file is played once repeatedly. If you click the icon twice, you can play the file up to 999 times in succession by entering a numerical value.

4.5.6.4 Assignment of a vehicle macro to a function key

The selected function key can be configured so that a selection dialogue can be used to decide whether it is a single macro or an on/off macro.

To define an on/off macro, two macros must be assigned to the function button. When the function is switched on, the function key is displayed in green and when it is switched off, it is displayed in grey.
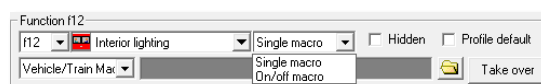
Fig. 4.25   11 of one or two macros to a function

The sequence is as follows:

- 🚋 Function button grey "off"→ Press to play macro-1→ Function button turns green
- 🚋 Function button green "on"→ Press to play macro-2→ Function button turns grey

4.5.6.5 Visualisation of active vehicle/train macros

The *"Play macro"* button in the vehicle control flashes as soon as a macro is played for the vehicle (here locomotive) or the train.

4.5.6.6 Options for function keys

Two further options can be added to a function (see Fig. 4.20). Firstly, functions can be "hidden". These are entered as a function in the list as described but are not displayed as a symbol in Vehicle Control when "Hidden" is selected. For example, you can suppress announcements programmed in the decoder for which you have no use.

Activating the "Profile default" option means that the selected function is activated by default when a profile is created in each line. In our example, the functions headlight and steam locomotive running noise have been assigned this option (cf. Fig. 4.20)
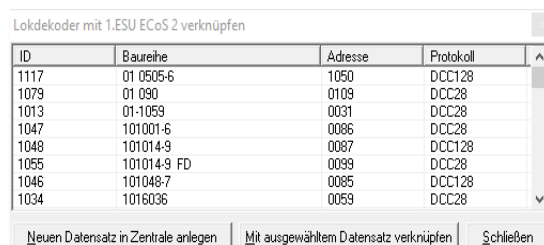
4.5.7 Linking individual vehicles to the control centre

Some digital systems which work internally with their own database for managing vehicles (e.g. ESU ECoS, ESU ECoS 2, Central Station Reloaded or Märklin Central Station)

require a link to the **Win-Digipet** vehicle database. When you create a new vehicle in the vehicle database and select one of the digital systems mentioned for control, **Win-Digipet** prompts you to create a link between the vehicle and the internal database of the digital control centre.

A red cross ✖ in the vehicle link area indicates that there is no link between the databases. Click on the '**Link'** button to create a link. If the link is correct, a green tick ✔ is displayed instead of the red cross. You can also use the **'Check'** button to check an existing link.

In the window that opens, all vehicles already entered in the centre's database are displayed (cf. Fig. 4.26).

Fig. 4.26   Existing database entries in the digital centre (Picture captured in German version)

Select the digital centre data record to be linked and then click on the **'Link to selected data record'** button.

If the vehicle has not yet been entered in the control centre database, create a new data record by clicking on the **'Create new data record in control centre'** button.

> Please pay particular attention to ensure that no duplicate data records are created in the database of the digital system. This will help you to avoid possible malfunctions.

4.6 Link mfx locomotive with Märklin Central Station 2 or 3

If you enter a new mfx locomotive in the vehicle database, select "MFX (128)" as the decoder type and "Märklin Central Station 2" or "Märklin Central Station 3" as the digital system, the *'Link'* button appears.

After clicking on this button, a new window like the one shown in Fig. 4.26 all vehicles entered in the Märklin Central Station are displayed in a new window similar to the list shown in Fig. 4.26.

Click on the *'Link to selected data record'* button to link the data records from **Win-Digipet** or the digital centre.

The successfully created link is immediately displayed with a green tick .

An existing link can also be removed again by clicking on the 'Delete' button.
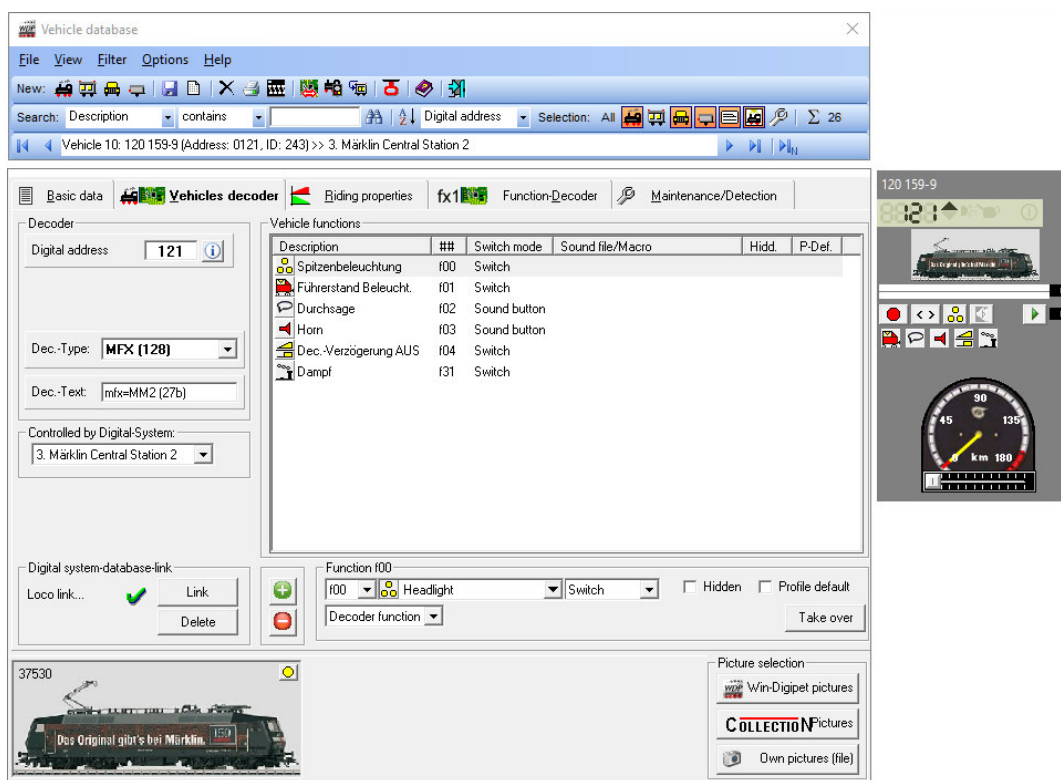
Fig. 4.27   Connecting12 mfx locomotive with the Märklin Central Station 2

> You can only control the mfx locomotive with **Win-Digipet** if the green tick is set.
>
> On the other hand, a link to a locomotive that is to be controlled with the Märklin Central Station 2 or Märklin Central Station 3 in Motorola or DCC format is not required.

> **Important!**
>
> The following applies to mfx locomotives:
>
> If you want to run under the mfx data format, then all locomotives with mfx locomotive decoders in which the mfx or Motorola format has not been deactivated in the decoder must be run under this format or all under Motorola.

4.7   Vehicle database – Riding properties tab
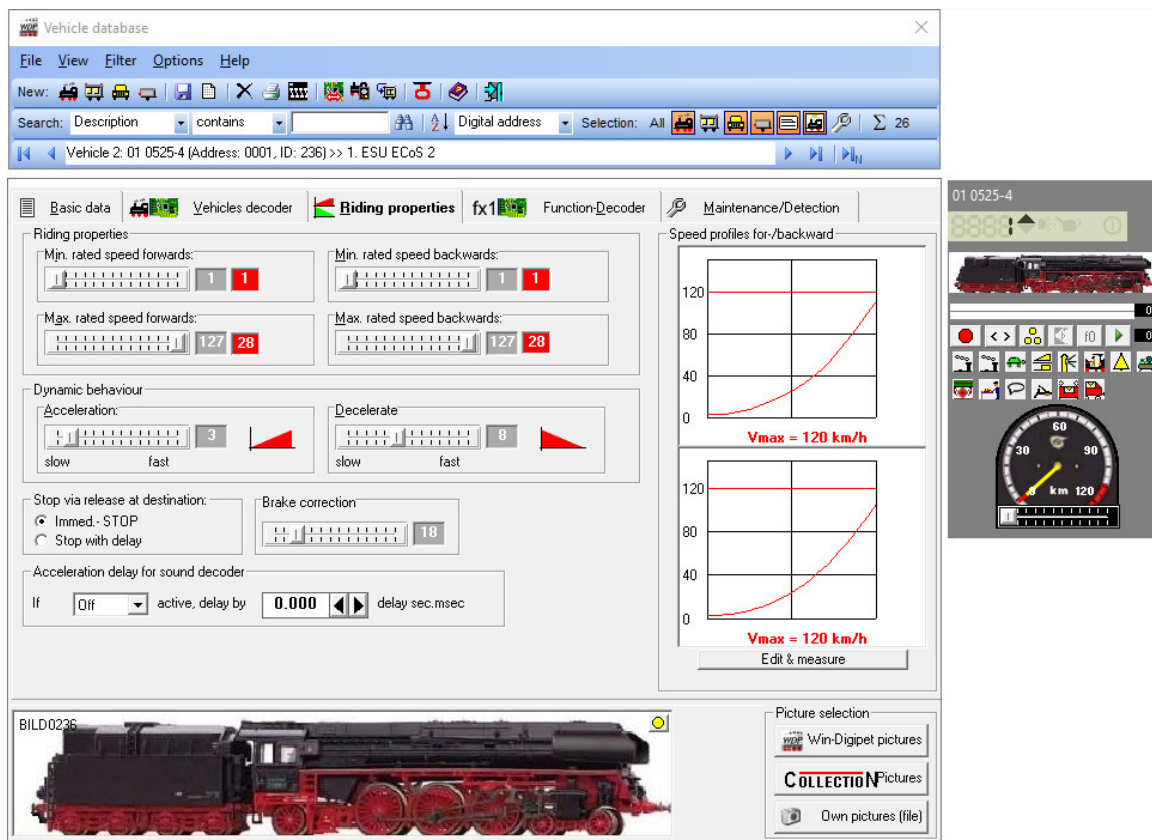
Fig. 4.28   13 Riding properties tab in the vehicle database

On the tab, the most important data on the driving behaviour of the recorded locomotive is entered. These are the settings for the slow and maximum speed levels forwards and backwards, as well as the dynamic behaviour of the locomotive during acceleration and braking.

> When updating from **Win-Digipet** version 8.x, the **old** values are adopted and can then be further customised by you for the reverse movements of the locomotive.
>
> An update from version 9.x to 2018.x does not require an adjustment.

All speed control ranges are divided into 128 steps. In contrast, the number of speed steps depends on the decoder type you have specified on the *"Vehicles decoder"* tab.

4.7.1 Riding properties

In the riding properties area, set the desired number of steps for the slow speed level and the maximum speed level set the number of steps required. You will then see the value of the corresponding speed level in the red field to the right. The control characteristics can be set separately for forwards and reverse travel.

In Fig. 4.29 shows the settings for a decoder with 28 speed steps, whereby the specifications for forwards and reverse travel are the same. As with all decoder types, the 28 speed steps are divided into 128 steps.
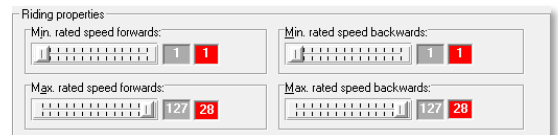
Fig. 4.29   Slider for defining the riding properties

At slow speed the selected number of steps is 1, at maximum speed level 127. To the right of the step numbers, you will see the speed levels 1 and 28. **Win-Digipet** calculates these numbers for the speed levels automatically and displays them as shown in the example.

With these settings, the entire control range of the locomotive is available to you, i.e. in this example, the locomotive would utilise all 28 speed levels.

The slow speed level determines the speed level at which the locomotive still moves and does not stop, e.g. "1" for smooth-running locomotives, "4" for slow-running locomotives.

As a rule, you should have entered the value "1" here so that the correct values can be determined when calibrating the locomotive with the 15-point measurement.

It is advisable to make the settings for the slow speed level and for the maximum speed in the decoder if possible. This gives you the entire control range over the maximum number of speed steps.

If the decoder does not offer sufficient setting options, you can use the sliders to set the desired values. Bear in mind that any limitation of the slow or maximum speed level restricts the maximum number of available speed levels.

4.7.2 Dynamic behaviour

The control characteristics in terms of acceleration and deceleration are also separate.

As shown in Fig. 4.30 the driving characteristics of the locomotive are set differently for starting and braking at . The locomotive should start up slowly, with a slight delay, and slow down again with a slight delay.
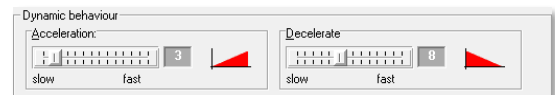
Fig. 4.30   Slider for influencing the dynamic driving behaviour

- 🚂 **Accelerate:** Use the acceleration factor to determine whether the locomotive accelerates slowly or quickly.

- 🚂 **Decelerate:** Use the braking factor to determine whether the locomotive brakes slowly or quickly. The values may differ from vehicle to vehicle. You should try out which values suit your personal taste.

These settings are independent of the decoder settings in the locomotive. With older Märklin locomotives, you should set the acceleration and braking delay of the locomotive decoder to approx. 60° of the rotary control (potentiometer) for acceleration and braking acceleration so that the locomotive can still coast with 2–3-wheel rotations after a stop command.

With modern locomotive decoders, you set the values for braking and acceleration via the so-called **CV values**[7] , whereby you should always set **very low values** here, especially for the braking deceleration. We recommend running tests on your model railway layout to find practical values for the above properties.

4.7.3 Stop via release at destination.

With the two radio buttons

- 🚂 "Immediate stop"
- 🚂 "Stop with delay".

determine the locomotive's driving behaviour at the destination.

If "Immediate stop" is selected, this locomotive is stopped immediately at the respective destination and any delay set in the vehicle database when "braking" is ignored.

However, this setting has no effect on any acceleration and braking delay set in the locomotive decoder. It is possible to switch off this function on some decoder types using a function button, for example. Please refer to the decoder manufacturer's operating instructions.

This setting is only important when driving with the start/finish function and not when driving with the profiles and with the automatic profile function.

4.7.4 Approach delay for sound decoder

If a sound decoder is used in the locomotive, the locomotive may start with a delay when the driving sound is switched on. In this case, sound procedures programmed by the decoder manufacturer are played (e.g. releasing the brake, starting up the units, etc.). This delay depends on the sound scheme of the decoder and can last several seconds. These procedures are not "visible" to **Win-Digipet, i.e.** the decoder does not inform you that the
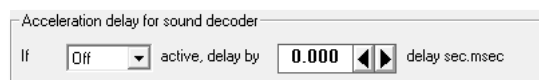
Fig. 4.31   Delayed start-up with sound function

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[7] CV = Configuration Variable

drive command generated by **Win-Digipet** is executed with a delay due to the sound procedure.

To keep the speed specification in **Win-Digipet** and the actual speed of the locomotive synchronised, the time in sec and milli sec that elapses between the first movement command and the actual movement of the locomotive must be entered here. This time must be determined manually. To do this, switch on the locomotive's running sound and set a run command on the speed controller. Now measure the time until the locomotive starts moving.

The function (fx) for the driving noise must also be entered.

This delay time before the locomotive starts moving is always considered by the programme if the sound function set here is activated.

4.7.5 Direction of travel

The "*Direction of travel"* field is only displayed if you have entered Märklin 6050/6051 as the digital system. In this field you specify whether the locomotive is currently travelling forwards or backwards. You only do this once after you have carried out a direction test with the locomotive. The programme then "remembers" the direction of travel permanently, displays it when you change direction and saves it when you switch off your model railway layout.

The direction of travel of the locomotive is displayed next to the digital address in the header of the vehicle control ("Maxi" or "Mini").

Black or red arrow pointing upwards = forwards, downwards = backwards.

If the display is incorrect, remove the locomotive with Märklin 6080 decoder from the track, give the command to change direction and put the locomotive back on the track. However, this is not necessary with other locomotive decoders, as the decoders receive and use absolute direction information.

4.8 Driving with speeds according to km/h

For driving with speeds in kilometres per hour, the locomotives must be calibrated. Driving according to kilometres per hour has been a milestone in the development of **Win-Digipet** since the 2012 version. Not only do different locomotives travel at the same speed with the same speed specification but driving by kilometres per hour (km/h) is also essential for precise stopping. **Win-Digipet** uses a so-called distance/time calculation to bring a vehicle to a standstill at defined stopping points.

The speed of the locomotives is determined very conveniently with **Win-Digipet...**

- with defined contact lengths on a measuring section
- with a roller dynamometer[8] with optical detection
- with optical detection of a light barrier-based system[9] when passing by

...whereby the determination is almost completely automatic.

Additional hardware is required for the two options mentioned below; please refer to the respective manufacturer's website for more information. Information on integrating these additional systems into **Win-Digipet can** also be found on the Internet at www.windigipet.de.

For each vehicle you should adjust the maximum speed according to the large prototype and set it in the **load-controlled** locomotive deco. With older Märklin locomotives, for example, this can be done using a small potentiometer on the vehicle decoder or with modern decoders using CV programming. **Win-Digipet** provides you with the decoder programmer as a programming tool for setting the decoders. Of course, you will also need to familiarise yourself with the operating instructions of the respective manufacturer to understand the various options for programming a decoder.

The maximum speed setting is very important, for example, because this is where you define the control range available to **Win-Digipet** for control (see section 4.7.1).

The maximum speed set in the decoder corresponds to the maximum speed level (e.g. 127). Our example locomotive (01 0525-4) in this chapter should run at a maximum speed of 120 km/h, so set the corresponding CV for the maximum speed to a value that corresponds to this speed. This means that **Win-Digipet** then has (almost) all the control levels of the locomotive decoder at its disposal.

The value for the starting speed (slow speed level) accordingly by programming a value at which the locomotive moves slowly over the track in speed level 1 without stuttering.

In the following sections you will learn how to determine the speeds.

---

[8] Roller dynamometers from various manufacturers are supported.

[9] Light barrier-based systems from various manufacturers are supported.

4.8.1 Speed measurements with the roller dynamometer

The speed determinations on a roller dynamometer in conjunction with a measuring system is very quick and convenient.

You should always start by determining and setting the maximum speed of the locomotive to be calibrated.

To do this, connect the roller test stand to the digital power supply of your system. Depending on the type, connect the measuring system to the USB port of the PC or the CAN bus of your Central Station 2.

> ⚠️ Please ensure that you establish the USB connection between the PC and the measuring system before you start **Win-Digipet.**
>
> Also, tools supplied by the manufacturer must not be opened in parallel with **Win-Digipet.**

You can determine the maximum speed of the locomotive very quickly in the main programme from the "<Vehicles><Speed measurement>" menu.

In the window that opens, select the desired entry using the *"Measurement type"* selection list. Please note that some entries (e.g. railSpeed) are only displayed after you have configured the corresponding digital system in the **Win-Digipet** system settings. In our example here, we have selected the MAX from the manufacturer M. Zeller.
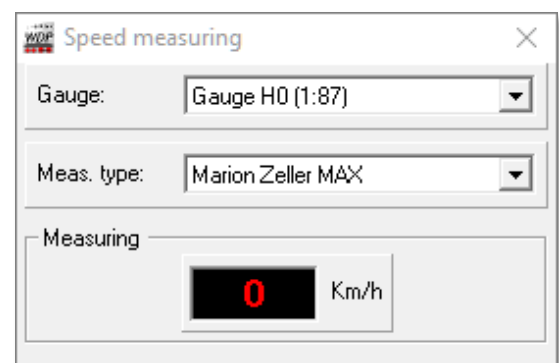
Fig. 4.32   14   window for determining the speed

Now place the locomotive on the roller test stand and set the speed controller of the digital control centre to the maximum position to determine the locomotive's maximum speed.

As a rule, the locomotive will run "faster than prototypical" and so you can, for example, change the maximum speed to a realistic value based on that of the large prototype by CV programming of the locomotive decoder.

The speeds of many German locomotives can be found, for example, on the website at www.lokomotive-online.com[10] . A value suitable for a model railway is the maximum speed of the prototype plus 0 to 10%. Using this method, you can first determine and set the maximum speeds for all locomotives on your model railway layout and display case.

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[10] No guarantee can be given for the continued existence of the link to a web address.

The example on the right in Fig. 4.33 shows the speed profile of a vehicle that has already been calibrated.

Vehicles that have not yet been calibrated contain a corresponding note at this point.

In the large and small vehicle controls, a vehicle that has not been calibrated is also indicated by a flashing information field in the status bar (cf. Fig. 4.34). Additional vehicle status information can be displayed in this information field. You can make this visible by moving the mouse over the flashing information field.

After setting the values for the dynamic behaviour of the vehicle (you can leave the other values unchanged when driving by km/h), click on the *'Edit & measure'* button on the *"Riding properties"* tab. A new *"Measure speed profile"* window will then appear.
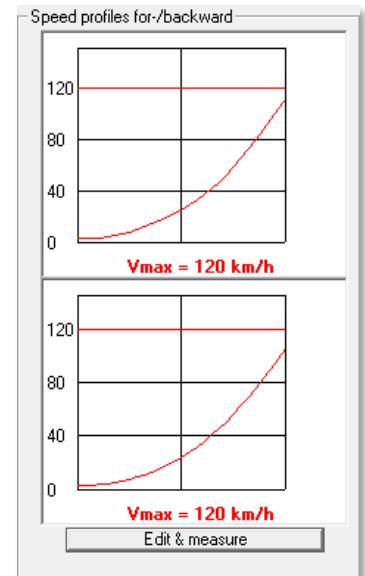
Fig. 4.33   Speed profile of a vehicle
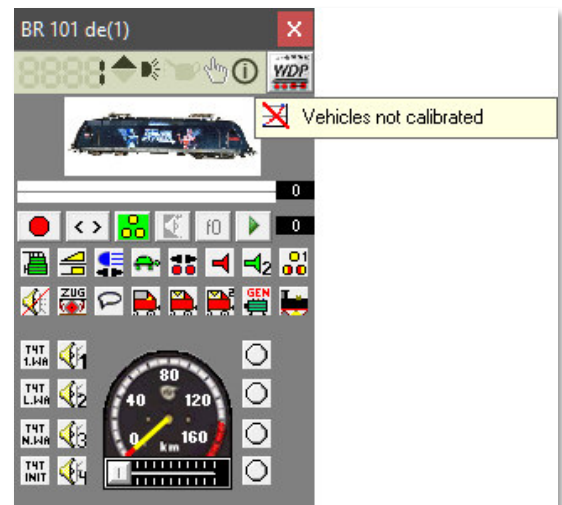
Fig. 4.34   No speed profile has yet been created for this locomotive.

🚂 Measuring system

By default, **Win-Digipet** shows the necessary settings for the distance/time measurement process on a defined measurement section on the tab. In this section, we want to measure the locomotive with a MAX measuring system. We select this using the selection list.

You will also be shown a few notes that are tailored to the selection of the measuring system. Follow these instructions to obtain the best possible usable result when calibrating the vehicles.

Please note that some entries (e.g. railSpeed) in the selection list are only displayed after you have configured the corresponding digital system in the **Win-Digipet** system settings.
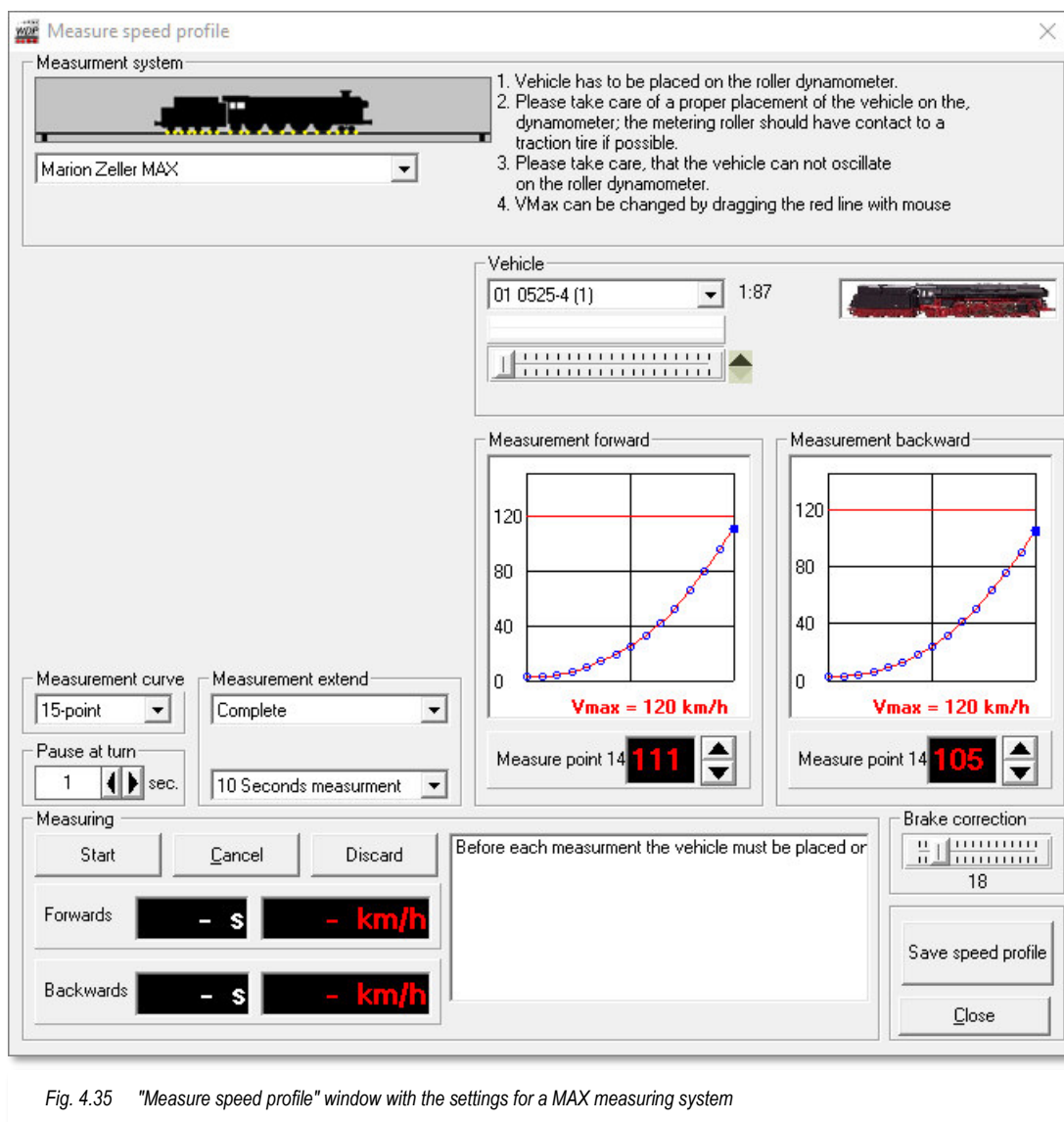
Fig. 4.35   "Measure speed profile" window with the settings for a MAX measuring system

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In the Vehicle area of the window, you will see an image of the vehicle as well as a speed controller that you can use to control the vehicle. With this speed controller, you have an alternative option to the method described above for determining the maximum speed. The values for the currently determined speed are displayed in the Measurement area of this window.

🚃 **Measurement curve shape**

In the Measurement curve shape area, you can choose between a measurement curve consisting of 3 or 15 measurement points. can be selected. Three or 15 speed levels are selected from the total number of possible speed levels (depending on the decoder) and the speed travelled in these speed levels is determined. The values between the individual measuring points are determined mathematically.

With the standard 3-point setting, the measurement is carried out with...

- 🚃 Measuring point 0 at the first speed level
- 🚃 Measuring point 1 with half the number of speeds and
- 🚃 Measuring point 2 with the highest number of speeds.

The variant with 15 points is certainly the more accurate measurement here, but it is not necessary. If you have programmed a linear speed characteristic curve in your decoder, the calculated values will correspond almost exactly to the real values.

The situation is different with an exponential characteristic curve; with this type of characteristic curve, the calculated values can deviate strongly from the actual speed values. Here you should favour the 15-point measurement.

🚃 **Measurement extend**

In the "Measurement curve" and "Measurement extend" selection fields you can choose between a complete measurement of all points (3 or 15) or a measurement of individual measuring points. For a single measurement, you can select individual or multiple points from a list (see Fig. 4.36) This selection list is displayed after the "*Single point*" setting. The points "0" and "14" are preselected by default but can of course be unchecked.
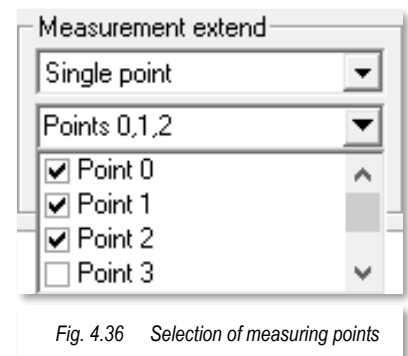
Fig. 4.36   Selection of measuring points

The single-point measurements are always useful
if you see "outliers" in the measurement curve and want to repeat this point after the measurement has been taken. This saves you time as you do not have to repeat the entire measurement.

> If you change the measurement curve shape, you must also reset the specifications for the measurement range. If you change from the 15-point measurement to the 3-point measurement, you will receive a warning about the risk of data loss.

Finally, in this block you can also set the measurement duration of the individual points to a value between 5 sec and 120 sec. The default value here is set to 10 sec.

🚂 Measurement forwards/backwards

The two Measurement forwards and Measurement backwards fields display the determined speed values in a graph. The graph displayed should correspond approximately to the speed characteristic curve set in the decoder. In Fig. 4.37 you can recognise a marking of the 1st measuring point. As the counting of the measuring points starts with the value 0, this is the second of 15 measuring points. In this example, values of 4 and 3 km/h were determined for travelling forwards and backwards.

The speed determined for the selected measuring point is displayed in the two small windows. You can change this value either with the up and down arrows or in the graphic by moving the measuring point with the mouse. However, as this significantly changes the driving behaviour of the vehicle, you should not use this option if possible.

This example also illustrates the advantage of a 15-point measurement compared to a 3-point measurement. Imagine a straight line between the 1st and 8th as well as the 8th and 15th measuring points. You will recognise that the values measured remain below this calculated line. This means that the vehicle is travelling slower than the estimate expects. This circumstance will become unpleasantly noticeable at the latest when stopping with pinpoint accuracy in the higher functions of **Win-Digipet**, as no correct results can be produced with incorrect input parameters.
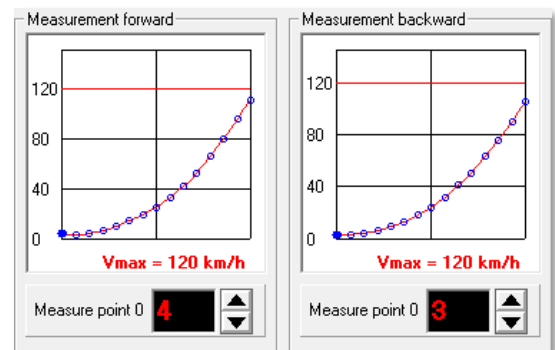
Fig. 4.37   A speed profile with a non-linear characteristic curve

A red line, here at 120 km/h, indicates the maximum permitted speed (V_{max}) for this vehicle. You can drag the lines downwards from the top edge of the graphics using the left mouse button. The values can of course be different for travelling forwards and backwards.

In the example here, the value determined as Vmax is slightly below the permitted maximum speed. This means that the entire control range is available to you for controlling this vehicle.

If you limit the Vmax for reversing to 60 km/h with the help of the red line, all speed levels above the line, in this case a good third, would not be available to you for driving this locomotive.

By right-clicking on the graphics with the characteristic curves, you can either save them as an image file in PNG format[11] or as a text file in CSV format.[12]

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[11] PNG - Portable Network Graphics

[12] CSV - Comma Separated Values

⛟ Measurement

To start the speed measurements click on the **'Start'** button and the locomotive will start accelerating up to the speed level of the first or the set measuring point.
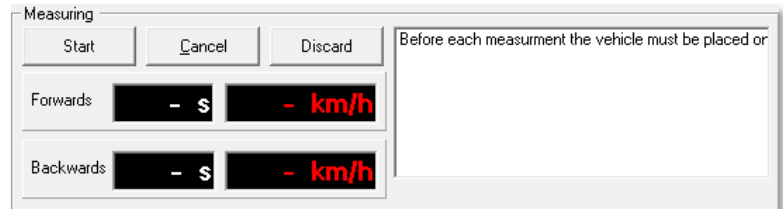
Fig. 4.38   The values determined during a measurement are displayed here

You can use the **'Cancel'** and **'Discard'** buttons to interrupt an ongoing measurement or discard the values of a measurement and start again.

The time and speed values determined for each point are displayed here in the fields provided. All events during the measurement are entered to the second in the small log window and can be read again using the scroll bar on the right.

In the measurement procedure explained here in the example (roller test bench), the locomotive will first determine all (selected) measurement points when travelling forwards. Only then will the locomotive turn round and carry out the same series of measurements in reverse.

This is regulated differently for distance/time measurement over a measuring section or when travelling past a light barrier. In this case, the vehicle is turned after each crossing of the measuring range and the values for travelling forwards and backwards are determined alternately.

⛟ Brake correction

The brake correction is used to create a balance between programme settings and the physical conditions of a locomotive and to compensate for delays caused by the decoder or the physical mass of the locomotive.

However, you should primarily try to eliminate the problems at their source. For example, braking delays programmed in the decoder should be switched off or reduced to a minimum.

However, this cannot be achieved with mechanical deceleration caused by a flywheel mass, for example. This is where the brake correction comes in, making the "braking ramp" steeper, depending on the level of the set value. As is so often the case, the correct value can only be found by trial and error.

> ⚠ The brake correction should only be used **after** the decoder has been set correctly and the vehicle **has been** calibrated!

After successfully completing a measurement you can save the data in the vehicle database by clicking on the **'Save speed profile'** button.

4.8.2 Speed measurements on a measuring track

As an alternative you can also carry out the measurements on a defined measuring section of your model railway layout. This type of measurement is the closest, as it can be carried out without the use of additional measuring equipment such as a roller dynamometer, but only with the existing feedback contacts.

The measuring range should be approximately 150 cm long and as straight as possible for railway vehicles in nominal size H0. When measuring road vehicles, a track length of 25 cm has proven to be suitable. For other track gauges, select appropriate measuring section lengths to achieve good results.

The maximum speed of the locomotive can be determined using the dialogue box from the "<Vehicles><Speed measurement>" menu, as described in the previous section.

In the window that opens, select the "*Way/time* measurement" setting and enter the feedback contacts for the start and finish and the measured length of the measurement distance.

Now place the locomotive on the track and set the speed controller of the digital control centre or the vehicle control unit to the maximum position to determine the maximum speed of the locomotive.

As a rule, the locomotive will run "faster than desired" and so you can change the maximum speed to a realistic value based on that of the prototype using CV programming of the locomotive decoder, for example.

Alternatively, you can also use the cruise control on the Speed measurement tab to determine the maximum speed. The procedure corresponds to that described in section 4.8.1.

Click as described in section 4.8.1 click on the **'Edit & measure'** button on the *"Riding properties"* tab. A new *"Measure speed profile"* window appears.
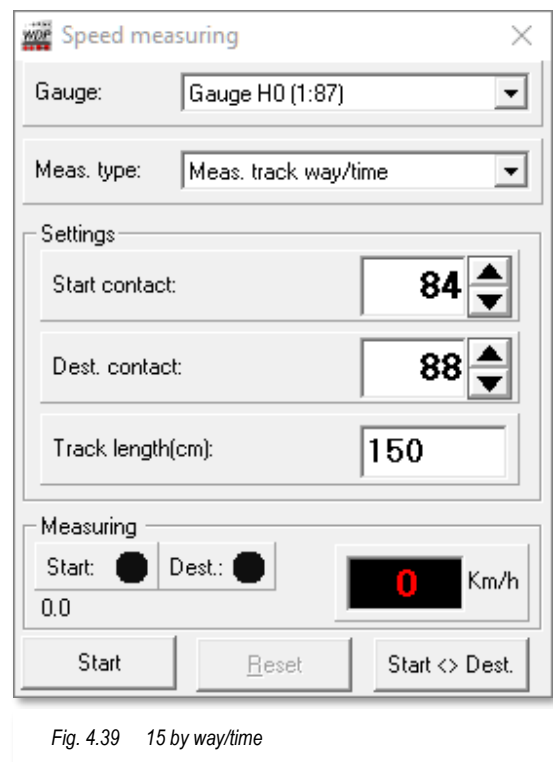
Fig. 4.39   15 by way/time
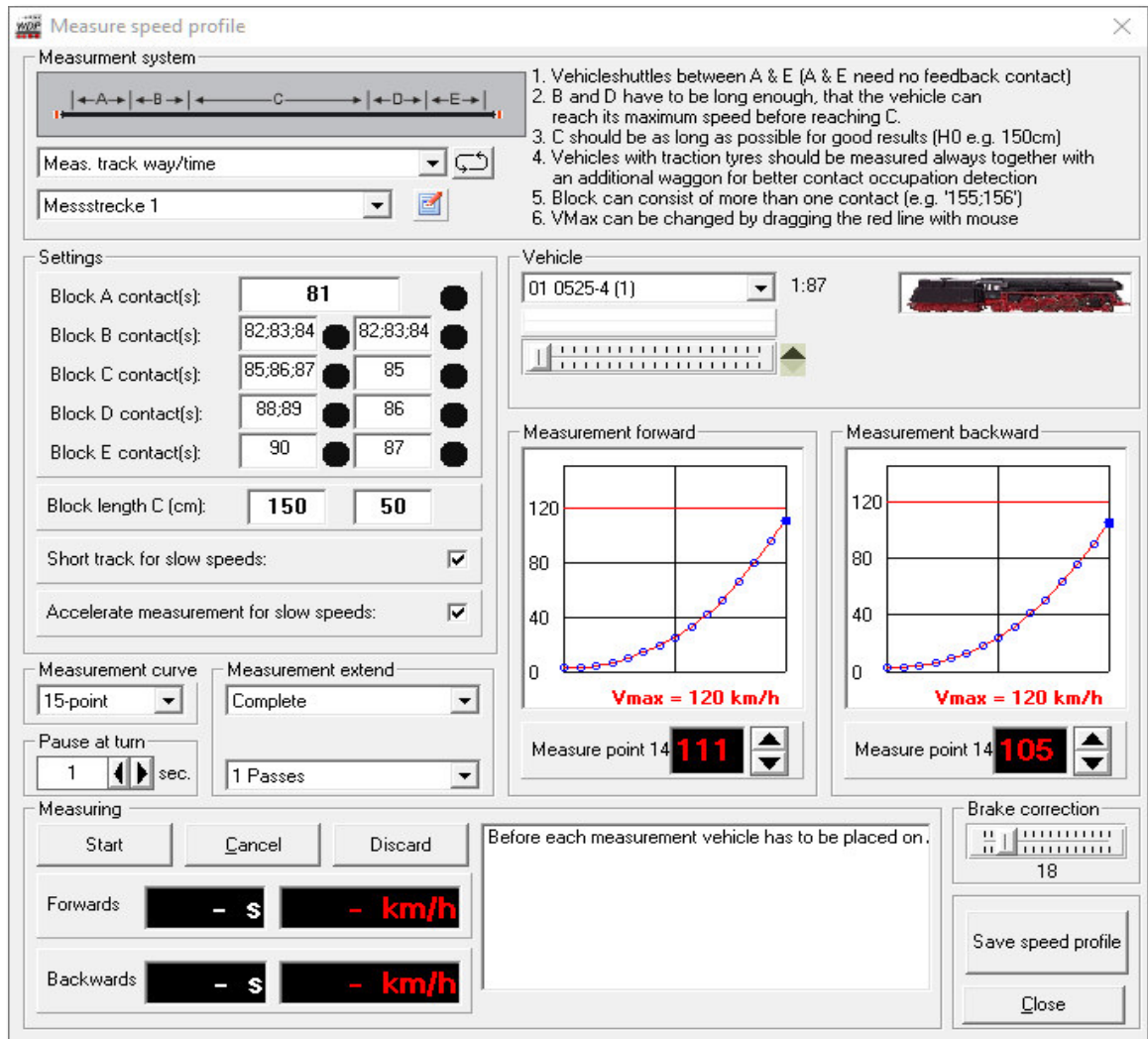
Fig. 4.40   16 "Measure speed profile" window with the settings for the way/time calculation

🚃 **Measuring system**

By default, Win-**Digipet displays** the necessary settings for the distance/time measurement process on a defined measurement section on the tab.

In the top left of this window, you will see a sketched representation of a measuring section consisting of five sections. There are some important notes to the right.

These sections must always be equipped with feedback contact sections. This is the only way to calculate the speed according to distance and time. Sections A (start point) and E (finish point) are an exception to this rule. Feedback is not necessary in these sections.
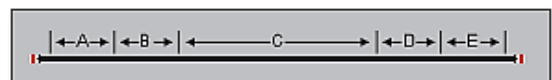
Fig. 4.41   The sketched representation of a measuring section

The measuring section in the form of a closed circuit is a special case. In this case, sections A and E are connected to each other and, if necessary, connected to the same feedback contact. To activate the circular section, press the button ⟳.

The locomotive will travel forwards and backwards at maximum speed on the defined measuring section; you should take this into account when selecting the measuring section.

Sections B and D are used to accelerate and decelerate the locomotive and must be long enough to allow the locomotive to reach maximum speed from a standstill before reaching measuring section C.

The actual measuring section C should be as straight as possible and not on an incline, so that there can be no differences, as with an ascent and descent.

As a rule, the individual sections will not consist of just one feedback contact. Several contact numbers can be entered in the configuration window, each separated by a semicolon.

In the example (cf. Fig. 4.42), the entire route consists of...

- the starting point A with the FB-N° 81 (optional)

- the acceleration section B with FB-N° 82, 83 and 84

- the actual measuring section C with the FB-N° 85, 86 and 87

- the deceleration section D with FB-N° 88 and 89 and

- the destination points E with the FB-N° 90 (optional)

...with a measuring section length C of 150 cm.

Fig. 4.42   Distribution of the feedback contacts on a measuring section
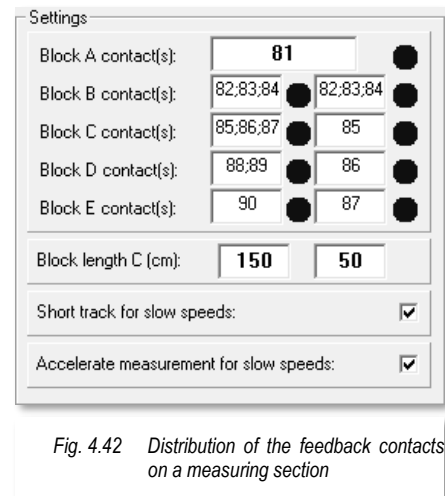
Now place the locomotive on the track at starting point A in such a way that the locomotive can also travel forwards over the measuring section when travelling forwards on the control centre. It does not matter which direction of travel is currently set on the control centre, as **Win-Digipet** will automatically change direction for you.

Select the 3-point measurement with single-point measurement for point 2, which is the highest speed level for the locomotive, and then click on *'**Start**'*. If the locomotive's direction of travel is now set to reverse, the programme will change this and accelerate the locomotive to the highest speed level.

The measurements are carried out as follows:

The locomotive is accelerated to the maximum number of speed steps. When route B is reached, the measurement is armed, measurement starts when route C is reached and ends when deceleration route D is reached. The locomotive is braked to half the number of speed steps when it reaches deceleration section D and is only stopped at destination point E when deceleration section D is also completely free again. Now the reversing command for the reverse journey is given and then the locomotive accelerates back to the highest speed level and the "game" starts again back to the starting point of the measurement.

When route D is reached, the measurement is armed, measurement starts when route C is reached and ends when deceleration route B is reached. The locomotive is braked to half the number of speed steps and only stopped at destination point A when deceleration section B is also completely free again. The locomotive is now commanded to turn, and the 3-point curve is calculated and displayed.

All other settings correspond to the settings described in section 4.8.1 and will therefore not be explained again here.

A 15-point measurement over the measuring section will take some time, as the locomotive really "crawls" in the lower speed steps.

If you own many locomotives, you should consider using alternative measurement methods, such as the roller test benches described above or a light barrier.

> There may be situations in which the measuring range "C" for one of the two paths (forwards or backwards) is longer than the same path in the opposite direction of travel. This is since the measurement is only terminated when the next contact entered (range B or D) is reached. If you have a section on your model railway layout between "C" and "D" or "C" and "B" that is not reported back (e.g. a turnout), the above-mentioned shifts will occur. For different lengths, enter two values in the Track length field, separated by a semicolon. The first value stands for the journey from "A" to "E", the second value for the opposite direction.

For clarification, the entire measuring section used is illustrated here once again. Important here are the separation points of measuring section C marked with the blue arrows, which must directly abut section B or D.
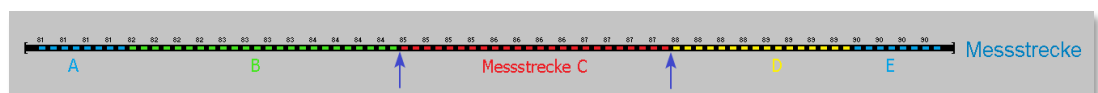
Fig. 4.43   Sketched representation of a measuring section with sections A to E

To get a usable measurement result, it is essential to clean the rails and wheels of the locomotive before taking measurements. Safe contact between the locomotive and the track is very important, especially at the lower measuring points. For locomotives with traction tires on the respective front wheels (in both

directions), you should also provide a carriage. However, 2-conductor drivers must bear in mind that the carriage must trigger a feedback signal (current consumption).

4.8.3 Speed determinations on a combined measuring section

The speed measurements on the measurement section can take quite a long time due to the measurement run with the first speed level.

You can therefore enter a subdivided measurement section in the measurement window for low speeds (up to 20 km/h by default).
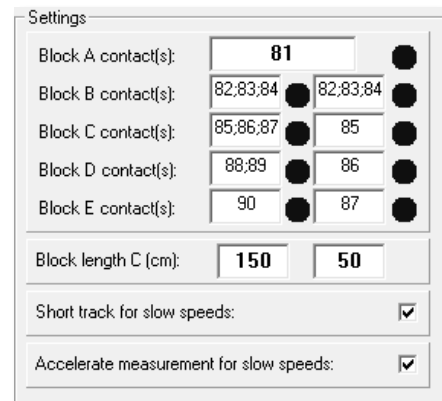
To do this, place a tick behind the text "Short distance for low speeds" and a second column for the contacts of the "shortened" measuring distance will become visible.

As with the left-hand column, enter the corresponding contacts here.

In the example (cf. Fig. 4.44), the entire route consists of...

🚂 the starting point A with the FB-N° 81 (optional)

🚂 the acceleration section B with FB-N° 82, 83 and 84

🚂 the actual measuring section C with the FB-N° 85

🚂 the deceleration section D with FB-N° 86 and

🚂 the destination points E with the FB-N° 87 (optional)

...with a measuring section length C of 50 cm.

Fig. 4.44 Distribution of the feedback contacts on a shortened measuring section

The shortened measurement section therefore represents a subset of the entire measurement section. The entries for sections B, C and D were reduced to one feedback contact each.

In principle, the measurement runs in the same way as a measurement run over the entire measurement section. For example, the locomotive starts in section A (RMK 81) at speed level 1, passes through section B (RMK 82, 83, 84) and starts the measurement when it reaches section C (RMK 85). If it is determined at the transition from C to D (RMK 86) that the locomotive has travelled at a speed below 20 km/h, it passes through section D and turns when it reaches section E (RMK 87) to start reversing.

If the programme determines when RMK 86 is reached that measuring range C was travelled through at a speed greater than 20 km/h, the values for the long measuring distance are subsequently applied.

You can also manually set the threshold value for the transition speed to a value between 5 km/h and 100 km/h by right-clicking in the *"Short distance for low speeds"* checkbox.

Section B of the short section must always be long enough for the locomotive to accelerate from a standstill to half the number of speed steps before reaching measuring section C of the short section.

Route D of the short line, on the other hand, can be quite short, as the locomotive only must accelerate from a standstill to a maximum of 20 km/h or the freely set threshold value for the transition speed.

4.8.4 Accelerate measurement at low speeds.

Optionally it is possible to change the driving behaviour of the locomotive during the measurement on the measuring track by means of a hook (cf. Fig. 4.44).

The measurement procedure takes a certain amount of time, especially in the lower speed ranges. Here, the locomotive's behaviour has been adapted so that the locomotive accelerates to 50% after leaving the defined measuring range C in route ranges D (when travelling forwards) or B (when travelling backwards) and thus reaches the turning points in route ranges A or E more quickly. If the option *'Accelerate measurement at low-speed levels' is* selected, this procedure is used for all measuring points that are below the 50% speed level.

4.8.5 Various measuring sections

You can set up to 5 different measuring sections on your model railway layout. on your model railway layout. After selecting an entry from the list (measuring section x), you can give your measuring section a meaningful name by clicking on the ⬛ symbol.

Here you enter the corresponding data for the long and short measuring sections and can then also measure the locomotives there.

After successfully completing a measurement, you can save the data in the vehicle database by clicking on the **'Save *speed profile'*** button to save the data in the vehicle database.

Measurements that were created with the **Win-Digipet** 2009 version should be renewed.

For precise driving, speed level 1 must be measured, only then can **Win-Digipet** calculate and specify the speeds precisely.

A time stamp is displayed both in the vehicle database and in a printout, which provides information about the last measurement process for the vehicle in question.

4.9   Vehicle database - Function decoder tab
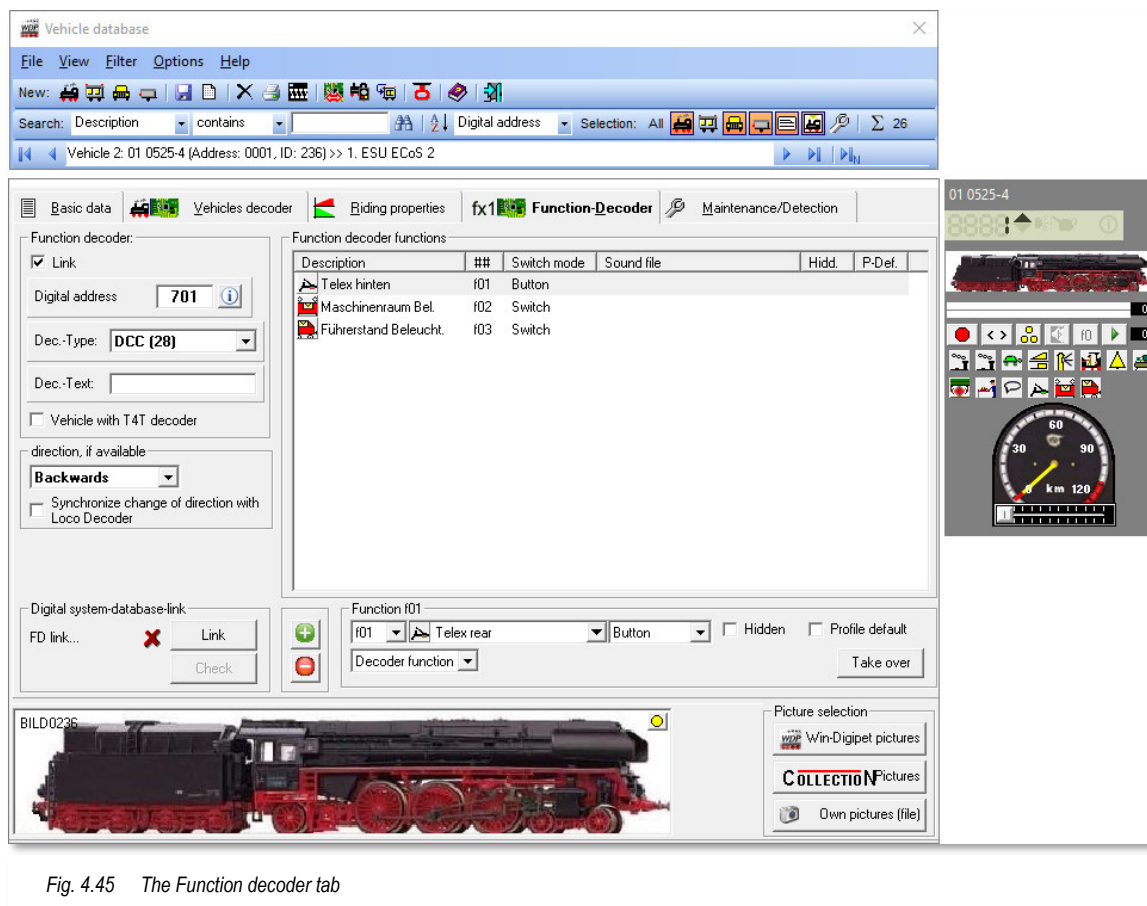
Fig. 4.45   The Function decoder tab

On tab, you can enter the settings for a function decoder installed in the vehicle.

The settings are entered in the same way as on the "Vehicle decoder" tab (see section 4.5) and are therefore not explained again here.

Enter the address of the built-in function decoder in the "*Digital address"* field at the top left and tick the "*Link"* box.

Select the type of decoder in the "*Decoder type"* field. The functions of the function decoder are displayed in Vehicle Control in addition to the functions of the vehicle decoder (cf. **Fehler! Verweisquelle konnte nicht gefunden werden.**). You can test all functions immediately by clicking on the corresponding pictogram.

In the "*Direction of travel"* field, specify whether the linked function decoder is currently switched to forward or reverse travel.

In the "*Synchronise change of direction with loco decoder"* input field, tick the box if the direction change command for the built-in and linked function decoder should also be sent. This is always an advantage if, for example, you have a locomotive at the front and rear of a tunnel rescue train, and these have **different** decoder addresses.

4.9.1 Acquisition T4T decoder

The decoders from Tec4Trains offer the option of switching couplings at any point in a train set. These so-called TCCS decoders use a proprietary protocol and must therefore be recognised as such in **Win-Digipet.**

Please tick this tab if a T4T decoder is installed in your locomotive.

Some standard functions should be entered on the tab:

- 🚂 F1 - uncoupling behind the locomotive
- 🚂 F2 - uncouple the last vehicle (in the train)
- 🚂 F5 - Declare locomotive in a traction to be the leading locomotive.

Win-Digipet manages the decoders as function decoders in the respective vehicles. The settings can therefore be found on the corresponding tab of the vehicle database. All other settings for the coupling processes are controlled in the profiles of the routes.

4.10 Vehicle database – Maintenance / Detection tab
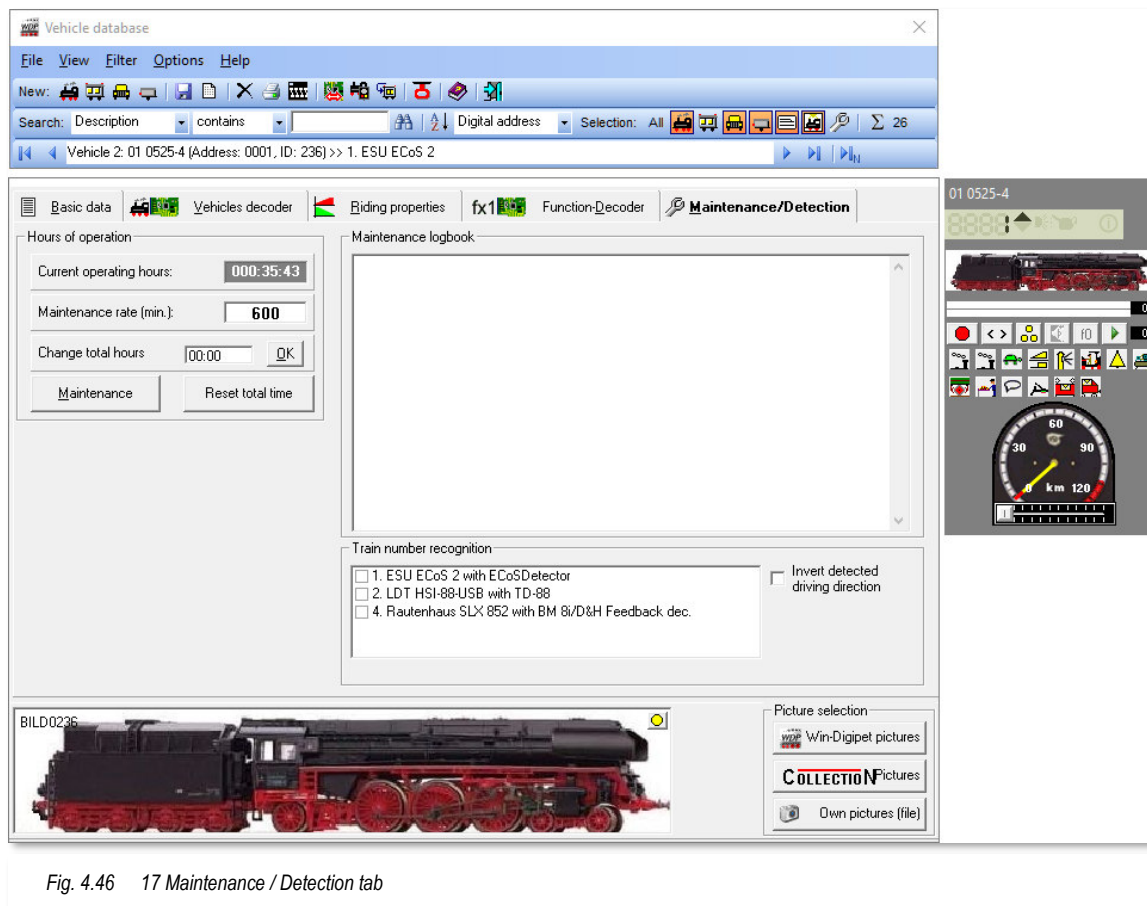
Fig. 4.46   17 Maintenance / Detection tab

On this tab, you can enter the data for vehicle maintenance, etc. This allows you to set up a maintenance logbook for your vehicles and always recognise when maintenance is due, e.g. a general overhaul or the installation of a function decoder.

The operating hours, total hours and maintenance interval for this vehicle are displayed in the Operating hours area. You can customise the maintenance interval to your own taste; the default value here is 600 min.

🚛 **Current operating hours**

The current operating hours of the vehicle since the last maintenance are displayed in this field.

If the number of operating hours since the last maintenance (hhh:mm:ss) is greater than the set maintenance interval, a small oil can 🛢 or 🟡 appears in the top right-hand corner of the Vehicle Control as a maintenance reminder.

For a road vehicle, a battery symbol 🔋 is displayed instead of the stylised oil can. For road vehicles, the maintenance time can be used as the charging capacity time.

The vehicle is also highlighted in yellow in the vehicle bar and in the vehicle monitor of the main programme.

🚗 **Battery management**

For road vehicles, a "small" battery management can be set up in addition to the operating hours. To do this, set a value in minutes in the "Battery runtime" field to indicate how long the vehicle can be operated with a charged battery. The calculations for the remaining running time can be generated via a running time calculation or via Railcom messages. Please note that you must have the necessary hardware for the calculations via Railcom.
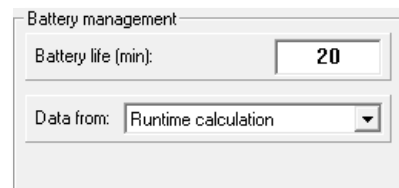
Fig. 4.47   18 for road vehicles

The battery management dialogue is only displayed for road vehicles, but not for rail vehicles.

🚗 **Maintenance interval**

Here you set a maintenance interval in minutes. The value range is between 1 and 6000 minutes.

🚗 **Change total hours**

You can change the total operating hours in this field. This is useful, for example, if you know these hours from other records and are recording the vehicle in **Win-Digipet** for the first time and would like to transfer these hours.

🚗 **Reset the operating/total operating hours**

If you have carried out maintenance (oiling) on this vehicle, you can reset the display to 000:00:00 by clicking on **'*Maintenance'*.** Operating hours performed since the last maintenance are then added to the total running time - service life - of the vehicle and displayed in the *"Change total hours:* (hh:mm)" field. You can reset the display to 00:00 by clicking on **'*Reset total time'*.**

🚗 **Maintenance logbook**

Here you can enter all data and comments on the maintenance of the vehicle. For example, you could enter the dates of a general overhaul, repairs to the vehicle, etc.

🚗 **Train number recognition**

You must make the settings for any train identification system installed here. The digital system that manages the train identification system is ticked.

4.11 Recording of wagons or wagon groups

As described above, you can also enter a single wagon or road trailer or wagon groups in the vehicle database in addition to locomotives and road vehicles.

To do this, click on the ▦ icon in the toolbar of the vehicle database and enter the following in the empty tab as described in sections 4.4 ff., enter the basic data of the vehicle or vehicle group.
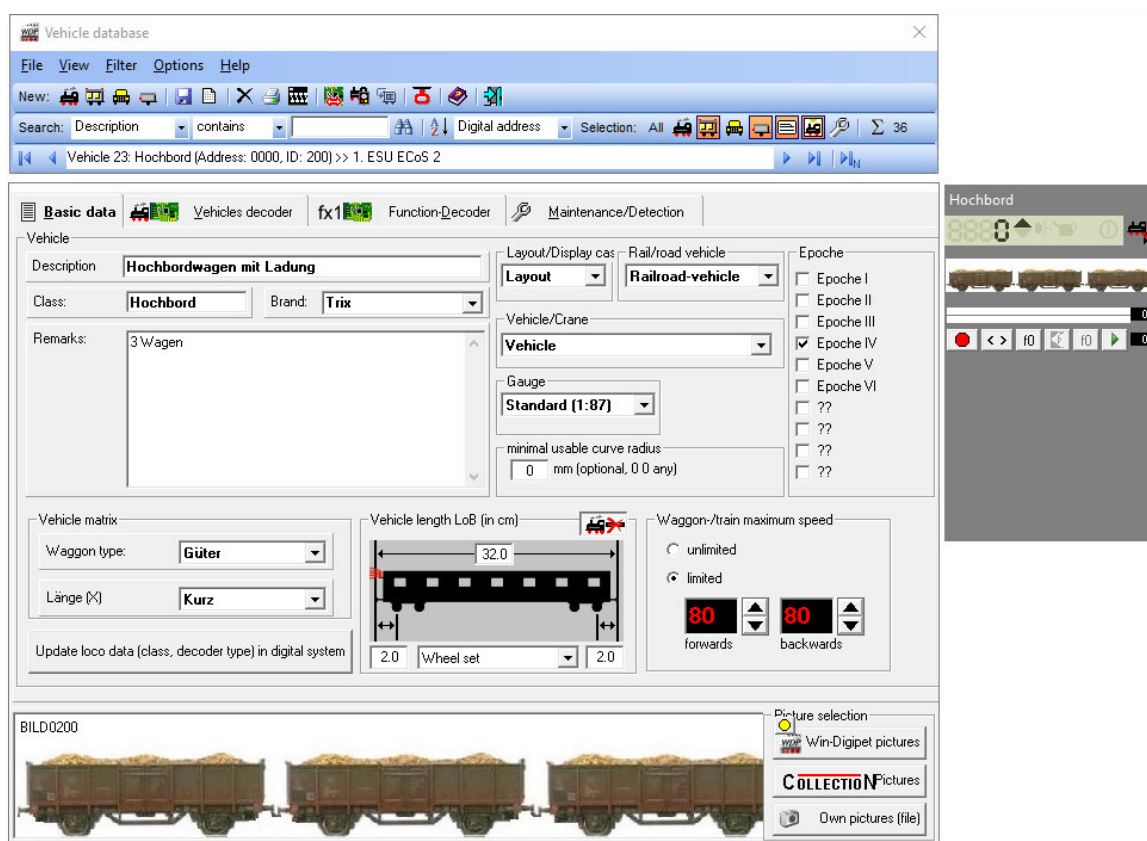
Fig. 4.48   The registration of a wagon group

The Fig. 4.48 shows an example of a wagon group of three freight wagons. Make the entries in the individual fields in the same way as described in the previous sections.

In contrast to the locomotives, the maximum speed of the wagons can be limited on the tab with the basic data, as shown in the example. This is always useful if you want to have this group of wagons pulled by locomotives travelling at different speeds. In this case, you do not need to change the speed details of the pulling locomotive, as the maximum speed of the train is always determined by the maximum speed of the slowest vehicle.

As a rule, you will have to use your own images here. When you create the images, make sure that the file size is kept small (<20 KB) and that the image size is as described in section 4.3.2 is described. Larger images are not required here.

When creating the images, again note the direction of travel from left to right; this is particularly important when evaluating the vehicle direction when travelling with **Win-Digipet.** The stylised passenger coach with the taillight on the tab is intended to illustrate this.

If the direction of travel of the vehicle image is not from left to right, you can easily mirror the image by selecting the menu command <File> <Mirror vehicle image>.
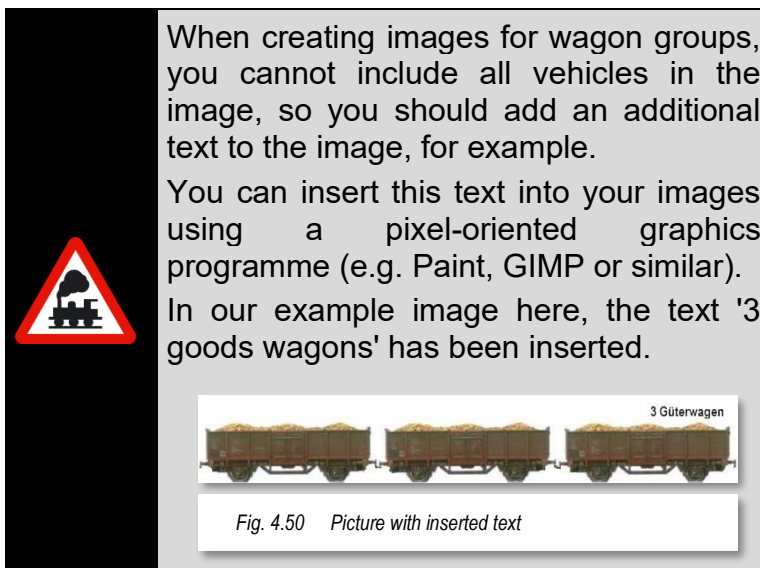
When creating images for wagon groups, you cannot include all vehicles in the image, so you should add an additional text to the image, for example.

You can insert this text into your images using a pixel-oriented graphics programme (e.g. Paint, GIMP or similar).

In our example image here, the text '3 goods wagons' has been inserted.

Fig. 4.50   Picture with inserted text
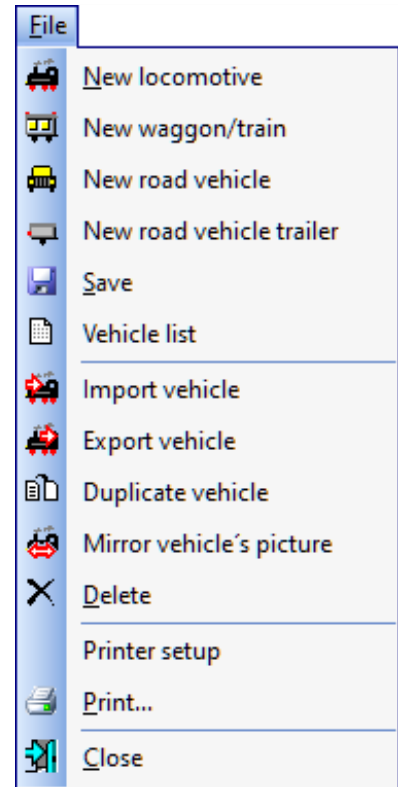
Fig. 4.49   19 file menu of the vehicle database

On the "Vehicle decoder" tab, you must enter any installed function decoder and enter a digital address and the corresponding decoder type accordingly.

Any special functions are recorded in the same way as for a locomotive (see section 4.5.6).

If no decoder is installed in the vehicle, tick the *"No decoder in vehicle"* box. This means that no data is transmitted to the control centre. In this case, the distance between the wheelsets and the buffer is also irrelevant.

You can enter the data for maintenance etc. on the following "Maintenance/detection" tab. In this way, you can also create a maintenance logbook for these vehicles and always recognise when maintenance is due, e.g. a general overhaul, or when a function decoder has been installed.

The operating hours, total hours and maintenance interval for this vehicle are displayed in the Operating hours area. You can customise the maintenance interval to your own taste; the default value here is 600 min.

You must make the settings for any train identification system installed here. The digital system that manages the train identification system is ticked.

4.12 Convert locomotive into a wagon.

In **Win-Digipet** versions prior to 2012, you always had to enter wagons with functions as locomotives in the vehicle database. You can use the *"Convert loco to waggon"* function to clear up any existing "legacy data".

By clicking on the ![icon] symbol and confirming a security prompt, a locomotive is easily converted into a wagon.

As a rule, you will click on the *'Yes'* button here and the data in the vehicle database will be changed immediately and the model labelled as a vehicle.

Add the vehicle length (in cm) to the existing data and any other information on the following two tabs and then click on the ![icon] icon to save the data permanently.

The maximum speed of the vehicle can be limited on this tab if desired. This is particularly useful for a hoover or crane truck, as the train should only travel at a low speed across the system.

> ⚠️ The conversion of a locomotive into a wagon can no longer be undone. Therefore, treat this command with due care!

4.13 Recording of cranes

The cranes or other functional models are recorded in the vehicle database in the same way as a wagon. You have already familiarised yourself with the entries on the tabs in the previous sections. At this point, we will therefore only go into the special features of entering a crane or functional model.
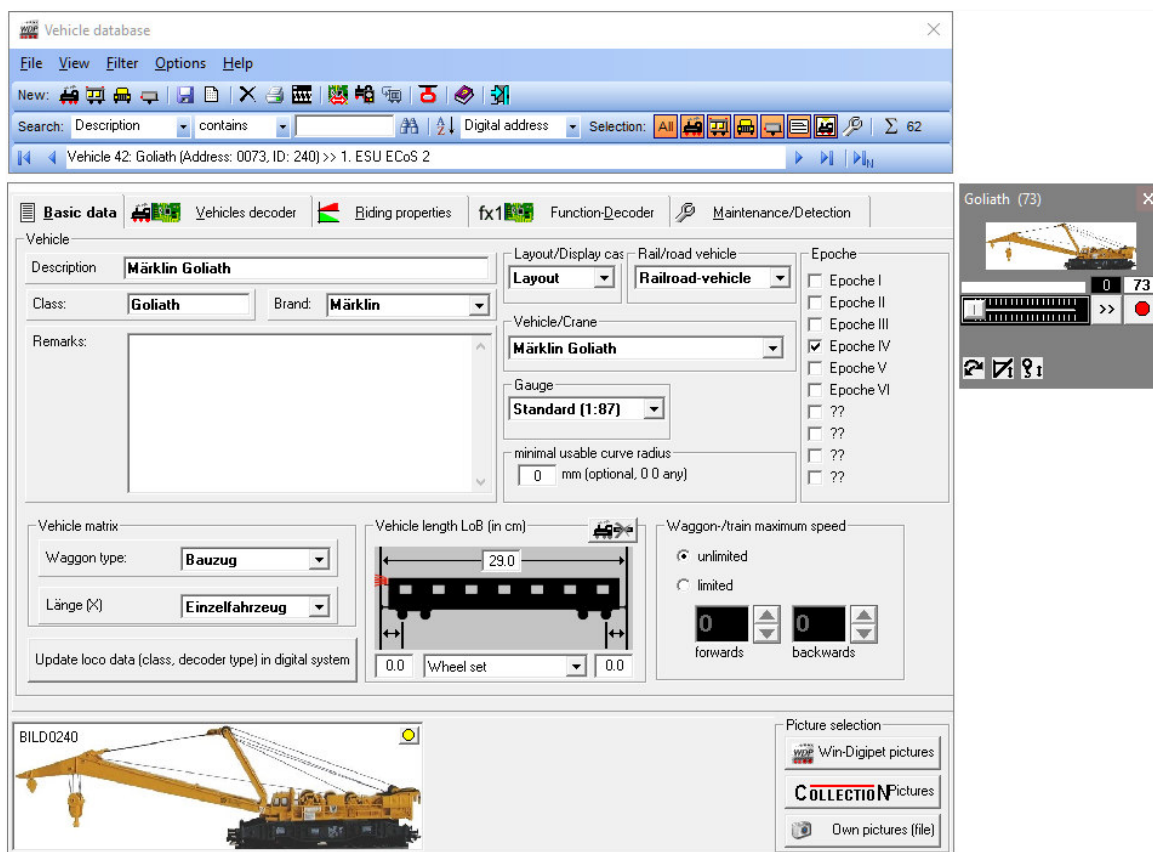
Fig. 4.51   Recording a crane in the vehicle database

In the *"Vehicle/Crane"* selection field, you can choose between a vehicle or a list of cranes or function models whose functions are supported by **Win-Digipet.**

The predefined crane types with their respective functions are recorded in a file called "KranControl.wdp" This file is in the **Win-Digipet** programme directory.

The latest version of the file can be downloaded from the **Win-Digipet** website in the forum area. The update function within the Start Centre also checks that this file is up-to-date and replaces it with a higher version via download if necessary.

In the following table we have summarised the crane types currently supported by **Win-Digipet.**

The following cranes can currently be controlled with **Win-Digipet:**	
Heljan	Heljan Container Terminal
Lux	Lux hoover
	Lux rail grinder
	Lux overhead line grinding trolley
	Lux wheel cleaning system
	Lux centre conductor slider
Märklin	Märklin Goliath
	Märklin Goliath MFX 49954
	Märklin gantry crane 76501
	Märklin gantry crane 76500
	Märklin slewing crane 7651
	Märklin coaling station
	Märklin slewing crane 76515
	Märklin tower railcar
	Märklin torpedo ladle wagon
	Märklin railway slewing crane
	Märklin Ardelt 57t 49570
Roco	Roco gantry crane
	Roco gantry crane V2
	Roco railway crane
	Roco gantry crane V3
Uhlenbrock	Uhlenbrock gantry crane

4.14 Registration of road vehicles

The recording of road vehicles in **Win-Digipet** is basically subdivided similarly to rail-dependent vehicles (locomotives and wagons) into

- 🚃 Road vehicles with drive (buses, lorries, etc.)
- 🚃 Road vehicles without their own drive (lorry trailers, etc.)

To create a new road vehicle in the vehicle database, select one of the two icons on the right in the toolbar New: 🚂 🚃 🚗 🚚 , depending on whether you want to enter a vehicle with or without its own drive.

The entries on the tabs described earlier in this chapter are largely identical to the options for rail-related vehicles. For this reason, this section only refers to the special entries relating to road vehicles.

4.14.1 Basic data tab (for road vehicles)
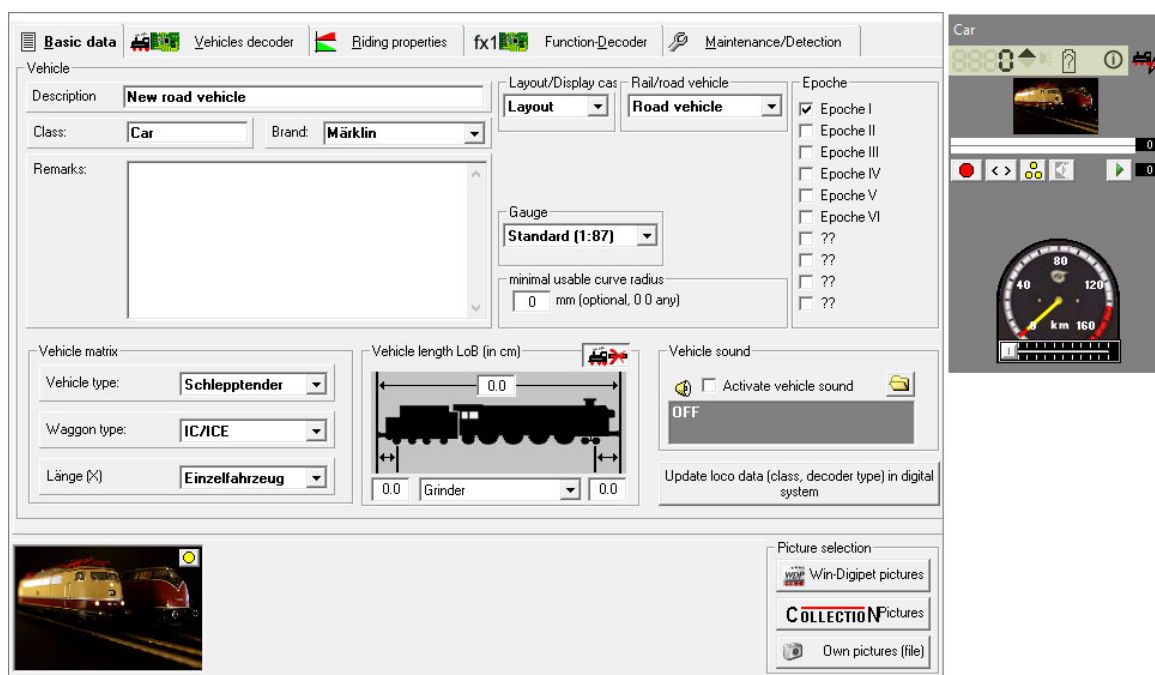
Fig. 4.52   The Basic data tab for road vehicles

On the "Basic data" tab ,only three selection list fields differ from the entries for rail-bound vehicles.

- 🚃 **Rail/road vehicle**
  For a road vehicle, select the corresponding list entry here.

Vehicle matrix

At this point, it makes sense to set the vehicle type to Auto or to a category for road vehicles defined in the system settings.

Vehicle length

As described above, the distances between the vehicle boundary and the contact-triggering medium are entered in the selection list below the stylised locomotive. In contrast to rail-related vehicles, it makes no sense to select the wheelset for road vehicles here, as this has no "electrical" contact with the road. Here it makes more sense to choose between the entries IR sensor, magnet, or light barrier, depending on the hardware you are using.

All other fields are identical to the entries for rail-bound vehicles as described above (see section 4.7).

4.14.2 Vehicle decoder tab (for road vehicles)
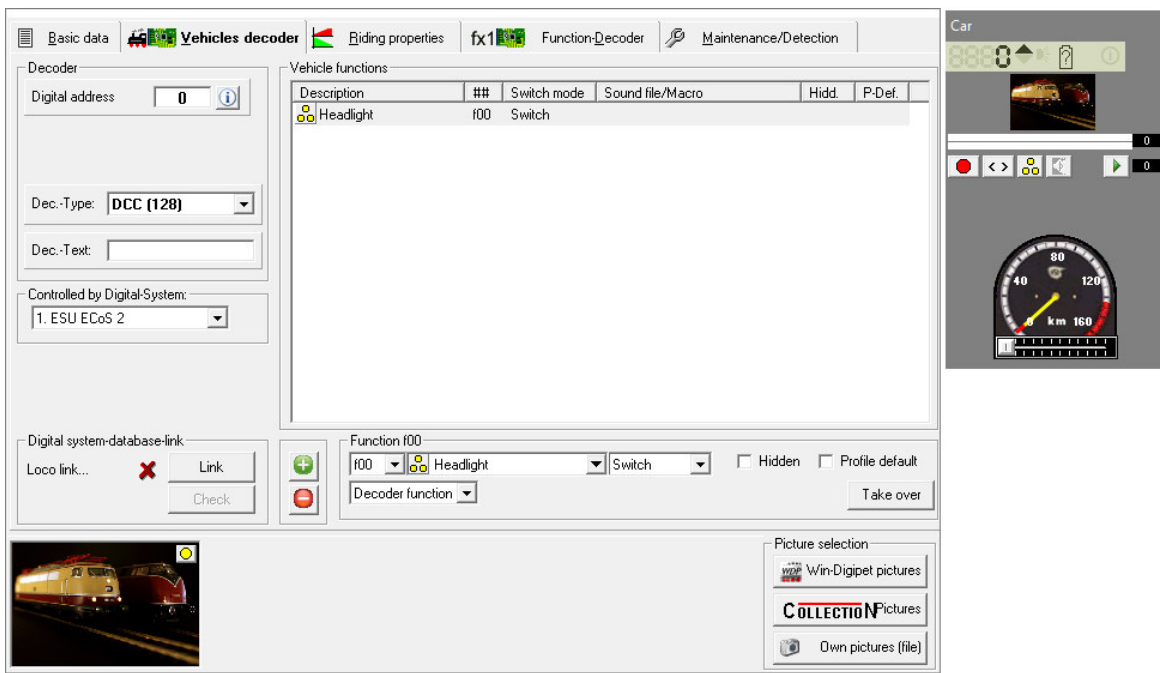
Fig. 4.53   "Vehicle decoder" tab (for road vehicles)

On tab, there are no specific settings for road vehicles. We have described the options on this tab in section 4.5 in detail. However, it is essential to note the necessary definitions for the digital address, the decoder type, and the digital system.

4.14.3 Riding properties tab (for road vehicles)
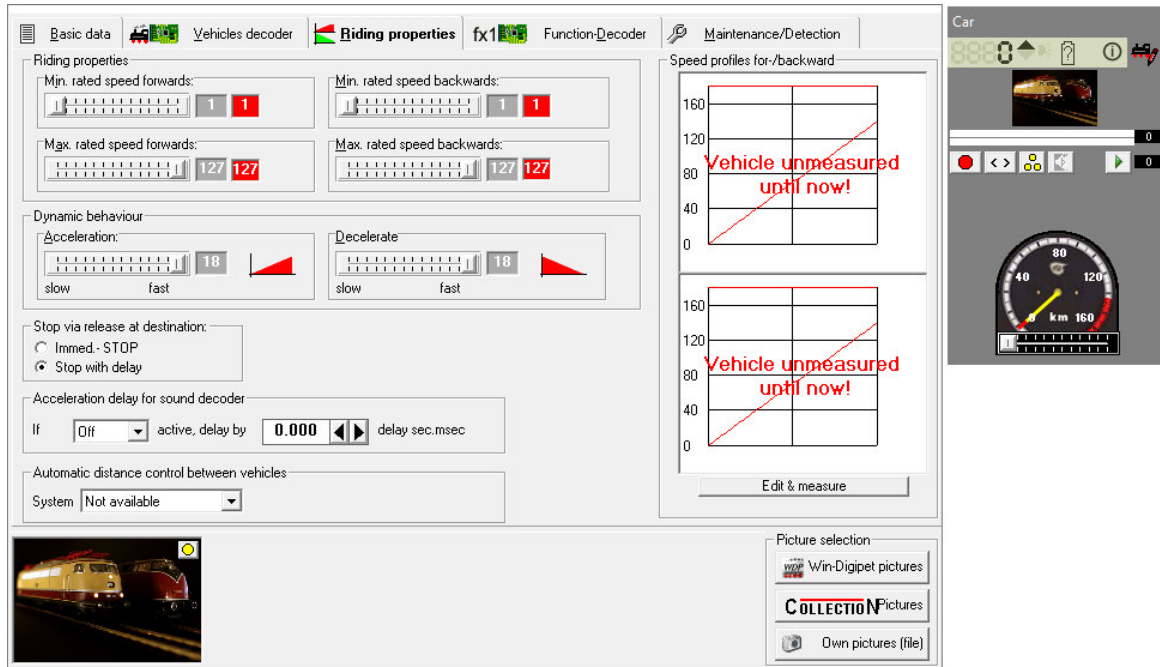
Fig. 4.54   The "Riding properties" tab (road vehicles)

Also there are no type-specific settings for road vehicles for this tab either. Please note, however, that there may be different requirements for the calibration of road vehicles than for rail-bound vehicles.

4.14.4 Function decoder tab (for road vehicles)

The entries on this tab correspond to those already described earlier in this chapter (see section 4.9) for rail-bound vehicles.

4.14.5 Maintenance / detection tab (for road vehicles)

Please refer to section 4.10. All the options of this dialogue are explained here, also in relation to road vehicles.

4.15 Transfer all vehicles to the digital system.

With clicking on the icon [icon] in the toolbar of the vehicle database, you can transfer the data from **Win-Digipet** to the connected digital system. As an alternative to the icon shown, you can also find the corresponding command in the <Options><Vehicle database←→ Centre> menu.

This function is not supported by all digital systems. If you are using a digital system that does not require this type of transmission, you will receive a message that the function is not available for the selected digital system.

4.15.1 Transmission to the Tams Master Control / Tams Red Box

At this point, the Tams Master Control / Tams Red Box is a special case compared to other digital control centres (e.g. ECoS) in that the Link Manager is not displayed here. Instead, a window is displayed that allows you to transfer the entire database to the Tams Master Control / Tams Red Box.

Before you answer *'Yes' to* the security question that appears, please note that any existing data in the Tams digital centre will be deleted and replaced by the data to be transferred.

4.15.2 Transmission to the Central Station or ECoS

For the digital systems

- Märklin Central Station
- Central Station Reloaded
- ESU ECoS,
- ESU ECoS 2

a click on the transfer symbol [icon] opens the so-called link manager. In principle, the control centres manage the vehicles in an internal database, just like **Win-Digipet**. However, in contrast to **Win-Digipet,** only locomotives, road vehicles and vehicles with function decoders are recorded here. Only these must be addressed by the digital control centre for operation. The Link Manager now establishes the connection between the vehicle database in **Win-Digipet** and the digital control centre.

> With the digital systems, only vehicles linked to both databases can be controlled via **Win-Digipet.**
>
> If vehicles on the system do not respond, please first check whether the link still exists. If there is no link, you must (re)create this link.

The Link Manager opens in a new window with the first active digital system found, which offers the database functions for the Link Manager.

Fig. 4.55   The link manager compares the entries in the databases (Picture in German version).

If, for example, a Tams Master Control is entered as the first digital system in your configuration, you can switch to the desired digital system (e.g. ESU ECoS 2) via a selection list.

Selecting an inactive digital system result in an empty window of the link manager with a corresponding message.

In the Fig. 4.55 shows an already "filled" link manager. Here you can see the linked vehicle database of the demo project with the database of an ESU ECoS 2, which is entered in the demo project as the first digital system.

The upper list window shows all vehicles with a decoder that are recorded in the **Win-Digipet** vehicle database for the ECoS 2 as the controlling digital system. Only the vehicles labelled "Layout" appear here, as only these are active. Vehicles labelled "Display case" in the database are not shown in this list, they are inactive.

All vehicles already created in the control centre are listed in the lower section. The symbols on the left-hand side of the tables show you the respective status of a database entry. The symbols have the following meanings:

    ✔   There is a correct link to the data record

    ❌   There is no link for this data record

    ⚠   There is an incorrect link in the data record

To transfer the data to the control centre, you must select the vehicles in the top list. To do this, you can use the various filter buttons on the right-hand side of the window. Once the relevant entries have been selected, click on the *'Transfer to Central Unit'* button and the selected data will be transferred to the digital system.

A progress bar shows the transfer and then reports the successful transfer of the data and after clicking on *'OK'*, the vehicle data appears in the lower window.

If the data is not updated immediately in the window, click on the button ↻ (Refresh).

⚠ A Märklin Central Station 2 should be equipped with at least firmware version 2.0.1 or higher for operation with **Win-Digipet**.

The two buttons '*Link automatically'* and *'Delete'* cannot be selected in conjunction with a CS 2; these functions must be carried out in the vehicle database in the data record of the corresponding locomotive.

4.15.3 Remove links to the control centre or restore.

You can delete or restore the links between **Win-Digipet** and the above-mentioned digital control centres at any time using the vehicle link manager.
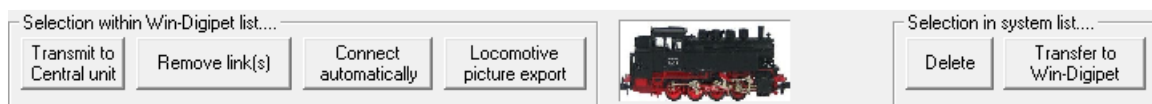
Fig. 4.56   20 link functions in the Link Manager

To do this, use the various buttons in the shortcut manager to select and then remove or create the shortcuts.

Selection in Win-Digipet **list**

- 🚂 **Transfer to control centre**
  The selected data records are transferred from the Win-Digipet database to the control centre and linked together.

- 🚂 **Remove links**
  The links for the selected data records are removed.

- 🚂 **Connect automatically**
  Existing data records in both databases are linked together.

- 🚂 **Locomotive picture export**
  The Win-Digipet images are converted into the format required for the respective control centre and stored in a subfolder in the Win-Digipet directory.

Selection in centre list

- 🚂 **Delete**
  The selected data records are deleted in the control centre. You should not have the locomotive database of the control centre open, otherwise it cannot be updated immediately.

- 🚂 **Transfer to Win-Digipet**
  The selected data records are transferred to the Win-Digipet vehicle database and linked.

4.15.4 Change the digital system for controlling the vehicles globally.

If you use more than one digital system to control the model railway layout, you can very quickly assign the control of all the vehicles entered to another digital system. To do this, click on the 🚂 icon in the vehicle database toolbar.

Another window opens in which you can now change the digital system.

In the upper selection field, select the previously controlling digital system and in the lower selection field, select the new digital system for controlling the vehicles.
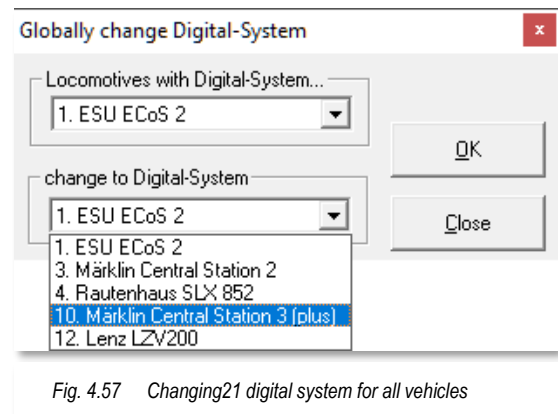
Fig. 4.57   Changing21 digital system for all vehicles

After clicking on the **'OK'** button, a confirmation prompt is displayed indicating the number of vehicles affected by the change.

After you have clicked on the **'Yes'** button in the confirmation prompt, you will receive a message that the changes have been made successfully.

The 1st digital system is always displayed in the "*Change digital systems globally*" dialogue. Even after a successful change to the digital system, the 1st digital system is always displayed in a subsequent change.

The respective selection may therefore have to be adapted to a different digital system.

Please also note that only the vehicles that are also assigned to the source system will be affected by a change.

4.15.5 Change function icons in the vehicle database.

The supplied function icons for the vehicle functions are stored in the **FuncIcons.png** file, which must be in the \Icons subdirectory of the **Win-Digipet** programme directory.

You can create up to 240 additional, customised function icons using the "Function icon editor" program from the **Win-Digipet** Start Centre.

These customised function icons are also saved in the \SYMBOLES subdirectory in a separate **FuncIconsPers.png** file.

4.16 Management of data records in the vehicle database

The operation of the vehicle database takes place in the upper part of the split dialogue window. In this control panel, the individual data records can be added, sorted, filtered, and deleted. You have already familiarised yourself with some other functions, such as the link manager, in the previous sections.
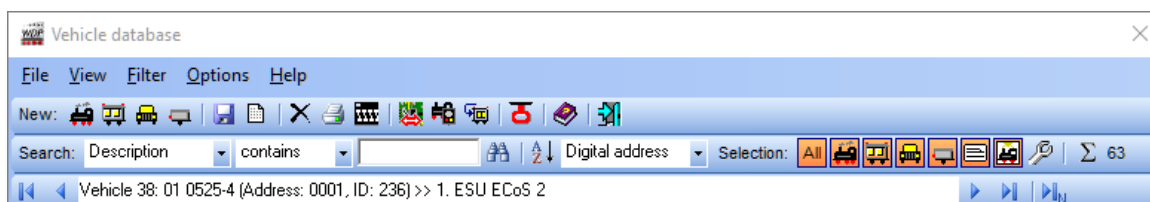
Fig. 4.58   The control panel of the vehicle database

4.16.1 Save a data record.

Your entries on the individual tabs of the vehicle database are always saved automatically. There is also an icon 💾 for manually saving the data in the toolbar of the vehicle database control panel.

4.16.2 Delete data records.

To delete a vehicle from the database, click on the ✖ icon in the vehicle database toolbar.

The current data record that you see in the lower part of the *"Vehicle database"* dialogue window is always deleted.

You can also select the vehicle to be deleted in the "Vehicle list" (see section 0). A confirmation prompt appears before final deletion.

4.16.3 Sort data records

In the upper area of the *"Vehicle database"* window, you have the option of filtering the display of data records according to various criteria. The following icons are available for this purpose: Selection: [All icons]. By selecting or deselecting the individual icons, you can filter your vehicles according to the following criteria:

- All vehicles, the filters are cancelled.
- Locomotives
- Wagons or cranes
- Road vehicles (with drive)
- Road vehicles (without drive)

🚂 Vehicles on system

🚂 Vehicles with reached maintenance time or end of battery life for road vehicles

You can also use the *"Sorting"* selection list to specify the order of your vehicles in the vehicle database. The set sorting type is considered in the main programme for the vehicle bar. Any existing vehicle tractions will not be deleted.
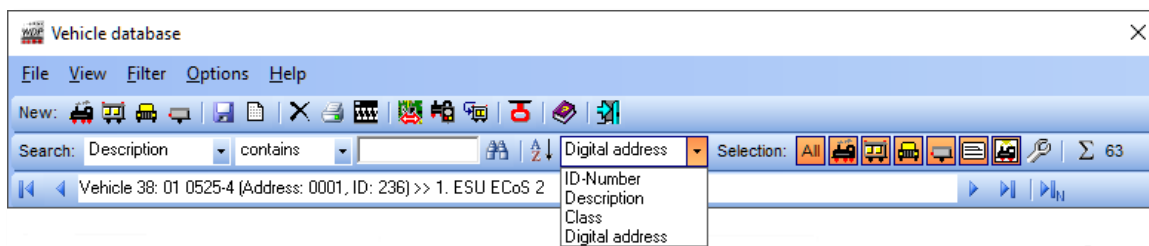
Fig. 4.59   Vehicle sorting criteria in the vehicle database.

The sorting criteria shown above mean in detail.

🚂 **ID number**
the data records are sorted according to the serial number of the data record.

🚂 **Description**
the data records are sorted according to the entries in the Description data field.

🚂 **Class**
the data records are sorted according to the entries in the Series data field.

🚂 **Digital address**
the data records are sorted according to the digital address of the vehicle decoder.

All sorting is always in ascending order (0-9, a-z).

4.16.4 Search data records

With the help of the search function in the menu bar of the vehicle database, you can very quickly call up the data record of an individual vehicle.
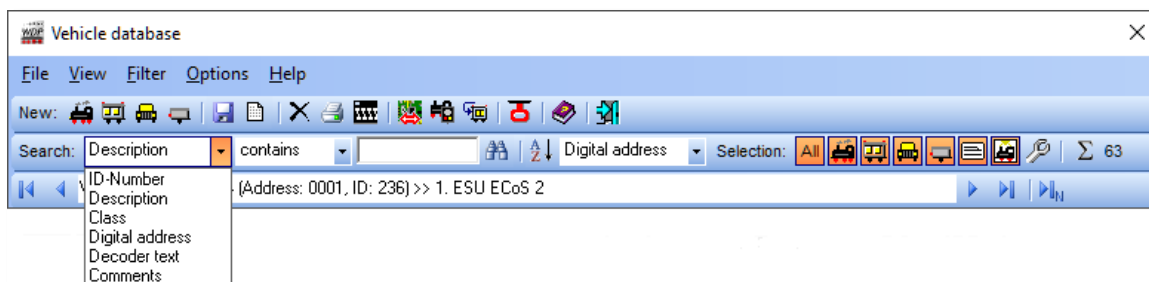
Fig. 4.60   The search function for calling up a specific data record.

You can search for character combinations in the fields as shown in Fig. 4.60 and refine the search using the criteria in the centre selection window.

Enter your search text in the empty field to the right of the list of search criteria.

After clicking on the symbol with the stylised binoculars ![binoculars], the vehicle you are looking for will be displayed immediately.
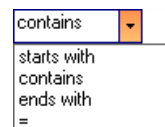
Fig. 4.61   Various search criteria

4.16.5 Scroll between the data records.

The "Browse" function in the menu bar guides you through the individual data records with mouse clicks.
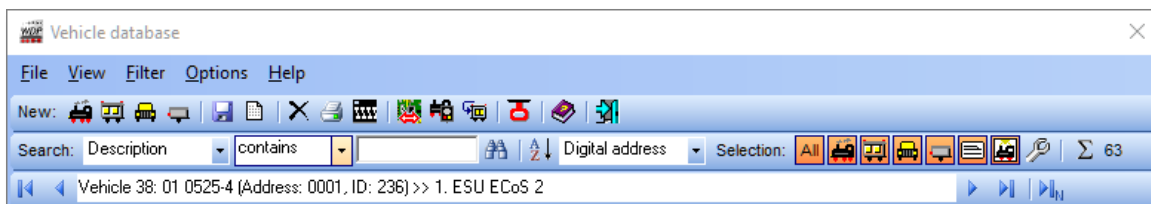
Fig. 4.62   22 "Browse" function is in the lower part of the menu bar in the vehicle database.

	to the first data record
	Return a data record
	one data record forwards
	to the last data record
	to the latest data set
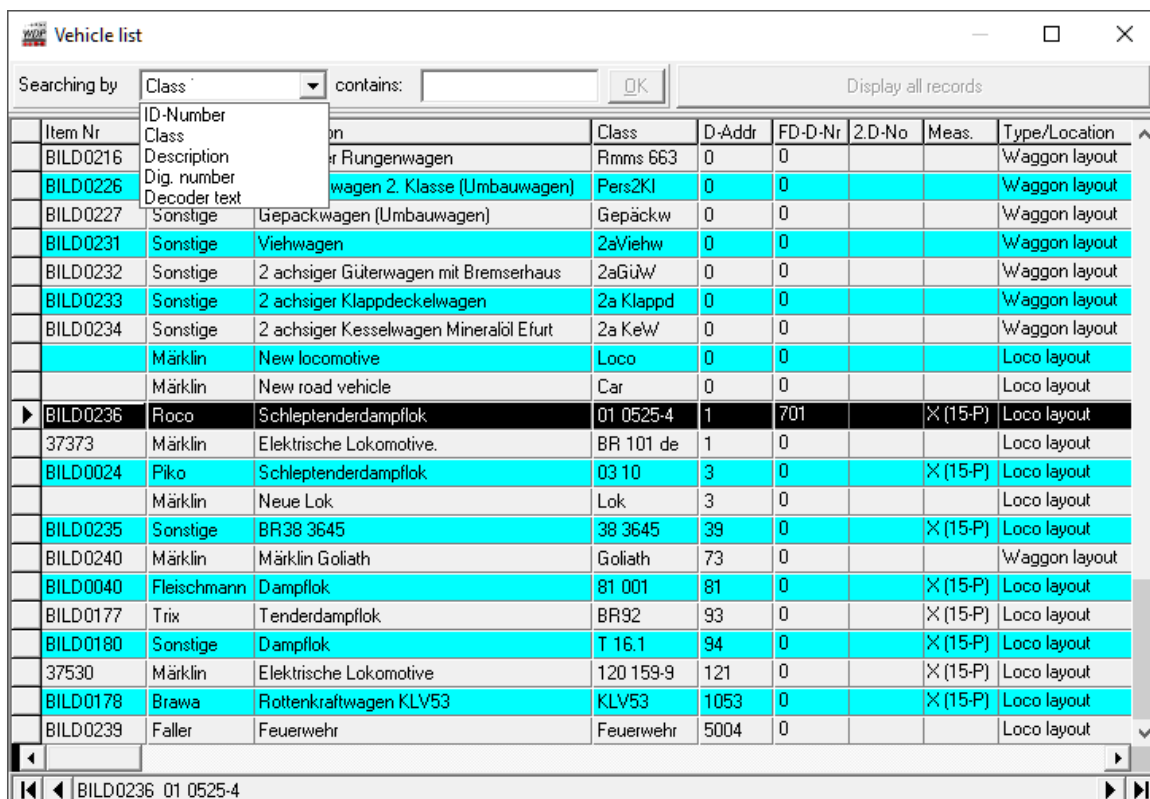
An information field on the number of vehicles rounds off the menu bar of the vehicle database. Please note that this number depends on the selected filter. A total number of vehicles is therefore only displayed if you select the *"Complete"* filter.

Σ 60   Sum of the (filtered) data records

4.16.6 Vehicle list

With a Click on the symbol ⬚ to display a list of all vehicles already entered in the vehicle database. All data records are listed here, regardless of whether the vehicle is in the "Layout" or "Display case" status. is listed.

In the "Vehicle list", you can use the "*Searching by*" selection list to filter all vehicles according to the following criteria.

Item Nr		on	Class	D-Addr	FD-D-Nr	2.D-No	Meas.	Type/Location
BILD0216		er Rungenwagen	Rmms 663	0	0			Waggon layout
BILD0226		wagen 2. Klasse (Umbauwagen)	Pers2Kl	0	0			Waggon layout
BILD0227	Sonstige	Gepackwagen (Umbauwagen)	Gepäckw	0	0			Waggon layout
BILD0231	Sonstige	Viehwagen	2aViehw	0	0			Waggon layout
BILD0232	Sonstige	2 achsiger Güterwagen mit Bremserhaus	2aGüW	0	0			Waggon layout
BILD0233	Sonstige	2 achsiger Klappdeckelwagen	2a Klappd	0	0			Waggon layout
BILD0234	Sonstige	2 achsiger Kesselwagen Mineralöl Efurt	2a KeW	0	0			Waggon layout
	Märklin	New locomotive	Loco	0	0			Loco layout
	Märklin	New road vehicle	Car	0	0			Loco layout
BILD0236	Roco	Schleptendampflok	01 0525-4	1	701		X (15-P)	Loco layout
37373	Märklin	Elektrische Lokomotive.	BR 101 de	1	0			Loco layout
BILD0024	Piko	Schleptendampflok	03 10	3	0		X (15-P)	Loco layout
	Märklin	Neue Lok	Lok	3	0			Loco layout
BILD0235	Sonstige	BR38 3645	38 3645	39	0		X (15-P)	Loco layout
BILD0240	Märklin	Märklin Goliath	Goliath	73	0			Waggon layout
BILD0040	Fleischmann	Dampflok	81 001	81	0		X (15-P)	Loco layout
BILD0177	Trix	Tenderdampflok	BR92	93	0		X (15-P)	Loco layout
BILD0180	Sonstige	Dampflok	T 16.1	94	0		X (15-P)	Loco layout
37530	Märklin	Elektrische Lokomotive	120 159-9	121	0		X (15-P)	Loco layout
BILD0178	Brawa	Rottenkraftwagen KLV53	KLV53	1053	0		X (15-P)	Loco layout
BILD0239	Faller	Feuerwehr	Feuerwehr	5004	0			Loco layout

BILD0236 01 0525-4

Fig. 4.63   23 vehicle list

- 🚂 ID number
- 🚂 Class
- 🚂 Description
- 🚂 Digital number
- 🚂 Decoder text

All vehicles that contain the search text you have entered in the filtered criterion are displayed in the list as search results.

To display all data records again after a search process, click on the **'Display all records"** button.

4.16.7 Change data records.

With a Click on a line in the vehicle list to jump directly to the selected vehicle in the vehicle database and the detailed data is displayed and can be edited and saved on the individual tabs as required.

In the "Vehicle list", you can also edit the data in the corresponding lines of the list. To do this, click in the desired column. **Win-Digipet** offers two options for editing, depending on the respective column.

- 🚂 First click in the column - column is highlighted. If you click again, an input cursor appears for overwriting.

- 🚂 First click in the column - a selection arrow appears and after clicking on this a small list box appears in which you can select other settings in the usual way.

> ⚠️ Not all columns can be edited in the vehicle list. In this case, use the existing data in the tabs of the vehicle database to change the details of the selected vehicle.

By selecting a different line in the vehicle list, your changes to the data record are saved.

At the bottom of the "Vehicle list" you will find a "Scroll" function - like the one in the menu bar.

To close the vehicle list, click on the close symbol in the top right-hand corner of the window title bar, as is typical for Windows.

4.16.8 Export vehicle

The You can export the complete data record of a vehicle from the vehicle database and import it again later.

This is very helpful if, for example, you want to run your vehicle on the layout of a model railway club or similar.

To do this, after selecting the vehicle, select the menu command <File><Export vehicle> and a new "Save as" window will appear immediately.

In this window, you can select any directory on your computer (e.g. a USB stick) and enter a corresponding file name. You should always select a file name that can be clearly assigned to the vehicle later.

After saving, you will find a file with the extension ".mdb" and the name you have given it in the selected directory.
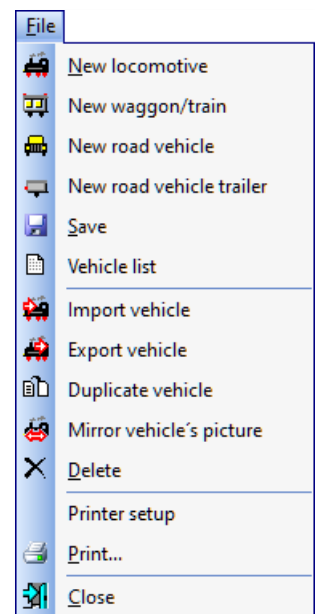
Fig. 4.64   The   import   and export function

4.16.9 Import vehicle.

The complete data record of a vehicle can also be imported back into a (different) **Win-Digipet** vehicle database after exporting.

> ⚠️ If you have two identical vehicles in your inventory, you can use the import/export functions to create a copy of one vehicle, for example, and then only must adjust the digital address in the data record of the second vehicle after import.

To import a vehicle, select the menu command <File> <Import vehicle> (cf. Fig. 4.64).

After clicking, the "Open" window appears. In this window, you can select the directory of your computer in which the previously exported data is located.

After selecting the saved data record, a security prompt appears, which you must pay close attention to. At this point, **Win-Digipet** asks you whether you want to transfer the entries of the vehicle to be imported to the data record currently displayed.

Fig. 4.65   24 into an existing data record

If you answer *'Yes'* at this point, your previous data will be overwritten and replaced by the data from the import file. If you reject the security prompt with **'No'**, a further dialogue will appear. Here you will be asked whether you want to create a new data record from the import file in your vehicle database.

Once you have transferred the vehicle to your vehicle database as a new data record, you only need to change the designation in the Series field (e.g. when copying a vehicle) and, in the case of a locomotive, the digital address, and the work is done after saving the new data record.

Fig. 4.66   25t into a new data set

4.17 Print vehicle database

Via menu command <File> <Printer Setup> to open the window for entering the technical data of your printer (typical for Windows). Confirm with *'OK'*.

To print data records from the vehicle database, select the <File><Print> command in the menu or click on the 🖨 icon in the toolbar.

The *"Print vehicle database - single images"* window appears immediately with the first two data records.

The possible functions of this window are self-explanatory. All commands are issued using the mouse.

At the beginning, all vehicles are presented to you as individual images on sheets in portrait format, depending on the sorting sequence you have set.

You can also create these single images on sheets in landscape format. Use the corresponding radio button in the Format area on the left-hand side of the window to make the setting.
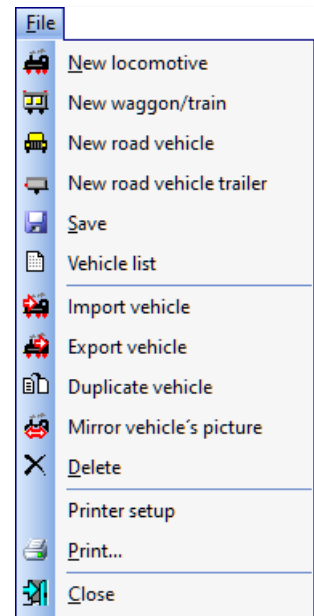
Fig. 4.67   The print function
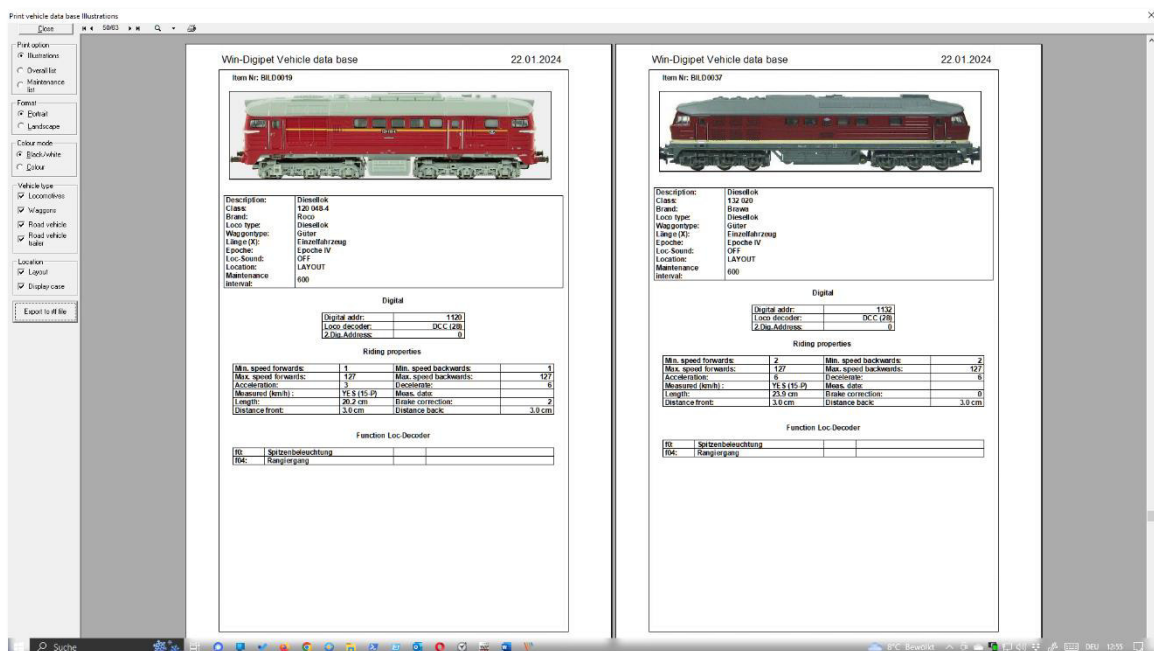
Fig. 4.68   The print output window of the vehicle database

For a complete list of all vehicles with their images, click on the radio button **'Overall list'**.

After clicking on the **'Maintenance list'** radio button, a complete list of all vehicles due for maintenance is printed out.

The filter functions in the *"Vehicle type"* list field offer you the same filter functions as in the menu bar of the vehicle database. Here you can select the different vehicle types for the printout.

With the *'Export to RTF file'* button, you can redirect the print output to an RTF[13] formatted file and process it with other programmes (e.g. Microsoft Office 365 or LibreOffice) that support this file format.

You can use the list arrow at the top of the screen to select several options for viewing the print image. If you do not select, **Win-Digipet** will use the menu command <Two pages> for all printouts.

Click on the ⌸ icon at the top of the screen to start the printing process via your windows printer.

Use the *'Close'* button to exit the print output.

---

[13] RTF - Rich Text Format

4.18 Exit vehicle database.

You can leave the vehicle database by clicking on the ⬕ icon in the toolbar.

At the same time, the vehicle bar of the main programme, the possibly open vehicle monitor and the vehicle or train number display in the track diagram are updated.

The briefly displayed messages "Correct vehicles" and "Correct train number displays" inform you of this process.

The vehicle bar in the main programme is updated to see whether you have perhaps set one or other vehicle to "*Display case"* or changed the sorting of the vehicles.

4.19 Editing the vehicle database with the vehicle wizard

The previous sections explained in detail how to create a vehicle in the vehicle database. However, you can also create a locomotive, road vehicle, wagon or train set in **Win-Digipet** from the main view of **Win-Digipet** using the vehicle wizard without having to open the vehicle database.

4.19.1 Register vehicles via the vehicle assistant.

The vehicle wizard is called up directly from the "Vehicles" toolbar of **Win-Digipet** by clicking on the ⚒ icon. The "Vehicle Wizard" window is displayed.

The initial dialogue of the vehicle wizard is divided into six selection options, which you can select via a radio button.

- 🚂 Create a new locomotive.
- 🚃 Create a new wagon.
- 🚗 Create a new road vehicle.
- 🚂 Create a new road vehicle trailer.
- 🚂 Transfer a vehicle from the digital centre and link it to **Win-Digipet**
- 🚂 Transfer a vehicle from a train detection system and link it to **Win-Digipet**

You can use the first two options to create a data record for a locomotive or a wagon in the **Win-Digipet** vehicle database.

Options three and four offer the same for mooring road vehicles or trailers.

With the fifth option, you can transfer a vehicle from a Märklin Central Station 1, 2 or 3, ESU ECoS 1 or 2 digital control centre as a new data record in **Win-Digipet** or link it to an existing data record in the vehicle database.

The last option is only available if you have installed a train detection system such as RailCom. Here you can then transfer vehicles recognised by the system to the **Win-Digipet** vehicle database or link them to an existing data record.

Fig. 4.69   26 initial dialogue of the vehicle wizard

If you select the option "Create a new locomotive" or "Create a new wagon" and click on the *'Next'* button, the vehicle editor opens. The vehicle editor contains the same tabs as the vehicle database and the necessary entries on the tabs are also identical here.
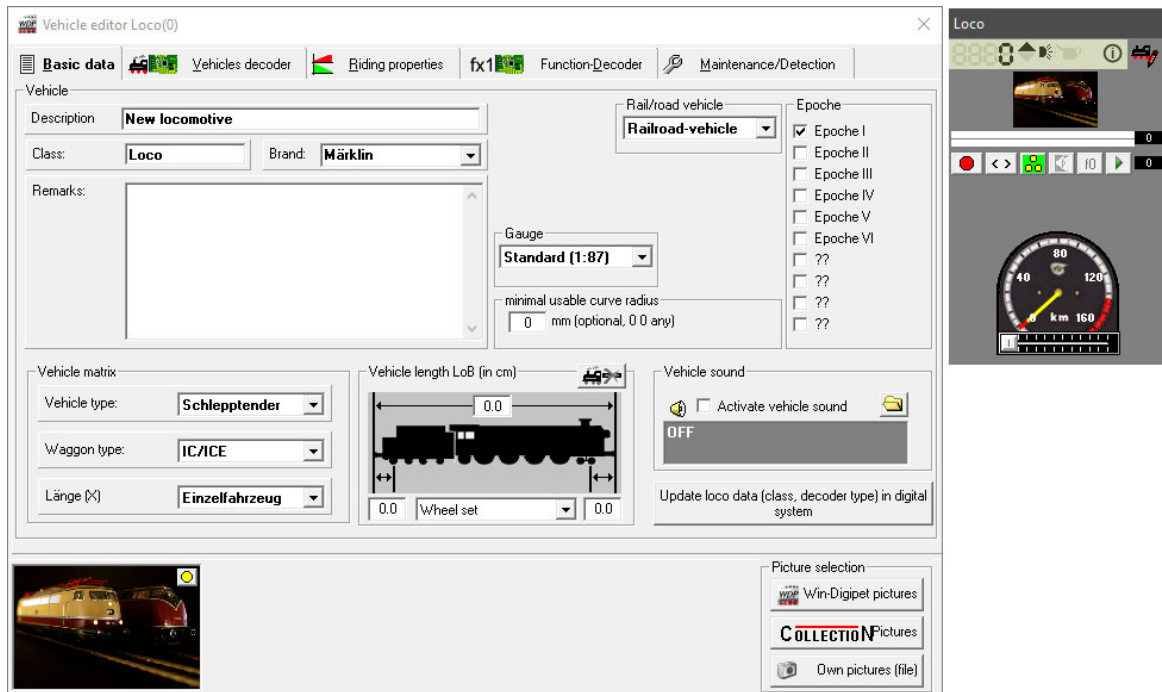
Fig. 4.71   28 "Create new locomotive" dialogue in the vehicle wizard leads to the vehicle editor.
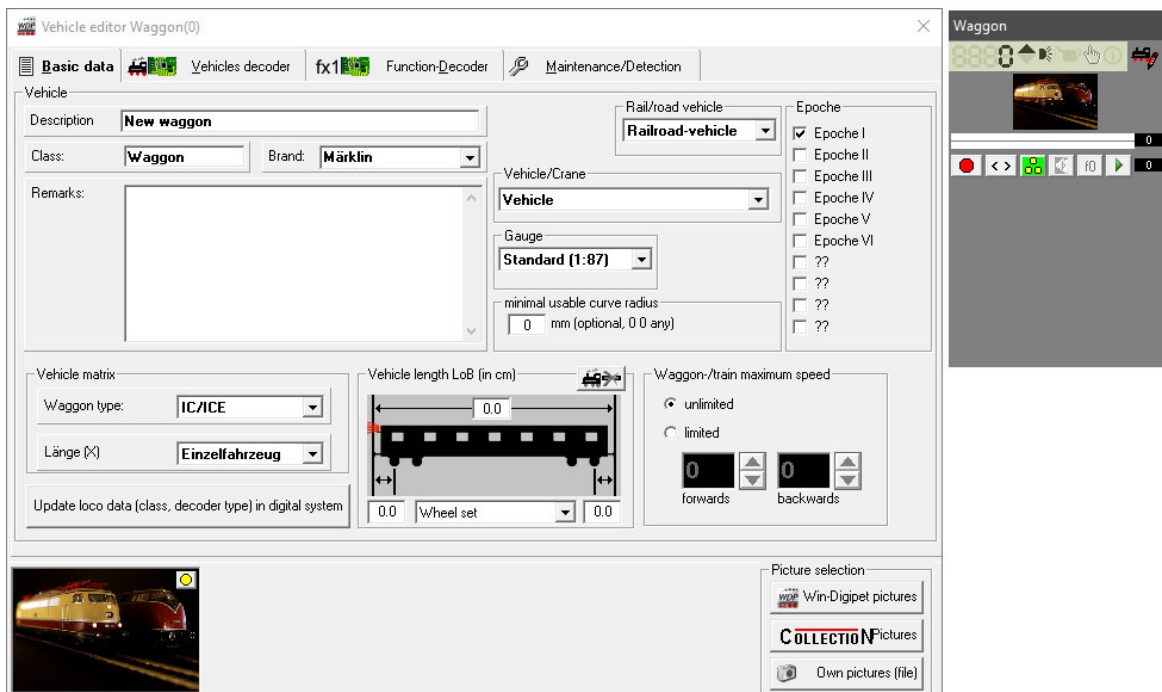
Fig. 4.70   27 dialogue "Create a new wagon" also leads to the vehicle editor.

As all entries have already been made in sections 4.2 ff., they will not be repeated here.

4.19.2 mfx locomotive recognised

Whenever ,you place a new mfx locomotive on the layout that is not yet present in the mfx central station (ESU ECoS, Central Station Reloaded, the ESU ECoS 2 or the Märklin Central Station 2/3), this is recognised by the central station. You can recognise this on the display of the central station by the progress bar with the mfx symbol.
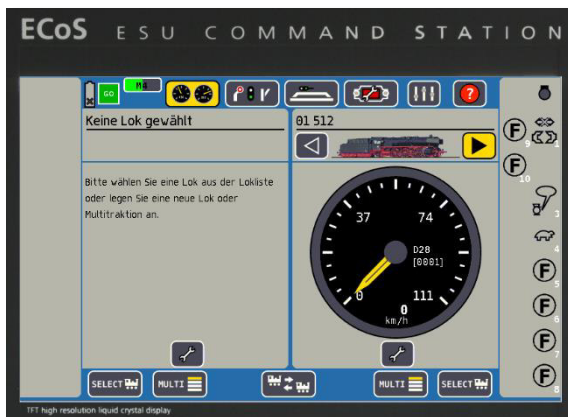
Fig. 4.72   29 digital system during mfx recognition
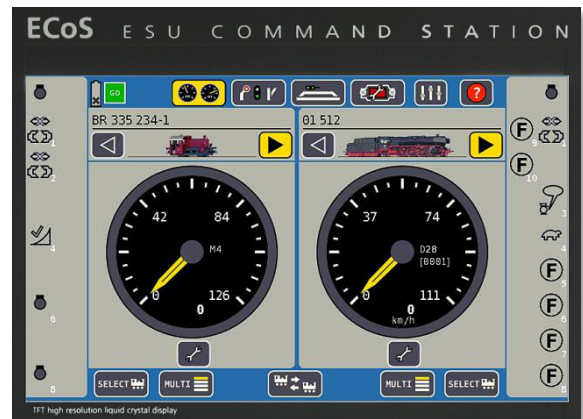
Fig. 4.73   The mfx locomotive after recognition

If a new mfx locomotive has been recognised on the mfx central station (ESU ECoS, the Central Station Reloaded, the ESU ECoS 2 or the Märklin Central Station 2/3), the vehicle wizard will report after a short time and show you this in **Win-Digipet.**

To be able to control locomotives with **Win-Digipet**, they must always be linked to the vehicle database of the mfx control centre **and** the vehicle database of **Win-Digipet**.

Please wait until the mfx recognition in the control centre has been completed.

Once the locomotive has been fully recognised, click on the **'Next'** button.

Fig. 4.74   30 vehicle assistant has recognised a new mfx vehicle. (Picture in German language)

This opens a dialogue for transferring the newly detected locomotive to the **Win-Digipet** vehicle database.

The newly detected locomotive is displayed in a list in this dialogue. If you select the option "*Also show already linked vehicles*" option, the already linked vehicles are also displayed in the list.

Use the radio buttons to decide whether you want to link the locomotive to an existing data record or create a new data record.

In our example here, we create the recognised locomotive as a new data record. After confirming with the *'Next'* button, you will be taken to the individual tabs of the vehicle database, which you already know from the manual entry of vehicles. Complete the tabs as described in sections 4.4 to 4.10 described. The entries are automatically transferred to the vehicle database.

Fig. 4.75   31 recognised locomotive is offered for takeover. (Dialogue is shown in German language)

Most of the locomotive's functions will already be entered on the "Vehicle decoder" tab.

However, you should note that the function description "Other" is always entered for the various function fields. Unfortunately, this cannot be changed by the programme as the ESU ECoS or Märklin Central Station does not provide the correct information for all functions. Please change the descriptions to the corresponding functions.

4.19.3 Automatic detection of a RailCom vehicle

In principle the process for recognising a RailCom vehicle is like the process described above for recognising an mfx locomotive.

4.20 Editing a vehicle from the Vehicle Control

In addition to the vehicle wizard for creating a new vehicle, it is also possible to edit an existing vehicle in the main **Win-Digipet** programme. To do this, you need the vehicle control of the vehicle to be edited. It is irrelevant at this point whether you have opened the large or the small display of the vehicle control. The functions described below can also be accessed via the vehicle monitor.
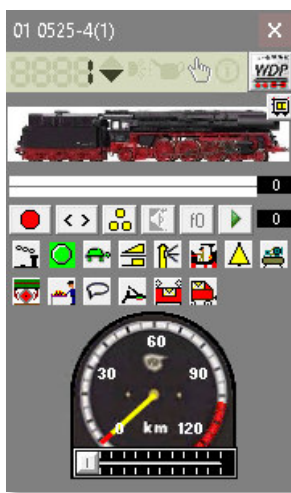
Fig. 4.76   A vehicle control
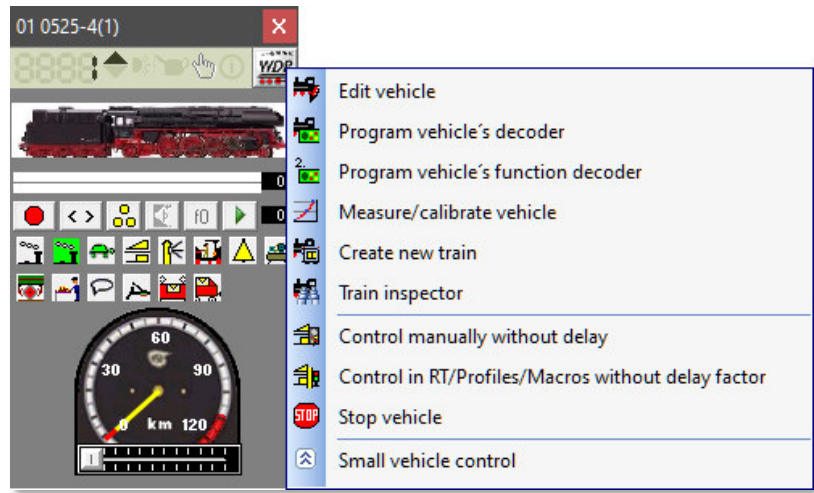
Fig. 4.77   The sub-menu for vehicle editing.

Clicking on the WDP symbol in the vehicle control ![WDP] opens a so-called sub-menu. The following functions are stored in this menu:

🚋 **Edit vehicle**
By selecting this entry, you can access all tabs of the vehicle from the vehicle database. All changes on the tabs are immediately applied to the vehicle data record.

🚋 **Program vehicle's decoder**
This selection takes you to the decoder programming programme section[14] of **Win-Digipet**. All decoder settings can be entered, changed, and saved here.

🚋 **Program vehicle's function decoder**
This selection also takes you to the decoder programming programme section of **Win-Digipet**. All settings of a function decoder in the vehicle can be entered, changed, and saved here.

🚋 **Measure/calibrate vehicle**
This menu item takes you directly to the "Measure speed profile" dialogue of the vehicle database. All functions as described in section 4.8 can be carried out.

🚋 **Create new train**
Selecting this menu item takes you to the "Train composition" dialogue. The train composition in which the vehicle is currently located is displayed in the dialogue. Using the train composition, locomotives, road vehicles and wagons or road trailers can be combined to form trains. This topic will be discussed in detail in a later chapter.

🚋 **Train inspector**
Selecting this menu item opens a window showing the train's current journeys.

🚋 **Control manually without delay**
Option to control vehicles or trains without any delay. The intelligent vehicle displays are an exception here.

🚋 **Control in route/profile/macros without delay factor**
Option to control vehicles/trains in routes, profiles, or macros without any delay. The intelligent vehicle displays are an exception here.

🚋 **Stop vehicle**
The moving vehicle is stopped.

🚋 **Small vehicle control**
The display of the vehicle control can be switched from "Maxi" to "Small" or vice versa.

---

[14] **Win-Digipet** Decoder-Programmer

The in Fig. 4.76 shown for a locomotive vehicle control can be accessed in the same way for the other vehicle types of wagons or road vehicles from the respective vehicle controls.

However, due to the functionality of a wagon or a road vehicle without drive, the menu items for calibrating the vehicle or programming the vehicle decoder are omitted.

You can recognise the editing mode of a vehicle by the stylised flashing pencil at the top of the vehicle control. In the Fig. 4.78 this is illustrated once again.
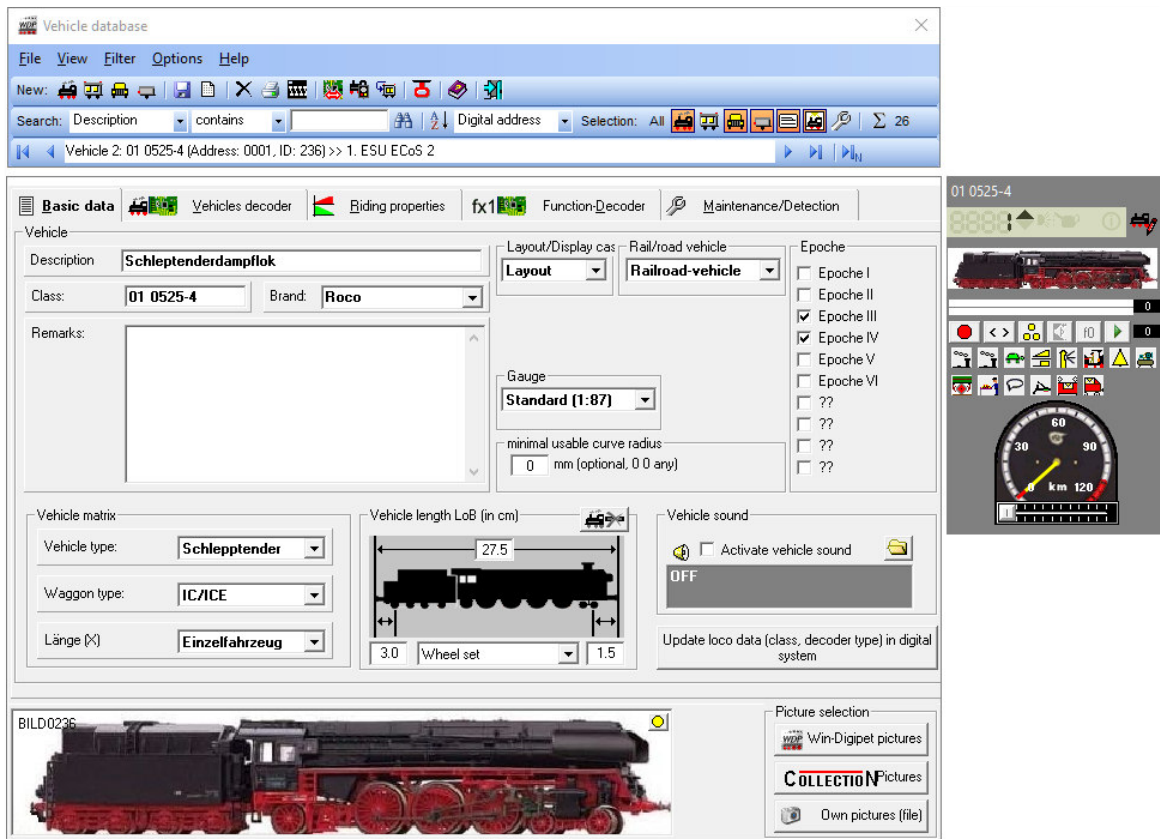
Fig. 4.78   32 locomotive in edit mode

 Please note that a vehicle that is in edit mode cannot be controlled by **Win-Digipet.** All other vehicles on the system can still be controlled.

A moving vehicle is stopped as soon as you enter edit mode.

4.21 Programming vehicle decoders (decoder programmer)

As already mentioned in the previous section, selecting "Program vehicle's decoder" opens the **Win-Digipet decoder programmer** for programming vehicle or function decoders.

The following illustration shows the dialogue for an example locomotive from the demo project. You can see from the flashing stylised decoder symbol in Vehicle Control that you are in the programme section for decoder programming.
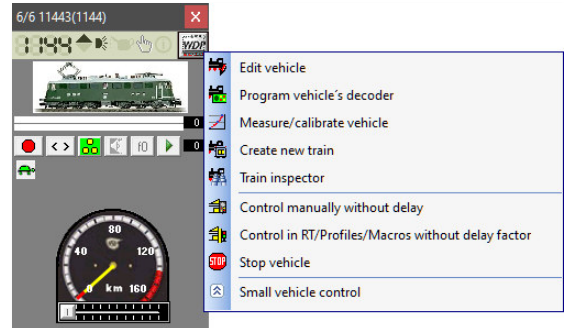
Fig. 4.79   33 the decoder programming via the submenu
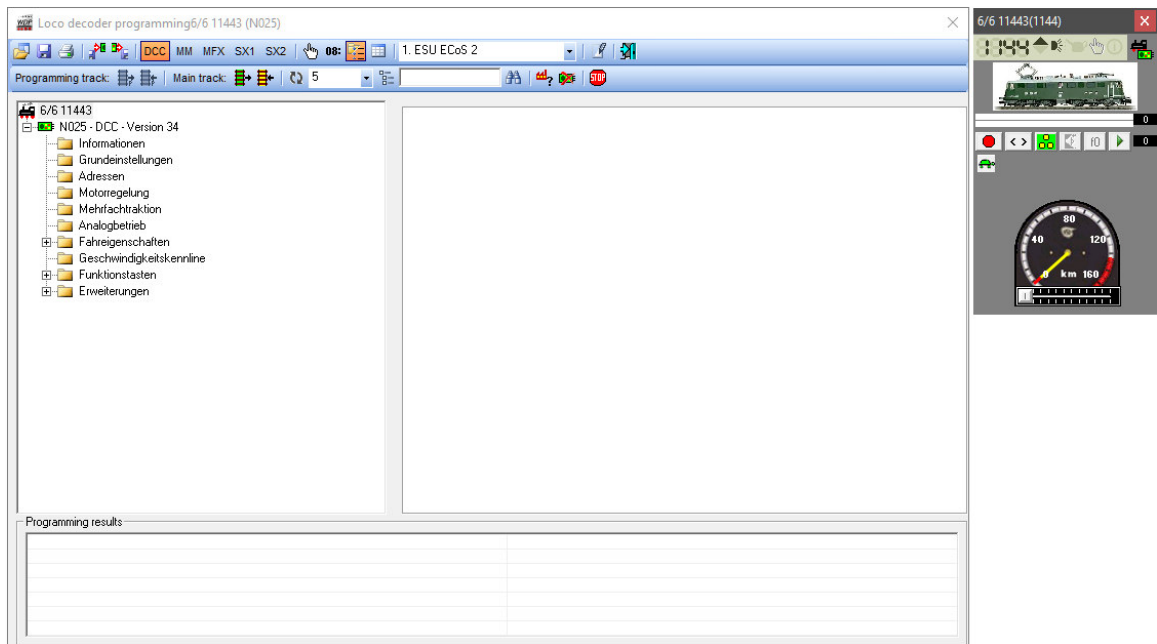
Fig. 4.80   The main dialogue window of the decoder programmer

> The **Win-Digipet** decoder programming function can be used to programme decoders whose values can be changed via CVs .[15]
>
> Decoders that are influenced by DIP switches or potentiometers, for example, cannot be set with this part of the programme.
>
> Please note that a vehicle that has been called up by the decoder programming programme section cannot be controlled by **Win-Digipet.** All other vehicles on the system can still be controlled.
>
> A moving vehicle is stopped as soon as you enter the mode for programming the decoder.

Before you start programming the decoder, you should make sure which type of decoder is installed in your vehicle. Our Ae 6/6 from the demo project uses a decoder type N025 from Kuehn as an example.

The decoder programmer is structured in such a way that the CV values of a vehicle decoder are written in so-called decoder templates and then assigned to the data record of the vehicle database when saved on the computer. The templates for decoder programming are included in the scope of delivery of **Win-Digipet 2021 Premium Edition**.

These templates are basically empty envelopes in which all the specifications of a decoder are stored and can be filled with the individual settings of a decoder. They are available in two different versions:

- 🚂 Templates of the DecoderDB
- 🚂 Win-Digipet templates

The DecoderDB is a manufacturer-independent decoder database created by Stephan Bauer on the Internet. This database provides new templates for **Win-Digipet** and copies them to your computer via the Start Centre during an online update. These new templates are read-only, i.e. you cannot make any changes to them.

The **Win-Digipet** decoder templates are stored in the programme subdirectory ".\DecoderTemplates" when **Win-Digipet** is installed.

The templates supplied are stored in the directory mentioned in a structured manner in further subdirectories named after the manufacturers.

---

[15] CV = Configuration Variable

During the development phase of **Win-Digipet**, templates were created for the most common decoder types. However, since the market is constantly changing, it is not possible to create ready-made templates for all decoder types.

You can also use this part of the programme to create and use your 🖋 own templates for your decoders according to the manufacturer's specifications. Use the icon from the window toolbar for this functionality. Before you start creating your own decoder templates, you should carry out an online update to download the latest decoder templates to your computer.

There are two types of **Win-Digipet** templates, which differ from each other in their names. Supplied templates have the extension *".wdpdec"*, the templates created by the user are stored with the extension *".usrdec"*.

The templates supplied by **Win-Digipet** are write-protected and therefore cannot be changed accidentally.

4.21.1 The DecoderDB templates

The DecoderDB templates have a slightly different internal structure to the **Win-Digipet** templates you may be used to, but they also offer a range of additional options.
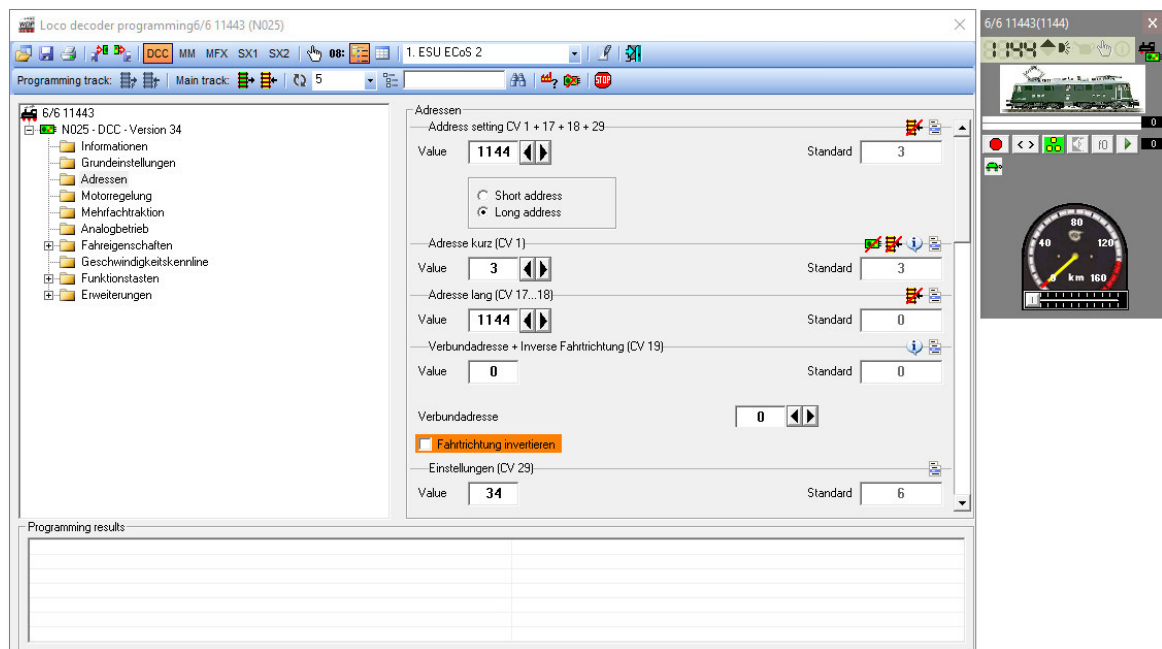
Fig. 4.81   34   Addresses tab with additional icons.

One page of the address settings of a *Kühn N025* decoder is shown here as an example. You can see in the graphic that all CV parameters belonging to the address settings are

summarised on one page. This allows you to see briefly which settings are stored in your decoder.

The individual CVs (CV = Configuration Variable) may also be accompanied by some symbols ![symbols] . Using these symbols, you can immediately recognise whether an individual variable is possibly read-only. A distinction is made between the main track and the programming track. If you move the mouse over one of the symbols, the stored information is displayed in a tool tip.

A mouse click on the list symbol opens a submenu window in which you can read out individual CVs or write them to the decoder.

You also have the option here of excluding the respective variable from the reading process or resetting the variable to the default value defined by the manufacturer. This deactivates the individual CVs in the tree (greyed out). They are no longer read or written during the read process. As an alternative to the submenu shown here, you can also use the right mouse button on the left of the tree window to skip the entries or not. This procedure also works in the tree with entire folders. Especially for decoders with an infinite number of CVs, it can make sense to simply hide unneeded variable groups. This procedure is suitable for greatly reducing the time required to read in a decoder.

If a decoder does not respond to a requested CV when it is read in, you will be informed of this in a dialogue window and can decide whether to do so:
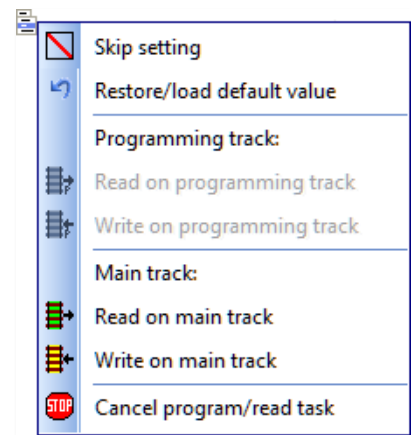
Fig. 4.82   The submenu of a CV

- this CV should be skipped once.
- this CV should be skipped and always deactivated.
- is to be cancelled.

When selecting the first or second point, you are then asked whether the selection made should also apply to all other CVs that fail in this run.

The toolbar of the programming window contains a list field that you can use to specify the number of read or write retries before the respective process is cancelled with an error message. The values 0-9 are possible here. The default value here is 5.

4.21.2 Select a decoder template.

The diagram Fig. 4.83 is divided into two areas. On the left is the tree view of the installed templates, divided into the templates of DecoderDB and **Win-Digipet** or your own templates.

Fig. 4.83   The selection window for a decoder template
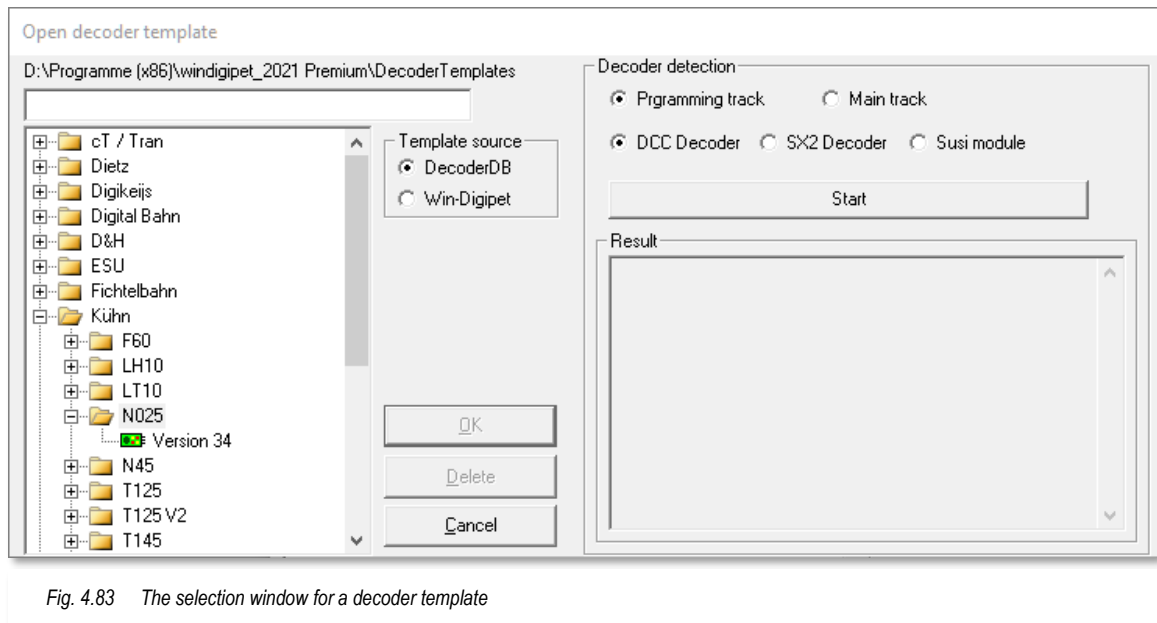
The right-hand part of the window is used to recognise a decoder that is installed in the vehicle. As a rule, you will place the vehicle on the programming track, which is connected to the programming output of your digital system, and then press the *'Start'* button. The programme switches the digital system to programming mode and attempts to read out the manufacturer ID and, if necessary, further information on the decoder type or firmware version. The latter information is not stored in every decoder or released by the manufacturer and therefore the result of the readout will depend very much on the decoder type. As a rule, however, the decoder should reveal its manufacturer ID from CV7.

Please ensure that you select whether the decoder is a DCC decoder, a Selectrix2 decoder or a SUSI module before the actual reading process. It is generally not possible to read "older" Motorola decoders.

The result of the read process is displayed in the results window and, if possible, a template from the DecoderDB is offered to you. This can be accepted with the help of a dialogue box.

But back to the programming of our example Ae 6/6 locomotive from the demo project. In Fig. 4.83 the prefabricated decoder template *"Kuehn N025 of the DecoderDB"* has been selected.

Place the locomotive to be programmed on the programming track and read out the values of the decoder by clicking on the green symbol in the programming

track area. area. If an error occurs during the read procedure or if you want to cancel the process, you can do so by clicking on the stop symbol 🛑 in the toolbar of the window.

The specifications of a decoder are displayed in a tree structure on the left-hand side of the decoder programming window. You are probably already familiar with this type of display from other Windows applications, not least from Windows Explorer. When working with **Win-Digipet**, we will encounter the tree view again in many parts of the programme.

As a result of the read process, the decoder data tree contains the individual CVs with the values of your decoder. The individual variables are summarised in groups or thematically. The groups can be expanded and collapsed by clicking on the +/- symbols. The following Fig. 4.84 shows the complete window with the read-out address settings. In this example, the address 1144 was determined for the decoder read out. This address is a "long address" by DCC definition, which is made up of the values in CV 17 and 18 and must be selected in CV29. The standard address in this example is address 3, but this is not used due to the "long address" selection. You can see that all relevant data for address assignment is summarised on one tab.
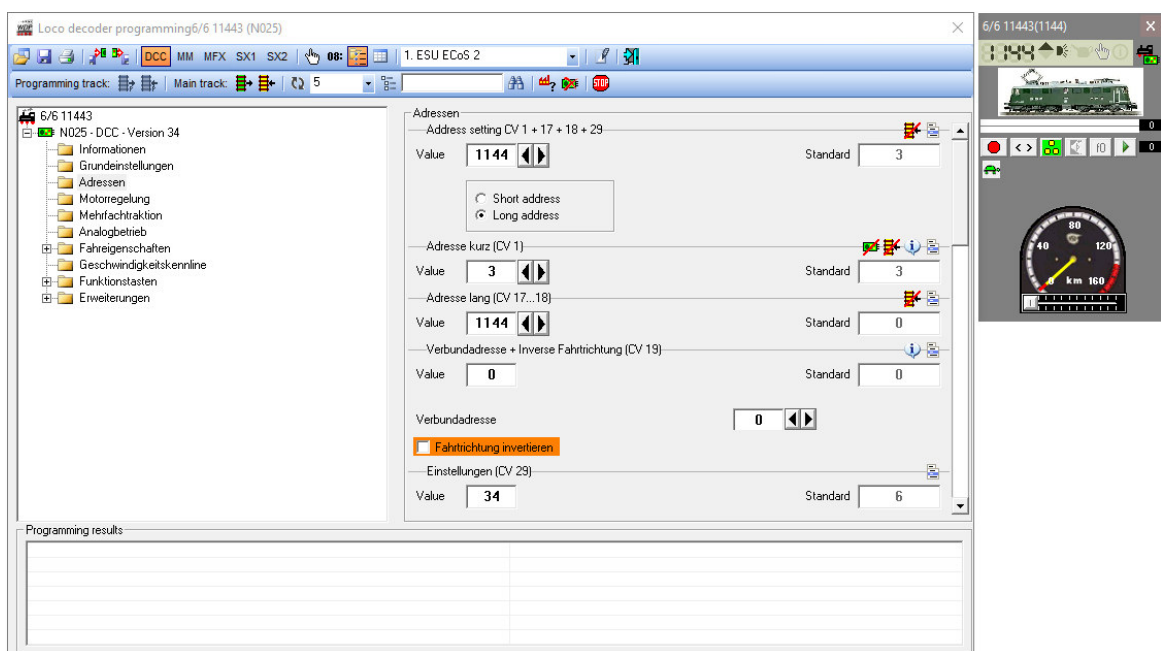
Fig. 4.84   The decoder settings are displayed in a tree structure.

You can change the individual values as you wish. Changed values that have not yet been saved are shown in red in the tree. Information texts have also been included for the individual variables to support you. However, please always refer to the manufacturer's documentation for your decoders.

The results of the programming processes are displayed at the bottom of the window. These results depend on the selected programming and the feedback from the digital control centre used.

4.21.3 Management and additional functions of the decoder programmer

Use the icons [icons] to access the management functions of the Decoder programmer programme section. We have already explained how to open a template above. Saving here means writing the decoder values back to the vehicle data record in the vehicle database.

Using the print function, you can print out the complete data record for the decoder or export it to an RTF file and edit it in a word processing programme, for example.

The two symbols on the right represent the import and export functions of the decoder programmer. If you have installed several decoders of the same type in your vehicles and want to make the main settings the same everywhere except for the address, you can easily duplicate the completed decoder settings to other vehicles by exporting and importing.

Other important functions of the decoder programmer can be accessed via the following toolbar: [toolbar]

The set numerical value specifies how many read or write attempts are to be made before the process is cancelled. The default setting is five attempts; the numbers 0-9 can be entered.

The second symbol from the left enables the option of multiple selection. In the tree structure, small selection fields are displayed next to the group or variable names. You can mark individual values for reading or writing by selecting them. This can save a huge amount of time, as reading out several hundred CVs (depending on the decoder type) takes a certain amount of time.

The "Binoculars" symbol with the adjacent text field allows you to search for character strings in the decoder template.

The "factory symbol" reads out the manufacturer identification of the decoder, like the form described above under decoder recognition.

You can reset the decoder to its factory settings using the "Delete decoder" symbol. The manufacturer-specific procedures are stored in the templates for this purpose (e.g. write value 8 to CV8).

The stop signs cancels read or write operations. Depending on the digital system used, it switches from programming mode to normal operating mode.

4.21.4 Manual adjustment of configuration variables

You can also programme CVs manually using the [symbol] symbol. For bit-orientated CVs (e.g. CV29), the individual bits of the variable can be easily adjusted in this way. The symbol for this function is designed as a switch, so you can switch the function on and off with the same symbol.

The symbol [symbol] also allows you to read individual or groups of variables from the decoder or write them to the decoder. To do this, tick the required variables in the tree. The symbol

for this function is also designed as a switch, so you can switch the function on and off with the same symbol.

Once you have adjusted all the desired values of the decoder to your requirements, write the values back to the decoder by clicking on the yellow symbol.
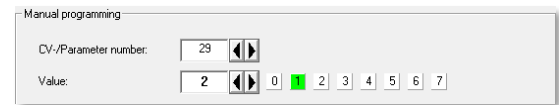
Fig. 4.85   85Manual CV programming

You can use the symbol ▦ to display a value list of all set CVs. Please note that the value list cannot be displayed when "manual CV programming" is switched on.

4.21.5 Main track programming with the decoder programmer

Alternatively, instead of the programming track you can also use the main track programming[16]. Please note, however, that not all digital systems or protocols support main track programming.

4.21.6 Selection of the track protocol

Of great the selection of the track protocol DCC MM MFX SX1 SX2 is also very important. **Win-Digipet** allows the following protocols to be selected here:

- 🚃 DCC
- 🚃 Motorola (MM)
- 🚃 MFX
- 🚃 Selectrix (SX1, SX2)

At this point, it should also be pointed out once again that the selected track protocol must be supported by both the decoder and the digital system you are using. You can find a table of the protocols supported by the digital systems and how to handle the programming in the download area of the **Win-Digipet server**.

The programming of variables in the MFX protocol currently works with the digital control centres Märklin Central Station 2 or 3, CAN Digital-Bahn CC-cuts in conjunction with a Märklin Mobile Station. These hardware constellations were successfully tested during the development phase of **Win-Digipet** in connection with the programming of MFX decoders.

Click on the symbol 🔀 to exit the programme section for decoder programming and return to the main programme.

---

[16] Program on Main Track (POM)

All entries for the decoder are saved in the vehicle database for the respective vehicle. This makes it very easy to manage your decoder settings and use them as a reference if required.

4.21.7 Programming vehicle function decoders

Programming a function decoder corresponds to the steps described in the previous section for programming a vehicle decoder.

At the start of programming, please select the function decoder you are using or create your own template. All further steps for programming the function decoder can be found in section 4.21.

Version 2021
Premium Edition

Chapter 05

5. THE TRACK DIAGRAM EDITOR

5.1 General information

With the help of the track diagram editor you can create a logical, functional image of your model railway layout in **Win-Digipet**. This track diagram does not have to be to scale and does not necessarily have to be linked to the physical conditions.

When creating the track layout, you should take the following turnouts to heart:

- 🚂 Create the track diagram as small as possible, but as large as necessary so that the track diagram can be displayed on the screen with all details.

- 🚂 Draw signals (usually start and destination signals) in the track diagram, even if the signals are not actually present on the model railway. They perform important safety functions in the individual routes.

- 🚂 Enter all feedback contacts of the model railway layout in the track diagram, even if only one-track section is provided for feedback contact.

- 🚂 Draw vehicle displays for the start and destination of the subsequent routes.

- 🚂 Allow space for virtual switches and possibly also counters to control the processes in automatic systems (e.g. the staging yard) so that later changes to the track layout and the associated changes to the routes etc. can be avoided.

- 🚂 Possibly divide the track diagram into logical areas. The individual areas can then be better distributed on the screen(s) and hidden if necessary, using the so-called multiplans.

We have developed the track diagram shown in the following graphic for the demonstration project contained in the project directory. It is intended to provide you with reference turnouts for the track layout of your own model layout. During the planning phase, we paid particular attention to keeping the visualisation clear. In the further course of this programme documentation, you will see that many realistic operating sequences are possible with the relatively small layout included in the demo project.

All descriptions and graphics in this and the following chapters are based on the demonstration project. This gives you the opportunity to reproduce the processes described in the manual in the demonstration project.

> ⚠️ If you want to follow all the descriptions in this manual, you should refer to section 2.2.3 load the supplied project **WDP2021.**

The following graphic shows the track diagram of the demo project.

In the track diagram you can recognise...
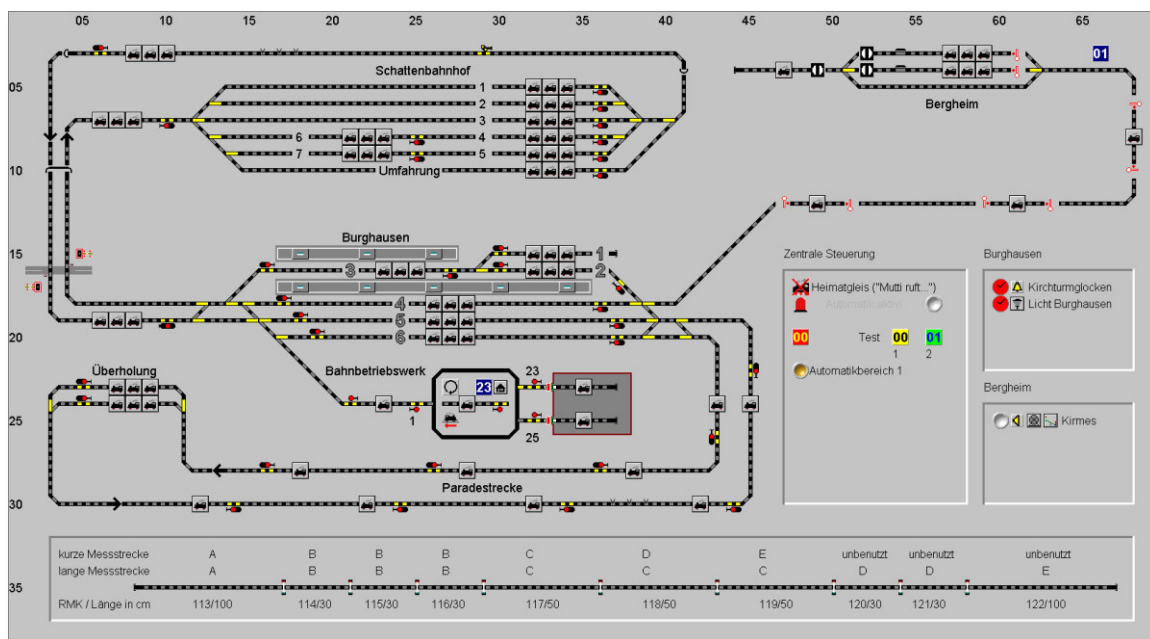
- in the centre is the 6-track Burghausen station, which can be used on all tracks in both directions.
- a branching single-track mountain line to Bergheim with three stops in between
- a 5-track staging yard in the upper part,
- a parade route with a 2-track overtaking section in the lower part
- a small depot with a turntable and a 2-stall engine shed.
- a control area for (virtual) switches and counters
- the representation of a measuring section

After you have entered your system configuration and the vehicles in the previous chapters, the next step is to create the track layout of your model railway system.

You have already made some preparations in the system settings and the feedback configuration by entering the feedback modules and the digital system as well as selecting for the appearance of the track diagram. These two turnouts are particularly important as they allow you to immediately test the correct functionality in the track diagram editor when assigning the feedback contacts and the solenoid device addresses.

How does this work? We will come back to this in the following sections.

5.2 The start of the track diagram editor

The track diagram editor can be started in three different ways:

In the Start Centre, you will find two buttons for starting the track diagram editor on the "Start project" action tab.

Here you can start the track diagram editor either in the layout version or in the so-called office version. As already described in the chapter on the Start Centre, the office version has no connection to the digital system.

Functions that require a connection to the digital system (e.g. the linking of solenoid devices) are not available in the office version.
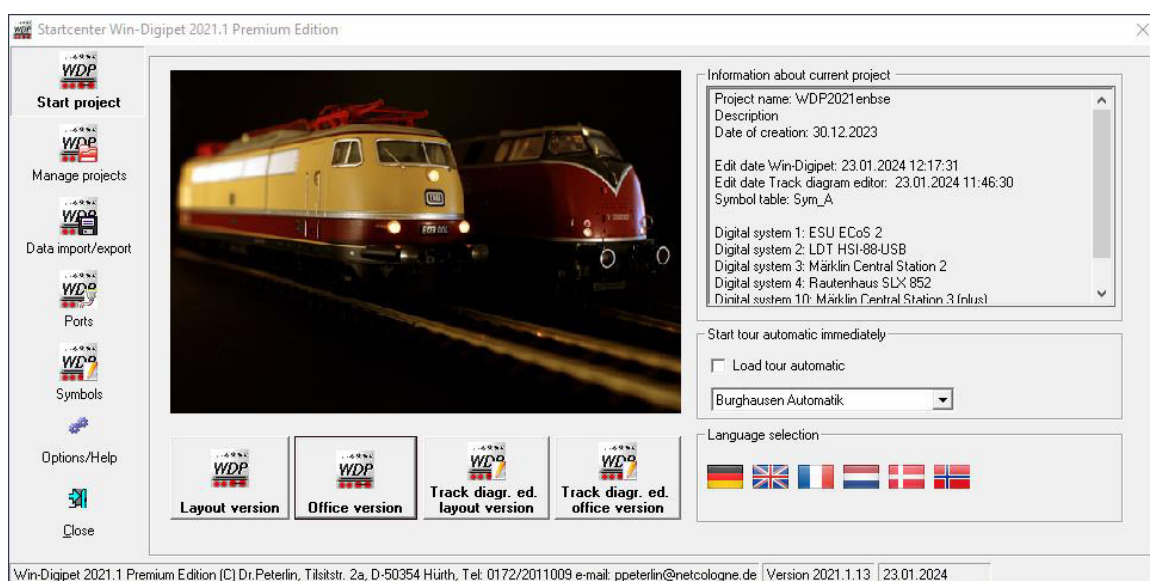
Fig. 5.2   The start centre with the two start options of the track diagram editor.

In addition to the start options from the Start Centre, you can also start the track diagram editor from the main **Win-Digipet** program. This also works for the layout and office versions of the programme with the same restrictions mentioned above.

Click on the 🖉 icon in the **Win-Digipet** main toolbar to start the track diagram editor.

5.3 Track diagram window

After starting, the track diagram editor presents itself with an existing track diagram of the current project, in our case the demo project WDP2021, or, when starting a new project, with a dialogue on the dimensions of the track diagram in the "new" project.
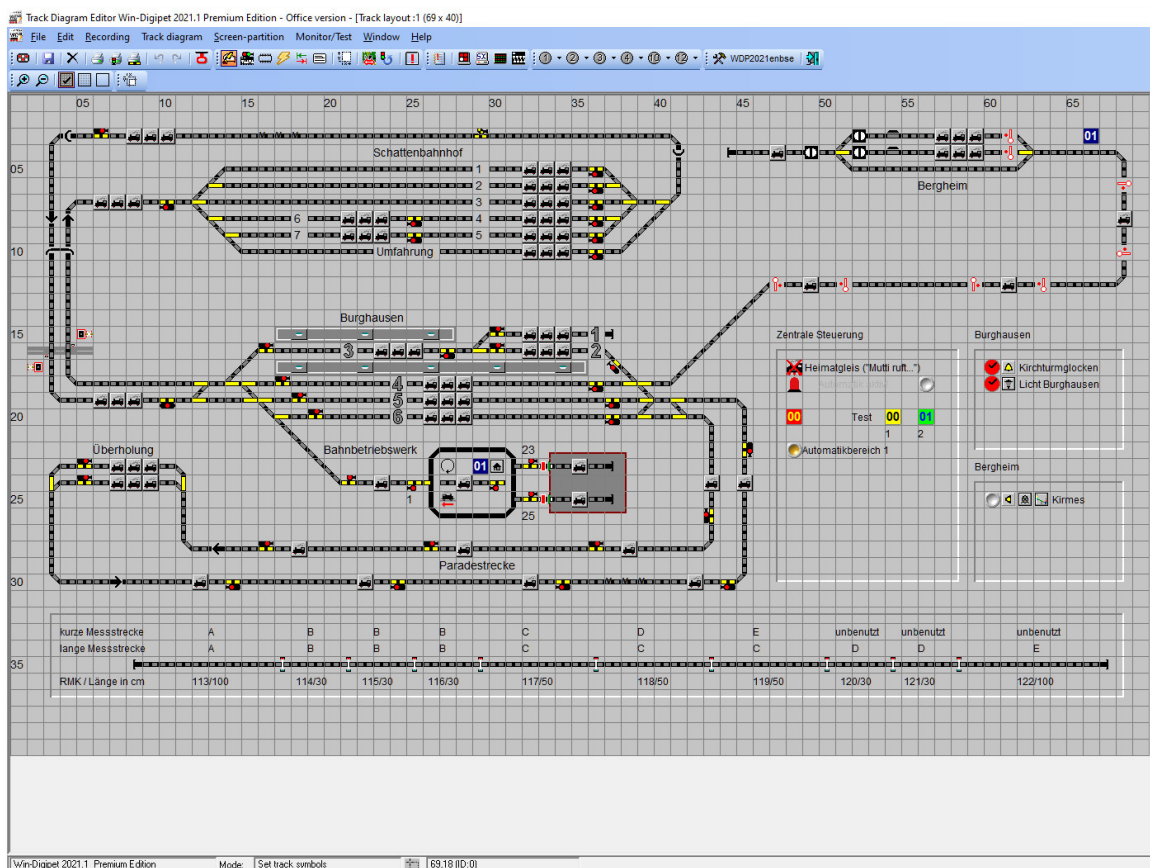
*Fig. 5.3   Overview of the **Win-Digipet** track diagram editor.*

5.3.1 The size of the track diagram

After starting the track diagram editor for the first time, an empty track diagram with a grid and the symbol selection window appears.

The specified track image size is **50** symbol fields horizontally and **30** symbol fields vertically.

By clicking on the icon in the track diagram editor toolbar, you can define the dimensions and the new position of your track diagram according to your requirements.

The dimensions of a track diagram can be between **20** and **250** symbol fields in width and between **20** and **200** symbol fields in height. Use the arrow buttons to specify the size in individual steps. After the entry, confirm with **'OK'**.

In the "Move track diagram" area, you can move an already recorded track diagram in its entirety to the right, down, left, or up in steps of 2. Routes that have already been recorded are automatically corrected for a shift. Confirm the shift with **'OK'** and a confirmation prompt appears before the shift is saved.

Fig. 5.4   2 dimensions of the track layout

If you have already drawn and saved a track diagram in a previous version of **Win-Digipet 2021,** it will be displayed automatically when **Win-Digipet** is started. Of course, you can continue to develop this track diagram with the current programme version.

5.3.2 Toolbars, status bar

Below the menu bar, the toolbars of the track diagram editor appear, which are basically structured and operated in the same way as the toolbars of the other programme parts of **Win-Digipet**.

A total of five toolbars are available to you, which you can show or hide as you wish. You can also switch the required toolbars on or off via the short menu by clicking the right mouse button in the track image of the editor.

It is not possible to customise the toolbars in this part of the programme, as is the case in the main programme.

Fig. 5.5   3 toolbar selection in the track diagram editor

However, the toolbars can be positioned as required.

In the menu bar of the track diagram editor, as in the other parts of the programme, the meanings of the individual symbols are displayed by means of "quick info" with a yellow background when you hover over them with the mouse.

In the status bar at the bottom of the screen, you can see the current mode of the track diagram editor and the current x and y position of the mouse pointer in the track diagram.
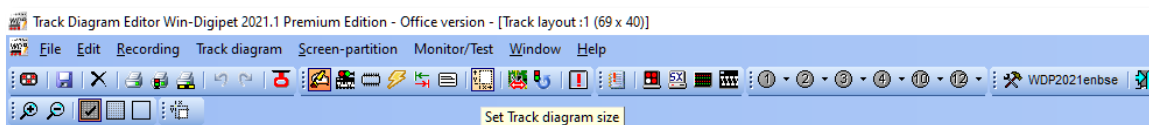
Fig. 5.6   Quick info on the meaning of a symbol

The "Mode" field shows you which of the three modes the track diagram editor is currently in. These will be explained in detail in the following sections. They are as follows:
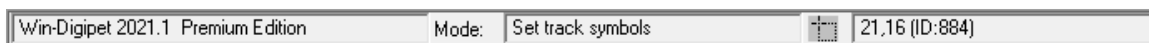
Fig. 5.7   4 status bar in the track diagram editor

- Placing track diagram symbols
- Assign solenoid device addresses.
- Enter feedback contacts.

5.3.3 *Setting different grid types*

To display the track diagram three versions of a grid are available in the editor window: <Lines> (a grid), <Points> and <No grid>.

When selecting <Lines>, older computers may experience a slight delay in the image setup and scrolling.

You can access the grid setting by right-clicking in the track image window via the <Grid> short menu or by clicking on one of the three icons in the toolbar.

5.3.4 Splitting the track diagram window

To split the editor window click on the menu command <Window><Split>. You will then first see two identical track images split in half on the screen. You can now place the track symbols in different positions and edit sections.

The two windows can be arranged on the screen in different ways using the other commands in this menu.

You can return to single-screen mode by selecting the <Window><Split> menu command again.
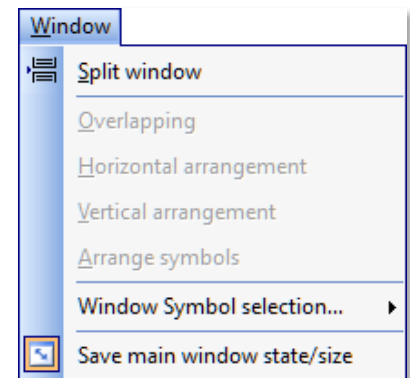
Fig. 5.8   Splitting5 editor window

5.3.5 Zoom in and out ("Zoom")

The gradual enlargement of the track image via <track image> <zoom plus/minus> or with the <u>right mouse button</u> in the track image via the short menu <zoom plus/minus>

Alternatively, you can also use the magnifying glass icons in the toolbar 🔍🔍.

There are 5 levels available for displaying the symbol fields:

Fig. 5.9   Menu and toolbar for the zoom levels

- 🚂 12 * 12 pixels (small)
- 🚂 16 * 16 pixels
- 🚂 20 * 20 pixels
- 🚂 24 * 24 pixels
- 🚂 28 * 28 pixels (large)

5.4   Move the track image with the centre mouse button.

A large track image, that extends beyond the dimensions of your screen can be moved in the track diagram editor window using the vertical or horizontal scroll bar on the right or bottom edge of the screen. As an alternative to this procedure, you can also move the track diagram in any direction by holding down the centre mouse button. The mouse pointer changes to a 4-fold directional arrow.

Fig. 5.10   6 moving the track image, the appearance of the mouse pointer changes

5.5 The "Set track symbols" mode in the track diagram editor

5.5.1 Selection of individual symbols or symbol groups

The track diagram of **Win-Digipet** is made up of individual symbols. These are put together in the track diagram editor according to your requirements.
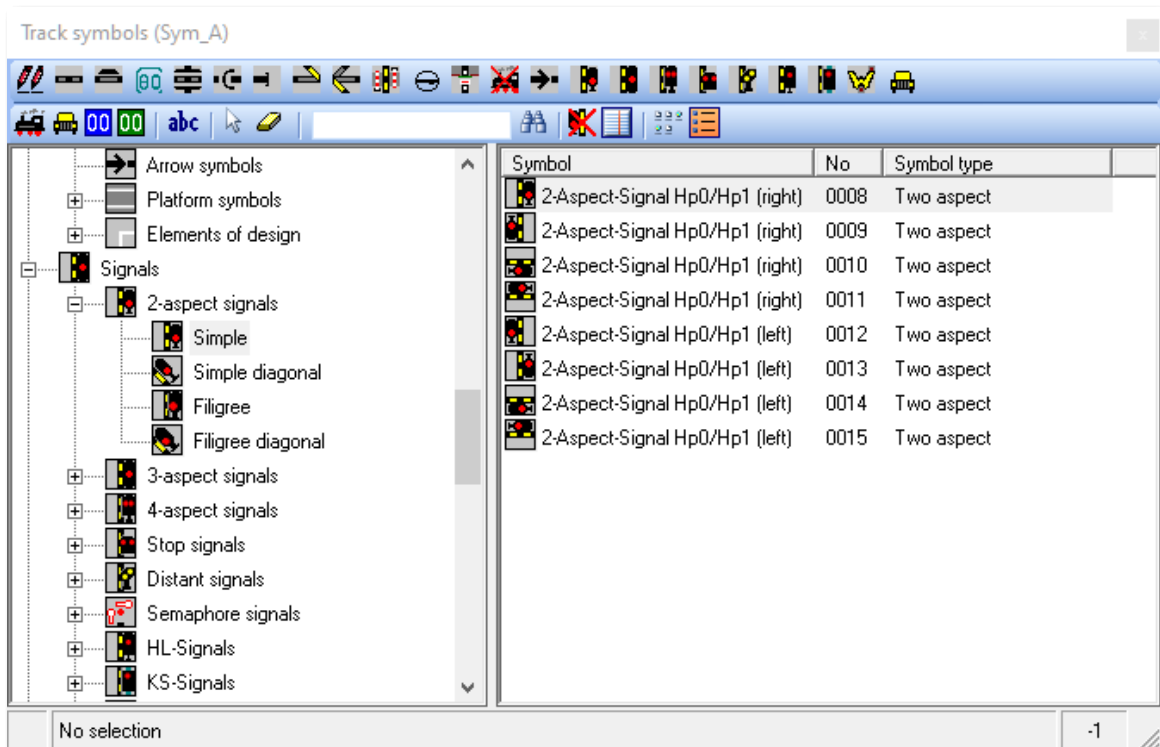
Fig. 5.11   The dialogue window for selecting the track diagram symbols.

The available symbols are displayed in a tree structure in the *"Track symbols"* window. This display method allows the required symbols to be found quickly and is also very clear thanks to its thematic categorisation.

The symbol selection includes individual symbols and symbol groups. Symbol groups also consist of individual symbols that are grouped thematically for placement in the track diagram. After placement in the track diagram, the symbols from these groups can be processed like individual symbols.

The bar at the top of the *"Track symbols"* window contains the controls for selecting the symbol categories in the first line. The second line contains the control icons for editing, search, and display functions.

The meaning of the symbols is also displayed here as "quick info" highlighted in yellow by pointing to them with the mouse pointer.

If you click on a symbol entry in a category, the associated elements of the selected category are displayed in detail in the list windows on the left and the individual symbols of

the respective category are displayed on the right. The Fig. 5.11 shows an example of this on the left for "simple 2-letter signals". In the right-hand part of the graphic, a 2-letter signal has been selected in vertical alignment. When a single symbol is selected, the name of the symbol is displayed in the lower text line.

The "Symbol groups" category contains thematically summarised individual symbols, as they occur again and again on many model railway layouts. This will enable you to draw your track layout even faster.
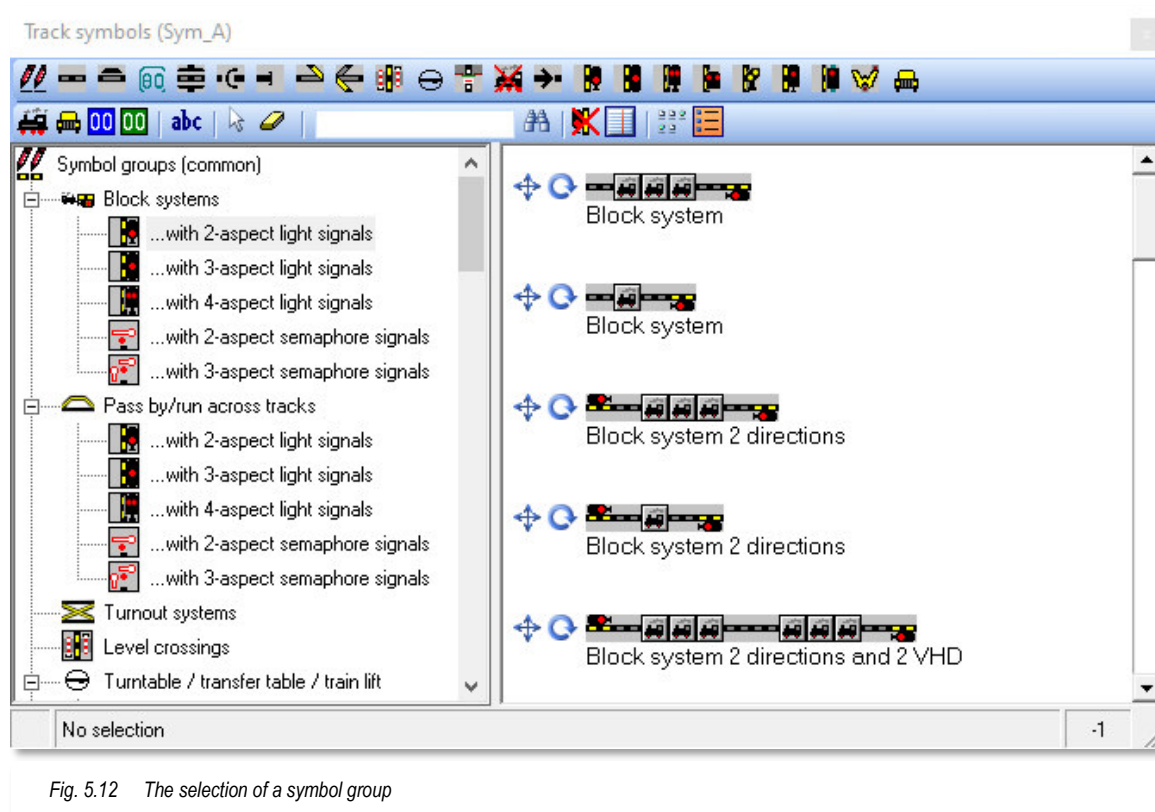
Fig. 5.12   The selection of a symbol group

A simple "Block system with 2-aspect light signal" is used here as an example of a symbol group. The selection of such a symbol group is shown in Fig. 5.12 is shown.

Possible combinations of such a symbol group are listed on the right-hand side of the window.

Here you will find block turnouts in one or two directions and the corresponding signals. Combinations with "large" or "small" vehicle displays are also listed.

In addition to the individual symbol groups, you can also recognise two small icons. These indicate that the designated symbol group can be rotated or scaled ✛ ↻ .

We will come back to the placement of the symbol groups and the individual symbols in the track diagram later in this chapter.

How and which symbols are displayed in the symbol selection also depends on the setting in the <Window> <Window symbol selection> menu.

There is a choice:

- 🚋 Hide symbols for traffic left.
- 🚋 Close open groups automatically
- 🚋 Show small symbols (zoom level 16, standard zoom level 20).

The vertical scroll bar scrolls forwards and backwards through almost **1800** symbols. In addition to the track sections, points, buffer stops, tunnel entrances and exits, bridges, turntable symbols, switches and buttons, the signals for right and left-hand traffic are also available as shaped or light signals. Symbols for train number tracking on long parade lines, symbols for level crossings, engine shed gates, direction arrows, various symbols to represent an engine shed etc. can also be selected.
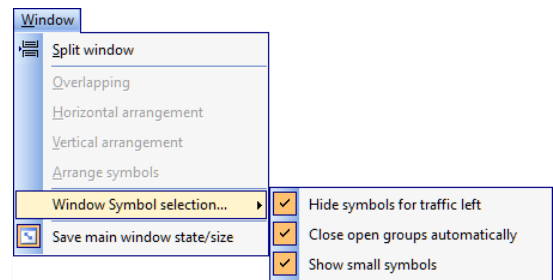
Fig. 5.13   Options for symbol selection in the Window menu

The selection of symbol groups includes block sections, overtaking and meeting tracks, turnouts connections, level crossings, turntables or transfer tables or train lifts, engine sheds and groups of frame symbols.

To create your own symbol groups, there is an external add-on programme, the so-called symbol group editor. This programme is not part of **Win-Digipet** and can be downloaded from the Internet. The corresponding links can be found in the **Win-Digipet** forum.

You can resize the "Symbol selection" window by dragging the window size to all sides as is typical for Windows.

You can also temporarily hide the "Symbol selection" window with the close symbol ⬚ to get a better overview of the track diagram, for example. You can then open the symbol selection window again with the symbol 🖉 or the menu command <Capture><Edit track diagram>.

The view of the symbol selection depends on your selection of the symbol table in the system settings and the position of the four right-hand switches in the second row of operating symbols.

You can use these four buttons to hide the symbols for left-hand traffic, display the symbol type in a list, set the symbol view or a detailed list view. The illustration on the right shows the detailed view of the individual symbols in Fig. 5.11.
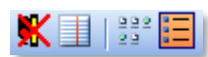
The search function integrated in the in the *"Symbol selection"* dialogue window allows you to find a specific symbol very quickly. To do this, simply enter the symbol number in the text field of the symbol bar and click on the stylised binoculars. The symbol you are looking for is immediately displayed in the list.

With the total number of almost 1800 individual symbols divided into the above-mentioned types, there are therefore many symbols available for displaying your track layout and can therefore presumably cover most requirements.

In total more than 20 symbol tables are offered. Some symbol tables are designed for special applications (e.g. driving with cars).

Only the standard symbol tables A, B, DB, DB 2, and 3D are compatible with each other, i.e. they are easily interchangeable. If a non-compatible symbol table is subsequently selected, corresponding changes must be made to the track diagram.

Other symbol tables are only compatible to a limited extent, as different (special) symbols are displayed in many places. These symbols can be, for example.

- International signalling symbols (Belgium, Italy, Netherlands, Switzerland, and Spain)
- Symbols for shared car and rail transport
- Additional track diagram symbols in the Sym_SP, Sym_Sp2 and Sym_SP3 tables

5.5.2 Change/create own symbol tables (Sym_U)

The programme also offers you the option of compiling your own symbol tables. With the help of the track symbol editor of **Win-Digipet**, you can change the desired symbols or create completely new ones yourself and add them to your own symbol tables. The track symbol editor can be found in the Start Centre in the "Symbols" action tab.

The supplied symbol tables are protected against accidental changes. Use the track symbol editor to create and edit your own symbol tables. You can find instructions on how to use it in the "Tips & Tricks" section of the **Win-Digipet** forum.

5.5.3 Draw track diagram.

The operation of the track diagram editor is simple and convenient. Before you start creating your track layout, it is advisable to roughly plan the track layout in advance; a simple sketch is sufficient, a technical drawing is not necessary.

In contrast to a full-scale track plan, your track diagram does not have to show the exact spatial position of all the tracks on your model railway layout. Rather, the focus should be on a suitable representation of track sections to be controlled (e.g. station or turntable) on one screen page.

Do not draw your track layout larger than necessary; you will save yourself a lot of work.

You must display your track layout **in two dimensions**, i.e. track areas that lie on top of each other (staging yards, spiral tracks, etc.) are displayed **side by side** or **one below the other** in the **Win-Digipet** track layout.

Now click on the symbol of the category (e.g. points) to which the individual symbol you want to place in your track diagram belongs in the toolbar of the window.

Then click on this individual symbol to select it. The selected symbol is displayed at the bottom left of the symbol selection.

Example:

You want to select the symbol of a three-way switch with the switch point to the left for placement.

Click on the **'Three-way turnout'** button at the top of the toolbar and the selected subgroup is immediately displayed in the category list on the left.

A previous symbol subgroup is closed if you have not changed the default setting. A closed subgroup is always marked with a plus sign (+), an open subgroup selected for selection is marked with a minus sign (-), as you know it from Windows Explorer.

In the opened symbol subgroup, select the desired individual symbol (here 0024).

Fig. 5.14   The selection of a three-way turnout in the "Track symbols" window
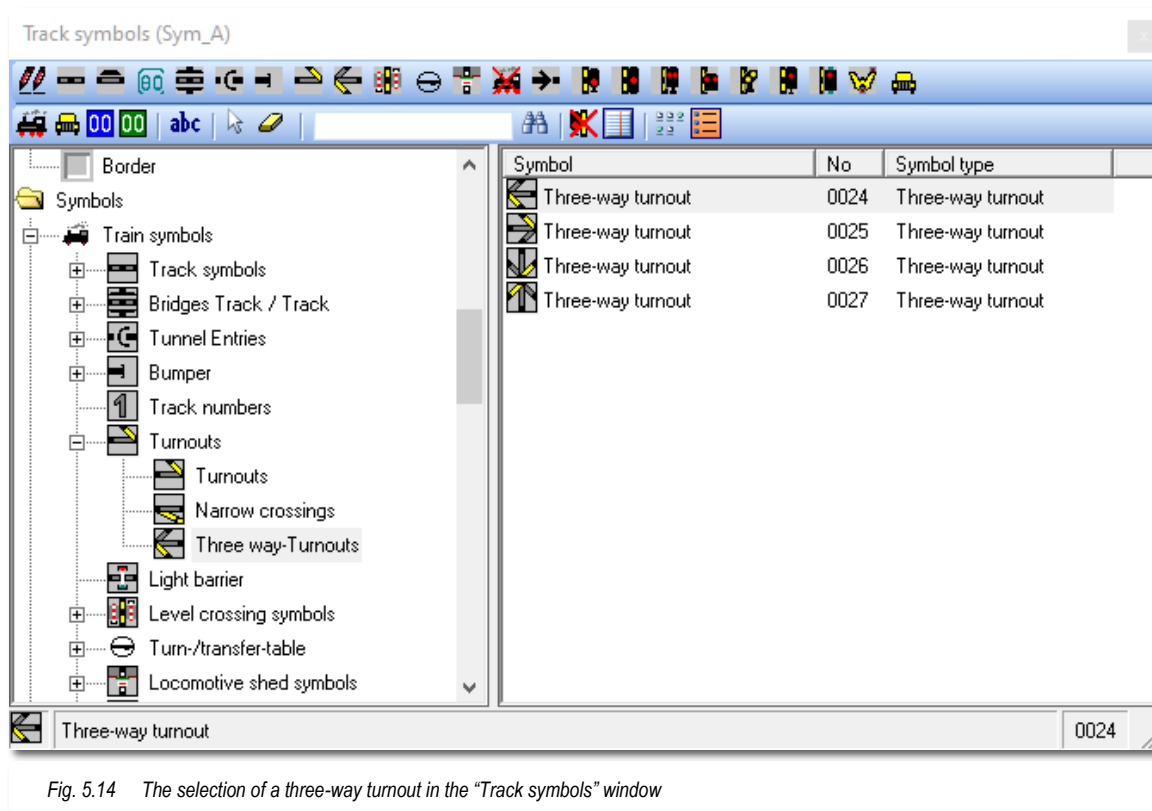
The selected symbol is displayed in the status bar at the bottom, along with its name and symbol number.

Now move the mouse pointer to the position in the track diagram where you want to place the symbol. When you leave the symbol selection area, the selected symbol is attached to the mouse pointer, which has changed to a 4-fold directional arrow (cf. Fig. 5.15). Use the right mouse button to switch to the next display in the list, i.e. you can rotate the symbol in 90° steps. Position the symbol as required by briefly pressing the <u>left mouse button</u> again at the desired position on the track diagram.
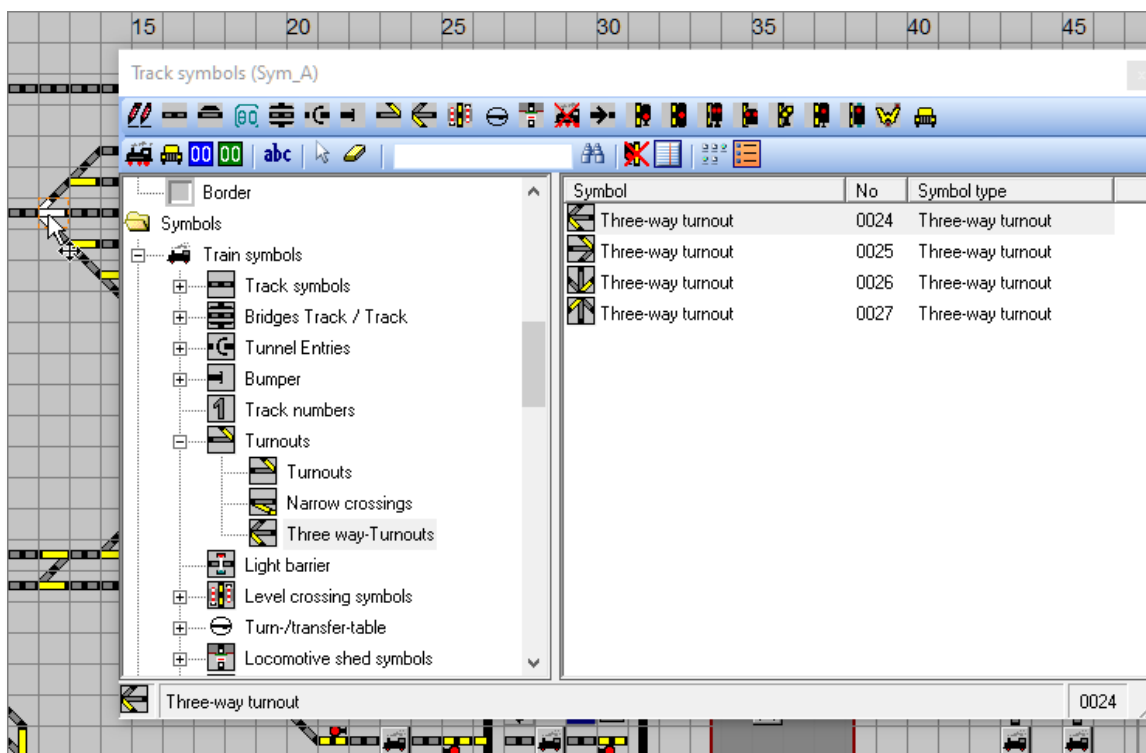
Fig. 5.15   The symbol for a three-way switch is placed in the track diagram.

Use the ESC button to cancel the placement of a symbol in the track diagram.

> If you **hold down the Shift key** and then click the left mouse button several times, you can also place the symbol in different directions, saving you having to click the corresponding symbol again.
>
> **But beware!**
>
> If you select a different symbol, it may not be placed in the desired orientation because you had previously rotated a symbol. In this case, click on the desired symbol again in the symbol selection and it will be displayed in the correct direction again.

If you want to draw a symbol several times in succession, e.g. "0068 track section" six times to represent a longer track, then press the left mouse button once in six track diagram

fields in succession or drag the mouse pointer over six track diagram fields while holding down the left mouse button.

If you double-click on an already placed symbol, it is immediately attached to the mouse pointer, and you can place it - without having to go through the symbol selection.

5.5.4 Placing symbol groups in the track diagram

A symbol group is inserted into the track diagram in the same way as a single symbol. As an example, we will place a "block with a 2-aspect signal and a small vehicle display" in our track diagram.
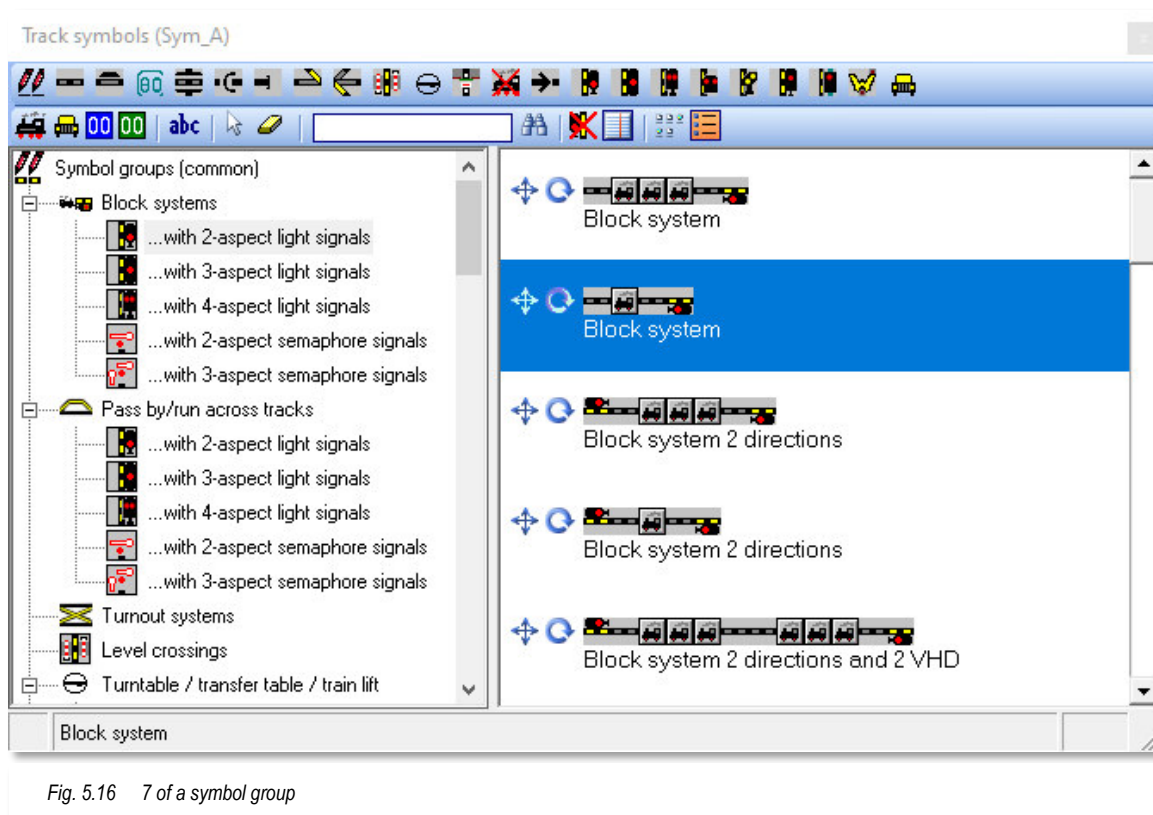
Fig. 5.16   7 of a symbol group

Select the required symbol group from the desired category. The symbol group now "hangs" on the mouse pointer when you move over the track image. The mouse pointer also changes its appearance again, just as you have already seen when placing a single symbol.

Click on the right mouse button to rotate the symbol group by 90°. This step can be repeated until the symbol group is displayed in the correct position.

Now click once with the left mouse button at the point where you want to insert the symbol group. As soon as you move the mouse to the next row above or below (or to the right or left for vertical placement) after this single click, another similar symbol group (e.g. as a neighbouring track) is displayed. A horizontal movement with the mouse "extends" the

block by normal track symbols. You can therefore scale the symbol groups as explained above. This makes it very easy to draw several station tracks "in one go". Other clicks with the left mouse button finally place the inserted symbol group(s) in your track diagram.
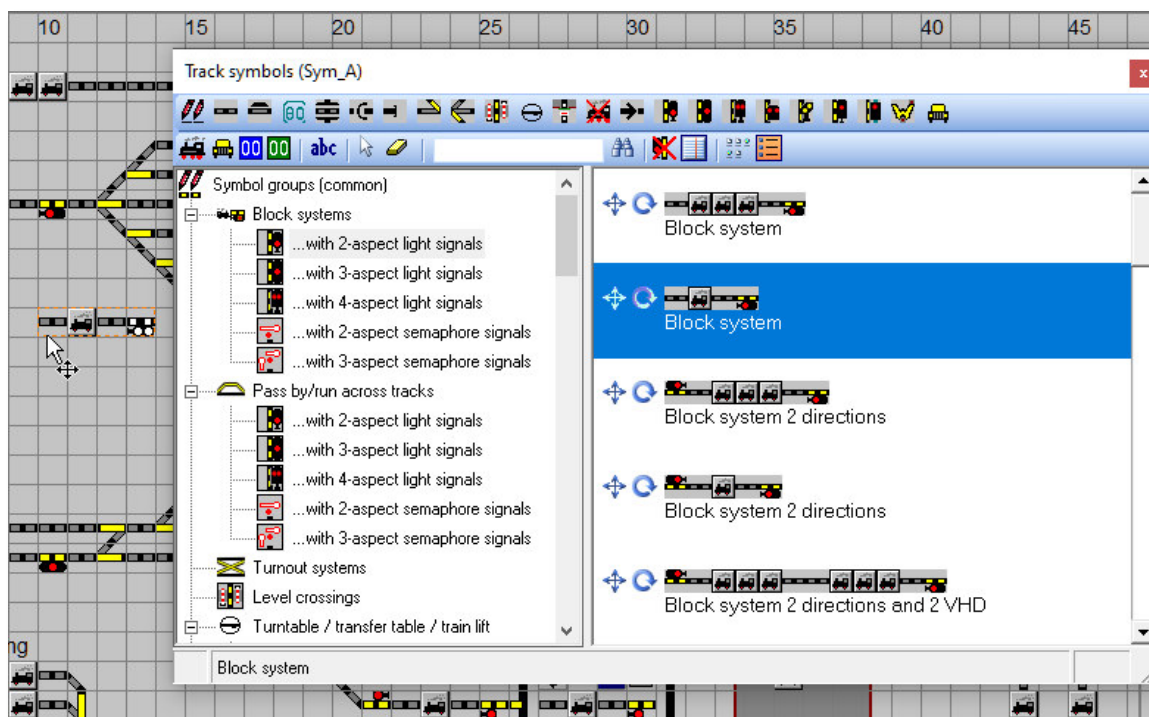
Fig. 5.17   8 a symbol group in the track diagram

You can use the ESC button to cancel the placement of a symbol group in the track diagram.

5.5.5 "Undo" or "Restore" changes.

You can cancel or restore all changes that you have made in your track diagram can be cancelled or restored. You may be familiar with this function from your office applications or drawing programmes. You can go back up to 1000 steps, but the memory that **Win-Digipet** holds for your restore data is limited to 100 Mbytes.

> However, this data is only available if you do not leave the track diagram editor.
> Deleting the entire track diagram **cannot** be undone.

The Undo and Restore functions can be found in the <Edit> menu of the track diagram editor. As an alternative to the menu items, the two corresponding icons are in the standard toolbar 🔄 🔄.

5.5.6 Special features for drawing the track layout

🚂 **Double crossing turnouts and crossings** are made up of two individual symbols of single points, which are placed next to each other in pairs in the symbol selection.

🚂 To depict a so-called "**braces track connection"** you have the choice between the two symbol groups, the narrow and the wide braces. The narrow version can be integrated into the track layout to save a lot of space.
You will also find two symbol groups for the brace connections in the Turnouts connections category.
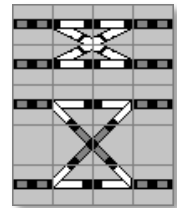
🚂 If you need to draw **three-way turnouts** diagonally in your track diagram, you should assemble them from one horizontal and one vertical single turnout.
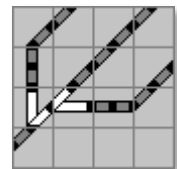
🚂 In the *"Switches and buttons"* symbol category, you will find many symbols for a wide variety of applications. You can also use these if you need so-called virtual switches in your track diagram, e.g. to make the switching of a route dependent on the switch position of this symbol. This is useful for staging yard control, for example. This subgroup contains symbols for a wide variety of switching decoder applications. These include switches for house, street and car lighting, smoking chimneys, vehicles with blue lights, moving figures, status displays, sound activation, etc. This makes it very easy to switch lights on and off, for example, and you always know which switch in the track diagram you need to press to activate the function.

If you have placed uncoupling tracks in the track diagram, you can also control them directly in the sequential circuit of a route or in a profile.

You **do not** need to draw an additional button symbol (e.g. 0245 uncoupling button) with the same address in the track diagram.

Not like this!

🚂 If possible, you should always draw parallel diagonal tracks as shown in the second variant. Otherwise, there is a risk of confusion later when recording the route.

> Diagonal track sections that represent two routes within one symbol also have two different feedback contacts, which must then be assigned with "top" and "bottom" respectively. This assignment requires particular care.
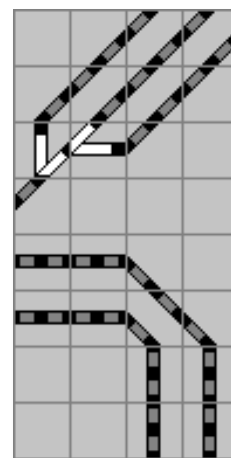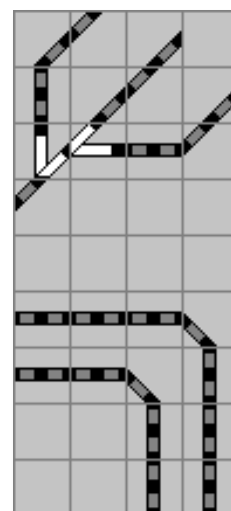
That's better!

🚂 If you use the **light signal decoders** (e.g. LS-DEC-DB) from LDT, you can also use a push-button to activate the dark keying of the distant signal on the mast of the main signal.

In this example, addresses 22 (green/red) and 23 (green) are assigned to the distant signal, the push-button is now assigned address 23 (red) for switching the dark keying of the distant signal (it can be switched on or off by clicking on the push-button).

🚂 If you want to you want to integrate additional conditions based on counting functions in the routes, profiles, or automatic functions, click on the **blue counter symbol** in the symbol selection and drag it to the desired position in the track diagram.
You do not need to assign a solenoid device address to this counter symbol. However, it would be important to assign a name. You can use these counters for many tasks in the routes, the profiles, and the tour-automatic editor.

🚂 If you are using a **Selectrix digital system,** you will see the green **SX display** symbol in the second line of the toolbar.
You can place this symbol in the track diagram as usual.

🚂 For track designations, feedback-capable symbols with the digits 0 - 9 have been created in horizontal and vertical versions. You can find these symbols by their numbers 0399 to 0418 in the symbol selection.
Alternatively, you can also place a text in your track image, which can also be designed to be feedback-capable (see section 5.5.10).

🚂 You delete symbols from the track image with the "eraser"". Click on it and move the mouse pointer over the track image to create a crosshair with an eraser. Move the crosshair to the places on the track diagram where you want to remove symbols etc. and click on it. You can delete an entire track area by dragging the eraser over several track diagram symbol fields while holding down the left mouse button.
Here too, press the right mouse button after deleting so that you can continue working.

5.5.7 Place vehicle displays in the track diagram

The so-called vehicle displays are used to display the vehicle number (digital address) or the vehicle or train name in the track diagram. In the versions up to 2018, the vehicle displays were called train number fields. Select a vehicle display using the symbols 🚂🚗 . When selecting the vehicle display, a distinction is made between displays for rail and road vehicles.

If you click on one of the symbols and move the mouse pointer away from the symbol selection into the track image, a small locomotive or a small car will be attached to the mouse pointer.

Place this vehicle display symbol next to a signal symbol at the start and end turnouts of the desired routes. Always leave a space between the signal and the vehicle display symbol, as shown in Fig. 5.18 can be seen. The vehicle displays inserted in the graphic are symbols for rail vehicles ![rail]. Vehicle displays for road vehicles are represented by a stylised car ![car] .
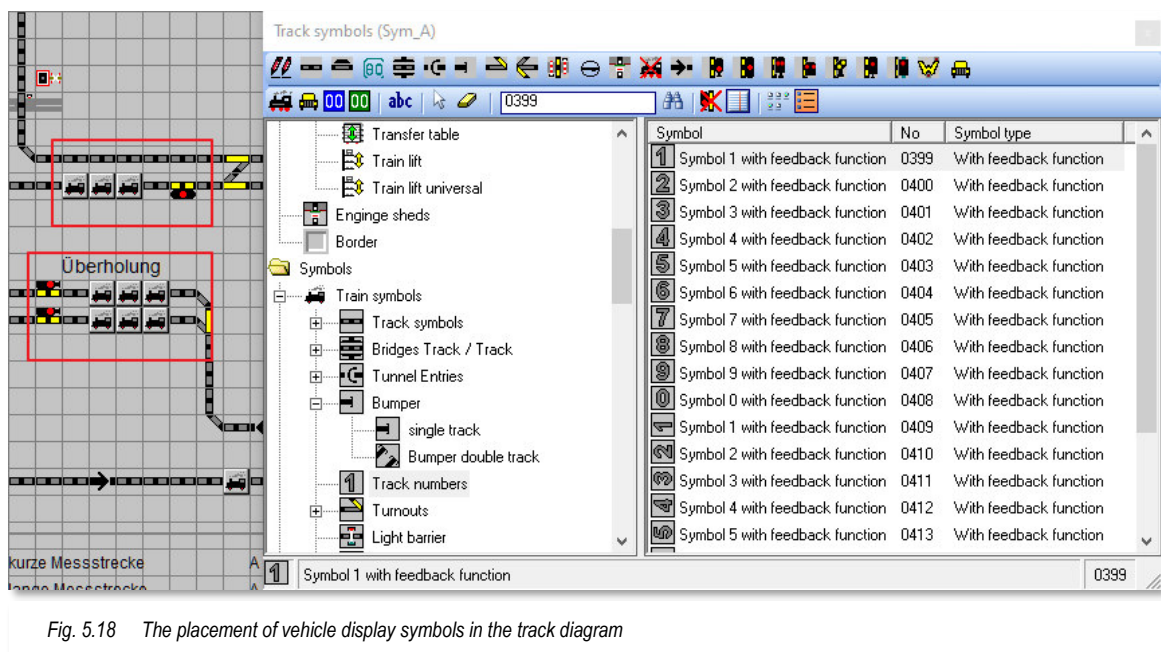
Fig. 5.18   The placement of vehicle display symbols in the track diagram

The type of placement makes it easier for you to assign the feedback contact numbers to the right and left of the vehicle display later. The above-mentioned symbol groups in section 5.5.4 above take this rule into account.

The vehicle detection indicators can be used on long routes. This allows you to follow the course of the train on the track diagram even better, especially on long parade routes. Later in operation with **Win-Digipet,** the digital address or the train name is displayed in these vehicle detection indicator symbols.

Clicking on the symbol ![symbol] takes you to the train number tracking displays, which start with the symbol number 0422. They look like normal track sections. After placing them in the track diagram, you will also see a small "V" on the symbols in the track diagram editor.

5.5.8 Extended vehicle display for displaying the class or the train name.

The vehicle display described in the previous section described in the previous section can be expanded to display the model designation or the name of the vehicle or train instead of the digital address of a vehicle.

To do this, place three vehicle display symbols directly next to each other in the horizontal or vertical direction (cf. Fig. 5.18).

The three symbols must not be arranged diagonally.

Each extended vehicle display requires three times as much space as the simple vehicle display. You should take this into account when planning your track layout.

If a vehicle or train is located on this vehicle display, the class or train name is displayed.
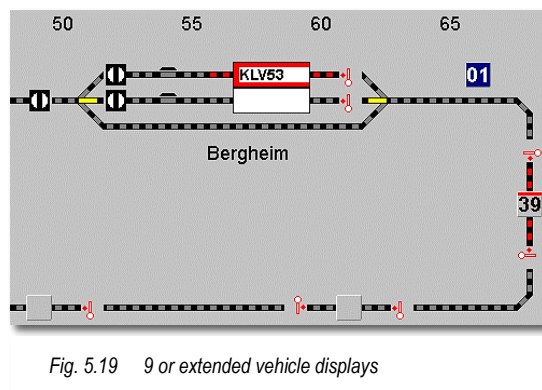
Fig. 5.19   9 or extended vehicle displays

5.5.9   Important notes on the positioning of the vehicle display

Please note the following important information on the positioning of the vehicle displays in the track diagram.

Win-Digipet uses the direction information stored in a programme file for the respective symbol for the semi-automatic or automatic route recording. However, this direction information is missing for the vehicle displays, as there are a total of eight (8!) possible directions and the direction required in individual cases cannot be defined from the outset.

If the automatic route recording reaches a vehicle display, the programme checks once around the circle (sequence W-N-E-S[17]) whether there is a track or vehicle display connected anywhere (except in the access direction) where the route could be continued.

In the following example, the recording direction is continued:

- coming from the east to the west or vice versa. The same applies to vertical vehicle displays for the north and south directions.

In the two examples below, **Win-Digipet cannot recognise** the direction of continuation**!** No clear assignment of the imaginary directions is possible here.

---

[17] W-N-E-S - Abbreviation in the sense of the cardinal points

🚒 coming from the north to the south
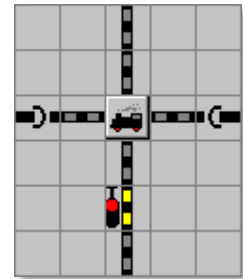
🚒 coming from the east to the west
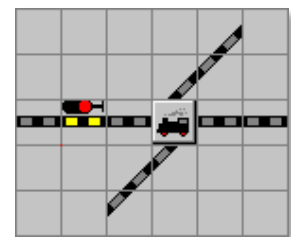
Therefore, always position the vehicle displays clearly so that the routes and directions of the routes can be always recognised without any problems.

Bridge symbols in the symbol tables have the special feature that they have two paths stored in their coordinate data.

Both colour-coded paths are required so that, for example, the two paths in the Fig. 5.20 can be found by the route assistant or in the semi-automatic route recording.

Fig. 5.20   Bridge symbols have two paths.

If the vehicle display is now set to Fig. 5.21 is used in conjunction with the bridge symbols in an **unintended** combination, problems will occur during automatic or semi-automatic route creation.
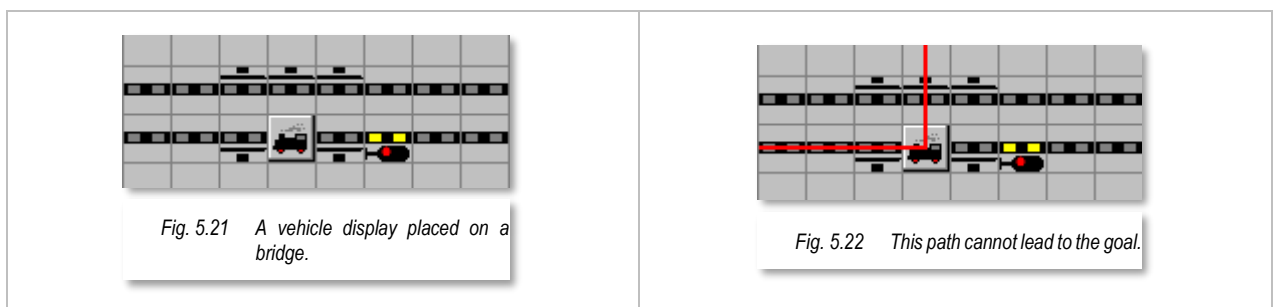
Fig. 5.21   A vehicle display placed on a bridge.

Fig. 5.22   This path cannot lead to the goal.

In this example, the desired directions from west to east and east to west on the double-track line appear clear at first glance.

However, if you try to create the route using the route wizard, you will receive the message "No route found!" or, in the case of semi-automatic route creation, the message "Target feedback contact not reached!".

But why is that?

The route for the lower track is to be created from west to east. When reaching the vehicle display, **Win-Digipet** does not recognise the desired direction to the east, as a bridge symbol has been drawn in the upper track. **Win-Digipet** therefore searches for the possible direction in the order west-north-south-east.

The route to the north is therefore the first possible direction, but the desired destination is not reached via this route and is acknowledged with the above-mentioned messages. The above also applies to the use of the vehicle displays extended to three track symbols.

If you want or need to use track diagram sections like those shown, you must create so-called jump labels. The handling of jump labels is explained in section 5.5.12.

5.5.10 Texts in the track diagram

Click on the icon abc in the toolbar of the symbol selection window and move the mouse pointer away from the symbol selection, a cross with *"abc" is* attached to the mouse pointer.

Move the mouse pointer to the position on the track image where you want your text to begin. The field is framed in a square and the "Text input" window appears.

Enter your text in the upper field, e.g. track numbers, station names etc. The length of the text depends on the font size and the spacing of the individual characters. Longer texts must be spread over several fields of the track diagram. Five font sizes are available for the size, which follow the zoom factors of the track image in stages.

The text can be output horizontally as well as diagonally and vertically. Use the *"Angle"* selection list at this point. You can also display the usual attributes of text programmes in bold, italics, underlined or strikethrough in any combination.

Fig. 5.23 Text input in the track diagram.

You can check the output of your text before inserting it by clicking on **'Preview'**. Your text will then be placed in your track diagram on a trial basis. If you are happy with the result, click on '**OK'**, otherwise adjust your entry or click on '**Close**'.

If you want the text to be displayed in a specific colour, click in the *"Colour"* field. A new *"Colour"* window opens, where you can select the desired colour or define it yourself. Click on the **'OK'** button to display the selected colour in the field and click on **'Preview' to** display the text in the track image in the corresponding colour.

If you want to restore the original colour, right-click, and the default colour from the system settings (black or white) will be displayed again.

You can now enter further texts or deactivate the "Text input" mode with the right mouse button.

Win-Digipet can also display the text when a feedback contact is triggered in the standard colour "red", for example, if the corresponding contact is entered in the field below the text "*When FB...*" using the keyboard or the arrow keys.

In this way, you could, for example, create track numbers with feedback capability or display a normally transparent text (text colour like the background) in a different colour as a warning when a feedback contact is triggered.

If you want to change or delete an entered text, click with the mouse on the **beginning of the text**. The original text appears in the "Text input" window, which you can now change or delete completely.

If you want to erase the text with the eraser, start erasing in the track diagram at the beginning of the inserted text.

5.5.11 Cut, copy, and paste track diagram parts.

Click after clicking with the <u>right mouse button</u> in the track image on the <Mark> shortcut menu command. The mouse pointer changes to a cross. Now hold down the left mouse button and move this marking cross along the edge of the area in the track diagram that you want to mark. It is delimited by a red outline.
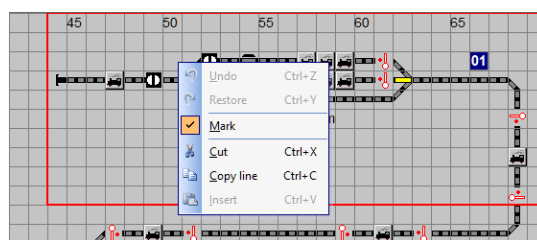
Fig. 5.24   10 short menu with the editing functions

Now press the <u>right mouse button</u> and select <Cut> or <Copy line> from the short menu.

🚂 **<Cut>** removes the selected area in the track image and saves it to the clipboard.

   Press the <u>right mouse button</u> again and select <Insert>; the mouse pointer changes to an arrow with a rectangle and the cut-out area follows the mouse pointer and you can easily determine the new position.

   Specify the position at which you want to insert the cut-out area and press the left mouse button.

   The cut area is inserted there. You have the option of undoing the **cut** once, but not the paste.

   You can also **delete** the cut area by not pressing the <u>right mouse button</u> after <Cut>, but by returning to the menu.

🚂 **<Copy>** leaves the selected area at the original position in the track diagram. The data is in the clipboard and can now be pasted **once** at any position in the track diagram.

   Press the <u>right mouse button</u> again and select <Insert>; the mouse pointer changes to an arrow with a rectangle and the copied area also visibly follows the mouse

pointer. Specify the area into which you want to copy the selected area and press the left mouse button to paste.

When pasting a copied area, **Win-Digipet draws your attention** to the fact that there may be solenoid items in the copied area that are referenced in other functions of the programme (e.g. dispatcher). Here you must decide whether the reference should be adapted to the new position of the solenoid device or whether it should be left at the old position.

!!! **Important note** !!!
After you have carried out one of the above functions and returned to the main **Win-Digipet** programme, the programme prompts you to automatically check the track layout. **You should have this automatic check carried out, as all routes and solenoid items are adapted to the changed conditions.** If you do not use the automatic check at this point, you are responsible for making any necessary corrections later.
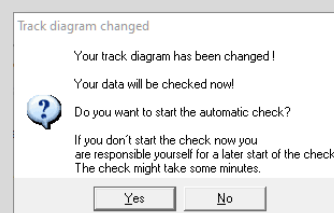
To exit <Mark> mode, deactivate the tick in the relevant submenu or short menu.

5.5.12 Jump label editor.

The automatic recording of routes and the route navigator require clear, uninterrupted paths across the various track symbols to function correctly. Further above in section 5.5.9 we have already dealt with this topic on the subject of "Positioning the vehicle displays".

There are many symbols in the symbol tables that do not contain coordinates for routing because they do not require them (e.g. switch symbols). Texts that you have inserted in the track diagram also have no coordinate data for the automatic recording of routes.

You can place all these symbols or texts in the track diagram in the same way as normal track symbols and "skip" them with the help of so-called jump marks if they are drawn in the tracks.

These jump labels are defined in the jump label editor. In the Fig. 5.25 we have shown an example of a connection with jump labels. In the example, the two track symbols are connected by the two jump labels with an imaginary line (rubber band). The text in between is "skipped".
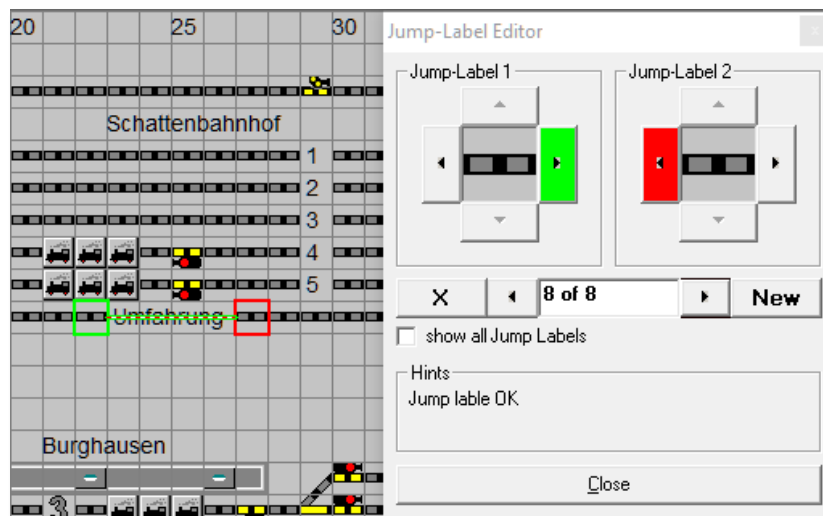
Fig. 5.25   A jump label connects two track symbols.

The jump label editor open it by clicking on the ⬛ icon in the toolbar of the track diagram editor. The "Jump label editor" dialogue window opens and click on the **'New'** button to create the jump label.

Now hold down the left mouse button and drag the last track symbol before the jump point (framed in green here) into the square field at jump marker 1 and click on the selectable direction arrows to set the direction to the jump point (to the right in this case). After clicking, the button turns green.

Proceed in the same way with the second jump point (framed in red here) and set the direction to the jump point by clicking on one of the selectable direction arrows. A green "rubber band" connects the two jump points. If the jump mark is correct, you will receive a corresponding message in the field provided or, if necessary, an error message

If you require further jump markers in your track diagram, proceed in the same way after clicking on the **'New'** button.

> ⚠ What is important here is always the direction **to the jump point** and not the direction for the formation of a route, as these jump labels work in both directions during automatic route recording.

Once you have set all the necessary markers in your track diagram, click on the **'Close'** button.

The jump marker data is stored in the **JUMP.DAT** file in the project directory.

To check your jump labels, open the jump label editor again and click on the two **'right/left'** buttons at the bottom of the window. The jump labels you have set are displayed one after the other with a red/green marker and the imaginary rubber band.

If you tick "*Show all jump labels*", **all** previously set labels will be displayed. For reasons of clarity, the green "rubber band" does not connect all jump turnouts with each other, but only the one currently selected in the jump point editor.

Fig. 5.26   Display of all jump labels set in the track diagram.

Only symbols for track representation can be dragged into the two jump marker fields 1 or 2. All other symbols such as the buffer stop, turntable, transfer table, pushbuttons, and switches, as well as the symbols for representing engine sheds and similar are blocked.

With the button ☒ in the marker editor, you can also delete a selected marker.

5.5.13 Assignment of jump labels

Please note the following instructions for entering the jump labels in the track diagram editor.

The representation in Fig. 5.25 and Fig. 5.26 show correct entries of the two jump labels 1 and 2. The green or red arrow always turnouts to the jump location. This is very clear in this example because the text in the track diagram is framed with the jump labels on the left and right and the green "rubber band" also connects the green frame with the red frame.

The Fig. 5.27 shows an incorrect jump label. Here the red arrow in jump label 2 is set incorrectly as it points out in the wrong direction from the jump point to the right. This is also clearly indicated by the green "rubber band". This jump label would not work in the automatic route recording.

If you enter the new jump labels and have dragged the track section into the small window of the jump markers, the jump turnouts are not displayed in green or red, but in yellow or magenta. The two jump markers are only displayed in green and red once you have defined the direction for both jump markers.
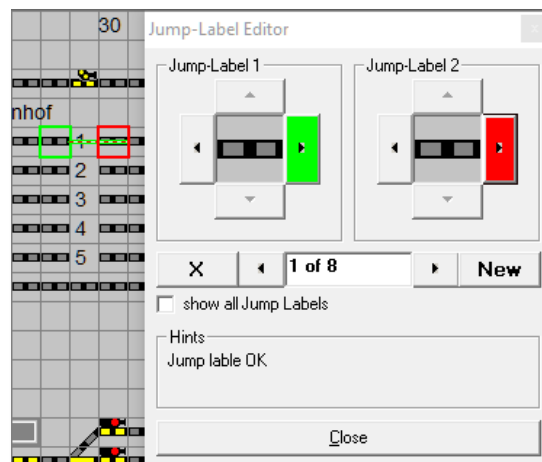
Fig. 5.27   Jump label 2 points out in the wrong direction.

The Fig. 5.28 shows an incorrect or incomplete jump label. In this example, no direction information has been added to the left-hand part of the first jump label. In addition to the colour coding (yellow and magenta), a message is also displayed to draw your attention to the incorrect entry.
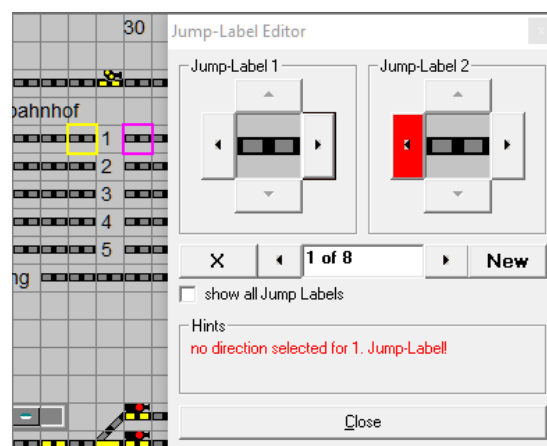
Fig. 5.28   Jump label 1 has no direction information.

5.5.14 Display of incorrect jump labels

If you have changed your track diagram after setting the jump labels, you should allow the automatic check of the track diagram after the change. As already described in section 5.5.11 the jump labels are also corrected during this automatic check. If you reject this automatic check, you are responsible for the subsequent manual correction yourself.

Incorrect jump labels are displayed after calling up the jump label editor with yellow or magenta framed jump point outs (cf. Fig. 5.1).

By selecting the "*Show all jump labels*" option, you immediately have an overview of all jump labels and can therefore easily recognise which of your jump labels are incorrect.

If "*Show all jump labels*" is ticked, you can quickly switch to the faulty jump label in the jump label editor by <u>right-clicking on</u> one of the two yellow or magenta framed track symbols.

The same also applies if you click on a track symbol with a green or red border; this will always take you very quickly to the desired label in the jump label editor.

5.5.15 Set up track layout screen partitions.

In **Win-Digipet** you can define up to nine screen partitions in different zoom sizes for a large track image, which can also extend over several monitors. These screen partitions can also be called up in the main programme.

You can then make the desired parts of the track diagram visible on the screen with a mouse click, such as the main station or the staging yard. Such parts of the track diagram must be defined in advance in the track diagram editor.

Please note the following basic principles:

- 🚂 there is only one-track diagram in the **Win-Digipet** project.
- 🚂 The cut-out function allows you to view specific, predefined areas of the track image.
- 🚂 Up to 20 multiplans can be set up (see section 5.5.16)

Click on the 🔲 icon in the toolbar to open a new "Screen partitions" window. First set the zoom factor in the toolbar of the track diagram editor and then select the first section *"1"*.

In the *"Partition"* field, give the section a name, e.g. *"SBhf 28x28"* (up to 20 characters are possible here).

Now define the track diagram section: This is the part of the track diagram that you see on the screen.

Move the entire track image with the right and bottom scroll bar until the part you see on the screen corresponds to your idea.

The desired section with the coordinates "X" and "Y" is displayed as a reference point using the four reference buttons.
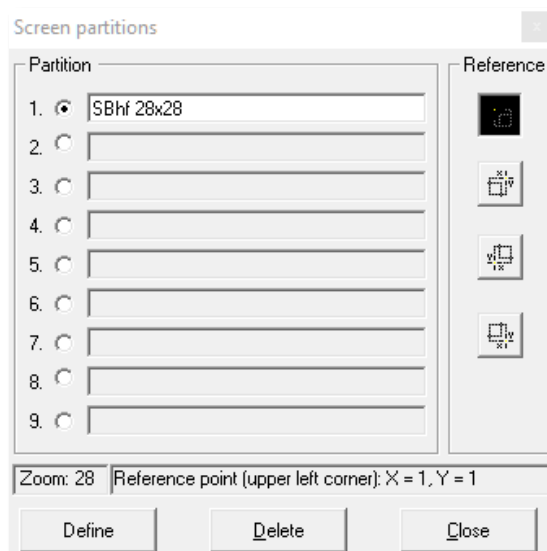
Fig. 5.29   Definition of track diagram sections

As shown in Fig. 5.29 you can set the reference point for the screen section to one of the four corners of the currently visible part of the track image. To do this, press one of the buttons on the right-hand side of the window.

If you are satisfied with your selection, please click on the '*Set*' button.

In the toolbar, you will now see the first of the 9 screen section icons highlighted in black and, when you move the mouse over it, the name you have given to the screen section in the "Quick info" highlighted in yellow.

You can define further track diagram sections in the same way. The track diagram sections can also be defined at a different zoom level. This is particularly interesting if you have a very large track diagram and want to see it as a complete image, e.g. in the 12x12 zoom level. Click on the relevant icon in the toolbar to display a section of the track diagram on the screen, e.g. the staging yard at zoom level 24x24.

You can delete a track diagram section by clicking on the icon in the track diagram editor toolbar, selecting the relevant partition in the "Screen partitions" window and clicking on '*Delete*'.

> If you are using several monitors, you should adjust the window size of the track diagram editor to the window size of the main programme. Otherwise, the screen sections may be displayed differently than desired.

5.5.16 Configure track diagram multiplans.

Within the programme **Win-Digipet** only has one track diagram. This track diagram is the so-called master plan. In addition to the master plan, partial track layouts are possible, which we call multiplans.

Multiplans are rectangular sections of the master plan that can be displayed in separate windows in any position. These windows are particularly suitable for users with two or more screens. You can set up to 20 multiplans in your project. This significantly increases the overview of your track layout. If you create the multiplans skilfully, you can also completely dispense with the display of the master plan during operation.

To configure a multiplan, click on <Recording><Configure multiplans> in the main menu of the track diagram editor or click on the corresponding icon in the toolbar.
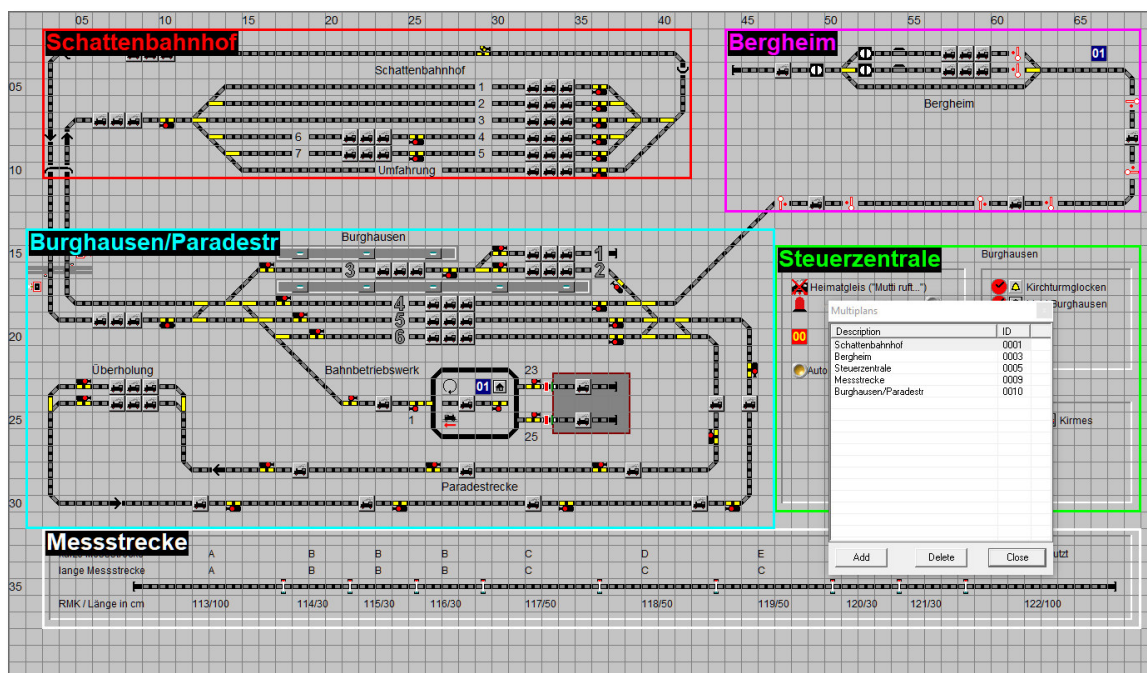
Fig. 5.30 The configuration window for the multiplans

Use the **'Add'** button to create a rectangular area in your track diagram. The example graphic from the WDP2021 demo project shows you multiplans that have already been created. The area of the staging yard has been outlined here with a rectangle. All track symbols located in the red rectangle "Staging yard" ("Schattenbahnhof" in German language) therefore belong to the similarly named multiplan.

Another multiplan of the example graphic shows the area of the "Burghausen railway station and the parade route". This multiplan is marked here by a turquoise-coloured rectangle. For performance reasons, the multiplans must not overlap, but they can be adjacent to each other (cf. Fig. 5.30).

Each symbol or coordinate of your track diagram can therefore appear a maximum of twice. Firstly, in the master plan and possibly in a multiplan. If you have inadvertently selected an overlap of the plans during the configuration of your multiplans, you will be notified of this misconfiguration in a message window.

The configured multiplans can be called up later in the main programme via the menu or the toolbar. The display of the symbols in the master plan and the multiplans is absolutely synchronised during operation, regardless of whether switching operations or the execution of routes are involved.

Multiplans that you no longer need can be removed from your project using the *'Delete'* button.

5.5.17 Check track layout.

In the track diagram editor contains a built-in check routine that analyses the track diagram for incorrect entries. We will encounter this check routine again later in the main **Win-Digipet** programme. There you can check all parts of the programme for incorrect entries. Click on the small symbol with the red exclamation mark 🔲 in the track diagram editor to start the track diagram check.

In the example graphic Fig. 5.31 two errors are noted. One of them is also marked directly in the track diagram by highlighting the respective line.

The example shown is a button to which a sound file has been assigned. This sound file could not be found by **Win-Digipet** (anymore).
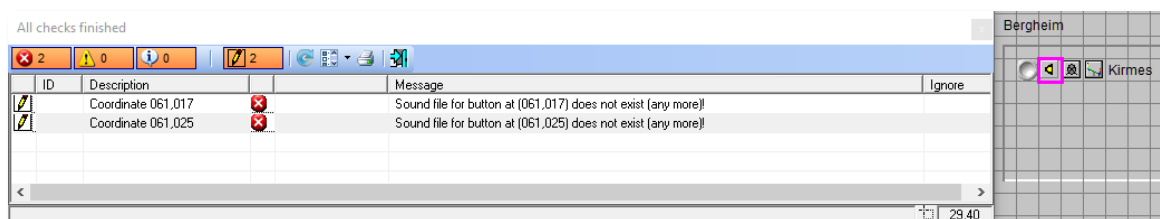
Fig. 5.31   The result of a check of the track layout

You can mark certain errors in the track diagram with a tick for "Ignore". In the case of these errors, it may be that you have deliberately set a track section to be free-standing, for example, but **Win-Digipet** expects the track to continue. In such a case, you can tick the "*Ignore*" column and then click on the 🔄 (update) icon. Errors marked as "ignored" are no longer displayed (hidden) after the list has been updated. However, you can also use the icon to make these list entries visible again.

Other errors in the track diagram, such as incorrect jump marks, cannot be ignored. These errors **must be** corrected by you. By selecting a list entry, you immediately jump to the point marked as incorrect. Optionally, you can prevent the check for the existence of sound files on your system. In this case, an error message as shown at the beginning of this section will not be displayed.
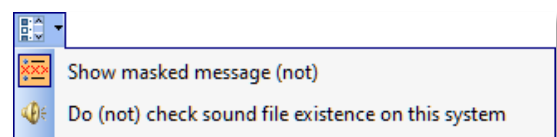
Fig. 5.32   11 in the track diagram editor

A print option for the test results rounds off the functionalities of this window.

You should carry out this check of the track diagram after every change in the track diagram, as it will immediately show you even small hidden errors. You should agree to the automatic track diagram check at the latest when you exit the track diagram editor.

5.6 The "Register solenoid devices" mode in the track diagram editor

5.6.1 General information

The information on the solenoid devices can be entered, maintained and tested in the track diagram editor.

Before entering the data in **Win-Digipet,** it is advisable to create an exact list of the solenoid devices with the configured digital addresses on your model railway layout.

If you control your model railway layout with different digital systems, which is easily possible with **Win-Digipet**, please also note which digital system is to be used to control which hardware and which protocols (data formats) are supported by the hardware used.

A small example will illustrate this once again.

A large model railway layout with many turnouts, signals, lamps for house and street lighting, uncoupling tracks, feedback contacts etc. should be fully digitally controlled. This requires many turnout- and switching decoders, which means that the limitation of the solenoid device addresses of digital systems can quickly be reached or even exceeded.

This is of course dependent on the digital system or data format used. Today, modern digital control centres can master their tasks even on larger model railway layouts, so that there is only a limited need to use several digital systems.

Win-Digipet will now help you to solve the problem by using the following configuration, for example:

- The 1st digital system for controlling the vehicles.
- The 2nd digital system for controlling the turnouts and signals.
- The 3rd digital system for controlling the uncoupling tracks and switching decoders for the house and street lighting,
- The 4th digital system for analysing the **first** 496 feedback contacts.
- The 5th digital system for analysing the other feedback contacts.

This division means that you are still bound by the limitations of the digital systems or data protocols, but the addresses can be available more than once if several digital systems are used.

The turnout with the solenoid device addresses 1 can be switched by a Uhlenbrock Intellibox, for example, and **another** turnout with the same solenoid device address 1 is switched by the Tams Red Box.

5.6.2 Record and test solenoid devices, display addresses

The registration of solenoid devices here refers to the assignment of one or more addresses. We have explained the placement of a symbol for a solenoid device in the track diagram in the previous sections.

To enter the solenoid devices, click on the 🖼 icon in the toolbar of the track diagram editor. As an alternative to this procedure, you can right-click anywhere in the track diagram and then select the <Solenoid device addresses> command that appears in the short menu with the left mouse button.

The window for selecting the track diagram symbols disappears and the mouse pointer changes to an arrow with symbolised microswitches. You are now in the "*Solenoid device registration*" mode of the track diagram editor. This is also displayed in the status bar at the bottom of the screen.

Now point to the solenoid device you want to capture. It will be framed in red. Click on it to open a new window called "Solenoid device registration".

The example in the graphic Fig. 5.33 shows a simple switch. The dialogue window is essentially divided into three areas. The top section contains the track diagram symbol and the name of the solenoid item. The centre section contains the solenoid device address and the assignments to the digital system used or to the booster area. The lower area shows the possible circuits (switching sequences) of the selected solenoid device. This area is divided into a total of five tabs on which further settings for the solenoid device can be entered.
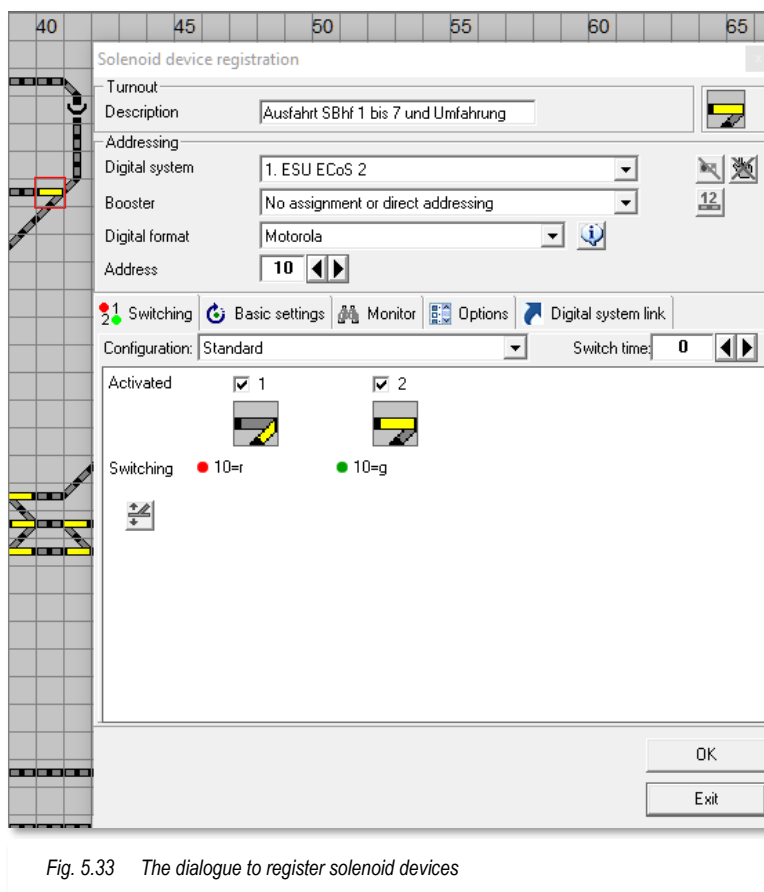
Fig. 5.33   The dialogue to register solenoid devices

The dialogue in Fig. 5.33 depends on the digital system used. For example, you will not see the database link tab shown here if you are using a Tams Master Control. If other control units are used, other specific dialogue fields may be displayed.

If several digital systems are used, as in our example, select the digital system that is to switch the selected solenoid item from the selection list. It goes without saying that the

wiring of your model railway layout must take the selection of the digital system into account.

> ⚠️ It is not sufficient to specify a digital system here, for example to bypass the address limitation of the digital system. The solenoid device must also be connected to the selected digital system.

The appearance of the dialogue changes depending on the properties of the respective solenoid device. The example graphics Fig. 5.34 and Fig. 5.35 show the configuration of a double crossover switch with two drives and a multi-term KS signal respectively.

Fig. 5.34   A double crossover switch in registration process

Fig. 5.35   Registration of a "multi-term" signal
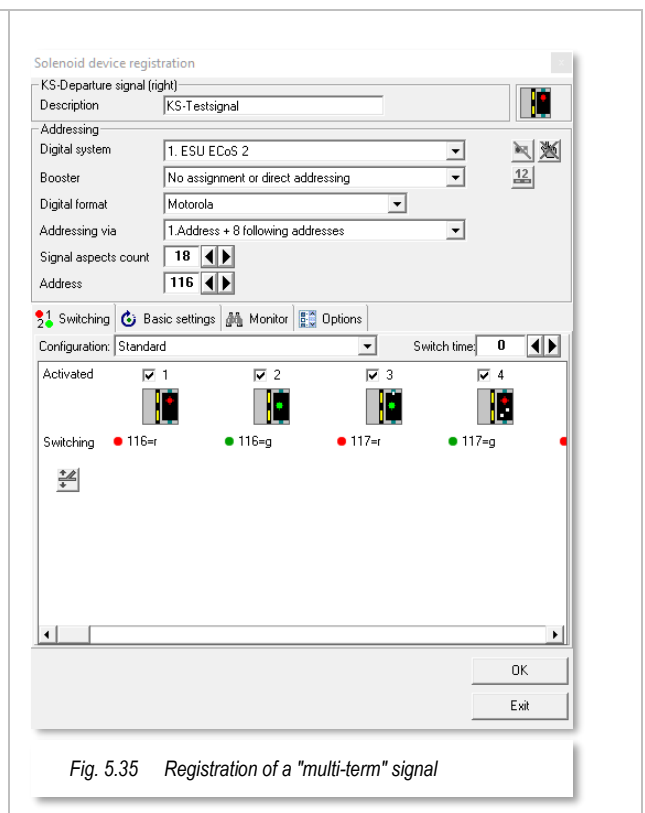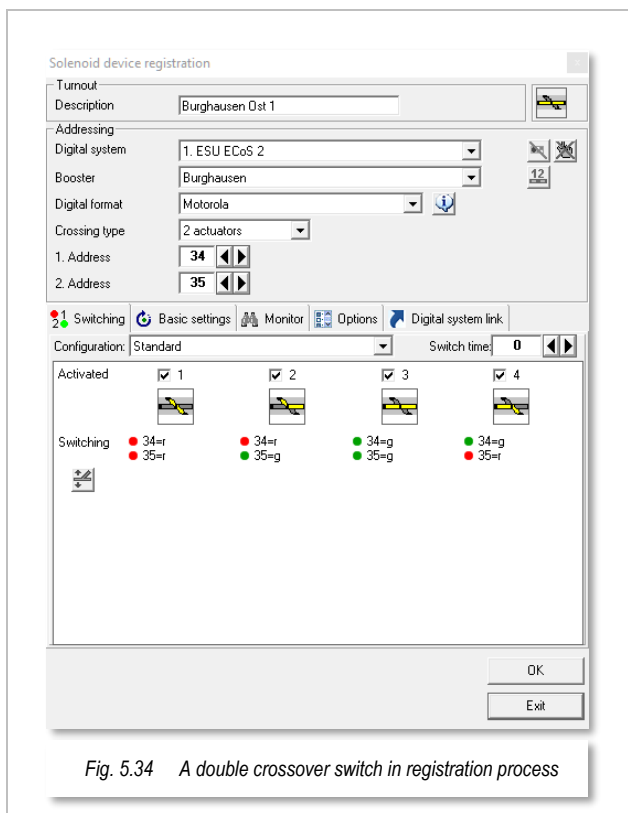
5.6.3 Enter solenoid device address and designation.

Let's look Let's look at the individual areas of the tab in detail. The top field once again lists the type of solenoid device, in this case the switch.

The designation represents the name of the solenoid device. You should enter a unique name here; this will be displayed later in the track diagram in the quick info (tool tips) and in the test routines (see manual section 5.5.17) and will help you to search for any errors.
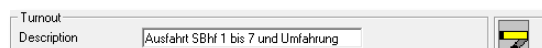
Fig. 5.36   12 of the solenoid device

The Addressing area comprises several list fields and some symbols. In the first list field, you define the digital system that controls the selected solenoid device. It is also connected to the digital system entered here.

In the second list field, the assignment of the solenoid device to a booster area is defined. If you have already assigned the solenoid device in booster management, the name of the booster area is automatically displayed here. Conversely, you can select an already created area from the list here and the solenoid device

Fig. 5.37   Addressing the solenoid device

will be assigned accordingly in booster management. By default, the solenoid device is not assigned to a booster or is controlled directly by the digital system.

The digital format if a distinction is required or supported by the digital system used. With some digital systems, the protocol format is defined exclusively in the digital system. In this case, specifying the format in **Win-Digipet** has no effect. Please refer to the operating instructions of the manufacturer of your digital system.

You can specify the solenoid device address using the arrow keys or by entering it on your keyboard.

This part of the dialogue is completed by some symbols that you can optionally use:

🚂 **Virtual solenoid device**
The solenoid device is labelled as "virtual", no commands are transmitted to the digital system.

🚂 **Locking solenoid device against manual operation**
This function is intended as protection against accidental operation. When the solenoid device is actuated in the track diagram, a safety query is displayed. The solenoid item is only switched after this prompt has been confirmed.

🚂 **Show all solenoid device addresses**
In the track diagram editor, all solenoid device addresses are displayed at the symbols.

5.6.4 *Properties of the solenoid device - Switching tab*

The lower part of the dialogue for solenoid device detection is divided into several tabs. The first tab deals with the switching states of the solenoid device.

You can use the "Standard" or "Connection interchanged" options in the "Configuration" list box on this tab to ensure that the display in the track diagram matches the status on the layout and the display in your digital system. The settings offered by the programme depend on the digital system used.
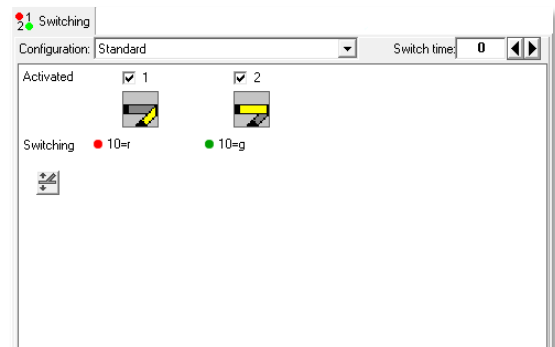
Fig. 5.38   13 "Switching" tab

You can set the switching time (0 to 3000 msec) individually for each solenoid item. This is necessary for some motorised point machine drives and/or for drives that switch poorly.

> It is recommended to leave the switching time set to 0 msec and to set the minimum and maximum switching time globally for all solenoid items in the digital centre.
>
> You should only use a longer switching time if this is necessary. It extends the positioning of the solenoid items in a route to be set.

The tab is dominated by the graphic display of the switching states of the solenoid to be configured. Here you can specifically influence the sequence of switching states required by the solenoid device decoder.

An icon for a solenoid device test rounds off the tab.

After entering the address of the solenoid device, it is advisable to test the function of the recorded device immediately. To do this, click with the left mouse button on the symbol at the top right of the entry window. Each click should change the position of the turnout on your model railway layout.

If the position of the turnout on the layout does not match the position in the **Win-Digipet** track diagram, you must change the connections on the decoder or select the appropriate entry in the Configuration list ("Connection interchanged") and then test again.

By activating the "*Test switching automatically*" button, the solenoid device is switched automatically every second. This time can be set to values between 500 msec and 10000 msec.

With this function, you can "scrutinise" the solenoid device directly on your system for correct switching - away from the computer.

The complexity of this dialogue increases many times over as soon as you use multi- or multi-term solenoid devices.

Fig. 5.39 The configuration dialogue of a double-crossing switch	*Fig. 5.40 The configuration dialogue of a simple crossing switch*
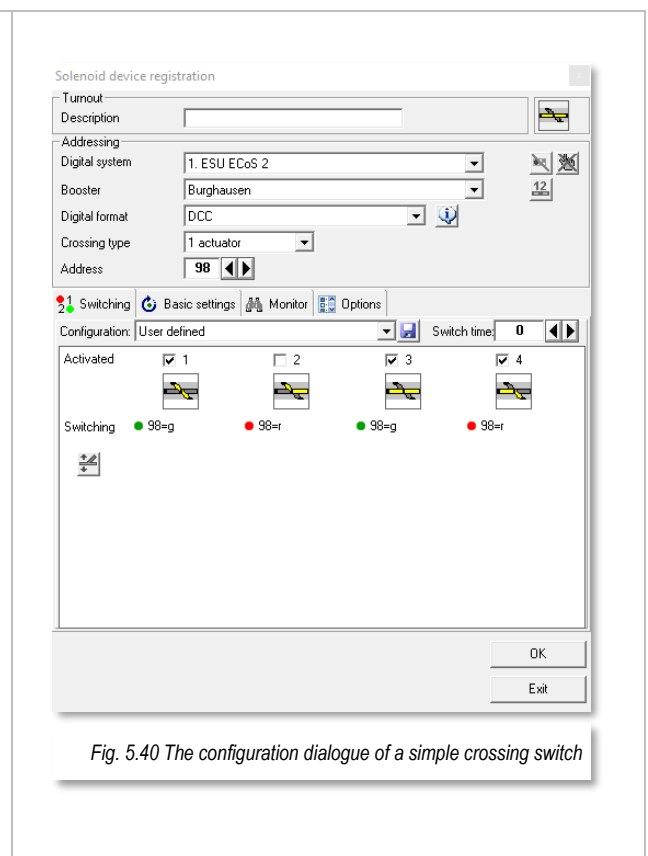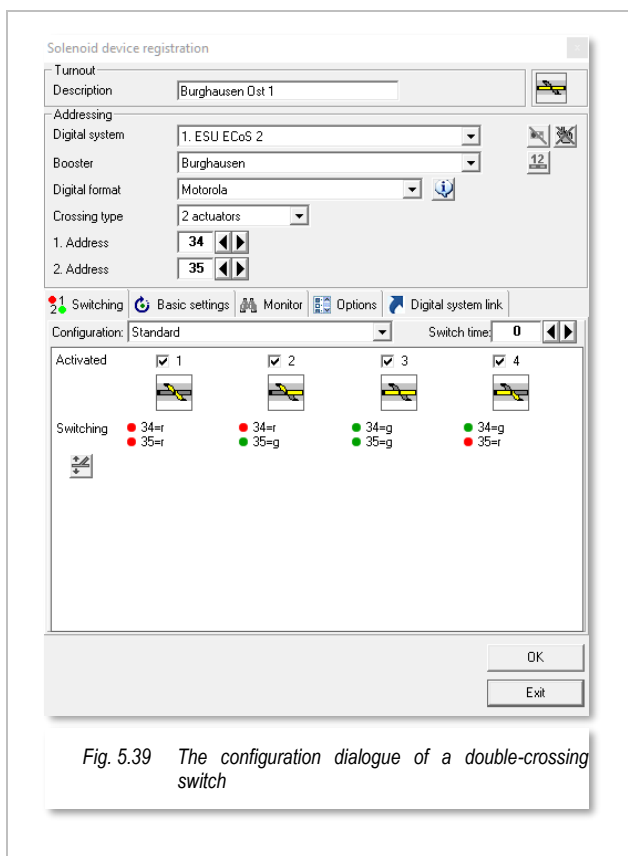
The example used here shows the dialogue for a double crossover switch with two drives. An address must be used for each drive. You can see from the switching states which switching states can be assumed by the crossing turnouts and which addresses or switching signals are sent to the decoder(s). You can adjust or add to the switching signals to be sent using the pencil shown in the graphic with a list field. Switching pauses between the individual switching signals can also be inserted here if required by the decoder.

The example is also suitable for a simple crossing turnout. Due to its properties, this can only display crossing (2x) and turning (1x). In this case, you would simply deactivate the unneeded position in the dialogue box (see Fig. 5.40).

As a further example, the configuration of a multi-term KS signal is shown here.

Up to 18 signal terms can be defined for multi-term signal types. A total of 9 solenoid device addresses are required for this. This address space is made up of the 1st address and 8 subsequent addresses, whereby you must set the first address here on the tab in the "Address" field.

The setting for the required number of addresses can be made in a list field. In addition to the 1st address, you can define up to 10 subsequent addresses and one additional address. Please note that the decoder you are using must support addressing.
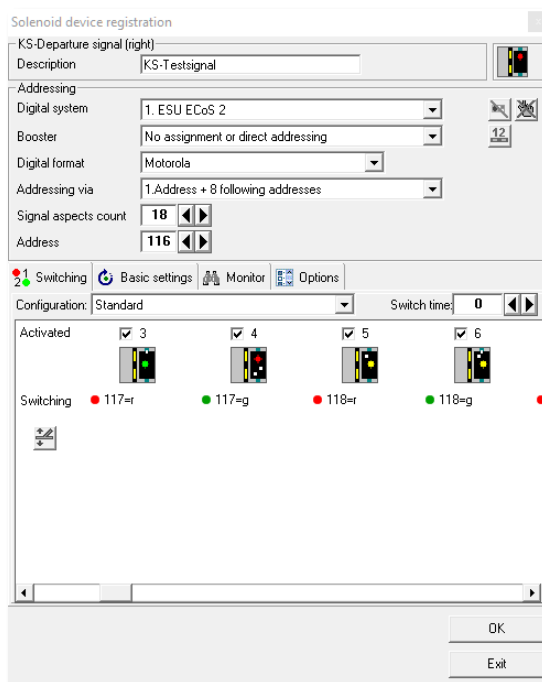
Fig. 5.41   Circuits of a "multi-term signal"

5.6.5 Properties of the solenoid device - Basic settings tab

In system settings of **Win-Digipet,** you have already learnt that solenoid items are switched to "basic setting", "current position" or "not switched" when the programme is started.

These selection options can be customised for each solenoid device. The graphic shows various options for handling a solenoid device during "global" switching operations.

In the list field, you can specify how each individual solenoid item is to behave when **Win-Digipet** is started, regardless of the system settings. The settings made here affect not only the start but also the "Execute basic position" menu function.

The "current position" is the last position of a solenoid device saved in **Win-Digipet.**

The selection options in the list field are as follows:
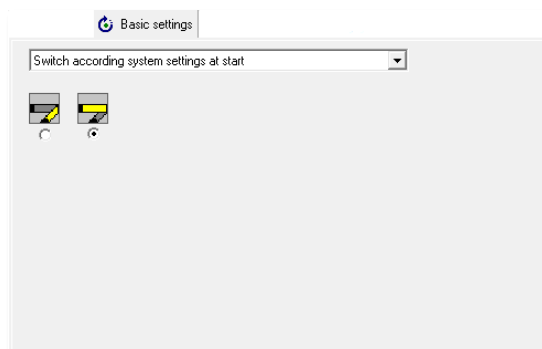
Fig. 5.42   The basic settings of the solenoid device
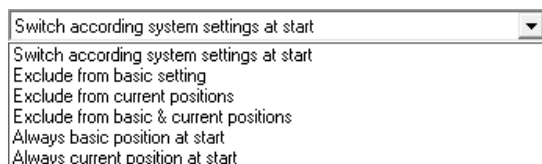
Fig. 5.43   Various options for individual circuits at programme start.

- **Switch according to system settings at start**
  The solenoid device is handled according to the specifications in the system settings.

- **Exclude from basic setting**
  The solenoid device is excluded when the basic position switching of all solenoid devices is requested. A home position request can be made during programme start or manually via a function in the main programme.

- **Exclude from current positions**
  The solenoid device is not switched when "Execute current position" is requested. An "Execute current position" request can be made during the programme start or manually via a function in the main programme.

- **Exclude from basic and current positions**
  Both of the above options apply.

- **Always basic position at start**
  When the programme is started, the solenoid item is always switched to the defined home position.

- **Always current position at start**
  When the programme is started, the solenoid device is switched to the last current position known to the programme.

With two-position switches that switch a feedback contact, for example, the basic position is generally undesirable because the position of the switch should not be changed when a basic position of the solenoid items is executed (manually or automatically at programme start).

The "*Exclude from basic position*" option is set here. This means that these solenoid devices remain unaffected by switching to the home position. Another possible application would be, for example, a parade route with some signals which, in self-block operation, always indicate travelling (green) and only show stop (red) if the route in front is occupied. If you want to operate such a self-blocking mode on your layout, the signals are not controlled via the routes, but exclusively via the busy signals of the feedback contacts of the preceding route. A basic position circuit would be counterproductive here.

5.6.6 Properties of the solenoid device - Monitoring tab

The position monitoring of solenoid devices enables you to avoid collisions of your trains due to incorrectly switching points. This means that set routes are only travelled via a switch with position feedback as soon as the correct position of the switch is reported.

Of course, you can also use the position monitoring options for any other solenoid device.

This tab contains four setting options for monitoring the position of turnouts (solenoid items):

Fig. 5.44   Various options for monitoring the position of a solenoid device.

- 🚂 No position monitoring.
- 🚂 Position monitoring by time
- 🚂 Position monitoring via Railcom
- 🚂 Position monitoring with the aid of feedback contacts

5.6.6.1 Solenoid device without position monitoring

In the tab has the default setting "no position monitoring", the routes are set manually or in automatic mode without monitoring the turnouts position.

5.6.6.2 Position monitoring according to time specification

Without making any changes to the model railway system, you can, for example, set a time for slow-switching turnouts after which the turnouts have reached the end position according to experience. This is useful for motorised turnout drives or servomotors, for example.

With the second option, you can set the time in msec for reaching the end position of the switch. You can use the arrow buttons to set a time in the range from 0 msec to 10000 msec (0 to 10 seconds) in steps of 100 msec.

In this setting, the routes (also in a route sequence) are set immediately after manual setting or in automatic mode, but the travel command to the locomotive is only given after the time set here for reaching the end position has elapsed and is therefore always delayed.

> ⚠️ With position monitoring according to a time setting, the vehicle will receive the move command after the set time has elapsed, even if, for example,

---

| | the turnouts have not yet reached the end position, or the point machine has not switched at all. |

If, for example, you have entered a time for all 4 turnouts of a turnout route in the route to be set, the times **do not** add up to a total time, but the locomotive receives the drive command according to the highest individual time set.

You should therefore be very careful with this setting, as it is often sufficient to enter the maximum time required for just one turnout in a long route.

5.6.6.3 Position monitoring via additional hardware

With the additional hardware, it is possible to use position monitoring via protocols such as Railcom. The tab is customised according to the possibilities of the digital system you are using. In our example, the ECoS is entered as the digital system, so the RailCom-capable switching decoders from the manufacturer ESU can be used for position monitoring.

Other digital systems also offer similar systems from other manufacturers, such as the "WeichenChef" from the manufacturer CAN-digital-Bahn in conjunction with a Märklin Central Station 2/3.

Listing further manufacturers and hardware combinations would go beyond the scope of this documentation. All the systems mentioned and not mentioned here offer the advantage of "real" position monitoring at this point.

5.6.6.4 Position monitoring via feedback contact

This position monitoring is only possible after appropriate modifications or additions to the hardware of your model railway layout.

For example, some decoders for servomotors offer the option of signalling an end position that has been reached. These can then be queried via feedback contacts.

Select the last option "*via feedback contact(s)*" on this tab.

You can enter one or more feedback contact numbers in the text field to report that the target has been reached. If you enter several contact numbers, use a semicolon to separate them.

In the graphic Fig. 5.45 you can see that contact 132 should have the "occupied" status as soon as the switch is set to "straight".

Mark the respective states of the contacts and thus the switch positions by marking the corresponding circles (see Fig. 5.45).
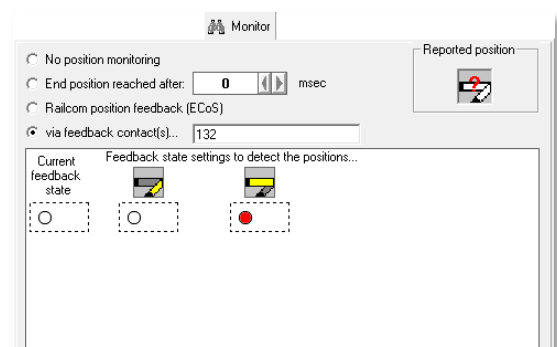
Fig. 5.45   Position monitoring via feedback contact

You can always see your entries immediately by the small symbol in the *"Reported position"* window.

If the window there looks like the graphic on the right, then your entries are incorrect.

And how is this position monitoring used in **Win-Digipet***?*

With this setting, the routes (also in a route sequence) are set immediately after manual setting or in automatic mode, but the drive command to the vehicle is only given when the feedback contact has signalled the correct position of the points.

5.6.6.5 Position feedback DinaSys turntable controller

You can use the position feedback of the controller to record the track connection of a turntable in conjunction with the DinaSys turntable controller.

To do this, activate the corresponding radio button on the "Monitoring" tab in the Solenoid device registration dialogue.

This function is only available if you have integrated the DinaSys turntable controller as a digital system to control your turntable.

5.6.7 Properties of the solenoid device - Options tab

We have already encountered the following three setting options on the "Switching" tab. The functionality of the symbols on the tab described above is identical.

Fig. 5.46   Optional properties of a solenoid device

🚂 **Virtual solenoid device**
The solenoid device is labelled as "virtual", no commands are transmitted to the digital system.

You can assign a **virtual** address for solenoid items that do not actually exist on the model railway layout by ticking the "*Virtual solenoid device*" box. This measure means that **Win-Digipet** does not send any data to the digital control centre, which in turn results in a reduction of the data stream.

Only assign an address to solenoid items that do not actually exist if the solenoid item (signal or virtual switch/button) should or must be set with the mouse. Assign a **virtual address,** which should then be above the model railway system limit.

> ⚠️ If you enter an address greater than 256 for a solenoid item (not multi-term signals), e.g. for the Märklin System 6050/6051, the "*Virtual*

solenoid device" box is immediately ticked, and the field is greyed out (cannot be changed).

With all digital systems, **Win-Digipet** ensures that you do not use a solenoid device address outside the valid range.

🚂 **Lock solenoid device against manual operation**
This function is intended as protection against accidental operation. When the solenoid device is activated in the track diagram, a safety query is displayed. The solenoid device is only switched after this prompt has been confirmed.

🚂 **Show all solenoid device addresses**
In the track diagram editor, all solenoid device addresses are displayed at the symbols.

You will also find a free text field on the Options tab where you can make your own notes on the solenoid device.

You can store a contact number in the feedback contact assignment area. This contact number represents any track occupancy signalling for the points. Please note that track occupancy signalling is not possible for all turnouts without making changes to the points.

5.6.8 Properties of the solenoid device – Digital system link tab

This tab is only displayed if the solenoid device is assigned to a digital system that requires a link between the databases in **Win-Digipet** and the database of the digital system. The control centres of the ECoS family are mentioned here as an example.

You cannot switch the solenoid device with **Win-Digipet** until an error-free link has been established. Solenoid devices marked with the red cross ✖ in the dialogue means that there is no link here yet. Click on the "Create" button to open a dialogue that allows you to create a link

Fig. 5.47   Link the solenoid device with the digital system.

with an existing data record in the digital central unit or to create a new data record in the central unit.

Once the link has been successfully created, the red cross changes to a green tick ✔. You can use the other buttons to "*Check"* an existing link, *"Refresh"* if changes are made and "*Delete"* again.

Any errors relating to the solenoid device, such as a missing link or a duplicate address, are displayed in the lower field. You should take these messages seriously and resolve them. This will protect you from error states in later operation with **Win-Digipet**. To avoid malfunctions, please always check the data format set here (DCC or MM).

5.6.9 Special features of counter symbols

A counter is basically a "switch" with 10000 different setting positions, so a counter can assume values between 0 and 9999.

Unlike other solenoid items, a counter symbol does not require a solenoid item address!

The counter symbols can take on a wide variety of control tasks in later model railway operation.

It should be noted at this point that you can assign a name to a counter symbol. Assigning a name seems particularly useful for the counters, as you may have many counters for different tasks in your track diagram and need to differentiate between them.

When assigning a designation, proceed exactly as described in the previous section for a switch.

Fig. 5.48   Possible settings of a counter symbol

You can include a counter symbol in the circuits for the basic position of solenoid devices when starting **Win-Digipet** or on request by command. You define the base value here in the dialogue window and set the corresponding tick.

Just like a solenoid item, a counter symbol can be locked against manual operation in the track diagram and ultimately you can decide whether single-digit values of the counter symbol are displayed with or without a leading "0".

5.6.9.1 Coloured display of counters

The colouring of the counter symbols in the track diagram can be freely configured according to your wishes, along with a few other adjustments.

When you select the *"Individual"* radio button, clicking on the desired counter symbol opens a dialogue for entering the counter. If you click on the icon in the dialogue with the <u>left mouse button</u>, you can change the background colour of the desired counter and with the <u>right mouse button</u> you can adjust the font colour of the counter. The colour values are adjusted in a typical Windows dialogue window, as you may be familiar with from other applications.

The colour of the so-called SX display cannot be changed. This is still shown in white on a dark green background. Please ensure that there is no confusion when using the SX display in your track diagram.
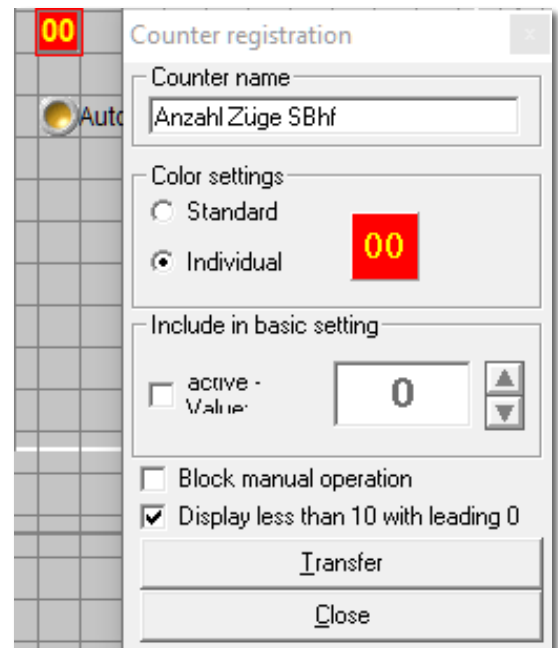
Fig. 5.49   Example for a coloured counter symbol

5.6.10 Multiple digital address available

It may be necessary to assign the same solenoid device addresses several times in the track diagram. A multi-track level crossing should serve as an example here.

Win-Digipet provides you with several symbols for controlling a **multi-track level crossing.** For the double-track level crossing in Fig. 5.50 assign the same solenoid device address to the symbols for the flashing lights (here address 66) and for the barriers (here address 67).

You will then receive the message shown in the image, which you can confirm by clicking on the **'OK'** button.

When you click on the highlighted message line in the dialogue, the symbol found with the **same** address is framed in magenta and the current symbol is displayed with a thick red frame. In this way, you can always see immediately if you have assigned digital addresses more than once.

You can also assign the same address multiple times for all solenoid items, e.g. if you have assigned a distant signal and a main signal to one decoder address. **Automatic** synchronisation takes place when one of these solenoid items is placed on the track diagram. However, this synchronisation **cannot** take place with three-way turnouts or crossing turnouts.
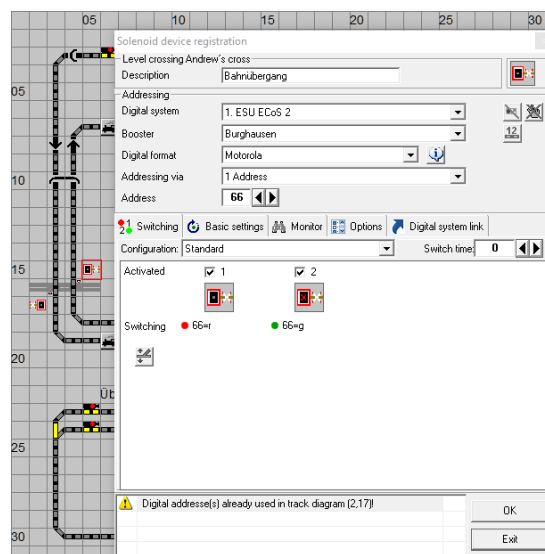
Fig. 5.50   Reference is made to an existing solenoid device address.

5.6.11 Simple turnouts drawn diagonally.

If you have diagonally marked single turnouts in your track diagram, activate the "*Configuration*" option. Setting this option will correct the symbol display in the programme.

For example, a right-hand turnout is installed on the layout, but a left-hand turnout is drawn in the track diagram for display reasons.

To ensure that the function and display "Turnout son straight" are correct again, select the "Connections interchanged" option here, provided that the turnouts are correctly connected to the solenoid device decoder. The other selection options are used for synchronisation with the displays in the digital control centre.

If you have diagonally marked single turnouts in your track diagram, activate the "*Configuration*" option. Setting this option will correct the symbol display in the programme.

Fig. 5.51   14 the connection interchanged option

For example, a right-hand turnout is installed on the layout, but a left-hand turnout is drawn in the track diagram for display reasons.

5.6.12 Crossings and double-crossing turnouts

With the crossings and (double) crossing turnouts are divided into those with no, one or two point machines.

- 🚂 **Double crossing turnouts with one drive:**
  Selection of crossing type: 1 drive
  1st decoder address: Enter value,
  2nd decoder address: **"0"**[18]
  The address **"0"** always means deactivation of the solenoid device symbol, home position and test.

- 🚂 **Double crossing turnouts with two drives:**
  Selection of crossing type: 2 drives
  1st decoder address: Enter value
  2nd decoder address: Enter value.

- 🚂 **Simple crossings without drive:**
  Selection of crossing type: 1 drive
  1st decoder address: Enter value, set solenoid device virtually,
  2nd decoder address: **"0"**[19]

These simple crossings do not require a decoder for switching, as there is nothing to switch. For technical programming reasons, which lie in the interlocking of the routes, you should enter a **virtual address** here, as only solenoid items perform a safety function in the routes.
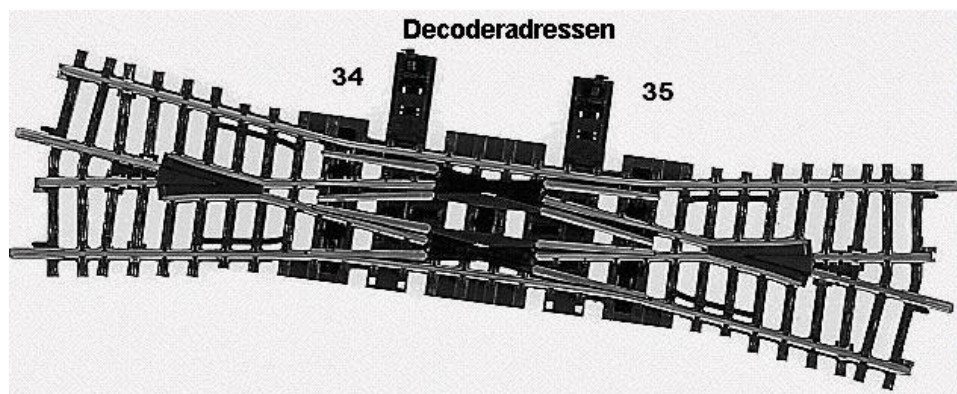
Fig. 5.52   Solenoid device addresses for a double crossover turnout.

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[18] If "1 drive" is selected, the field for the 2nd decoder address is hidden in the dialogue.

[19] If "1 drive" is selected, the field for the 2nd decoder address is hidden in the dialogue.

There are always problems with the assignment of the solenoid device addresses for the double-crossing turnouts with 2-point machines. For this reason, here are some illustrations and explanations of the double-crossing points.

The Fig. 5.52 shows a double-crossing turnout with two-point machines. The two left turnouts are controlled by a point machine with the decoder address 34 and the two right turnouts by a point machine with the decoder address 35.

The addressing in **Win-Digipet** then looks as follows (cf. Fig. 5.53):

The **left** part of the turnout corresponds to the **right** turnout area on the model railway layout and is assigned the address 35 as the 1st decoder address.

The **right** part of the turnout corresponds to the **left** turnout area on the model railway layout and is assigned the solenoid device address 34 as the 2nd decoder address.

You may have to rethink a little when entering the addresses.
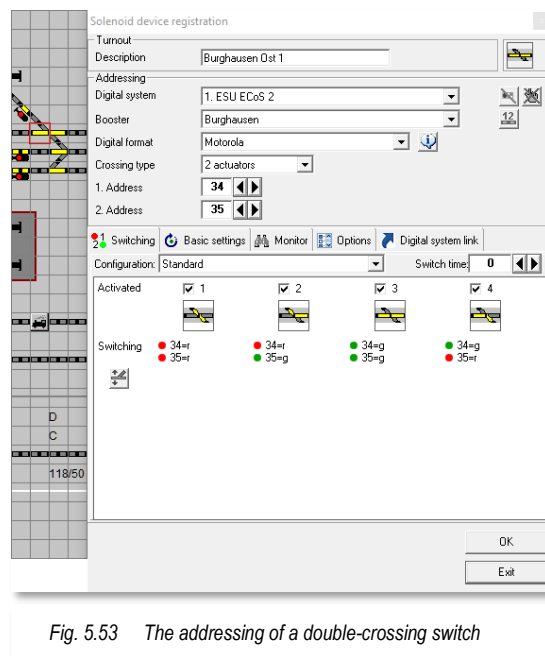
Fig. 5.53   The addressing of a double-crossing switch

5.6.13 Three-way crossover

A three-way turnout always has two point machines and therefore you must also enter two solenoid device addresses. The first address controls the point machine to the right and the second address controls the point machine to the left.

You can determine the correct connection of a three-way crossover as described in section 5.6.4.

5.6.14 Three- and four-aspect signals
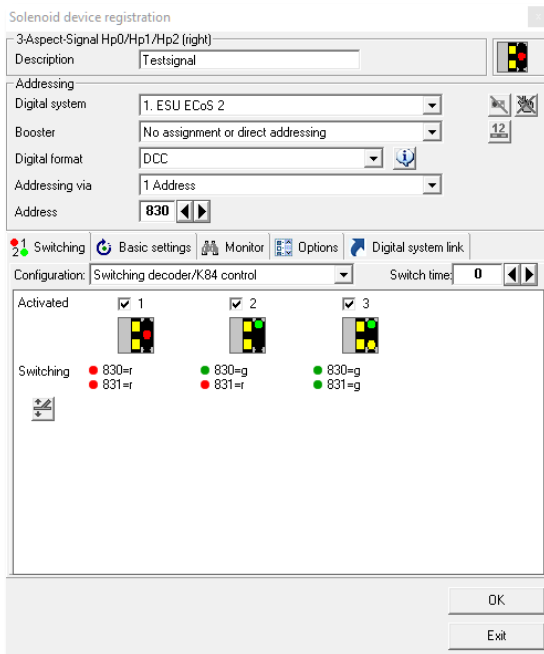
Fig. 5.54   Registration of a three-aspect signal
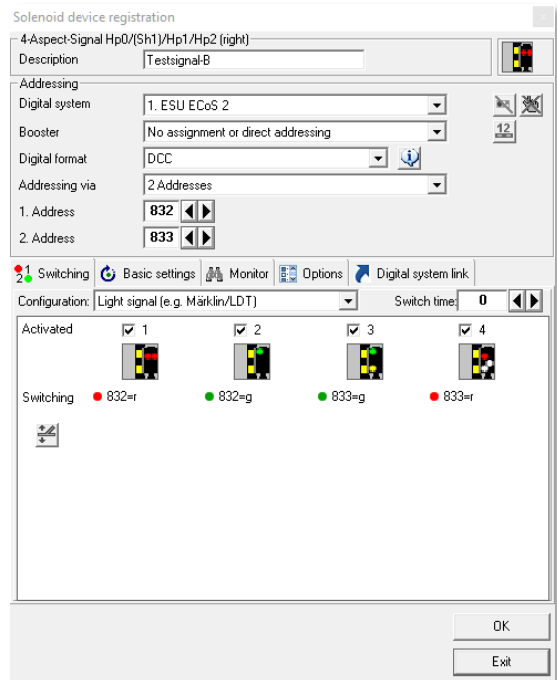
Fig. 5.55   15 registration of a four-aspect signal

The following instructions apply to the detection of three- and four-aspect signals:

 In the case of a three-aspect signal, you can use the "Configuration" selection list to choose between different control options. Here you specify whether you want to control the signal with a light signal decoder from the manufacturer Littfinski Datentechnik (LDT) or with a K84 switching decoder, for example. Depending on the selection, the necessary circuits that are sent to the decoder to display the desired signal image change here.

 When selecting the corresponding entry, you also specify here whether the "*RED*" or "*GREEN*" connection should be switched for the 2nd address.

 If this is a Märklin form signal, select "*Märklin 3 aspect signal (mech.)*" or, when switching with the signal decoder
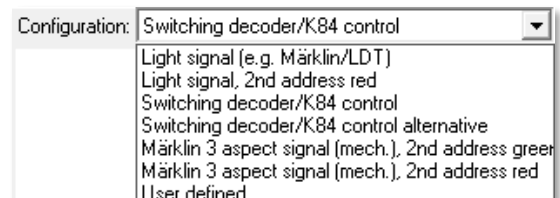
Fig. 5.56   Various controls for signals (3-aspect)

from LDT[20] , "*Light signal (e.g. Märklin /LDT)"*. After entering the digital address and the other settings, you should always test the function of the signal immediately so that you can recognise and correct any incorrect entries straight away.

🚂 You can also take the use of LDT **light signal decoders** (e.g. LS-DEC-DB) into account when detecting solenoid devices.

This is particularly necessary in the case of a four-position distant signal on the mast of the main signal. This means that once the distant signal has been activated, it cannot be deactivated again by mistake.
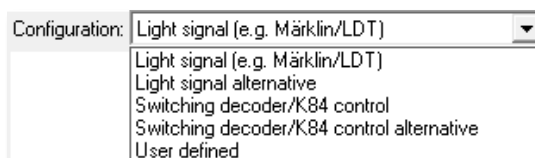
Fig. 5.57   Various control options for signals (4-aspects)

However, when switching the LDT signal decoders in the routes etc., you must still ensure that a second positioning command for a decoder is not given during the time of dark scanning.

🚂 When using the four-letter signals from Roco, you can switch them in **Win-Digipet** via a switching decoder (e.g. k84).
To do this, wire the signal accordingly, select "*Switching decoder/K84 control"* and you can switch the signal connected to the switching decoder.

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[20] LDT - Littfinski Data Technology

🚗 With the "User-defined" entry, you can define your own switching sequences and then save them under a separate term. This saved switching sequence is then also available for other, similar solenoid items.

A traffic light for road traffic should serve as an example of this. Just like a four-term signal, this can also display four switching states. The Fig. 5.58 shows these in the correct switching sequence as used in Germany. The symbols for traffic lights can be found in the symbol tables for operation with cars or in the tables for mixed railway and car operation.
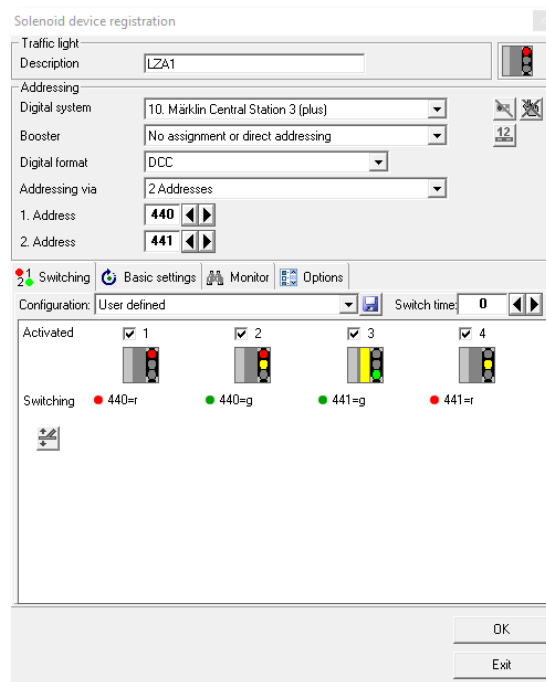
Fig. 5.58   Example of a traffic light (road) 4-aspect

5.6.15 Configuration for multi-term signals

If you use the multi-word light signals available on the model railway market, then you need the symbols provided for them in the track diagram.

These can be found in the symbol selection in the group of HL or KS signals.

As the control of these signals is very complex, you must select the traffic light decoder you are using via the selection in the "Configuration" list.

There is a choice:

Configuration: Standard
- Standard
- LDT LS-DEC-DR
- Viessmann 5229 KS exit signal
- Viessmann 5229 KS entry signal
- Rundumleuchte
- User defined

Fig. 5.59   Various configurations for multi-term signals

- 🚂 LDT LS-DEC-DR

- 🚂 Viessmann 5229 KS exit signal

- 🚂 Viessmann 5229 KS entry signal

- 🚂 Rotating beacon

- 🚂 Customised configuration

Predefined switching sequences are integrated for this purpose, which you can also change at any time. However, you should only do this once you have familiarised yourself with the functions of the decoder.

To display the signalling patterns correctly, use the symbols listed below in the track diagram and set the decoder type to Viessmann 5229 KS-Exit or Viessmann 5229 KS-Entry.

- 🚂 Symbols from 1316 for the Viessmann KS exit signals (Item number 4043 or 4046)

- 🚂 Symbols from 1324 for the Viessmann KS entry signals (Item number 4042 or 4045)

> ⚠️ No link to the database of the ESU ECoS or Märklin Central Station is required for these multi-term signals.

The switching sequences for the individual signal patterns are shown in the graphics below. Up to 18 signal positions can be configured for this example of a KS exit signal. Depending on the signal shown in the track diagram, the "Solenoid device registration" dialogue changes its appearance accordingly. The respective signal positions and the switching commands below them are displayed in the respective order.

You can change the switching commands or sequences by pointing the mouse at the switching command to be changed. You will then see a pencil icon 🖊 for editing the line. To insert additional switching commands or a switching pause between the commands, click on the "green plus sign" under the switching command (cf. Fig. 5.60).

To edit an existing line or to insert an additional switching command, a list with the configured addresses for the solenoid device is displayed. In the example of the KS signal, we need a total of nine solenoid device addresses to display the eighteen possible signal images. This address space is made up of the 1st address and 8 subsequent addresses, whereby you must enter the first address here in the dialogue window. The solenoid device decoder can be addressed with these nine consecutive solenoid devices addresses if set accordingly.

Fig. 5.60   Editing the switching commands.

The setting for the required number of addresses can be made in a list field. In addition to the 1st address, you can define up to 10 subsequent addresses and one additional address. Please note that the decoder you are using must support addressing.

The Fig. 5.61 shows the list of possible circuits or the switching pause displayed at. From the list, select the entry that is to be sent to display the desired signal image.

Fig. 5.61   List of available switching commands

In the Fig. 5.61 it can be seen, for example, that the first sequence address "red" should be sent to switch signal pattern 3, while "green" must be sent on the first sequence address to display signal pattern 4.

Depending on the decoder used, it may be necessary to send several commands in succession to display a specific position of the solenoid device. In this case, use the green "plus sign" mentioned above to insert additional commands or a time offset in the form of a switching pause between commands. You can specify this time offset precisely by inserting a value line. For switching sequences and any necessary pauses, be sure to observe the information in the operating instructions for the solenoid device decoder.

You can use the **'*Save'*** button to create specially defined decoder types and only save them under a new name. The predefined data is saved in the **DecTemplate.WDP** file and should not be deleted.

Your own data is saved in the **DecTemplate.DAT** file, which you can change and delete at any time.

5.6.16 Sound via push-button

You can also assign sounds from the symbol selection (Sound button group) to the buttons marked in the track diagram (e.g. the symbol 0628 Sound 1). These sound files must be available on your computer system in WAV or MP3 format.

Fig. 5.62   A track diagram symbol for a sound button
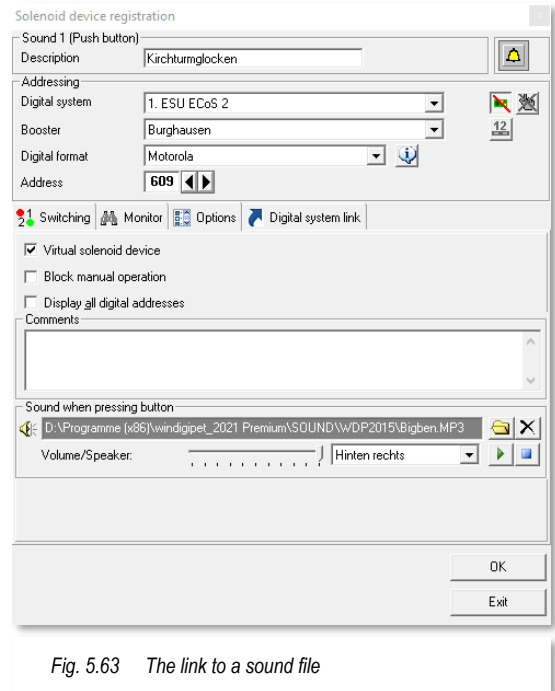
Fig. 5.63   The link to a sound file

The sounds can be stored in any directory on your hard drive or network drive. If necessary, create a directory in which you store your sound files in further subdirectories organised by topic.

For the sound symbols, you will find the option to link these sound files to the solenoid device on the *"Options"* tab in the *"Solenoid device registration"* dialogue. After clicking on the ⌷ icon, an "Open" window appears, and you can select the desired sound in the typical Windows way.

You can delete, play, or stop playback of a selected sound using the three other buttons.

As with all solenoid items, assign a solenoid item address on the *"Switching"* tab and enter a text in the "*Description"* field.

As shown in Fig. 5.62 and Fig. 5.63 you can always set the "virtual solenoid device" label for this type of solenoid device, as the command does not have to be sent to the control centre.

You can assign the registered sound to any speaker. However, the prerequisite for this is that you have installed a **2.1**, **5.1** or **7.1** surround sound system on your computer.

To do this, click on the down arrow and select the desired speaker from the list box.

> When backing up data with **Win-Digipet,** only the sound files stored in the SOUND directory are automatically backed up.
> You must back up all other directories yourself!

Please note that a WAV file must be in mono format. Only then can it be assigned to the individual speakers.

If this is not the case, you will receive a corresponding message and can initiate a conversion and save the new file in a directory with a name of your choice on the hard disc.

5.6.17 Solenoid device switches feedback contact

If you have already worked with a previous version of **Win-Digipet 2021**, you may be familiar with the function of being able to switch a feedback contact with a 2-aspect solenoid device. This functionality can now be found in the main programme in the properties of a virtual feedback contact or in the "Virtual contacts and pulse generators" editor.

You will get to know these parts of the **Win-Digipet** programme in detail later in this documentation.

5.6.18 Detect solenoid devices using the keyboard test.

With using the virtual keyboard for testing the solenoid items, you can not only test the function of the items installed on the model railway layout, but also enter the solenoid device addresses very conveniently in the track diagram editor.

To do this, open the virtual keyboard by clicking on the icon in the toolbar of the track diagram editor and use the down arrow to select the controlling digital system and the right down arrow to select the address range for the corresponding free solenoid item address. Using the small selection list, you can also set the required digital format here, as you already know from the dialogues for solenoid device entry.
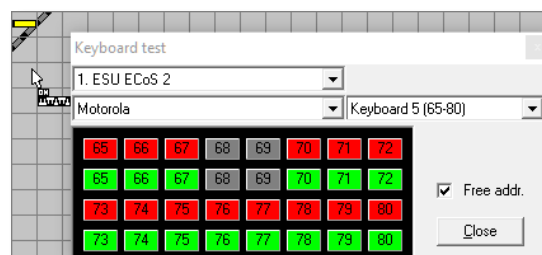
Fig. 5.64   Detecting solenoid devices with the test keyboard.

After clicking with the middle mouse button on the solenoid device address in the "Keyboard test" window, the mouse pointer changes to a pick-up pointer (cf. Fig. 5.64).

Keeping the mouse button pressed, drag the pick-up pointer to the desired symbol in the track diagram and release the mouse button. The track symbol is framed in red and the "Solenoid device registration" window appears immediately. The digital system used, and the solenoid device address are automatically entered in this window.

You can complete the dialogue with all the necessary settings and a meaningful solenoid device designation.

5.6.19 Detect solenoid devices using the keyboard test (Selectrix)

If you control your solenoid items with a Selectrix digital system, the input screen for entering the solenoid items in the track diagram editor will change. The number of the solenoid item address is not entered for these digital systems, as your digital system and **Win-Digipet** expect the data for the SX bus, module, and connection here.

As already described in section 5.6.18 using a solenoid item controlled with the ECoS 2, you can also enter the solenoid device addresses very conveniently in the track diagram editor for the Trix, MÜT and Rautenhaus digital systems.

To do this, open the virtual keyboard by clicking on the icon in the toolbar of the track diagram editor and use the down arrow to select the controlling digital system and the right down arrow to select the address range for a corresponding free solenoid device address.

After clicking with the centre mouse button on the solenoid device address in the "Keyboard test" window, the mouse pointer changes to a pick-up pointer.

Keeping the mouse button pressed, drag the pick-up pointer to the symbol in the track diagram to which you want to assign the selected solenoid device address and release the mouse button.

The track symbol is framed in red and the "Solenoid device registration" window appears immediately. The digital system used and the solenoid item address with bus, module and connection are automatically entered in this window. The correct keyboard keys (red and green) are also assigned automatically.
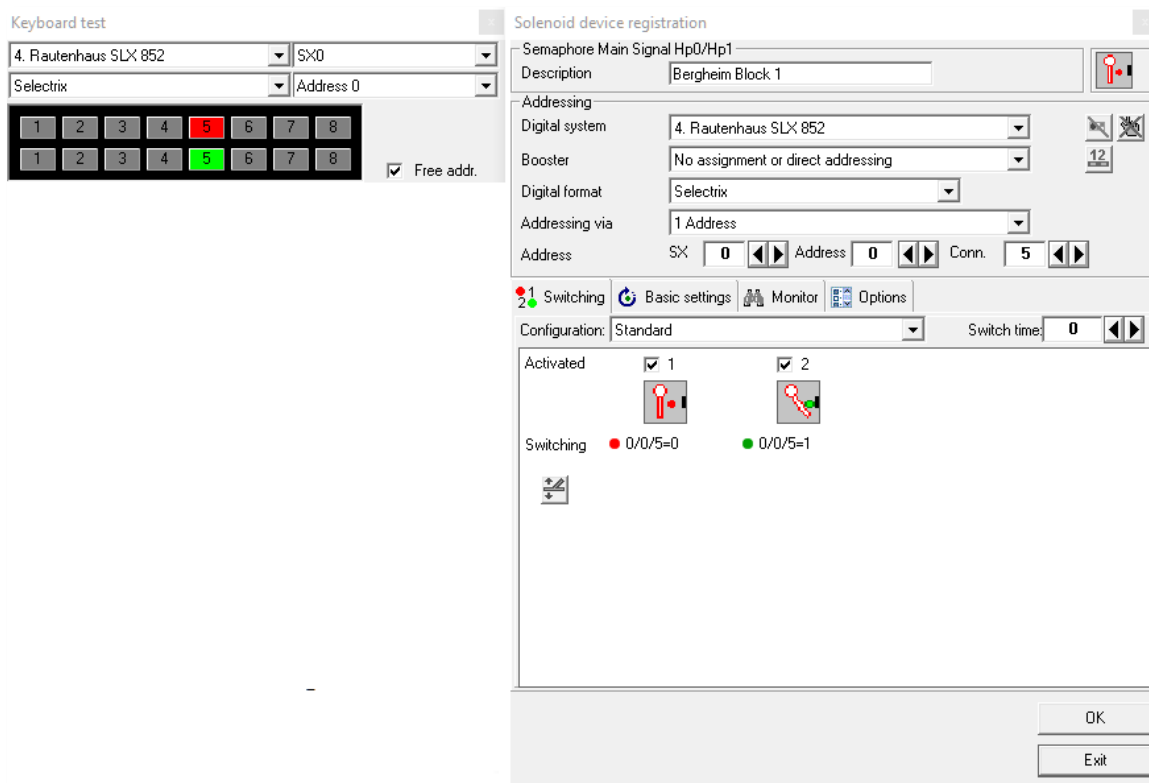
Now you can set any additional switches, enter a solenoid device designation and after clicking on the '*OK*' button, the solenoid device address is entered in the track diagram.

> As also described in section 5.6.18 the function of the solenoid device is considered when the address is entered automatically.
>
> If you have entered a two-letter solenoid device, only one solenoid device address is assigned. However, if you have entered a three- or four-letter solenoid device, two addresses will also be provided for it.

5.6.20 Globally assign solenoid devices to another digital system

If you use more than one digital system to control the model railway layout, you can very quickly assign the control of all registered solenoid items to another connected digital system.

To do this, click on the 🖼 icon in the track diagram editor toolbar.

Another window opens in which you can now change the digital system. Select the source system in the upper selection field and the target system in the lower selection field. After clicking on the **'OK'** button, a confirmation prompt appears in which the number of solenoid items affected by the change is displayed.
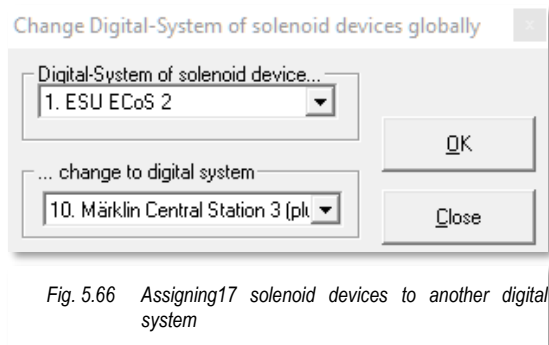
Fig. 5.66   Assigning17 solenoid devices to another digital system

Fig. 5.6718 of affected solenoid devices
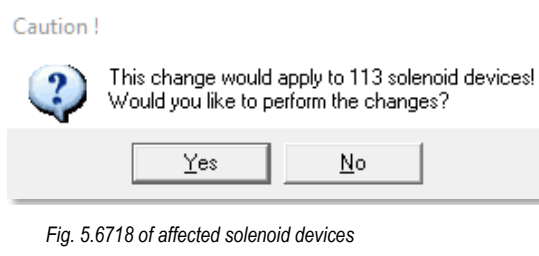
By confirming this dialogue, the change is carried out and acknowledged by the program once the change is complete.

If you have already assigned different digital systems to individual solenoid items in **Win-Digipet,** these settings will be considered.

If, for example, the solenoid device addresses 1 is assigned for two turnouts in the track diagram, whereby ...

   🚂 the first turnout from the ESU ECoS 2

   🚂 and the second turnout from the Märklin Central Station 2

...is controlled, then this works perfectly.

However, after changing the digital system from the ESU ECoS 2 to the Märklin Central Station 2 or vice versa, **both** turnouts are **always** switched.

5.6.21 Solenoid device linking manager.

One special feature must be observed when using the ESU ECoS (1&2) or the Märklin Central Station (Reloaded).

When performing a "reset to factory settings", you should always back up the configuration of your digital system. You can perform this important backup via a browser; please follow the manufacturer's instructions.

After a reset to factory settings, the necessary links to **Win-Digipet** no longer exist and must be created again.

If you do not have a backup copy, you can use the solenoid device link manager, which you can start by clicking on the 🚦 icon in the toolbar of the track diagram editor.

You can only open the solenoid device link-manager if you have installed a suitable digital system (see above). Otherwise, you will receive an error message.

The basic functionality of the link manager for solenoid items here in the track diagram editor is like the link manager for vehicles, which you have already learnt about in the chapter on the vehicle database.

After calling up the link manager, the window shows two lists. The upper list contains all solenoid items assigned to this digital system in the **Win-Digipet** track diagram.

The second list contains all solenoid items that are stored in the control centre database.

Between the two lists, in the centre of the window, there are several buttons that you can use to transfer or link the individual data records from **Win-Digipet** to the database of the digital system. You can also remove an existing link. Pay particular attention to selecting the correct data format for the solenoid item(s) to be linked.

The marking of the line has the following meaning:

✔ There is a correct link to the data record

❌ There is no link for this data record

⚠ There is an incorrect link in the data record.

This solenoid device is linked to a solenoid device in the control centre/track diagram, but either the addresses do not match, i.e. a solenoid device with one address has been assigned to a two-address solenoid device or a push-button respond red instead of green, the message reason also appears in the Message column in each case.

However, it is not possible to check whether, for example, a switch has been assigned to a two-aspect light signal (only addresses are checked). The system also checks whether the linking partner still exists in the control centre.

Using the 5 buttons to the right of each list, you can select the red/yellow or green lines or all or none to perform one of the actions described below.

🚂 Create new marked solenoid items in the control centre in either MM or DCC format. This only works for data records that are marked with the red X to prevent malfunctions due to duplicate data records.
However, the refined symbol selection as offered in the dialogues for recording solenoid items is not available here,

🚂 The links to the control centre can be deleted for marked solenoid devices (green/yellow)

🚂 The marked solenoid items can be framed with a magenta-coloured frame in the track diagram.

- If you have created solenoid items in parallel in **Win-Digipet** and in the digital centre and have not yet linked them, you can try to automatically link the items selected in the list above (only red entries are considered).

- You can delete entries marked by the PC in the magnet list of the control centre using the *'X'* button.

The following direct actions are also stored in the track diagram solenoid device list:

- Double-click on a line to open the "Solenoid device registration window" for the relevant solenoid device.
  However, the prerequisite is the activated "Register solenoid devices" mode in the toolbar of the track diagram editor. The manager activates this automatically when it is called up. However, it can no longer set it if you have manually set the mode to "Set track symbols" mode, for example.

- You can link red solenoid items directly to a red solenoid item in the control centre using "drag & drop" by dragging the desired solenoid item from the track image list directly onto the desired linking partner in the digital system list.

The following direct action is also available in the central magnet article list:

- You can link red solenoid items directly to a red solenoid item in the track diagram list using "drag & drop" by dragging the desired solenoid item from the centre list directly onto the desired linking partner in the track diagram list.

5.6.22 Virtual keyboard for testing all solenoid devices.

In the Track diagram editor, you can call up the "Keyboard test" window, which simulates a Märklin keyboard, by clicking on the symbol ▦ in the toolbar. We have already described this keyboard in section 5.6.18 when recording solenoid items.

First select the desired digital system from the selection list on the left if it is not already displayed.

The selection list on the right contains the individual keyboard areas. Each keyboard manages 16 addresses. Here you select the corresponding number of the virtual keyboard in which your solenoid device addresses to be tested is located.

The "Keyboard test" window offers three functions:
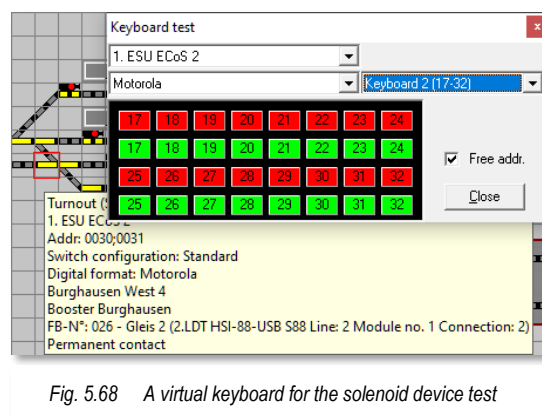
Fig. 5.68   A virtual keyboard for the solenoid device test

- If you have ticked the checkbox next to "free *address"*, the inactive solenoid device addresses are hidden in the track diagram. This allows you to recognise which addresses you have not yet assigned.

- You can also click on the address of the solenoid item to check that it is working properly. Upper button red, lower button green. The solenoid device is outlined in magenta on the screen and its current position is displayed.

- Assigning the solenoid device address in the track diagram according to the sections 5.6.18 and 5.6.19.

5.6.23 Dip switch positions for decoder k83/k84

This section only applies to the Märklin decoder k83/k84.

Click on the ▦ icon in the toolbar of the track diagram editor to open the "Dip switch for decoder k83/k84" display.

Enter the number of the decoder using the two arrow keys or directly via the keyboard and the positions of the 8 dip switches are displayed immediately. There is no need to browse and search through the documentation, as this information is immediately available in the track diagram editor.
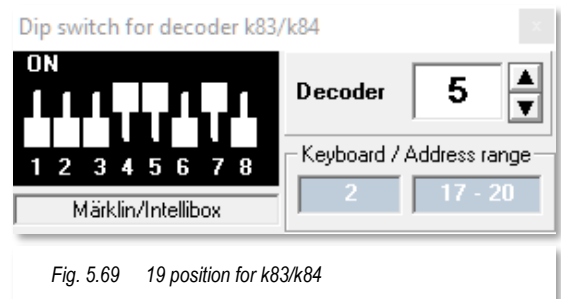
Fig. 5.69   19 position for k83/k84

However, this **does not** apply to the turnouts decoders that you can mount directly under the turnout son Märklin C track, as two additional dip switches 9 and 10 must be set for this type of decoder. The same applies to the mfx signals of the Märklin 70x series.

5.6.24 Connect the SX display in the track diagram to an address.

A green SX display placed in the track diagram, you must assign the SX display address in the usual way via the solenoid device registration.

You can only see the green counter symbol for the SX display if you have installed a Selectrix digital system (e.g. Rautenhaus SLX 852).

After entering a name in the "SX-Display description" field and clicking on the **'Transfer'** button, the entry is accepted.

The SX value of the selected address is then always displayed.

The entry dialogue for an SX display includes a few more setting options, such as blocking against manual operation, which you are already familiar with from the dialogues for the solenoid devices or counter symbols.
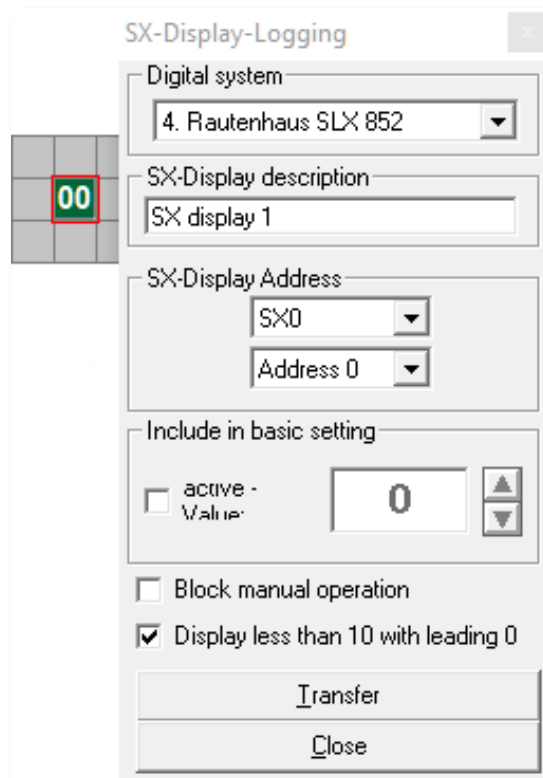
Fig. 5.70   Addressing SX display.

5.6.25 Print solenoid devices.

With click on the icon [icon] in the toolbar of the track diagram editor to open the "Print solenoid devices" window.
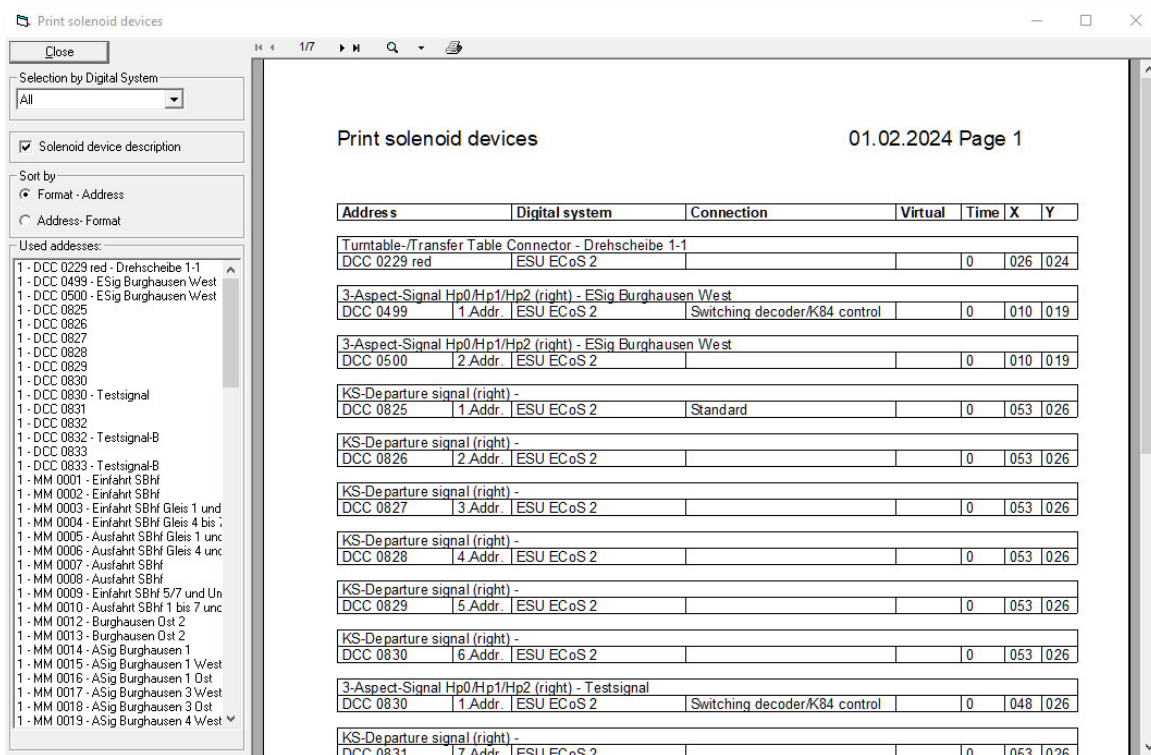
Fig. 5.71   The "Print solenoid devices" dialogue.

Here you can print out a list of all solenoid items used in your track diagram.

In this list, either all the solenoid items used or those of an entered digital system are displayed. To do this, select the desired entry from the selection list.

The solenoid items are displayed in a list in the left-hand window and in the right-hand window with further relevant information. The designation you assigned when entering the solenoid device is also displayed here or printed out on a printer. You can create the list of solenoid items sorted by format - address or by address - format.

5.7   The "Recording feedback contacts" mode in the track diagram editor.

5.7.1   General information

The third mode in the track diagram editor includes the assignment of the feedback contact numbers to the symbols in the track diagram.

Before entering the data, it is advisable to create a list or a sketch showing the position of the individual feedback contacts on your model railway layout.

If you control your model railway system with different digital systems, please also make a note of which feedback modules are to be controlled with which digital system. The topic of feedback module configuration has already been covered in this documentation in the chapter "3 SYSTEM SETTINGS AND FEEDBACK CONFIGURATION".

5.7.2   Enter feedback contacts, vehicle display numbers.

With a Click on the 🖳 icon in the toolbar of the track diagram editor to open the "Feedback contacts" window. Alternatively, you can also open this window by right-clicking in the track diagram and selecting the menu command <Feedback contacts>. The mouse pointer changes to an arrow with a stylised feedback module symbol.

The "Recording feedback contacts" mode is now displayed in the status bar at the bottom of the screen.
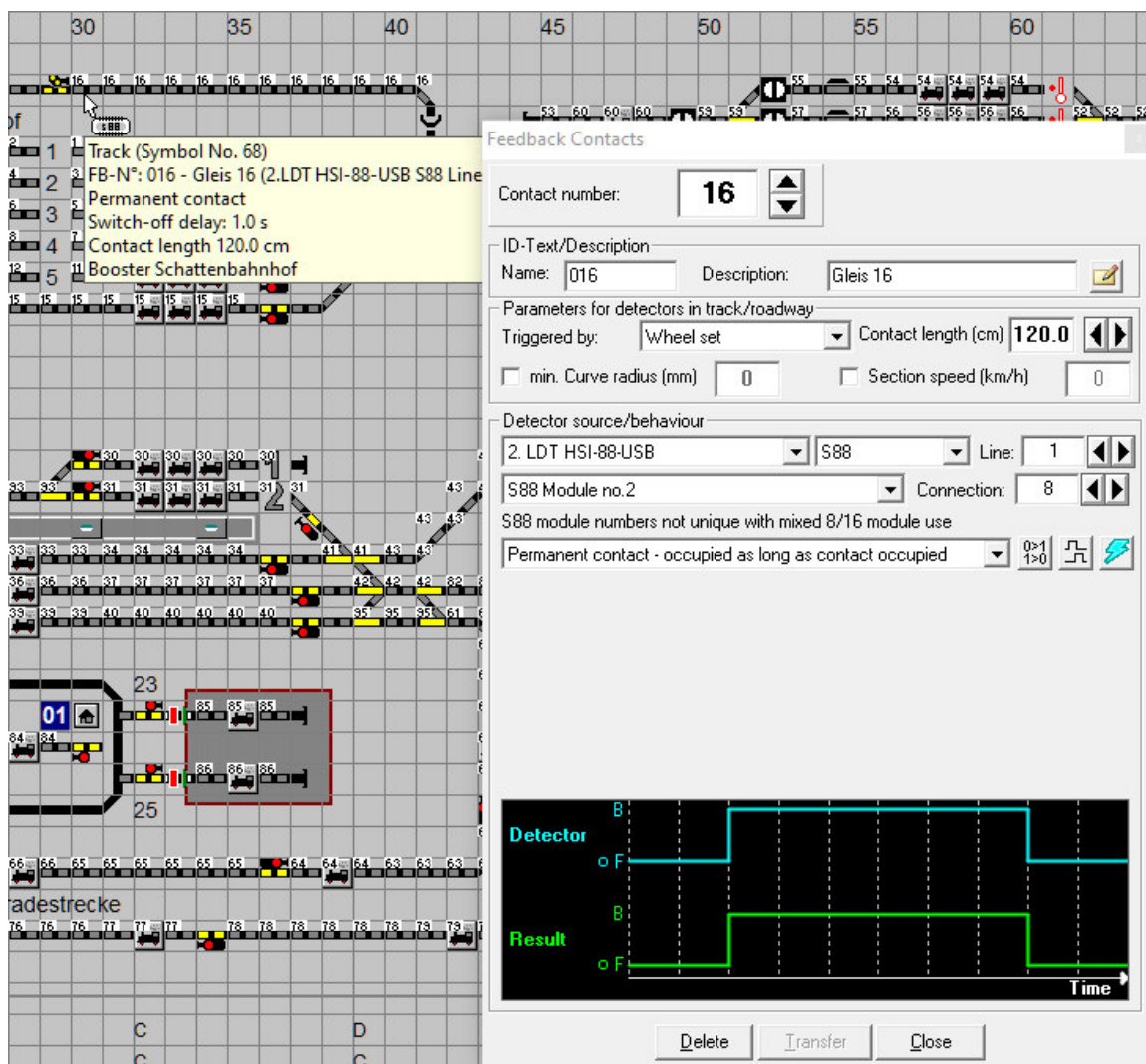
Fig. 5.72   A feedback contact number is assigned to a track symbol.

All feedback contacts that have already been recorded are displayed in the track diagram. In our example image (see Fig. 5.72), only a few assignments of contact numbers to the track symbols are still missing. For this example, the feedback contact with the number 16 is to be used here.

In the "*Contact number"* field, click on the arrows - or use the keyboard - to enter the serial number of the contact to be entered, in this case "*16"*.

Now move the mouse pointer to the track symbol to which you want to assign the current contact number and press the left mouse button. The selected contact number immediately appears on the track symbol. You can place the number in the track image as often as you wish by pressing the left mouse button several times or dragging the mouse pointer.

If you have already assigned feedback contact numbers to individual track sections, vehicle displays or turnout sin the track diagram, you can transfer this contact number to the small "Feedback contacts" window by right-clicking on a symbol that has already been assigned

a feedback contact number and do not have to enter the number using the keyboard or arrow keys.

If you want to delete contact numbers that have already been entered in the track diagram, click on '**Delete'**; the contact number **"0"** will then appear in the "*Contact number*" field.

With a contact number **"0",** existing feedback contacts in the track diagram are deleted again when you click with the left mouse button or move over them with the left mouse button pressed.

If you need to use two diagonal track sections in a track field to display two tracks, a short menu <Top> <Bottom> (oben / unten in German language) opens when assigning the feedback contact numbers for the double diagonals.

Then click <Up> or <Down> to specify which route the contact number should be assigned to.

Tracks that run **diagonally should be** drawn in the second variant if possible; the upper variant with the double diagonal symbol harbours a higher risk of error. With such double diagonal track sections, you will have to specify the top and bottom later, e.g. for manual route recordings. There is a risk of confusion here.
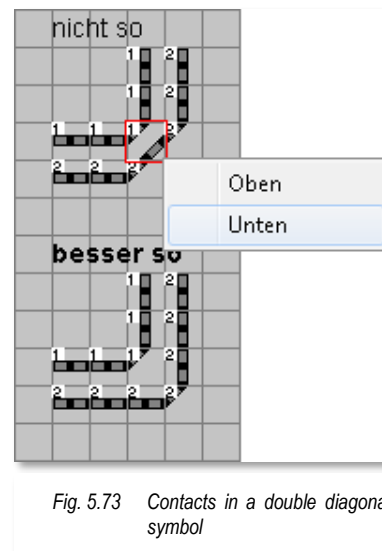
Fig. 5.73   Contacts in a double diagonal symbol

5.7.3 Description of the feedback contact

You should, add a unique description to each individual feedback contact number. This makes it easier for you to search for feedback contact numbers later.

The description for contact numbers without a vehicle display can be regarded as optional; for contacts with a vehicle display, the description should be regarded as mandatory.
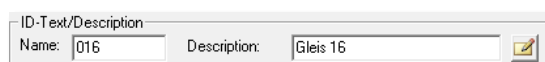
Fig. 5.74   Number and description of a feedback contact

To the right of the "Name" field, you will find a

small notepad symbol . Clicking on this symbol opens a small editor window in which you can enter further comments on this feedback contact number.

5.7.4 Parameters for feedback contacts

In the *"Parameters for detectors in the track/roadway"* area, you can add a few more properties to the individual feedback contact. This relates to the physical length of the contact section, a minimum curve radius or a predefined track speed.

Fig. 5.75   Various parameters of a feedback contact

The "*Triggered by*" selection list is used to define different types of detectors and contains the parameters wheelset, slider, magnet, IR transmitter or light barrier.

In the chapter 4 on the vehicle database you have already been informed about driving with train and vehicle lengths and in the section 4.4.2 you have already entered the vehicle length for the vehicles (for rail-bound vehicles: LoB[21] (in cm)).

To enable **Win-Digipet** to control the trains accordingly, the lengths of the feedback contact sections are required in addition to the vehicle lengths.

You may now be asking: *"Do I have to measure and enter all the feedback routes on the model railway layout?"*

The answer is: *"No, in principle only very specific feedback routes! But it doesn't hurt to know all the lengths either."*

Essentially, these are the braking and stopping sections in front of the signals and the track sections at the platforms. This means that trains can stop in the centre of the platform, for example, with the help of a distance/time calculation. All with just one intelligent vehicle display on the track.

In the chapter on the routes editor, we will encounter the intelligent vehicle displays again, but for the moment we are interested in the route lengths of the individual feedback contacts.

You can enter the track length of the feedback contact to be entered here in the track diagram editor or later in the main **Win-Digipet** programme.

In the "Feedback contacts" window (see Fig. 5.75*)* you will find the "*Contact length (cm)*" field. Enter the measured track length of the feedback contact there. You can measure the length on the layout or take it from the track plan of your model railway layout created with a track planning programme.

---

[21] LoB - length over buffer

5.7.5 Behaviour of feedback contacts

5.7.5.1 Feedback contacts as permanent contacts

In this dialogue section, you can define settings for the source and behaviour of a feedback contact.

The feedback module with the associated digital system is regarded as the source of the feedback contact. The corresponding number of the connection on the module is also entered here. If you have already assigned the feedback numbers in the feedback module configuration, the data is transferred here accordingly.

The Fig. 5.76 shows a permanent contact. The characteristic of such a permanent contact is that if the detector is occupied (e.g. vehicle on track section), the feedback contact signals occupied. This behaviour is shown graphically in the stylised timeline in the lower part of the window.
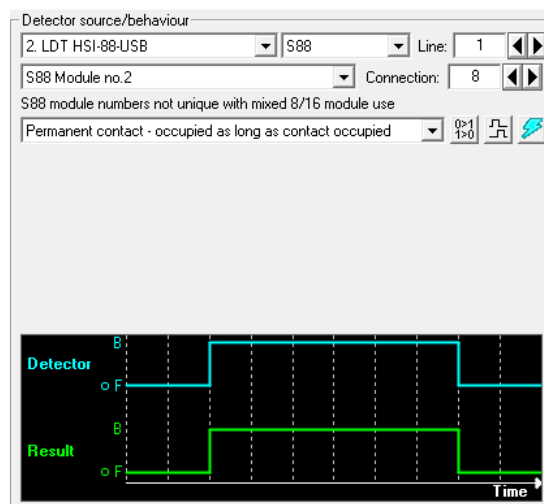
Fig. 5.76   Source and behaviour of a feedback contact

You can set a switch-on or switch-off delay for all feedback contacts after activating the ⊓ symbol. Values between 0 and 50,000 msec (corresponds to 50 sec) can be set in steps of 50 using the arrows shown in the graphic (cf. Fig. 5.77) can be set.

> ⚠️ You should apply the switch-on and switch-off delays with the necessary sensitivity, as they always influence the operating sequence, e.g. with section releases in the routes.

Activating the 0>1 1>0 symbol causes the contact status to be inverted and the ⚡ function "freezes" the detector, i.e. no more status messages from the feedback contact are analysed.

5.7.5.2 Feedback contacts as momentary contacts

In contrast , the characteristic of a momentary contact (e.g. reed contact) is that it is only occupied for a very short period of time, for example when triggered by a magnet on the vehicle. Reliable evaluation may not always be possible here.

By selecting "*Momentary contact - occupied after contact occupied*" from the list, further options are displayed in the dialogue window, which essentially relate to the release message of the momentary contact. **Win-Digipet** "extends", so to speak, the occupied signalling of the contact until one or more specific events occurs.

In the simplest case, this can be the next feedback contact on the route. Enter this in the field provided or use the arrow keys to select the corresponding number.

Several numbers can also be entered in the field; these must then be separated by a semicolon. If you have entered several contacts, these may be located after a turnout or a branch. Click on the corresponding solenoid symbol in the track diagram and select "...as FB-Off condition" from the menu. The selected solenoid item is entered in the "large" field, and you define the position of the solenoid item.

You define more complex conditions that lead to the momentary contact being reset in the main **Win-Digipet** programme.
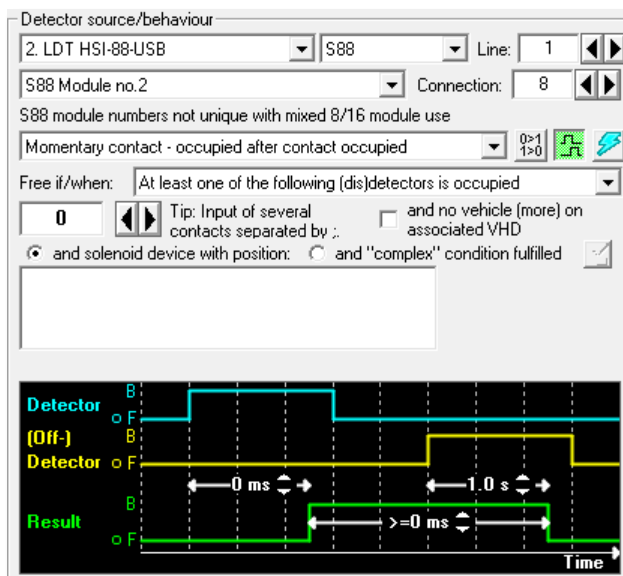
Fig. 5.77   Source and behaviour of a momentary contact

The "Free if/when:" selection list contains further options that you can use to switch off the occupied momentary contact:

- **At least one of the following (dis) detectors is occupied**
  As described above, a subsequent detector with the **"occupied"** position switches back the momentary contact.

- **At least one of the following (off) detectors becomes free**
  A subsequent detector must change from the "occupied" to the "free" position to reset the detector.

- **After time x, after the contact itself has been occupied**
  The detector switches back after a defined time after occupancy. You set the time using the graphic in the dialogue window, whereby the period can be between 50 msec and 50 sec. Values below one second can be set in steps of 50 msec and above one second in steps of 100 msec.

- **After time x, after the contact itself became free**
  The detector switches back after a defined time after it has become free again. You set the time using the graphic in the dialogue window, whereby the time can be between 50 msec and 50 sec. Values under one second can be set in steps of 50 msec and over one second in steps of 100 msec.

- **The contact itself is occupied again**
  The detector is reset after it has been reassigned.

- **Only manual off or by switching action**
  The detector is reset manually (e.g. by a solenoid device) or by a switching action that can be configured in the various parts of the programme (e.g. routes editor, tour automatic editor, dispatcher).

5.7.5.3 Feedback contacts as virtual contacts

About the source selection list can also be used to create so-called "virtual contacts".
These contacts must not be assigned to any digital system. Their numbering is therefore generally higher than the ranges covered by your physically existing feedback contacts. In our example project, the contact numbers up to 120 are assigned to the HSI-88-USB digital system. The area above this could therefore be used for virtual contacts. However, it is advisable to always keep a certain reserve area free for extensions, i.e. to only allow the virtual feedback contacts to start from feedback number 250, for example.

Virtual feedback contacts can be defined here in the dialogue as manually switchable, or contacts switched via a clock generator. At this point, we understand manually switchable to mean both "manuals" switching or switching via switching actions in various programme parts (e.g. routes, tour automatic tables, or dispatcher etc.) of **Win-Digipet**. The switching can also be linked here to a two-aspect solenoid device.
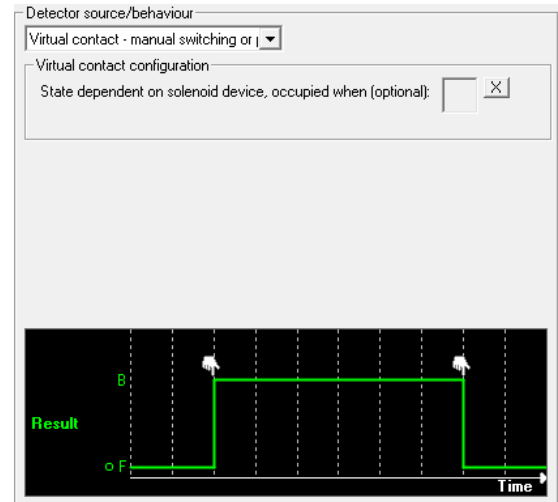
Fig. 5.78   A virtual contact with manual switching

5.7.5.4 Feedback contacts as "virtual pulse (clock) generators"

Virtual feedback contacts, which are defined here as a "virtual pulse (clock) generator" are switched on and off according to a predefined time pattern.

Activate the clock generator here in the dialogue window. Optionally, you can link the clock generator circuit to a two-aspect solenoid device.

In the graphic display in the lower part of the window, use the arrow buttons to define the time periods for active and inactive phases of the virtual contact. The phases can be of different lengths and cover a period between 50 msec and 50 sec. Below one second, the values can be set in steps of 50 msec and above one second in steps of 100 msec.
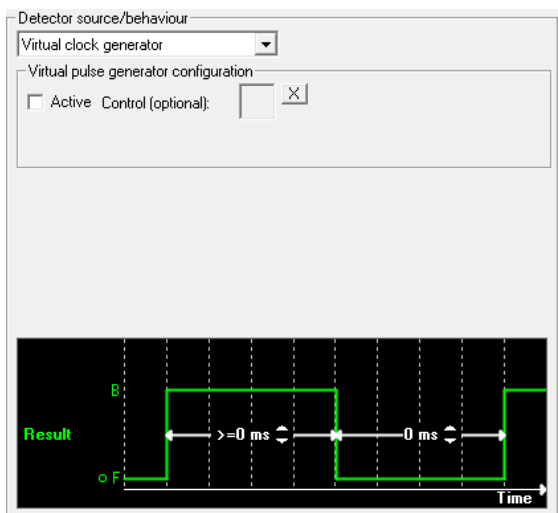
Fig. 5.79   A virtual contact as a clock generator

5.7.6 Turnouts with feedback capability

If you have installed feedback-capable turnouts on your model railway layout, you can also assign contact numbers to them in the track diagram. To do this, please use the track diagram symbols labelled as "feedback-capable" from the symbol selection.

You can assign up to 2 feedback contact numbers per turnout for crossover turnouts if this is intended and possible on the turnout. Only **one contact** number can be assigned for normal turnouts and three-way turnouts.

As a rule, you will only have one feedback contact connected to the crossing points, which indicates that the turnouts are occupied. In this case, enter the same contact number on both sides of the crossing points.

> The feedback described here is not position feedback of the switch (see section 5.6.6.4), but real feedback of the track to "occupied" or "free".

5.7.7 Vehicle display

The vehicle displays (VHD) play a special role in **Win-Digipet.** You will later place your vehicles or trains on them to control them using the routes between the vehicle displays.

> In the previous versions of **Win-Digipet,** the vehicle displays were referred to as train number fields. The "old" designation is inappropriate because the control of road vehicles is now also becoming more important with version 2021. During this documentation, you will also see further renaming's with the same reasons as above. We will point this out at the appropriate places.

A vehicle display represents a specific feedback contact. Consequently, the program displays the same dialogue as we have discussed in detail in the previous sections.
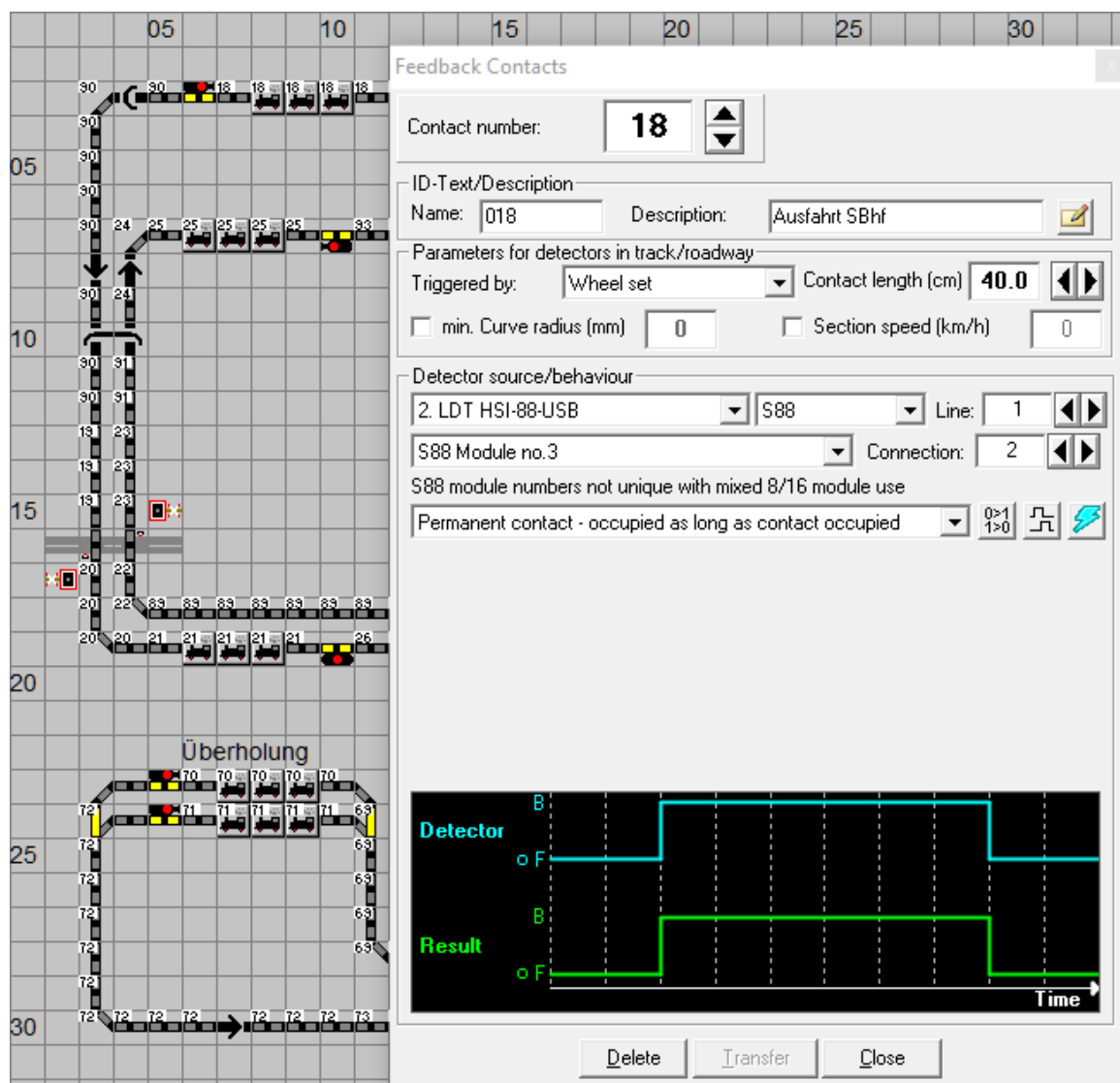
Fig. 5.80   Name and description for a vehicle display

You should insert the description of the vehicle display here and thus give the vehicle display a unique designation. In the **Fehler! Verweisquelle konnte nicht gefunden werden.** "018" was assigned as the name for the vehicle display, which corresponds to the number of the feedback contact, and "Ausfahrt SBhf" (means "exit SBhf" in German language) was selected as the description.

You will come across this name or description again later in many parts of the programme. This name assignment will help you to find a solution more quickly, especially when troubleshooting. It is also easier to understand when a route runs from "SBhf_Gl1 to ASig_SBhf", for example, than if you were to say, "the route runs from contact 001 to contact 020".

The name and description entered will be adopted later when routes are automatically created. We recommend that you do not change the information in the "*Name*" field and

enter your individual description of the vehicle display (max. 24 characters) in the second line. Blocked characters are rejected with a corresponding message.

5.7.8 Vehicle detection indicator

A train numbers marked in the vehicle detection indicator symbol (see section 5.5.7) must also assign a feedback contact number to this track symbol labelled with a small "V".

After clicking on the ▦ icon in the toolbar of the track diagram editor, the small "V" in the track diagram is not recognisable, as the icon then looks like a normal piece of track. Only when you move the mouse over it will a "quick info" highlighted in yellow show you that it is a symbol for vehicle detection indicators.

Now click on the track section with the feedback contact number set and assign the contact number as usual.
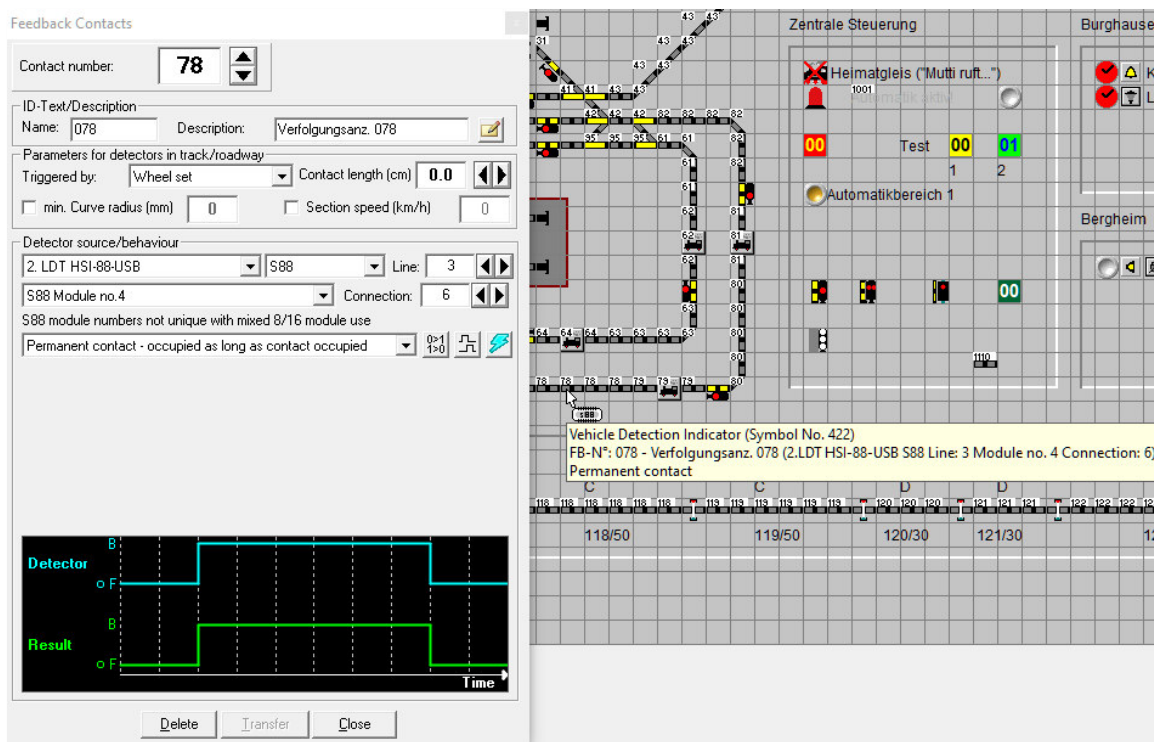
Fig. 5.81   A feedback contact on a vehicle detection indicator

5.7.9 Enter feedback contacts via the feedback monitor.

In the If you have wired your feedback contacts "wildly" on the model railway layout, you may no longer know exactly where to enter a contact in the track diagram.

The feedback monitor helps you to enter the corresponding feedback contacts correctly in the track diagram. On the model railway layout, push a short wagon with feedback capability (!) over the track and observe which contact is displayed as occupied in the test monitor for RM modules.
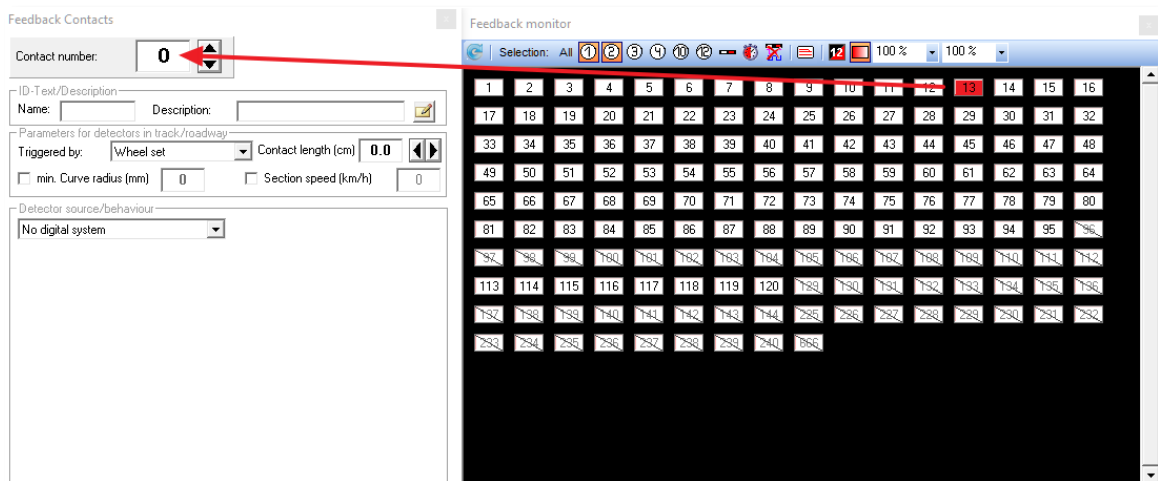
Fig. 5.82   A contact number is dragged from the test monitor into the contact number field.

To enter the feedback contacts in the track diagram, open the "Feedback contacts" window and, holding down the centre mouse button on the feedback contact number in the "Feedback monitor" window, drag the mouse pointer into the "*Contact number*" entry field (cf. Fig. 5.82). The mouse pointer changes to a grasping hand with a cross.

The feedback contact number is now immediately entered in the field. You can now continue as usual with the assignment of the feedback contact in the track diagram.

5.7.10 Print feedback contacts

With a Click on the icon 🖶 in the toolbar of the track diagram editor to open the "Print feedback contacts" window.

Here you can print out a list of all the feedback contacts used in your track diagram. Optionally, you can also list only the contacts of vehicle displays. In this list, either all the feedback contacts used or those of an entered digital system are displayed. To do this, select the desired entry from the selection list.

The feedback contacts are displayed in a list in the left-hand window and in the right-hand window with the relevant information from the entry dialogues. The name you assigned during entry is also displayed here or printed out on a printer.
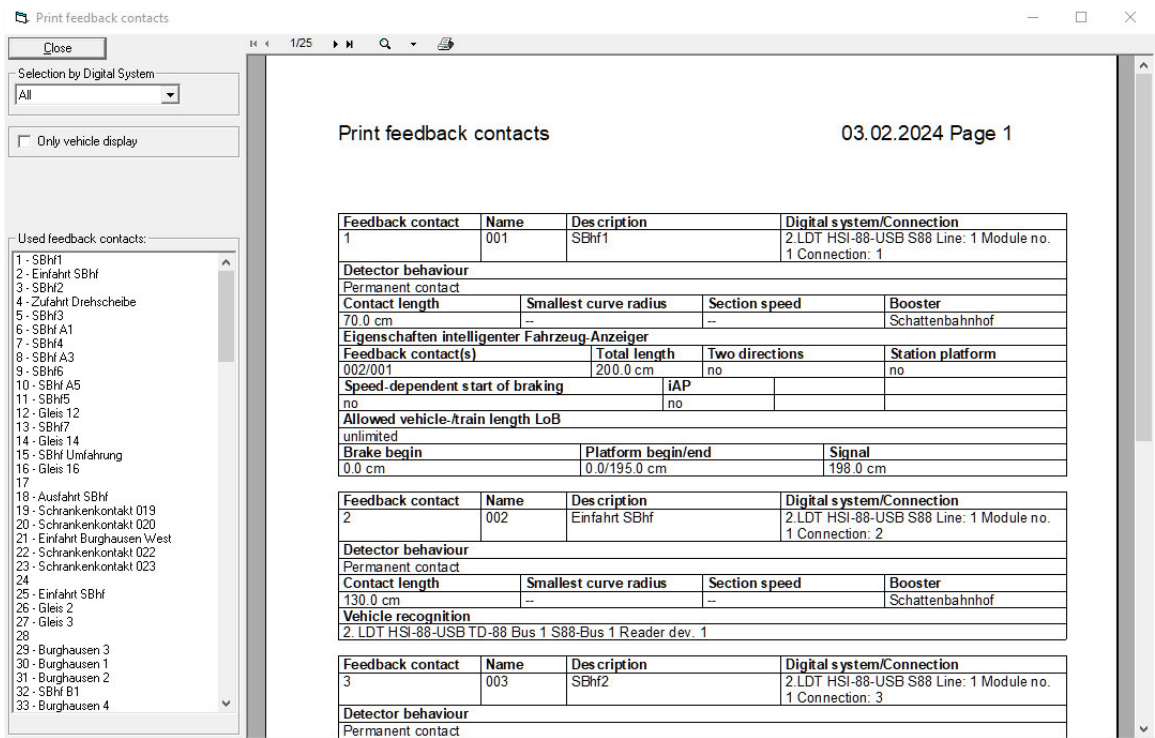
Fig. 5.83   The "Print feedback contacts" dialogue

5.8   Feedback configuration

The "Feedback configuration" dialogue in the track diagram editor corresponds to the dialogue in the main **Win-Digipet** program. A detailed description can be found in the chapter 3 of this documentation. You can also open the feedback configuration here using the ![icon] icon from the toolbar of the track diagram editor.

5.9 Booster management in the track diagram editor

5.9.1 Booster management concept

One component of **Win-Digipet** is what is known as booster management. This functionality is intended to ensure that even on larger systems with many boosters, fewer shutdowns of the entire system caused by short circuits disrupt smooth model railway operation.

Modern boosters and digital control centres now offer the option of switching off individual booster circuits in the event of a short circuit or overload, for example, and keeping unaffected areas in operation.

For safety reasons, booster management should only be used for boosters that switch off safely on their own in the event of a short circuit and are not dependent on being switched off by the control centre.

> ⚠️ **It must <u>always</u> be ensured that the booster switches off <u>safely in the</u> event of a short circuit or overload, even without the influence of the control centre or PC!**

Booster management is set up in **Win-Digipet** in the main programme and in the track diagram editor. This section describes the individual steps in the track diagram editor.

5.9.2 Assignment of the solenoid devices and feedback contacts

In the track diagram editor, all solenoid devices and feedback contacts can be assigned to the booster circuits configured in the main programme. configured in the main programme.

It goes without saying, however, that only the assignment of solenoid items and feedback contacts that exist on the model railway layout makes sense. As explained above, booster management is about switching off the power supply in certain areas.

The assignment of the solenoid devices or feedback contacts to the booster circuits created in the main programme is started with the "Booster assignment" symbol ⚡ or the corresponding menu entry in the <Recording> menu.

In the dialogue that then appears, all booster circuits already created in the main **Win-Digipet** program are displayed with the assigned names.

ID	Description
	No booster assignment
0003	Schattenbahnhof
0004	Burghausen
0005	Bergheim
0006	Paradestrecke
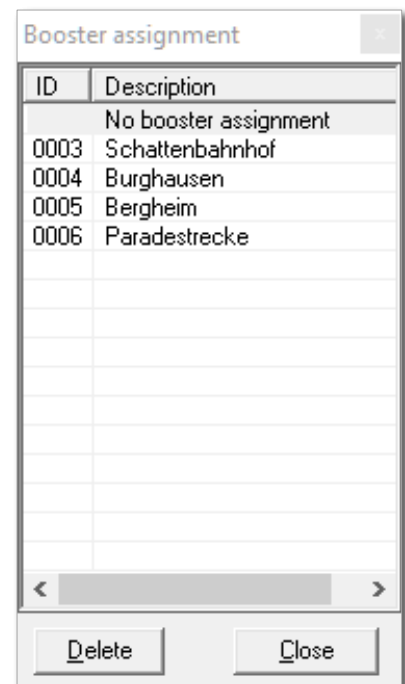
Fig. 5.84   Booster assignment 20

The delete function in this dialogue box works in the same way as the feedback contact entry, namely by marking the *"No selection"* entry and then clicking on the corresponding symbol in the track image.

Our example shows a total of four booster areas, the additional entry *"no booster assignment"* is available by default:

- 🚂 Booster area staging yard (Schattenbahnhof in German language)
- 🚂 Booster area Burghausen
- 🚂 Booster area Bergheim
- 🚂 Booster area parade route

The following four example graphics from the demo project are intended to illustrate the spatial and functional assignment of the solenoid items and feedback contacts.

<u>Booster area staging yard.</u>

Here, all feedback contacts, as well as the real existing solenoid items of the staging yard, were assigned to the same booster area.
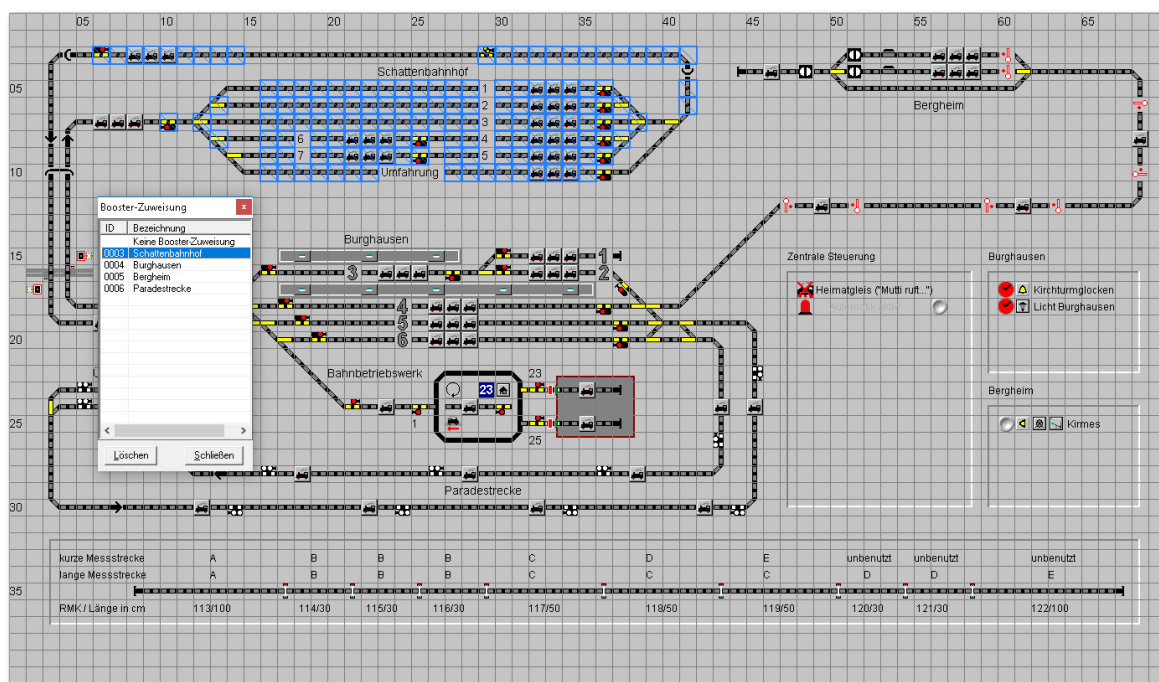
Fig. 5.85   21 of booster areas - staging yard Picture shows dialogue in Germn language)

To assign a solenoid device or feedback contact to an area, select the desired list entry in the Booster assignment dialogue box.

Now click once on all the symbols that you would like to assign to the selected booster area. Alternatively, you can select an area by holding down the left mouse button. If you hold down the left mouse button, this will be marked with a red frame.

You will quickly notice that when you click on a track symbol, all symbols with the same feedback number are highlighted. This means that you do not have to click on each track symbol individually, it is sufficient to mark a symbol of the respective feedback contact. All symbols that you have marked in one of the two ways are marked with a blue crossed-out frame as a result and thus indicate the assignment made. Each symbol can be assigned to a maximum of one booster area.

Booster area Burghausen

The following example shows the assignment of the feedback contacts to the "Burghausen" booster area. The solenoid items in the Burghausen station area are mainly assigned to this booster area.
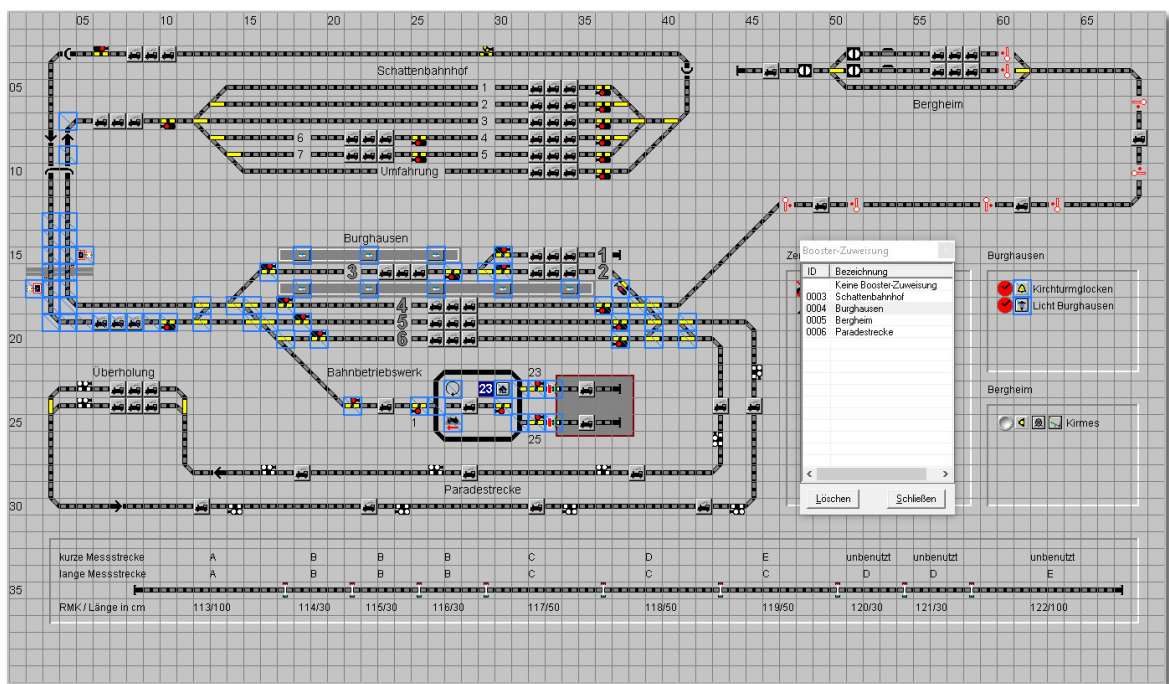
Fig. 5.86   22 of booster areas – Burghausen (Picture shows dialogue box in German language)

Booster area Bergheim

In this example, the solenoid items present on the model railway layout have now been assigned to a booster area. One consideration is to operate all the solenoid items in an exclusive booster circuit, as short circuits are unlikely to occur in such an area. This ensures that all switching operations can be carried out reliably.

A prerequisite for this - and all other - configuration(s) is, of course, the correct wiring of the solenoid items and feedback modules. When wiring your model railway layout, pay

meticulous attention to the electrical separation of the booster areas. It is essential that you also observe the manufacturer's instructions for the components you are using.
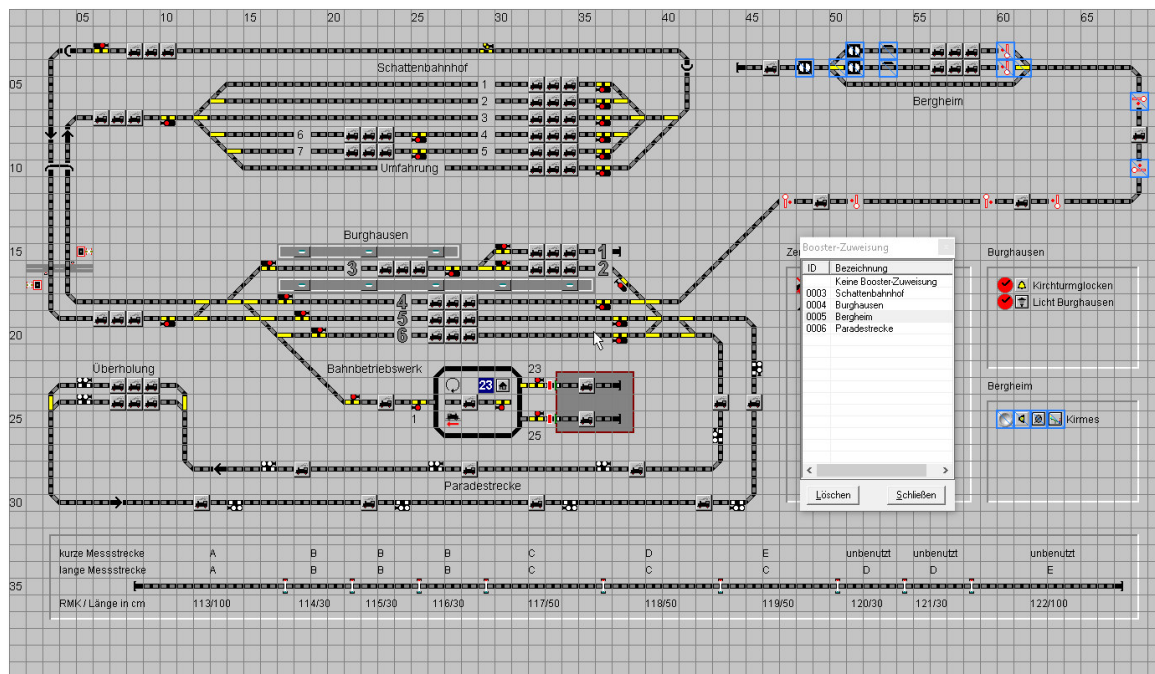
Fig. 5.87   23 of booster areas – Bergheim (Picture shows dialogue box in German language)

No booster allocation

The last example shows the symbols that have not been assigned to a booster area. At the start of assignments to areas, all symbols will be highlighted in blue if the "No booster assignment" entry is selected. Later, you can also quickly locate "forgotten" areas at this point or reset areas that have already been assigned.
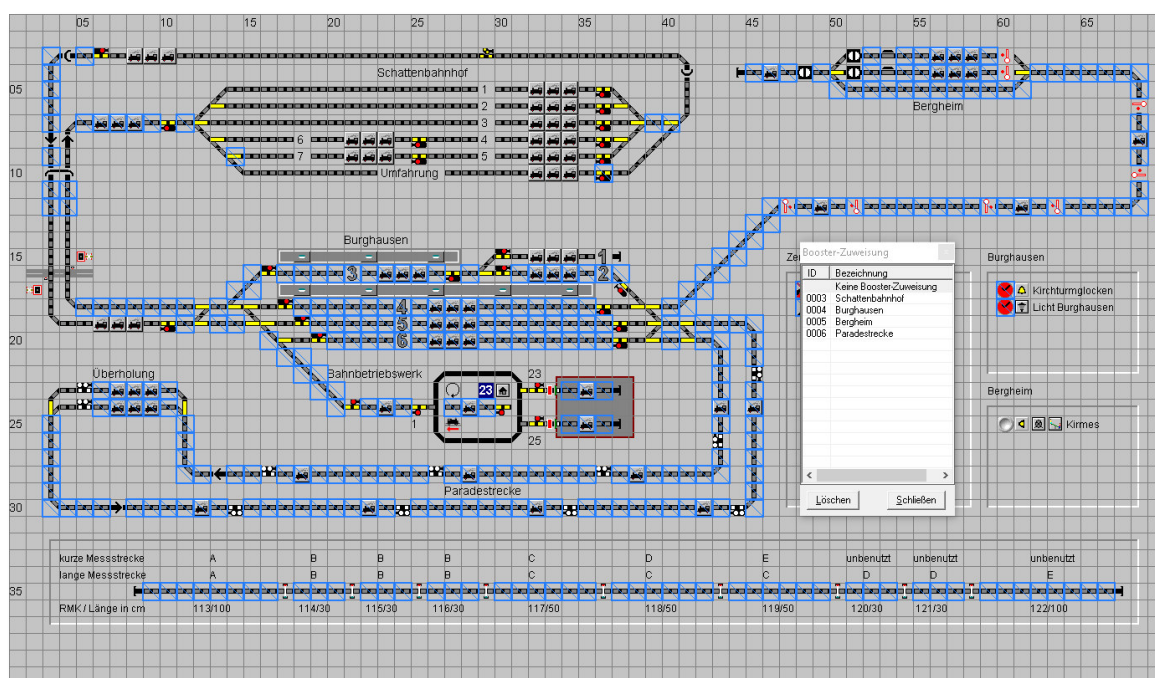
Fig. 5.88   24 marked symbols are not assigned to a booster area (Picture shows dialogue box in German language)

5.10 Error checking in the track diagram editor

The track diagram editor offers you a routine for checking the track diagram, just like the main programme. You can access this part of the programme via the ▉ icon in the toolbar or the "Check track diagram" entry in the "Recording" menu.

We recommend calling up the track diagram check here in the track diagram editor and correcting any errors. Errors in the track diagram are also displayed by the check routine in the main programme but track diagram errors must always be corrected in the track diagram editor.
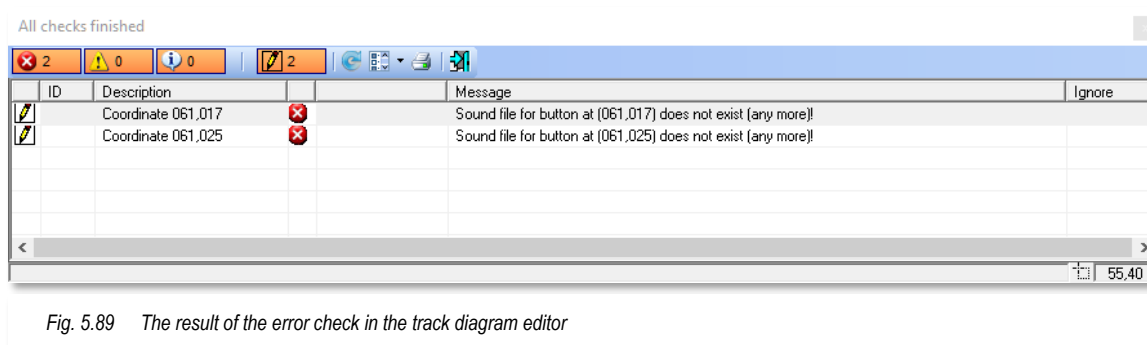
Fig. 5.89   The result of the error check in the track diagram editor

The graphic shows an example of the result of the error check of the demo project. In the track diagram editor, only two sound files that no longer exists and were assigned with buttons at coordinates 061.017 and 061.025 are displayed. In operation with **Win-Digipet,** pressing the sound button would not lead to any results.

The error check can find many more incorrect entries in your track diagram. We cannot list them all here. Most of the messages are self-explanatory and by clicking on the respective line, you will be shown the noted location in the track diagram.

> The urgent recommendation is to check the track image after each edit and to edit any notes or error messages that may occur. The reward for your work will be smooth operation with **Win-Digipet.**

5.11 The logbook in the track diagram editor

The logbook in **Win-Digipet** is exactly what its name suggests. All events and messages during the operation of **Win-Digipet** are recorded here. You have an operating log at your fingertips, so to speak. The logbook is available both in the main programme and in the track diagram editor.

The logbook recordings must be activated once in the *"System settings – General".* This part of the programme is then available to you every time you start **Win-Digipet** and runs in the background, even if you have not shown the logbook window on the screen.

You can activate the logbook window by clicking on the 🔳 icon in the "Extras" toolbar.

The window that then opens shows a list of entries. These entries are the events and messages that have occurred since **Win-Digipet** was started. All messages are provided with a time stamp. This time stamp is, of course, to be viewed in real time and has nothing to do with the model railway time from the automatic journey.

All messages are also categorised with a graphic symbol. This makes it easy to assign the messages to a component.

The image here shows an extract of the operating log from the logbook opened in the track diagram editor. You can see that some general information (e.g. date, programme version and the project name) was recorded at the beginning.

This is followed by the important hardware initialisation phase.

The example here clearly shows that the track
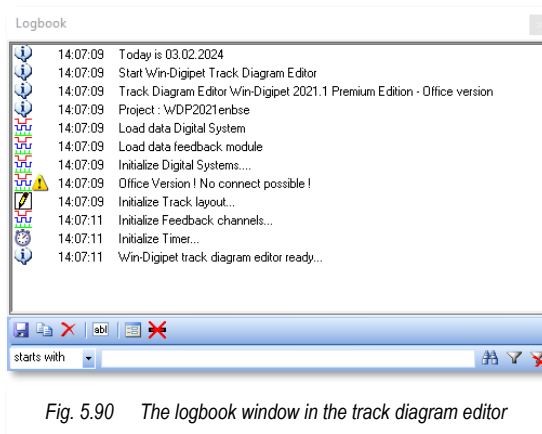
Fig. 5.90   The logbook window in the track diagram editor

diagram editor was started in the office version and therefore there is no connection to a digital system.

All further messages will normally revolve around your work on the track layout or error messages will be displayed. You must then follow up these messages and eliminate the sources of the errors.

Below the message window you will find several operating icons. The first group of icons 💾 📋 ❌ is self-explanatory; here you can save the accumulated messages in a text file or paste them into another programme (e.g. a word processor) via the Windows clipboard. The third icon in this group deletes the accumulated entries in the message window.

The symbol 🔲 hides the logbook after a few seconds. However, the window is still active and is only displayed transparently on the screen. The window becomes visible again as soon as you move the mouse over it.

You can use the ⟦abl⟧ icon to add your own notes to the current logbook. Just like the logged events, these are provided with a time stamp. This helps you to quickly find certain events again later in post-processing.

The last symbol in this series ✶ gives you the option of logging all feedback events in the logbook. However, for performance reasons, we recommend that you only use this option for troubleshooting and otherwise leave it switched off.

At the bottom of the logbook window, you will find a line that allows you to filter the messages.
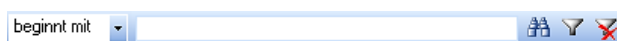
| beginnt mit ▾ | | 🔍 🝚 🝚 |

Here you can search specifically for character strings in the accumulated log or only display the messages specified according to the filter criteria set. All other messages are then no longer displayed until the filter is deleted again.

The messages in the logbook are largely self-explanatory. It is important that you always check which error messages are displayed so that you can carry out targeted root cause analysis.

5.12 Print, save and delete track diagram.

5.12.1 Print track diagram

To create a printout of your track diagram, click on the ⏺ icon in the track diagram editor toolbar to open the *"Print track layout"* dialogue. On less powerful computers, it may take some time to set up the window due to the graphical calculations.

The structure of the window is like the print dialogues already discussed in this manual and the possible functions are self-explanatory.
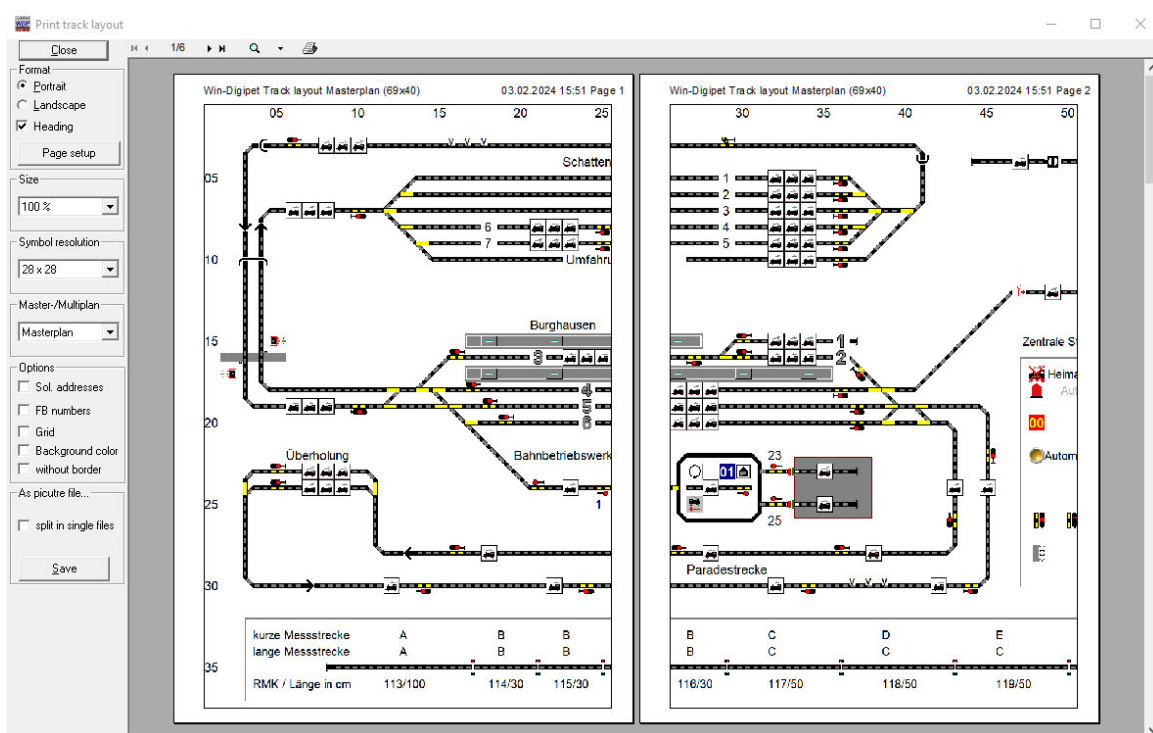
Fig. 5.91   The dialogue for printing the track layout

The track image is displayed in the dialogue with a **white background** and is also printed. As a rule, 50% is sufficient for the printout. You can redirect the output to any printer installed in your computer system.

> ⚠️ You must specify whether you want to print in colour or greyscale in the driver dialogue of the respective printer, as many driver programs ignore the setting made by **Win-Digipet.**

The print function uses the track diagram symbols in size 28x28 as the source. This allows much more detailed images to be generated. If required, the symbol size can be set to the

other symbol sizes 12, 16, 20, 24. Please note that the corresponding symbol sizes must also be available. If you have created your own symbol tables and have not customised them for all sizes, only the symbols that are also present in the symbol tables can be printed correctly.

You can set up the page using the **'Page setup'** button. This makes it possible to use larger paper formats (e.g. A3). The printout then shows more per page on the larger surface. However, the prerequisite for use is that the printer also supports the selected format. The width of the page margins can also be adjusted in the setup dialogue.

The track image can be printed in different scaling levels. The possible levels are: 25%, 33%, 50%, 100% and 200%.

Various options:

- 🚂 With the "*Solenoid addresses*" and "*FB numbers*" options, you can print out the assigned solenoid device addresses, or the feedback contact numbers in the track diagram.
- 🚂 Optionally, the frame around the image, the track image grid or the header can be faded in or out.
- 🚂 Optionally, the track image can be printed including the background colour.

You also have the option of saving your track image as an image file on your hard drive. You can choose between the memory-friendly PNG or JPG formats or the more memory-intensive BMP format.

To do this, click on a format (*.PNG, *.JPG or *.BMP) under the text *"As image file..."* and then click on **'Save'**.

The track image is saved either as a single image (standard) or divided into individual files according to the representation in the print image in the selected file format. The file name can be freely selected.

You can then use any image editing programme to make changes yourself or output the image to your printer in any scaled form.

> The preview of the print image on the screen appears somewhat "pixelated" at times. However, this is only the case on the screen; the test results were convincing when printed.

5.12.2 Save track diagram.

To save the track diagram, click on the icon 💾 in the toolbar of the track diagram editor.

It is strongly recommended that you run this command from time to time while editing the track diagram. This procedure protects you from data loss, which can be caused by computer crashes etc.

5.12.3 Delete track diagram.

If you want to want to delete your track diagram to create a new track diagram, click on the ✕ icon in the track diagram editor toolbar.

After clicking, you will be prompted to answer a security question.

After deleting, you will find an empty track diagram. The deleted track diagram is saved in the project directory under the file name **GPLAN.BAK**. This file can be reactivated by simply renaming it to **GPLAN.DAT.**

Fig. 5.92   25 before deleting the track diagram.

In **Win-Digipet** versions up to Pro X.3, the track image was saved in the GBILD.DAT file.

5.13 Exit track diagram editor.

5.13.1 Switch between track diagram editor and main programme

If you want to switch back and forth between the track diagram editor and the main programme via the taskbar or with the keyboard combination Alt-TAB, this is displayed and prevented in the main programme with the following message:

Fig. 5.93 26 is not possible to switch to the main programme when the track diagram editor is active.
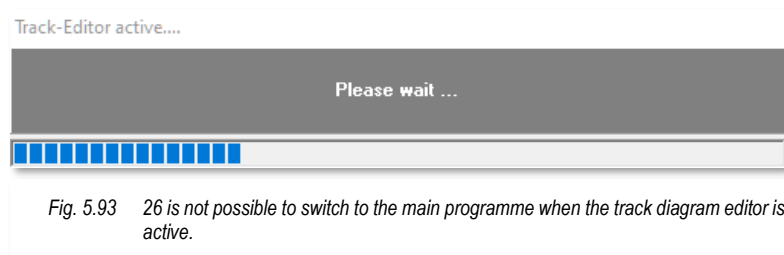
This window is not displayed if you have started the track diagram editor directly from the **Win-Digipet** Start Centre.

Always exit the track diagram editor via the symbol 🔀 or via the corresponding menu item <File><End>. This is the only way to correctly transfer the entries in the track diagram to the main programme and hide the message shown here.

5.13.2 Save data, exit track diagram editor.

To save the entries, click on the icon 💾 in the toolbar of the track diagram editor.

Close the track diagram editor by clicking on the 🔀 icon in the toolbar. After closing the track diagram editor, you will receive a message like the one in the previous section, the track diagram will be updated, and you will return to the main programme or the **Win-Digipet** start centre.

Version 2021
Premium Edition

Chapter 06

6. THE VEHICLE-DISPLAY

6.1 Basic information on the vehicle displays

In the previous versions of **Win-Digipet,** the vehicle displays were called train number fields. The "old" designation is inappropriate because the control of road vehicles is now also becoming more important with version 2021. During this documentation, you will also see further renaming's with the same reasons as above. We will point this out at the appropriate places.

The vehicle displays (VHD) contain the entries of the vehicles or trains on your model railway layout. As you already know from the chapter on the track diagram editor, the vehicle displays can consist of a single symbol (small VHD) or three connected vehicle display symbols (large VHD) consist of one single symbol. Using the same feedback contact addressing, these symbols are then combined by the programme to form a vehicle display.

In contrast to a small vehicle display, which can only display the digital address, the large vehicle displays can display the designation of the vehicle or the train name. For rail-related vehicles, the series designation is normally used in the designation field.

The following pictures show vehicle displays (VHD) in various situations:

Small vehicle display free

Small occupied vehicle display with digital address and direction of travel information of the registered vehicle or train.

The red bars indicate the direction in which the train will move next.
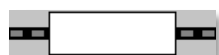
Large vehicle display free

Large, occupied vehicle display with series designation and direction of travel information of the registered vehicle, here a locomotive.

The horizontal red bars show the "Occupied" message of the feedback contact assigned to the vehicle display, the vertical red bar shows in which direction the vehicle (train) will move next.

Large, occupied vehicle display with train name and direction of travel information of the registered train.

Large vehicle display as the start of a route with direction information

Large vehicle display as the destination of a route with direction information

In the track diagram editor, you have already entered vehicle displays in your track diagram. These vehicle displays are the most important part of a route, as they are the points that you will later click on to set a route. The train number or designation is also always transported from the start to the destination vehicle display when a route has been set.

The vehicle displays can basically be divided into two different categories:

- Normal vehicle displays
- Intelligent vehicle displays

The following picture illustrates the differences in the driving behaviour of the vehicles and trains.
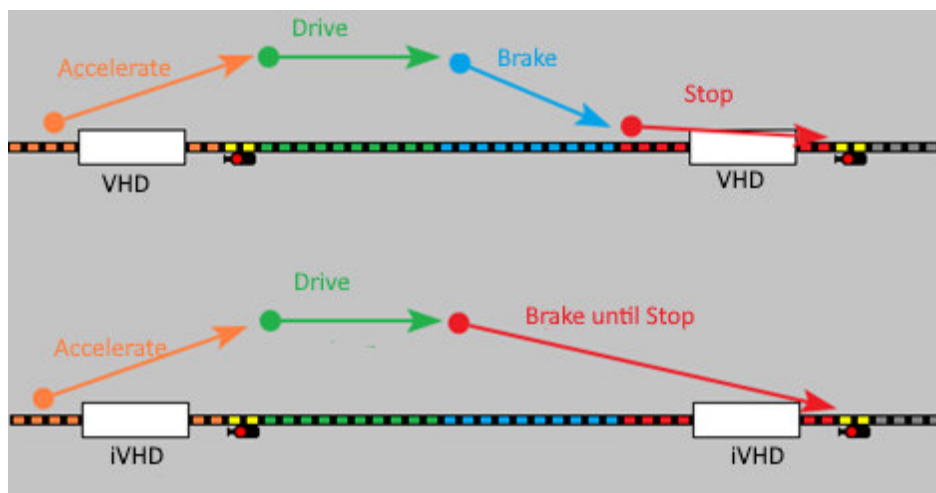
Fig. 6.1   Different driving behaviour with normal and intelligent vehicle displays.

normal vehicle display (VHD)

The upper part of the picture shows the driving behaviour on a road between two normal vehicle displays.

The route shown here consists of a start contact, an additional travelling contact, a braking contact, and a destination contact. The additional driving contact is not necessary, it is only intended to provide a better understanding at this point.

At the starting contact, the vehicle accelerates to the defined starting speed and maintains this speed via the additional driving contact until the braking contact is reached.

At the brake contact, the vehicle is braked to the speed set at the brake contact, which it often reaches before the target contact and therefore continues travelling at the braking speed.

The vehicle is brought to a stop when the target contact is reached.

intelligent vehicle display (iVHD)

The lower part of the picture shows the same route as above. The difference is that intelligent vehicle displays are used here.

In an intelligent vehicle display, the target contact is extended by additional contacts, whereby the vehicle is braked to a standstill at the defined target on an evenly falling braking ramp when the extended target contact is reached.

In the graphic, the brake contact shown in blue is part of the intelligent vehicle display. The braking ramp therefore begins when the blue-coloured contact is reached.

6.1.1 The Properties dialogue of a vehicle display

In the track diagram of **Win-Digipet,** you do not need to insert a new symbol for the "intelligent vehicle display (iVHD)". You can very quickly assign the "intelligent vehicle display" property to an existing vehicle display in the **Win-Digipet** main programme. But let's start with a "normal" vehicle display first.

In the graphic (cf. Fig. 6.2) you can see the section of the track diagram of the demo project with a normal vehicle display. The assigned feedback contact has the number 018.
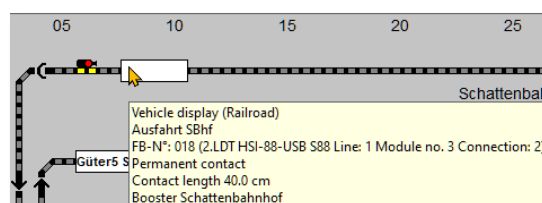
In the "Quick info" highlighted in yellow you will find some information about this vehicle display. You can activate or deactivate the information in different levels of detail in the menu bar of the

Fig. 6.2   A normal vehicle display in the track diagram

main programme under <Track diagram><Symbol information under mouse pointer>. In addition to the name that you have assigned in the track diagram editor (here: SBhf exit or Ausfahrt SBhf in German language), the assignment to a booster area and the assignment of the feedback contact to the digital system are also displayed here. In the further course of your work with **Win-Digipet,** you will discover a lot more helpful information in the quick info.

After clicking on the vehicle display with the <u>right mouse button,</u> the <Properties vehicle display> menu command appears in the short menu, which you can select with the left mouse button.

The "Vehicle display" configuration dialogue opens immediately. The name of the vehicle display (018) and the corresponding feedback contact (RMK 18) are displayed in the title bar of the window.
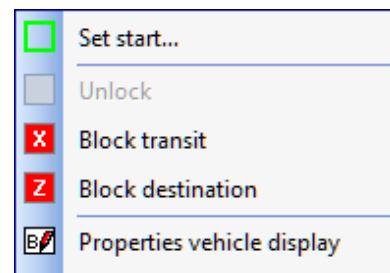
Fig. 6.3   Quick menu of the vehicle display

In addition to the "intelligent VHD" tab, you will also see other tabs for the basic data, matrix, train number recognition, neighbourhood, and function activation. All these tabs and their meanings and functions are explained in detail in the following sections. The vehicle displays are of fundamental importance for operation with **Win-Digipet**. A basic understanding of how they work is therefore essential.

Fig. 6.4   The tabs of the Vehicle display properties dialogue

6.1.2 Vehicle display properties dialogue window - Intelligent VHD″ tab (I)

By opening the "Vehicle display properties" dialogue, the "Intelligent VHD" tab is displayed. In the track diagram, all track symbols with the same contact number are also provided with a "red" frame.

Before we turn to the possibilities of an intelligent vehicle display, let us look at the settings on the tab for a "normal" vehicle display.

In the track diagram editor, you had assigned a feedback contact to the three symbols. These three symbols now form the vehicle display, here with the contact number 018. If you have already entered the track length of the feedback contact in the track diagram editor, the recorded value will also be displayed here immediately as "Length (cm)". If you have not been so precise when entering the length in the track diagram editor or have not yet entered the length, you can do so in this dialogue window. You can enter the length (cm) with a decimal point, whereby you can use the decimal point or the full stop here, but the value is always displayed with a full stop in the graphics within the programme. You can only change the whole value before the decimal point using the up or down arrow; any decimal point value already entered is not considered.

The length of the feedback contact plays a rather subordinate role for a "normal" vehicle display. The obligation to specify the correct length only arises with the conversion to an "intelligent" vehicle display. Only after ticking the "*Intelligent vehicle display*" option (cf. Fig. 6.5), further settings can be changed.
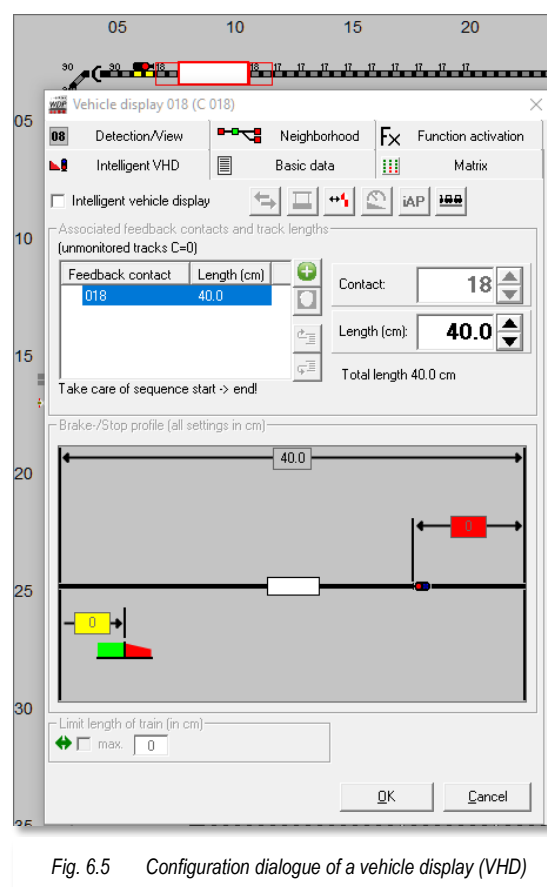
Fig. 6.5   Configuration dialogue of a vehicle display (VHD)

6.1.3 Vehicle display properties dialogue window - Intelligent VHD″ tab (II)

As soon as you tick the *"Intelligent vehicle display"* checkbox in the "Vehicle display" dialogue window, the intelligence of the vehicle display is switched on. We have already mentioned above that an intelligent vehicle display can consist of several feedback contacts that are combined into one contact.

The iVHD 001 from the WDP2021 demo project is used here as an example. The graphic shows the Vehicle display dialogue, which you can access as described above via the

submenu of the VHD (cf. Fig. 6.3) as described above. The first tab "Intelligent VHD" is displayed.

In the track image section (cf. Fig. 6.6), you can see that the track symbols of the VHD (here: FB-N° 001) are marked with a red frame and the symbols of FB-N° 002 are also marked with a blue frame. This illustration shows you that the two contacts have been combined. Both feedback contacts belong to iVHD 001.

You will also find the contacts mentioned in the list in the section "Associated feedback contacts and track lengths". This list contains all contacts that belong to the iVHD. In your own projects, you may assign more than two feedback contacts to an iVHD. In addition to the contact numbers, the track lengths entered are shown here or can be entered in the "Length (cm)" field. The added total length of the entered values is also displayed for your information, in this case 200.0 cm.

You can also add further contact lines to an "iVHD" or delete an existing contact line later. The following buttons are available for this purpose:

Fig. 6.6   Configuration dialogue of an intelligent vehicle display (iVHD)

⊕	Add contact
⊖	Remove contact
⬆	Move entry up
⬇	Move entry down

Please pay particular attention to the correct sequence of the feedback contacts in an iVHD. The required sequence is displayed below the list field depending on the position of the iVHD. In our example, the iVHD is travelled from left to right, so the correct contact sequence is 002, 001.

The two buttons for moving the entries make it easy to create the correct order.

Unmonitored areas are sections of track that are not assigned to a feedback contact. An example of this is a turnout in the station track that has not been converted for a track occupancy signal. However, these non-reporting track sections must be included in the length calculation, otherwise the result will be falsified.

You therefore add an unmonitored route section using the ⊕ symbol and assign the contact number "0" for this entry in addition to the length.

> The aim is to use the iVHD to stop the vehicle as precisely as possible at defined or calculated stopping positions.

A very rough distinction is made between stopping the train directly in front of the **destination signal**, e.g. on the parade line or in the staging yard and stopping **at the platform in the station**. Here you can stop at the beginning (with the backend of the train), in the middle or at the end (with the frontend of the train) of the platform, viewed in the direction of travel. In a later chapter, you will also learn how to stop a train at individually selected or calculated points.

The lower part of the dialogue window is characterised by a graphic representation of the intelligent vehicle display. All values that could not be edited for a VHD "without intelligence" (cf. Fig. 6.5) can now be adjusted.

The total length has already been explained; it is the sum of the length of the individual contacts and any unmonitored sections. In our example, it starts at the beginning of feedback contact number 002 and ends at the boundary of contact number 001 to the following section.

The beige-coloured fields define the distance (in cm) from the start of the iVHD to the start (left field) or end (right field) of the platform. Measure the values on your system and enter them in the coloured fields. If there is no platform at this iVHD, these fields can be hidden using the symbol ⬚. We will come back to this later.

In the red field, enter the distance value between the signal and the end of the iVHD.

The yellow field contains the distance from the start of the iVHD to the start of the braking process, the so-called braking ramp. With a value of "0", the vehicle or train begins the braking process when the first feedback contact of the iVHD is triggered. The braking ramp increases depending on the speed travelled, the further back you move the start of the braking process.

Fig. 6.7   The brake and hold profile of an iVHD.

At the An arrow pointing to the right can be seen at the bottom of the graphical representation of the iVHD. This arrow defines the direction in which the iVHD is travelled. Click on the arrow to set the desired direction.

> A "yellow triangle" in the graphic indicates that the iVHD was created in a previous version of **Win-Digipet** 2021 and the direction information has not yet been defined.
>
> With the help of the error check, all iVHD without direction information are listed and can be corrected.

In the "Limit length of train" section, you can limit the maximum length of the trains that are authorised for the iVHD. To do this, tick the checkbox and enter the desired value.

With the values shown in the diagram, the maximum length of a train would be 198.0 cm. This value results from the total length minus the distance from the signal to the end of the iVHD, in this case two centimetres.

To limit the maximum train length, you must tick the corresponding boxes at the bottom of the window. You can set the limit for one or both directions (iVHD for two directions of travel). This may result in different maximum train lengths for the two directions of travel due to the distances to the signals, as the trains should always stop before a signal at the latest, which is also the case with the large railway.

> Any existing matrix definition Length(X) for the vehicle display is "overridden" by the length limit entry. You can use this entry to define the iVHD for train lengths accurate to the centimetre.

To complete the options on the *"Intelligent VHD"* tab, *there are* six more icons at the top for extending the functions of an iVHD, which are explained below.

Let us start with the first symbol from the left:

Fig. 6.8   Further iVHD functions

> Please note that activating two directions of travel may change the order of the contact numbers associated with the iVHD. For an iVHD with only one direction of travel, the list is entered from start to finish (see Fig. 6.6).
>
> This is not possible for an iVHD with two directions of travel. The rule here is that the sequence must be observed from **left to right** or, in the case of a vertical iVHD, from **top to bottom**.
> **Tip!**
> The valid rule for the contact sequence is displayed in the dialogue window below the contact list.

Two directions of travel ⇄

Activating this option configures the iVHD for two directions of travel. The graphical representation of the iVHD in the lower area of the dialogue window is **extended** by the value fields **(red)** for the distance of the signal and for the starting point of the braking process, in each case for both directions of travel. Furthermore, the maximum train length can also be activated individually for both directions and assigned different length specifications.
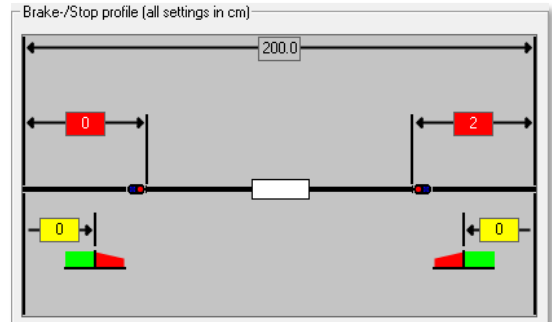
Fig. 6.9   Graphic with value fields for 2-direction iVHD with hidden platform

Activate / show platform 🗖

This symbol can be used to show or hide the value fields (beige) for the dimensions of a platform.

If the iVHD is a shadow station or freight track, for example, simply switch this option off. The value fields for the stop positions with reference to the stop at the platform are then not available for this iVHD. Only the position of the signal and the start of the braking ramp can be entered. In the case of an iVHD for two directions of travel, these fields are of course available for both directions.

Protective distance to the previous track section ↔

If this option is activated, you can define a protective distance to the previous or following track section on one or both sides of the iVHD. Detection on both sides is also possible without the option for two directions of travel. No vehicle may come to a standstill in the marked areas. This means, for example, that the clearance profiles of the vehicles can be observed. Enter the necessary values in the value fields (white).

The railway in Germany signals such protected areas with a boundary sign and marks the limit up to which each branch track may be occupied on the converging tracks at a switch.
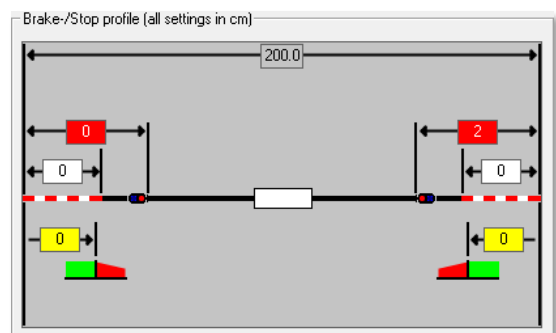
Fig. 6.10   Graphic with value fields for iVHD with protection areas

Speed-dependent start of braking

This option can be used to customise the start of braking for fast or slow vehicles or trains. Imagine a rail bus stopping at a long platform where IC trains normally run. It will then appear more realistic if this slow train starts braking later than an Intercity with eight carriages.

The difference lies in the speed (fast or slow) at the defined braking point.

Enter the distance values for the braking point(s) in the value fields (yellow) (see Fig. 6.11).

Fig. 6.11   Graphic with value fields for iVHD with individual start of braking

The value fields (green) contain the threshold values for the braking speeds (fast or slow). An example is provided to explain how this works.

With this function, the values for iVHD with two directions of travel can also be recorded separately for both sides, with different values. In the following example, however, we will stick to the simple variant.

Example:

Braking point (fast) = 50 cm with limit braking speed (fast) 80 km/h

Braking point slow = 100 cm with limit braking speed (slow) 40 km/h

With these values, all vehicles or trains travelling at 80 km/h or more when reaching the iVHD start braking after 50 cm.

All vehicles or trains arriving at or below 40 km/h when reaching the iVHD brake after 100 cm. For all other trains, the intermediate value corresponding to the speed is determined:

Fig. 6.12   Example of an iVHD with individual braking points

This means that a vehicle or train travelling at 60 km/h brakes after 75 cm, a vehicle travelling at 70 km/h brakes after 62.5 cm and a vehicle travelling at 50 km/h brakes after 87.5 cm. These values are only intended as a simple calculation example. Any other intermediate values are calculated automatically by **Win-Digipet.**

🚂 **Individualised stopping points (IAP)**

iAP

> You can define up to two individual stopping points (IAPs) for each intelligent vehicle display. You can define the position of uncouplers in the track at the IAPs, for example. In the settings for routes, which we will discuss in the following chapter, you can then specify that a vehicle or train stops at a freely definable point.
>
> For example, if you want to uncouple a train at the 3rd wagon, you can design the route so that the coupling of the 3rd

Fig. 6.13   Graphic with value fields for iVHD with two IAPs

wagon comes to a stop above the uncoupler. To achieve this, enter the distances of the IAPs, again measured from the start or end of the track, in the value fields (blue) in the dialogue. Two configurable IAPs are available for iVHD with one or two directions of travel.

6.1.4   Properties of intelligent vehicle displays - multi-intelligent vehicle display (MiVHD)

🚂 **Several independent vehicles on one iVHD (MiVHD)**

> Another option of the intelligent vehicle displays is the ability to have several vehicles or trains stop, move up and pull out fully automatically one after the other. Activating the symbol shown above transforms the intelligent vehicle display (iVHD) into a multi-intelligent vehicle display (MiVHD). This option is only available when the platform function is deactivated[22].

> ⚠️ The MiVHD function is preferably intended for operation with road-related vehicles (car systems) that have distance control, among other things.
>
> However, the use for rail-related vehicles is not excluded in principle but must be considered a special case. Programme parts, such as the dispatcher, can only process the information in connection with MiVHD to a limited extent

---

[22] Changed in version 2021.1

For correct functionality of a MiVHD, it is necessary that the last contact is not occupied when a vehicle or train arrives. This contact is required as a reference contact for calculating the route. A MiVHD must therefore contain at least two feedback contacts.

When the function is activated, two additional fields are displayed below the graphical representation of the iVHD with the settings already explained.

At the bottom on the left, you can specify the maximum number of vehicles or trains. To do this, tick the checkbox and enter the desired number in the numerical field.

The number of vehicles or trains is of course dependent on the vehicle or train lengths and the length of the vehicle display. This total length is shown in the graphic display. If you have limited the train length or set up additional protection zones, the available length is reduced.
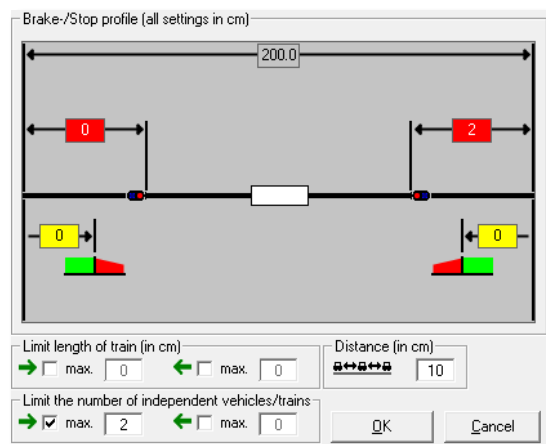
Fig. 6.14   Settings for the MiVHD function

The last parameter that is part of the function of a MiVHD is the distance to be maintained between the vehicles or trains lined up one behind the other. The distance should not be too small to avoid the risk of collision.

6.1.4.1 Intelligent vehicle displays and seamless track monitoring

In the area of the "intelligent vehicle display", it is necessary to monitor the track sections as seamlessly as possible with feedback contacts. Therefore, 2-conductor drivers should pay special attention to this and equip their vehicles and track sections accordingly.

This also applies to the feedback of the track occupancy with the aid of light barriers or other devices for analysing the contact tracks.

6.1.4.2 Deactivate intelligent vehicle display.

If you want to If you want to deactivate an "intelligent vehicle display", i.e. convert it into a "normal vehicle display", you must deactivate the "intelligent vehicle display" in the dialogue

except for the actual train number field contact (see Fig. 6.6 of contact number 001), you must delete all signalling contacts individually using the ⊖ button.

Only then can you remove the tick in the "*Intelligent vehicle display*" field, otherwise a warning message will appear with a corresponding note.

6.1.5   Vehicle display properties dialogue window – "Basic data" tab

The Basic data tab in the properties dialogue of a vehicle display essentially corresponds to the configuration of the associated feedback contact. You have already learnt about the options for this in the chapter 5. All settings, except for the contact number assignment, can be made either in the track diagram editor or here in the properties dialogue. The values entered in the track diagram editor are adopted here.

Accordingly, the "*Name*" assigned in the track diagram editor can be found in the "ID- text/description" section here: 001. This name corresponds to the feedback contact number. We recommend that you do not change this.

In the *"Description"* field, you can, or rather should, add a meaningful description to each individual feedback contact number. This makes it easier for you to search for feedback contact numbers later.

The description for contact numbers without a vehicle display can be regarded as optional; for contacts with a vehicle display, the description should be regarded as mandatory.

Fig. 6.15   Properties dialogue VHD, the "Basic data" tab

To the right next to the "Description" field you will find a small notepad symbol 🗒. Clicking on this symbol opens a small editor window in which you can enter further comments on this feedback contact number.

6.1.5.1 Parameters for feedback contacts

In the *"Parameters for detectors in the track/roadway"* area, you can add a few more properties to the individual feedback contact. This relates to the physical length of the contact section, a minimum curve radius or a predefined track speed.

The "*Triggered by*" selection list is used to define different types of detectors and contains the parameters wheelset, slider, magnet, IR transmitter or light barrier.

Fig. 6.16   Various parameters of a feedback contact

In the chapter 4 to the vehicle database you have already been informed about driving with train and vehicle lengths and in the section 4.4.2 you have already entered the vehicle length for the vehicles (for rail-bound vehicles: LoB (in cm)).

So that **Win-Digipet** can control the trains accordingly, the lengths of the feedback contact sections are required in addition to the vehicle lengths.

Essentially, these are the braking and stopping sections in front of the signals and the track sections at the platforms. This means that trains can stop in the centre of the platform, for example, with the help of a distance/time calculation. All with just one intelligent vehicle display (iVHD) on the track.

On the tab described here (see Fig. 6.5*)* you will find the "*Contact length (cm)"* field. Enter the measured track length of the feedback contact there. You can measure the length on the layout or take it from the track plan of your model railway layout created with a track planning programme.

6.1.5.2 Behaviour of feedback contacts - permanent contacts

In section of the dialogue, you can define settings for the source and behaviour of a feedback contact.

The feedback module with the associated digital system is regarded as the source of the feedback contact. The corresponding number of the connection on the module is also entered here. If you have already assigned the feedback contact numbers in the feedback module configuration, the data is transferred here accordingly.

The Fig. 6.17 shows a permanent contact. The characteristic of such a permanent contact is that if the detector is occupied (e.g. vehicle on track section), the feedback contact signals occupied. This behaviour is shown graphically in the stylised timeline in the lower part of the window.
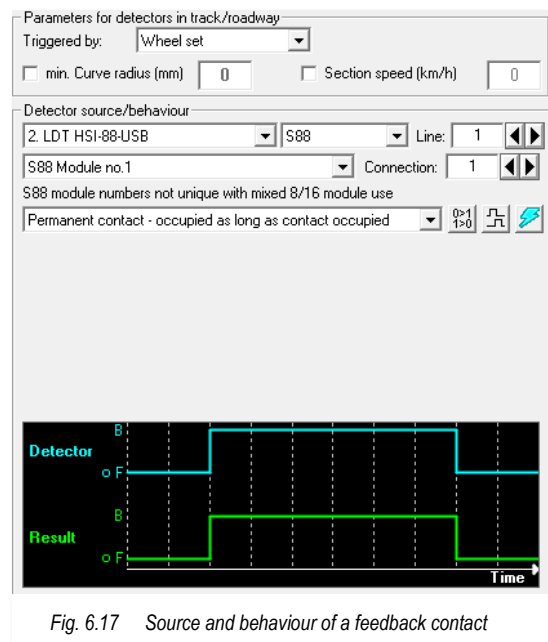
Fig. 6.17   Source and behaviour of a feedback contact

You can set a switch-on or switch-off delay for all feedback contacts after activating the ⬚ symbol. Values between 0 and 50,000 msec (corresponds to 50 sec) can be set in steps of 50 using the arrows shown in the graphic (cf. Fig. 6.18) can be set.

> ⚠️ You should apply the switch-on and switch-off delays with the necessary sensitivity, as they always influence the operating sequence, e.g. with section releases in the routes.

Activating the ⬚ symbol causes the contact status to be inverted and the ⚡ function "freezes"" the detector, i.e. no more status messages from the feedback contact are analysed.

6.1.5.3 Behaviour of feedback contacts - momentary contacts

In contrast, the characteristic of a momentary contact (e.g. a reed contact) is that it is only occupied for a very short period of time, for example when a magnet on the vehicle is triggered. Reliable evaluation may not always be possible here.

By selecting "*Momentary contact - occupied after contact occupied*" from the list, further options are displayed in the dialogue window, which essentially relate to the release signal of the momentary contact. **Win-Digipet** "extends", so to speak, the busy signal of the contact until one or more specific events occurs. In the simplest case, this can be the next feedback contact on the route. Enter this in the field provided or use the arrow keys to select the corresponding number.
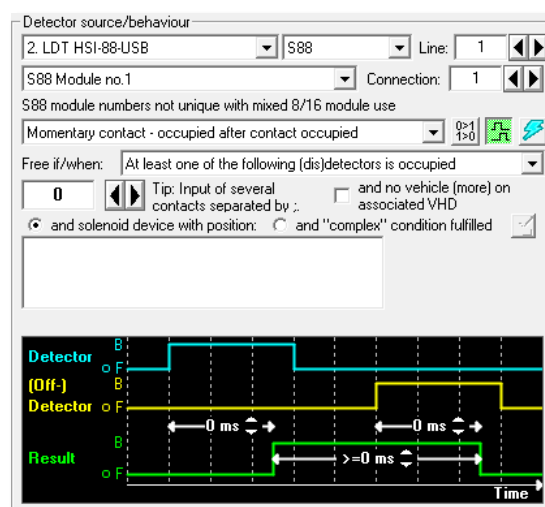
Fig. 6.18   Source and behaviour of a momentary contact

Several numbers can also be entered in the field; these must then be separated by a semicolon. If you have entered several contacts, these may be dependent on a specific position of a turnout or branch. Drag & drop the corresponding solenoid symbol in the track diagram in the "large" field, and you also specify the position of the solenoid device.

You can also define more complex conditions that lead to the momentary contact being reset. To do this, open an editor for conditions with the small button 📝. You will encounter the topic of "conditions" and how to deal with them several times in this document.

The resetting of momentary contacts can, among other things, depend on

- 🚂 Triggering detectors
- 🚂 Solenoid devices or counters
- 🚂 feedback contacts,

🚙 or various conditions in conjunction with vehicle displays.
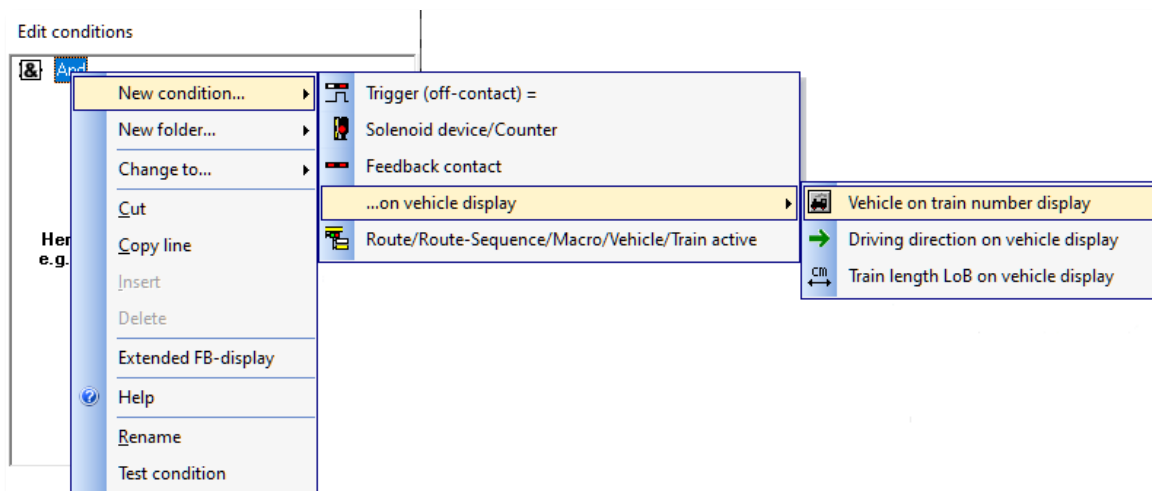
Fig. 6.19   Link the resetting of momentary contacts to "complex" conditions.

The "Free if/when:" selection list contains further options that you can use to switch off the occupied momentary contact. They apply to the feedback contact and can also be linked to the option *"and no vehicle (more) on associated VHD"* (i.e. on the other feedback contact belonging to the iVHD):

🚙 **At least one of the following (off) detectors is occupied**
As described above, a subsequent detector with the "occupied" position switches back the momentary contact.

🚙 **At least one of the following (off) detectors becomes free**
A subsequent detector must change from the "occupied" to the "free" position to reset the detector.

🚙 **After time x, after the detector itself has been occupied**
The detector switches back after a defined time after occupancy. You set the time using the graphic in the dialogue window, whereby the period can be between 50 msec and 50 sec. Values under one second can be set in steps of 50 msec and over one second in steps of 100 msec.

🚙 **After time x, after the detector itself has been released,**
The detector switches back after a defined time after it has become free again. You set the time using the graphic in the dialogue window, whereby the period can be between 50 msec and 50 sec. Values below one second can be set in steps of 50 msec and above one second in steps of 100 msec.

🚙 **The detector itself has been reassigned**
The detector is reset after it has been reassigned.

🚙 **(Only) Manual switch-off or by switching action**
The detector is reset manually (e.g. by a solenoid device) or by a switching action

that can be configured in the various parts of the programme (e.g. routes editor, automatic drive editor, dispatcher).

6.1.6 Vehicle display properties dialogue window – "Matrix" tab

On tab, you can make the settings for the matrix adjustments.

A matrix means that only vehicles or trains whose specifications correspond to the settings permitted here in the categories can drive onto the vehicle display. The total of 40 individual specifications can be set by clicking on them. The colour "green" means permitted or "white" means not permitted.

The matrix settings for the vehicles are defined in the vehicle database , the matrix settings for trains in the train compilation. The **"Matrix test"** shows you which vehicles are authorised for this vehicle display under the selected settings.

The matrix settings configured here are used as the default values for the vehicle displays when selecting the upper radio button during route creation. If you change the settings here, you must ensure that you adapt the routes already created at this point to the changed matrix settings of the vehicle display.

The radio button causes the settings configured here to apply as a fixed destination matrix for this vehicle display, i.e. this matrix applies to all routes that have this vehicle display as a destination.

Fig. 6.20   VHD properties, the "Matrix" tab

We will encounter the assorted options for matrix settings again and again during this programme documentation, so we will not go into them in detail here.

Before you use the matrix settings, you should be clear about where you want to make the possible restrictions and what effects, you can expect on your driving.

You can block the vehicle display for certain vehicles or only allow certain vehicles. Set the button to the required action (red/green) and drag the affected vehicle(s) with the image from the vehicle bar or the vehicle control into the list (cf. Fig. 6.20).

6.1.7 Vehicle display properties dialogue window - "Detection/view" tab

On this tab, you can make the settings for a vehicle recognition system. Please note that you must have installed and configured such a system.

By default, this tab indicates that you have "no vehicle detection" installed. As soon as you have integrated digital systems into **Win-Digipet** that support a vehicle detection system, these will be displayed in the selection list. If such a digital system is selected, the corresponding configuration dialogue for the necessary components is also displayed.

The graphic on the right shows an example of the configuration dialogue for an ECoSDetector. This is "ECoSDetector 1", on which port 1 is assigned to the vehicle display.

Further settings here relate to the recognised or set direction of travel of the vehicle and the option to delete the entered vehicle from the vehicle display as soon as no more messages are received.

Depending on the detection system used, further options may be displayed on this tab.
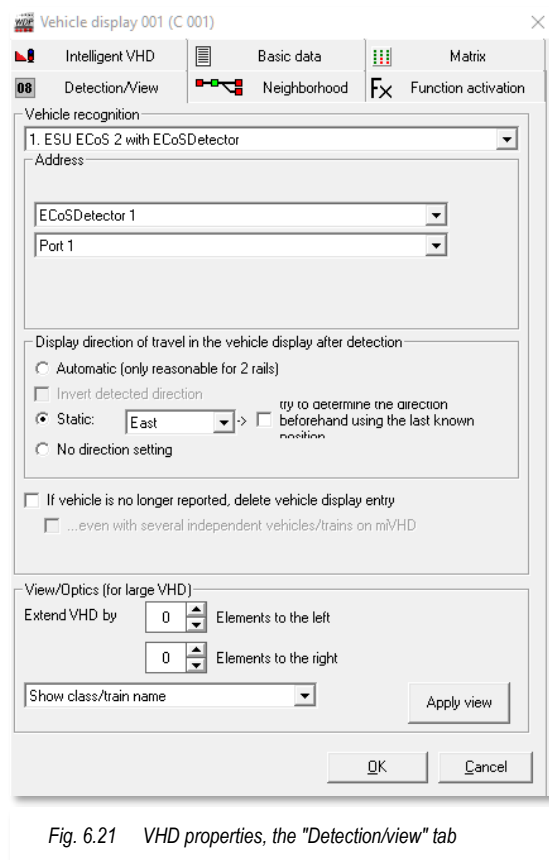
Fig. 6.21   VHD properties, the "Detection/view" tab

6.1.8 Vehicle display properties dialogue window – "Neighbourhood" tab

The fifth of the six tabs "Neighbourhood" contains information about the VHDs neighbouring the vehicle display.

When setting up an VHD, the programme uses the track diagram information to search the surrounding area for the nearest VHDs. The search for neighbouring VHDs is carried out in both directions of the VHD. The result of the search is **automatically** entered in the list field of the tab.

In the simplest case, the result can include a single VHD (from a stub track) through to many VHDs, for example in a staging yard.

The example in the Fig. 6.22 shows two neighbouring vehicle displays for the VHD 001 (018 and 025). These are the train displays "Exit SBhf (018)" and "Entry SBhf (025)".

Activating the checkbox below the list field causes the connection to the neighbouring VHD to be displayed in the track diagram. The connecting track diagram symbols are marked with a thicker, blue frame (see Fig. 6.23). However, only the highlighted line of the list is displayed in the track diagram.
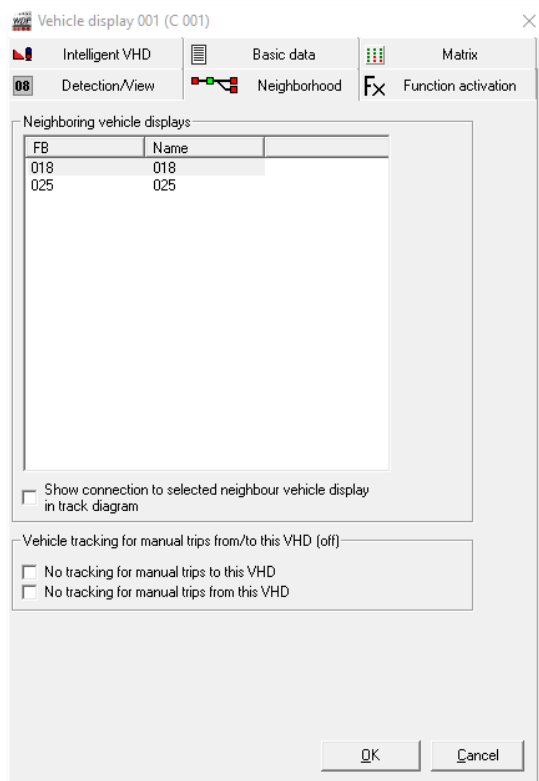
Fig. 6.22   VHD properties, the "Neighbourhood" tab
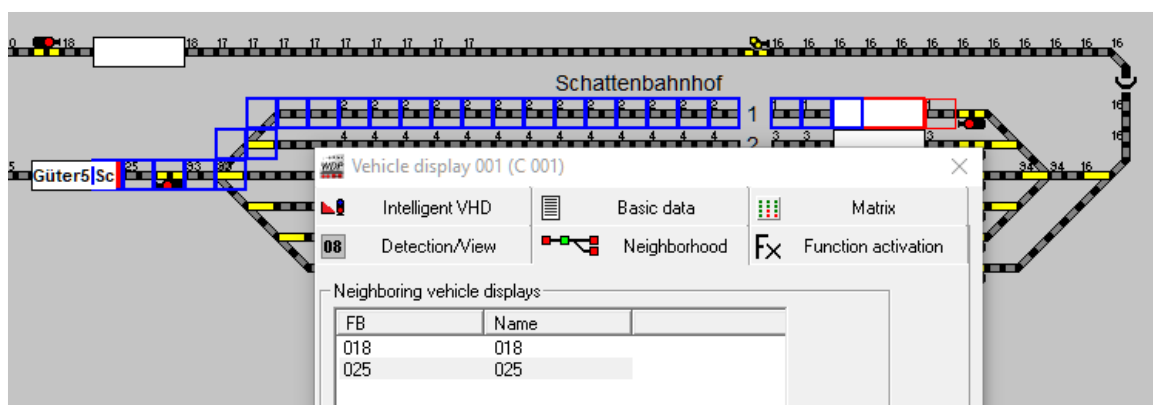
Fig. 6.23   the connection to a neighbouring vehicle display

If you look at the last two options on the tab, the reason for recording neighbouring vehicle displays becomes clear.

The recording enables the programme to track the vehicles, even if they are not controlled by **Win-Digipet** but manually, for example.

Imagine the situation of an occupied VHD (Feedback contact occupied, and vehicle entered in the VHD). You are now driving the vehicle manually, i.e. the feedback contact goes out, but the vehicle number is still entered in the vehicle display. When the next, neighbouring vehicle display is reached and the contact lying on the way is triggered, **Win-Digipet** detects the movement of the vehicle and automatically transfers the vehicle number to the "neighbouring" vehicle display. You can activate the detection of a manual journey using a hand controller or mobile app in the <Operation> menu in the menu bar of the main programme.
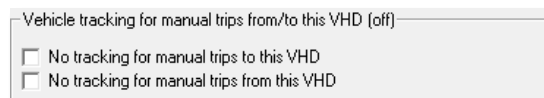
Fig. 6.24   Preventing vehicle tracking during manual driving.

The two checkboxes at the bottom of the tab prevent vehicle tracking during manual journeys, both from and to the current vehicle display.

6.1.9 Vehicle display properties dialogue window – "Function activation" tab

The last of the six tabs in the properties dialogue of a vehicle display deals with the handling of vehicle functions when a vehicle or train arrives at or departs from a vehicle display. With this function it is possible to switch vehicle functions without the use of profiles or macros.

The tab is essentially divided into two areas. The upper section defines which vehicle functions are to be switched **depending on the direction** on arrival or departure.

All vehicle functions available in **Win-Digipet** are displayed in a tree structure in the lower section. The topic "Vehicle functions" has already been covered in this documentation in the chapter 4 "Vehicle database" in connection with vehicles.

To switch a vehicle function on arrival or departure, simply drag the required function symbol from the lower field with the mouse, holding down the left mouse button, into the desired arrival or departure field and select from the menu that appears at this moment whether the vehicle function should be switched on or off. Of course, you can repeat this process with several vehicle functions.
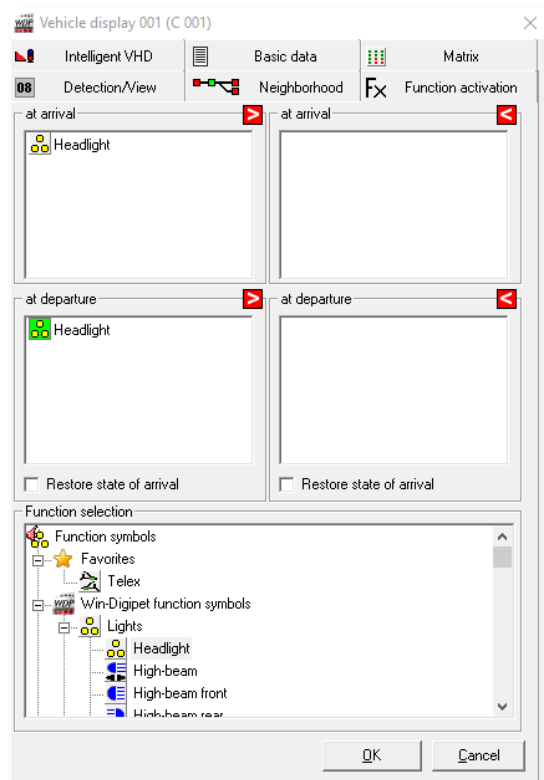
Fig. 6.25   VHD properties, the "Function activation" tab

The example in the Fig. 6.25 shows that the peak lighting of a vehicle is to be switched off when it arrives at the vehicle display and then switched on again when it departs. The switching operations have only been entered here for the direction from left to right, as the vehicle display is only travelled in one direction in this example.

As a result, all vehicles that have configured the "Head lighting" function with the selected function symbol will switch the light off or on.

Activating the *"Restore state of arrival"* checkboxes causes **Win-Digipet** to save the status of the activated functions of an arriving vehicle or train and then restore them on departure from the VHD.

> It does not matter which function number has been assigned to the individual vehicle, what is important here is the selection of the function symbol.

6.1.10 Finalising the configuration of a vehicle display

This explains all the options for recording a vehicle display.

Click on the *'OK'* button to save the entered values in the **ZNFELDER.DAT** file in the project directory.

6.1.11 The Properties window feedback contact

In the previous sections, the settings dialogue for the properties of a vehicle display was explained in detail.

If you right-click on a track symbol without a vehicle display but with a feedback number and select "*Properties feedback contact*", you will see similar tabs for the basic data, the matrix settings and for detection. You can therefore also assign many of the properties of an VHD to feedback contacts without assignment to a vehicle display.

Version 2021
Premium Edition

Chapter 07

7. THE ROUTES

7.1 General information

The routes are, in addition to the vehicles and the track layout, one of the three basic pillars (cf. Fig. 1.1) of **Win-Digipet**. This chapter explains how to create and use routes. As in the previous chapters of this documentation, the descriptions and example graphics are largely based on the WDP2021 demonstration project.

After transferring the data from the demonstration project, start the office version of **Win-Digipet** from the Start Centre. You do not need a connection to your model railway layout to create the routes.

To be able to understand the examples presented here, it is advisable to switch on the so-called simulation should be switched on. With this simulation, you can simulate all the functions of the programme without a model railway layout. The switching of the solenoid items and the movements of the trains are displayed alongside all other programme sequences.

Start the simulation mode with the 🔢 icon from the **Win-Digipet** main programme toolbar.

The small "Simulation" window will then open. Here you can set a time sequence for the movements of your trains on the screen. We recommend setting a value between 2000 msec and 3000 msec here. This means that when the train is travelling, the next contact is displayed as occupied after 2 seconds. The feedback contacts of the vehicle displays are also immediately displayed in red as occupied when the simulation is started if a vehicle is entered there.

The routes are in fact the basic framework for controlling your digital model railway layout with **Win-Digipet**, both in manual and automatic operation. You can define an almost unlimited number of routes, but before starting your work you should consider between which points of your model railway layout it makes sense to drive. It makes no sense to connect every vehicle display with every other vehicle display via a route.

> The following descriptions always refer to travelling with speeds according to km/h. However, if you have switched from an older previous version with driving by speed steps to the current version, you must change your old routes (see section 7.13).

7.2 Record routes

Routes can be created in **Win-Digipet** in several ways. To create routes with the route navigator or the routes wizard or routes editor to run smoothly, you should, however, pay attention to a few points:

- All feedback contacts are entered in the track diagram.

- the vehicle displays have been drawn in and have also been given a feedback contact number and a meaningful description.

- All real solenoid items (points and signals) have been given a solenoid item address.

- All jump labels for track interruptions due to texts, track designations and other non-feedback symbols etc. have been recorded.

- You have entered default values for the start and braking speed in the system settings.

Only when you have completed this preliminary work in the track diagram editor, the feedback configuration and in the system settings should you start creating routes.

The routes are stored in a route database in **Win-Digipet.** This database with the routes of your project is in the file **WDROUTES.MDB** in your project directory.

Basically, all routes are created and managed with the routes editor. You can create routes in the routes editor as follows:

- With the route assistant

- With the semi-automatic creation of routes

- With the manual creation of routes

Another very simple way of creating routes is available to you after the track diagram has been created:

- The route navigator

7.3   The route navigator

The Route navigator is used to create temporary routes that you may need for test purposes or to quickly move trains or locomotives from one point of the model railway layout to another if no route or route sequence has yet been created.

In the following example, a freight train is to run from track 5 in Burghausen into the overtaking area on the upper track. The vehicle number or train name is already entered in vehicle display 036 and you have run the simulation (see section 7.1) has been switched on.
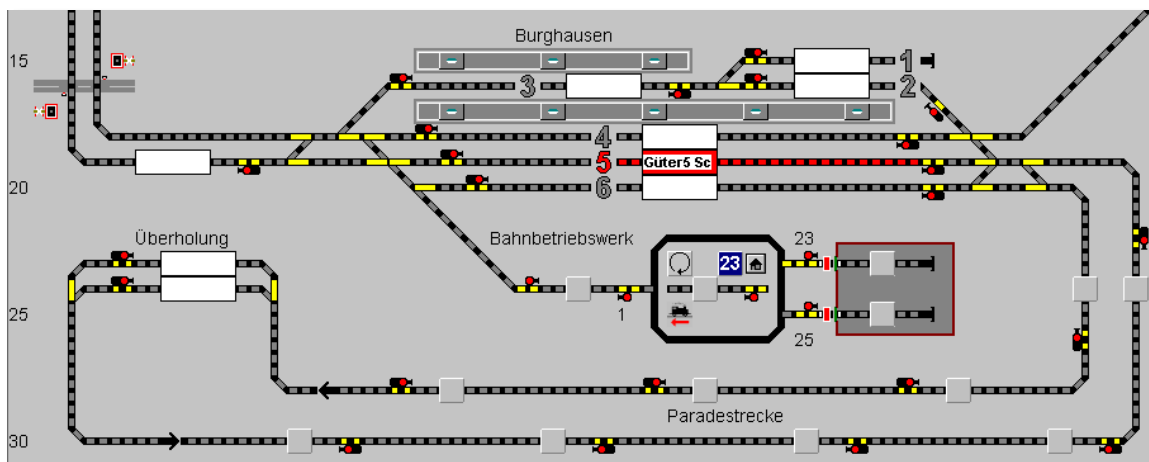
Fig. 7.1   The freight train should travel from Burghausen into the overtaking area.

If the vehicle number is not entered in the vehicle display, drag the locomotive BR 132 from the vehicle bar into the empty vehicle display (VHD) by clicking and dragging with the right mouse button.

After you have dragged the locomotive into the vehicle display (VHD), the programme prompts you to determine the direction of travel of the train. In our example, we select that the train should move to the right (see Fig. 7.2).

You can manually set the associated feedback contact as occupied in the simulation by clicking on a track symbol of the FB-No. with the left mouse button.

The track sections in front of and behind the VHD with the registered train "Güter5 Sc" are illuminated in red and the registered train number has also received the two red lines at the top and bottom. This means that the corresponding feedback contact is busy. The direction of travel of the train is now also indicated in the VHD by a red marking on the right-hand side (cf. Fig. 7.1).
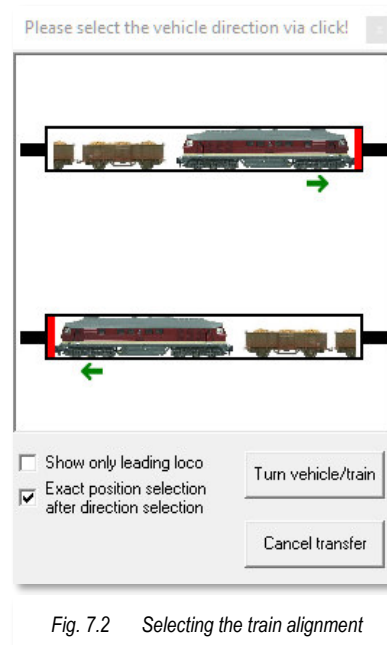
Fig. 7.2   Selecting the train alignment

The easiest way to set a route is to use the centre mouse button. You have already learnt about a variant for setting the route using the right mouse button via the short menus in the quick start to **Win-Digipet.**

You have a mouse with a middle button and now click with this button first on the start vehicle display with the entered train number "Güter5 Sc" and then within about 10 seconds a second time with the middle mouse button on the destination vehicle display in the "upper track overtaking area" ("Überholung" in German language).

After the second mouse click, the "Start/Destination selection" window appears with the red message *"No route (-Sequence) found!".* This is correct, as no route has yet been created for this route.
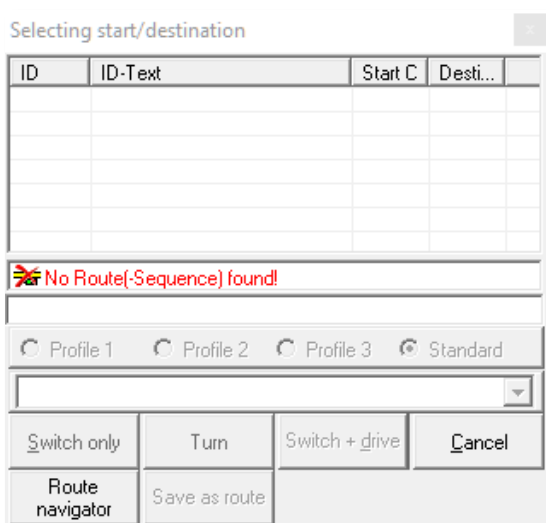
Fig. 7.3   The start/destination selection has not found a route.
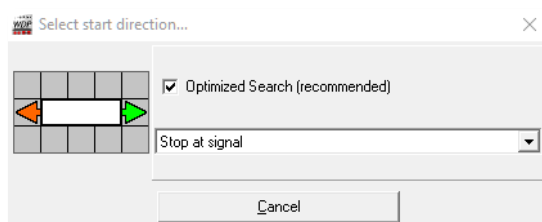
Fig. 7.4 Selecting the start direction.

You Please click on the **'Route navigator'** button and the screen shown in Fig. 7.4 *"Select start direction..."* window appears immediately. As our train is to start to the right, drag the mouse onto the arrow pointing to the right, which will turn green.

Now click on the green arrow with the left mouse button. The start vehicle display is displayed in green; the destination vehicle display in red, the route found by the route navigator in yellow and two route variants are displayed in the "Start/destination selection" window. The vehicle displays contain additional direction information displayed as stylised arrows.

Variation 2 is the route we need here to reach our destination, the upper track of the bypass area, with the carriageway. The other variant would then lead through the opposite track from the left to our selected destination vehicle display.
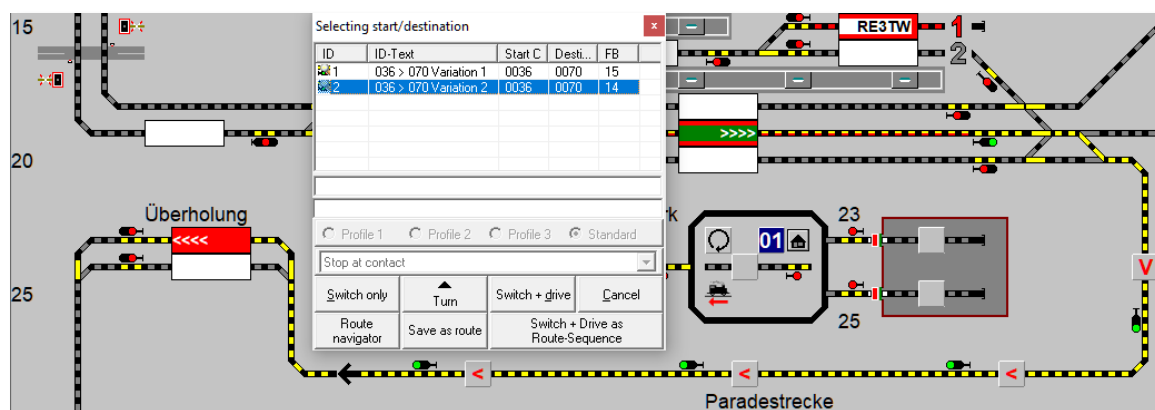
Fig. 7.5   The route navigator finds two different variants.

Now left click on the **'*Switch + drive*'** button.

After clicking on this button with the left mouse button, the route is set, and the "Selecting Start/Destination" window disappears. The vehicle also starts moving and you can follow the journey simultaneously on the screen.

In our small example here, this is all very simple, as all the tracks are free so far. The **'*Switch + drive*'** button would not be selectable if the destination vehicle display is occupied. In such a case, the red messages *"Unfilled switching conditions…"* and *"Vehicle on destination"* would be displayed in the "Selecting start/destination" dialogue. You could then either click on the **'*Cancel*'** button or **'*Switch + drive as Route Sequence*'.** In the Fig. 7.6 we have illustrated this once by dragging a vehicle into the target vehicle display.
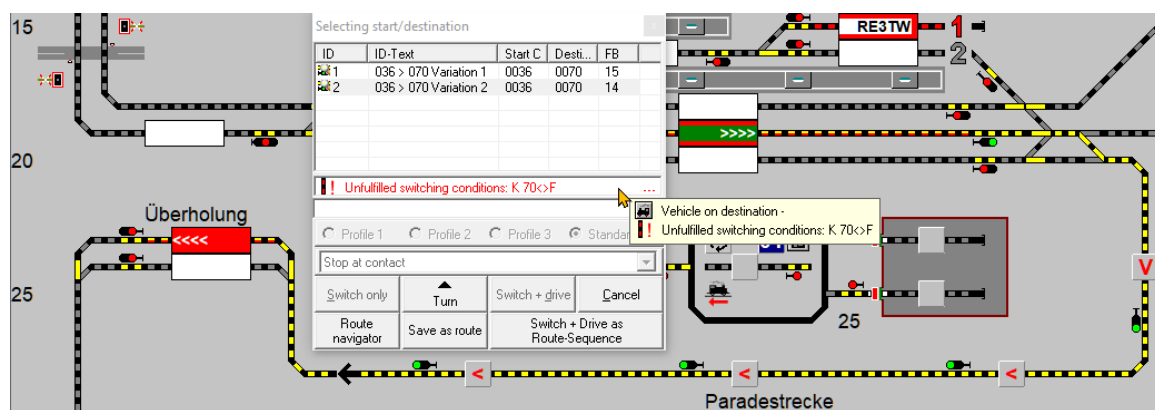
Fig. 7.6   The destination vehicle display is signalled as occupied.

In this case, the start/finish dialogue appears with one or more error messages. In Fig. 7.6 shows that a vehicle is entered on the destination vehicle display. The second error

message in the tool tip means that feedback contact 070 is not signalled as free. However, this is a condition for setting the route.

The tool tip with the error messages is displayed as soon as you move the mouse over the three red dots.

If you now click on the **'Switch + drive as Route Sequence'** button, the so-called Tour Event-inspector is displayed. The journey of the freight train is now listed in this window, but it cannot be executed due to the destination blockade. You will see a corresponding message in the Tour Event-inspector (see Fig. 7.7).
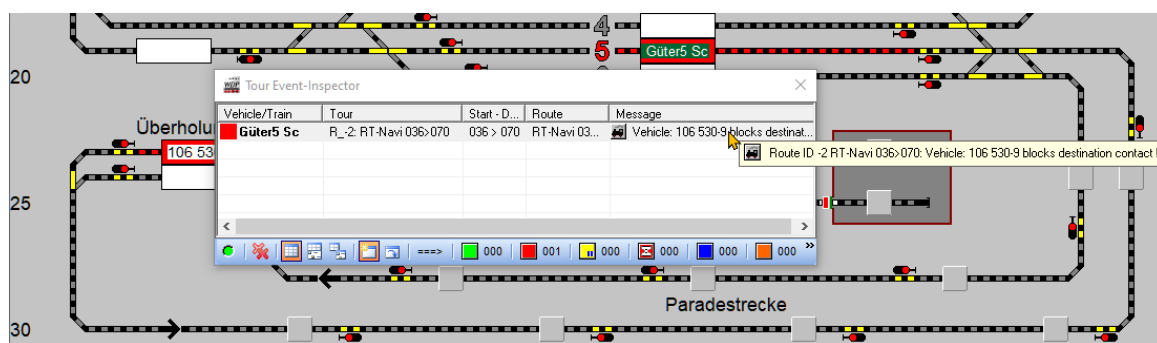
Fig. 7.7   The tour event-inspector shows the blockage of the target vehicle display.

To allow the freight train to continue its journey, you must now allow the vehicle or train to leave the overtaking track.

To do this, click again with the middle mouse button on the start vehicle display with the entered train name "106 530-9" and then a second time on the destination vehicle display at the next block signal.

A route (070>073) is found here for the planned journey. You can recognise this by the entry in the list of the start/destination dialogue. Next to its unique ID-No., the symbol for a route is shown.

You may later see routes or route sequences displayed in this list. These route sequences are also displayed with a symbol next to their unique ID.
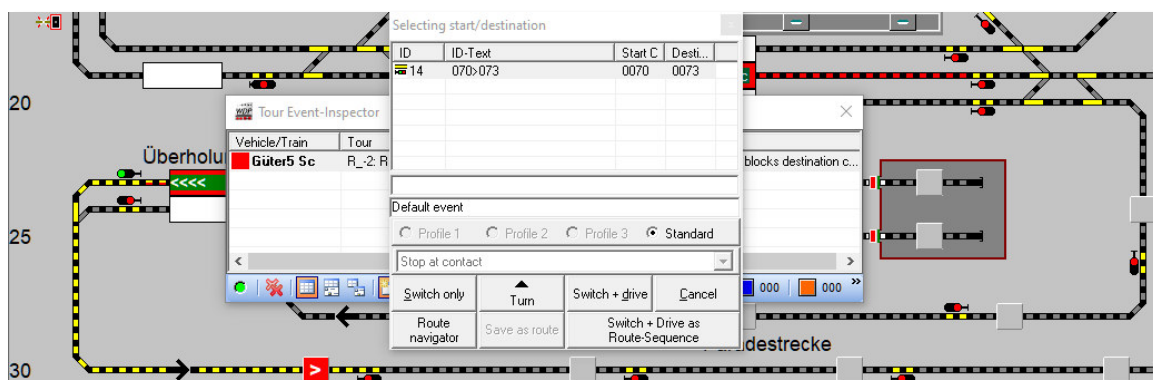
Fig. 7.8   The vehicle or train "Loco" is to clear the freight train's destination vehicle display.

Click on the '**Switch + drive as route sequence'** button and the "106 530-9" vehicle starts moving. The processing of this route, marked by a green square, is listed in the route sequence inspector window.

At this point, the journey sequence inspector still shows a red square with the message *"Positioning conditions not fulfilled…"* for the freight train (Güter5 Sc).

In the situation shown (cf. Fig. 7.9), two aspects are responsible for this. Firstly, the destination contact for the goods train is still occupied. The "106 530-9" have started its journey but has not yet left the start contact. The second aspect is that the route 036>070 contains the exit signal for the upper overtaking track. Exactly this entry signal is also contained in route 070>073, which is set for the freight train.
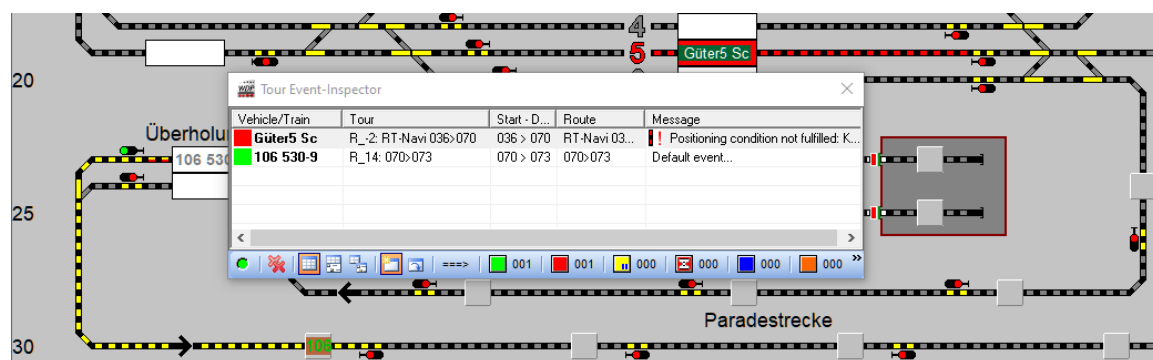
Fig. 7.9   A route is executed.

 An important basic rule in **Win-Digipet** states:

A route cannot be executed (set) if it contains a solenoid device that is already being used by another route.

The route for the freight train can therefore only be executed when the "106 530-9" has reached its destination and route 070>073 is resolved (released).

The resolve of the route also releases the exit signal of the upper overtaking track so that it can be set by another route.

This graphics in Fig. 7.10**Fehler! Verweisquelle konnte nicht gefunden werden.** is intended to convey this situation. Immediately after the vehicle or train 106 530-9 has cleared the exit signal, route 036>070 is executed and the goods train can start its journey.
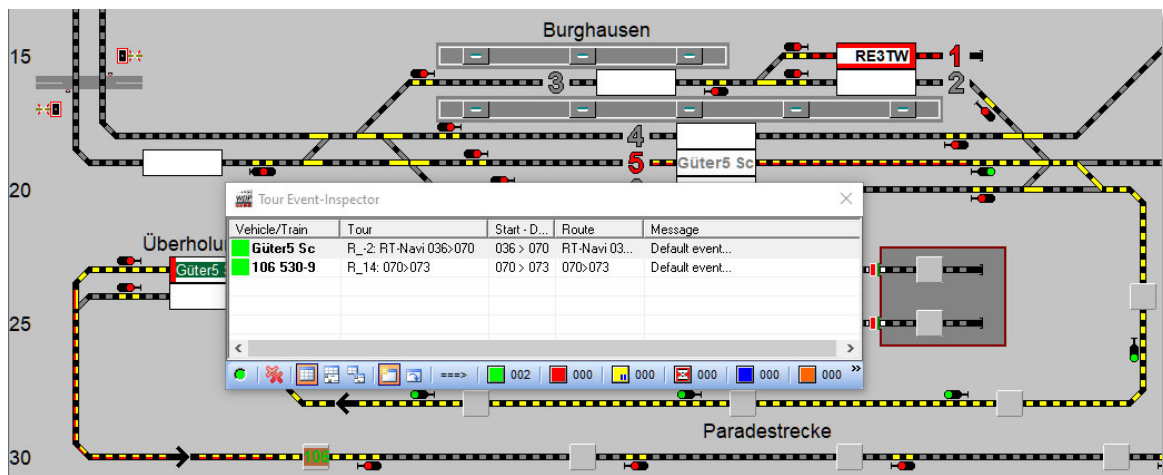
Fig. 7.10   The freight train's route is executed after vehicle 106 530-9 has released the exit signal.

The name and direction of travel of the train is already entered on the destination vehicle display in the upper track of the overtaking. However, we do not yet see any occupancy of the destination vehicle display (red marking), as the train is still travelling and has not yet reached the destination contact.

7.3.1   Saving temporary Navigator routes in the routes editor

Would you like to save the routes created by the route navigator (cf. Fig. 7.5), simply click on the '*Save as route*' button in the start-destination dialogue. This means that the temporary routes are also available after a new programme start of **Win-Digipet.**

The Fig. 7.11**Fehler! Verweisquelle konnte nicht gefunden werden.** shows the start/finish dialogue from the Fig. 7.5. Here, the route navigator has found two possible variants for the start-destination selection.

The route found as variant 2 is saved in the route database using the '*Save as route*' function and can then be edited using the routes editor.
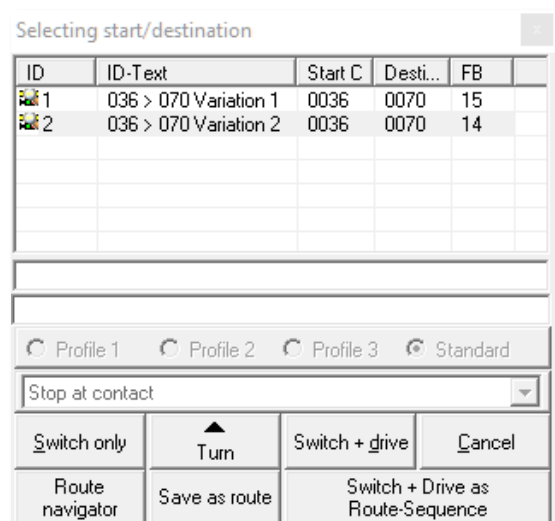
Fig. 7.11   Temporary routes in the start-destination dialogue

You can open the routes editor by clicking on the ⚡ icon in the **Win-Digipet** main programme toolbar or alternatively you can access the routes editor via the <File> menu in the main menu bar.
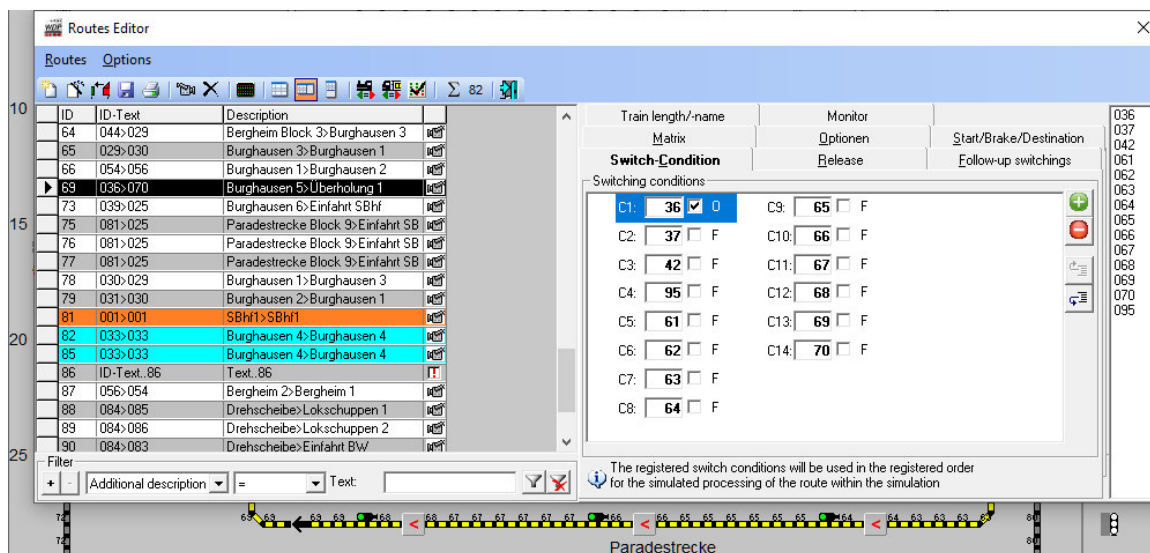
Fig. 7.12   The previously temporary route has been saved in the database and can be edited in the routes editor.

The Fig. 7.12 shows the automatically created route in the routes editor. All information on the individual tabs has been inserted automatically and can be added to or customised as required. For the moment, we will leave all settings as they are; the individual tabs will be described in detail in the following sections.

7.4 The routes wizard

Another method for conveniently creating or recording routes in **Win-Digipet** is the so-called route assistant. The routes wizard is located within the routes editor.

Open the routes editor by clicking on the ![icon] icon in the toolbar of the main programme.

> When you open the routes editor for the first time, you will find an example entry for the 1st data record in the route list; this can be overwritten.
>
> There must always be at least one data record in the route database, whereby you cannot delete the last existing data record.
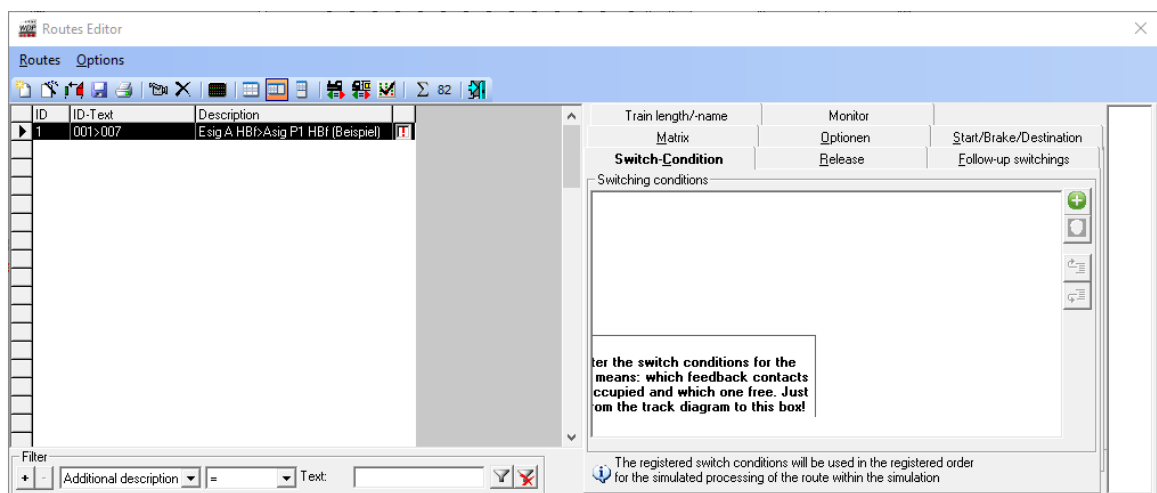
Fig. 7.13   1 empty routes editor with the first data set

The *"Routes editor"* window opens with the two menu items <Routes> and <Options> as well as eight associated tabs.

Now click on the ![icon] icon in the toolbar of the open routes editor to open the "Routes wizard" window. At this point, you can also access the routes wizard again via the menu with the entry <Routes><Routes Wizard>.

The **Fehler! Verweisquelle konnte nicht gefunden werden.** shows you the four different options for creating routes with the routes wizard.

- 🚂 Create a route from start to destination.
- 🚂 Create a set of routes for a driveway.
- 🚂 Create a set of routes for an exit.
- 🚂 Create a route semi-automatically or manually.

The selection of one of the options depends on whether you want to create one route or an entire route set (several routes). The next sections of this chapter will take a closer look at the various options.

The routes wizard does a lot of the work for you, but you still have to "fine-tune" the error-free and very quickly created routes yourself.

This applies to the stop position of the start signal after the train has passed, the travelling speeds on the track sections and the other sequential switching of the solenoid devices.
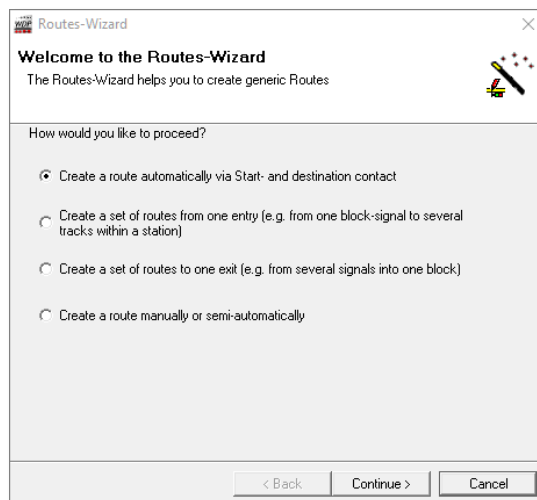
Fig. 7.14   The start dialogue of the route assistant

7.4.1 Automatically create a route from the starting point to the destination

In the start dialogue (see Fig. 7.14) of the routes wizard shown above, use the radio button to select the first option *"Create a route automatically via start- and destination contact"*.

After clicking on the **'Continue'** button, you will be prompted to select the start and destination symbols for the new route.

An **example** of a route is shown in the graphic in the routes wizard dialogue. This example display is decoupled from your personal track diagram. Clicking on the example route in any of the following graphics has no effect and does not lead to the desired result.

A route generally starts at a track symbol before a vehicle display (VHD) and ends at a signal after a vehicle display.
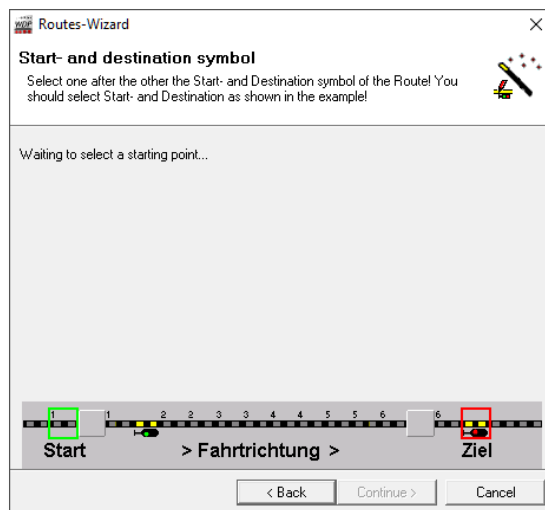
Fig. 7.15   Selecting a starting point

In your track diagram, left click on the track section to the left of the start vehicle display.
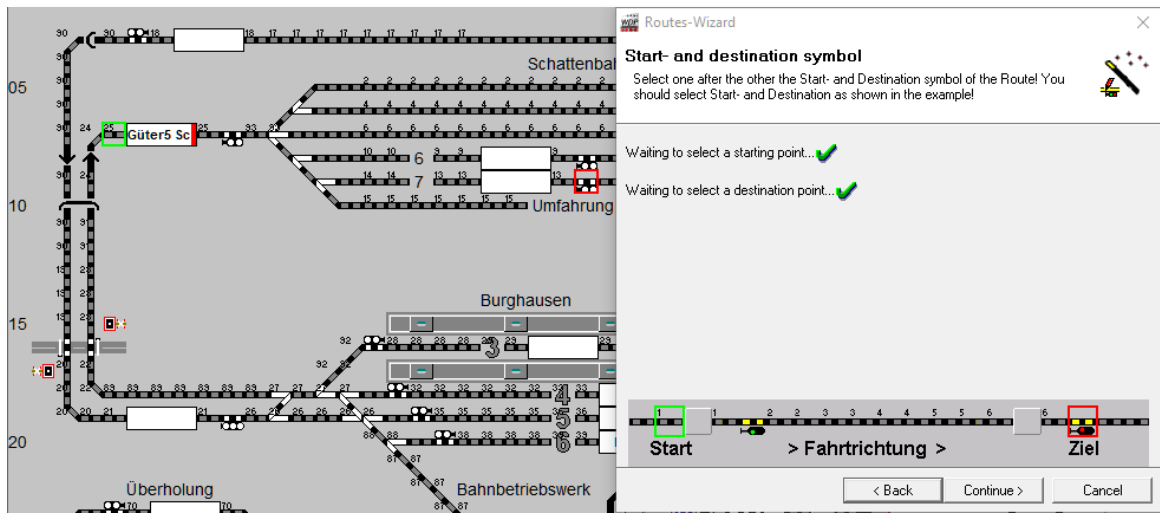
Fig. 7.16   The start and destination points of the route to be created have been selected.

The track symbol is framed in green and the first line of text ("*Waiting to select a starting point..."*) in the routes wizard is marked with a green tick. If you then proceed in the same way with the destination signal, this will be framed in red, and another green tick will appear behind the second line of text ("Waiting to select *a destination point…"*). The green tick indicates that your selection has been accepted by the programme (see Fig. 7.16).

After clicking on the '***Next'*** button, the starting direction of the route and the possible variants can be selected. As only the direction to the left or right is possible here, only these two direction arrows are displayed. Leave the other setting options as preselected for the time being. Drag the mouse onto the arrow to the right, which will be displayed in green, and then click on the green direction arrow with the left mouse button.
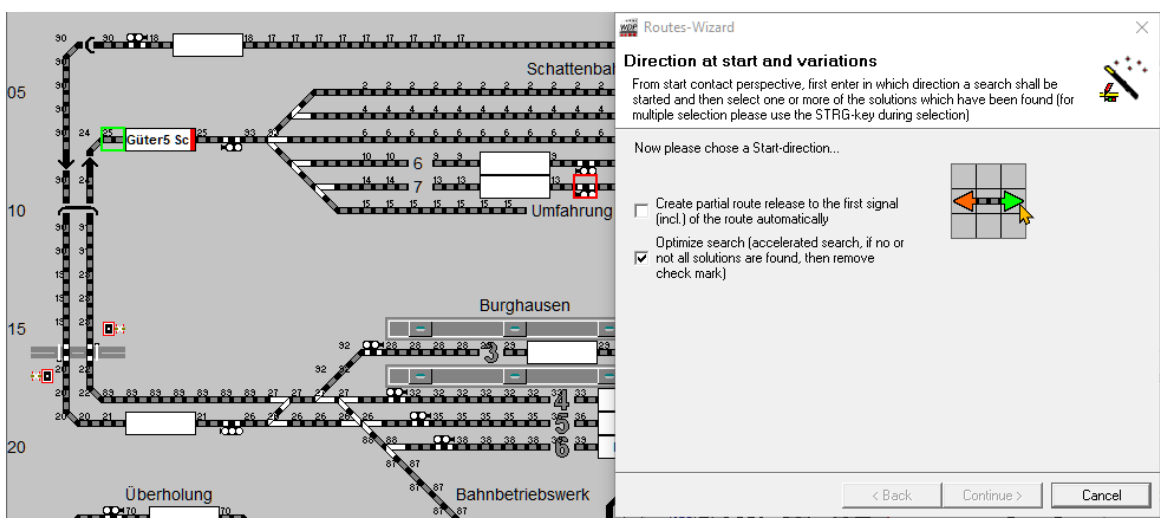
Fig. 7.17   The direction of the route recording is selected 2 starting point.

After clicking on the green direction arrow, **Win-Digipet** searches for the possible routes between the start and destination points and offers them for selection (cf. Fig. 7.18).
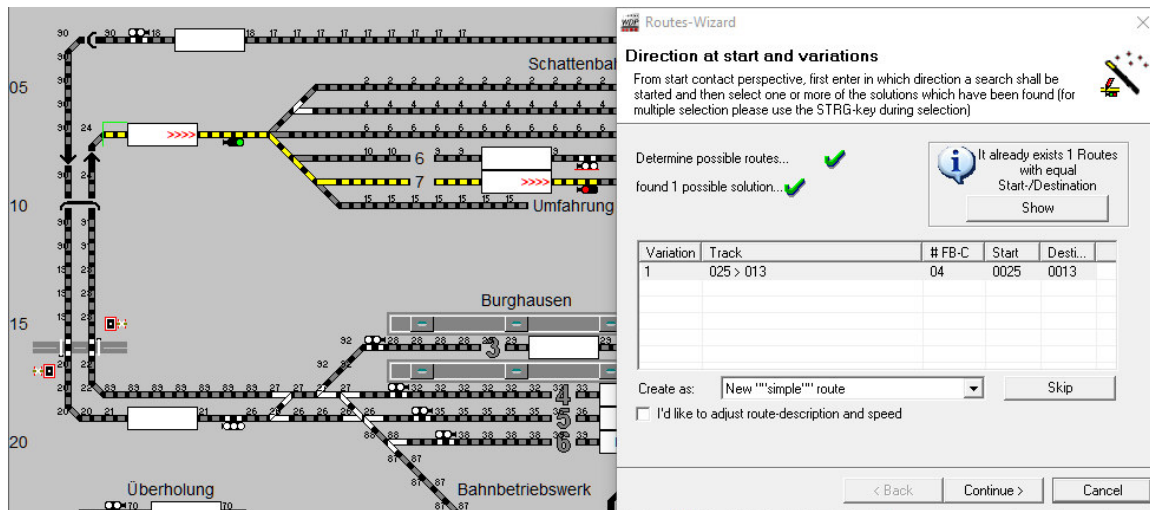
Fig. 7.18   The search has found a possible route for the carriageway.

In this example, there is only one variant, which is also marked. In the example graphic, you can see in the info window that a route with the same start and destination contact already exists in the project. In this example, this is because we have already created the necessary routes in advance in the attached demo project.

You should pay attention to the message in your own project. Creating the same routes multiple times can lead to errors in subsequent automatic operation. In some special cases, however, it may make sense to create the same routes several times. However, you should mark these routes for special tasks in the route list.

The routes wizard can create the route to be created either as a "normal, simple" route or as a route for special purposes. For this purpose, a selection list can be found under the list of variants found from which special variants for creating a route can be selected. These "special" routes are already mentioned here; we will go into them in detail later in this chapter:

- 🚂 Move-up route
- 🚂 Train division route
- 🚂 Train coupling route
- 🚂 Relocate route

The last three route types mentioned are only available after enabling the so-called "Expert mode" is available.

Leave the other options for adjusting the route description and speeds as preselected.

Click on the **'*Next'* button** to confirm all the settings.

Win-Digipet now records the route and confirms this with the following screen.

If you want to record further routes, tick "*I want to create additional route right away*" in the dialogue and click on the **'Continue'** button.

If no further routes are to be recorded, the **'Finalize'** button is displayed, and you can exit this dialogue by clicking on it.
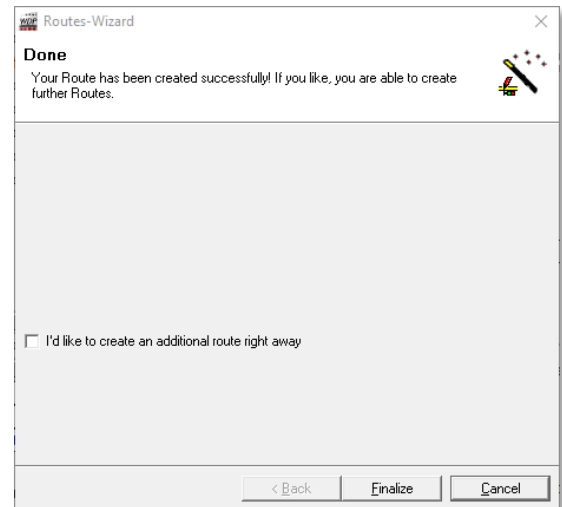
7.4.2 Automatically create a set of routes for driveways

In this section a route set is to be created for two entrances to the staging yard. To do this, the second option *"Create a route set from one entry"* is selected in the start dialogue of the routes wizard.

After clicking on the **'Continue'** button, you will be asked to mark the start and destination symbols of the new routes, as shown in the graphic of the routes wizard.
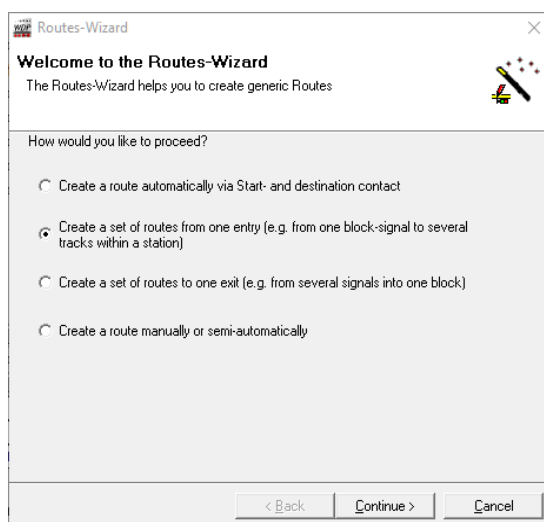
Fig. 7.20   Create a set of entry routes.
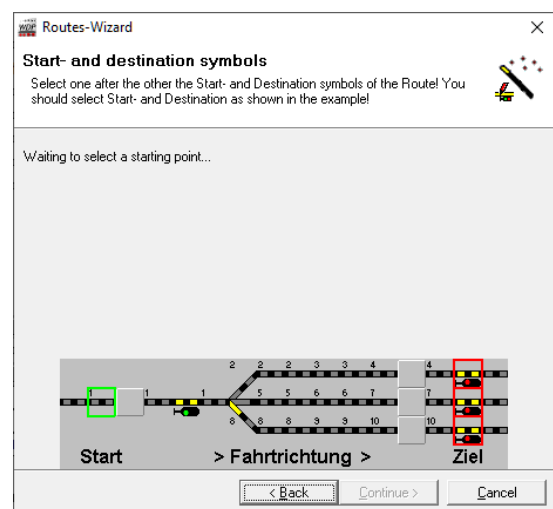
Fig. 7.21   The selection of a starting point and several destination points

The difference to the procedure described in section 7.4.1 is that several routes with the same starting point but different destination points are to be created here.

The graphic in the routes wizard dialogue again shows an **example** of a route set (see Fig. 7.21). This example representation is also not identical to your personal track diagram.

Left click on the track section to the right of the start vehicle display in your track diagram. This is now framed in green and confirmed in the routes wizard behind the text line with the starting point with a green tick.

If you then proceed in the same way with the target signals, they will be framed in red, and another green tick will appear behind the text line with the target points.

In the demo project, we select the entry signal to the staging yard as an example and the exit signals of tracks SBhf 6 and SBhf 7 as target points. Fig. 7.22 shows this situation.
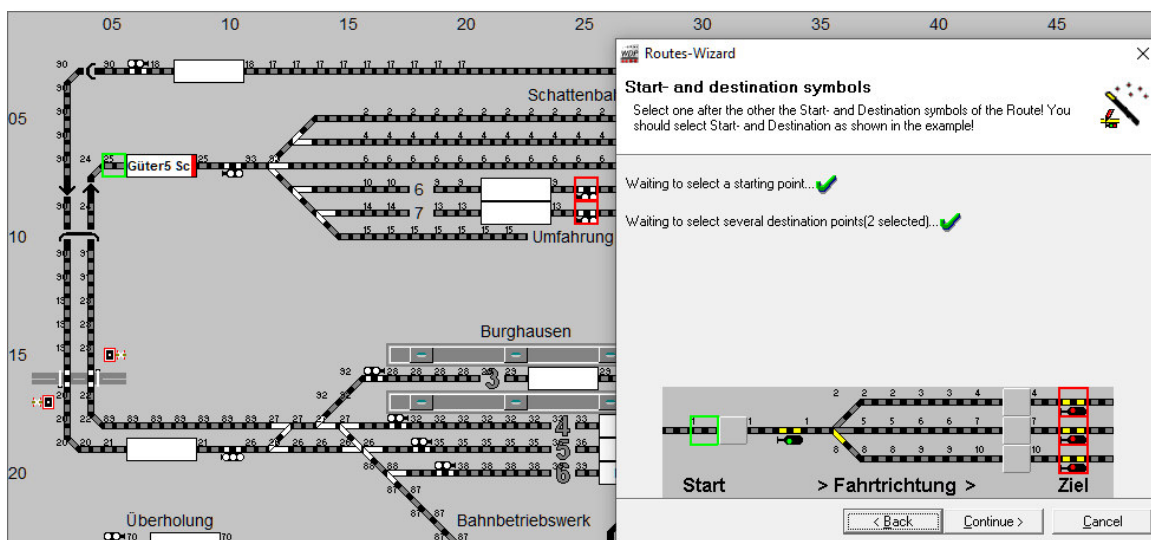
Fig. 7.22   The starting point and several destination points have been selected.

If you "mis clicked" when selecting the start or destination points, you can correct your entry by right-clicking on the incorrectly selected symbol and selecting *"Delete start or destination point"* from the menu that appears.

After clicking on the **'Continue'** button, the screen in the routes wizard changes so that the start direction and the possible variants can be selected.

In this example, please also select the option *"Automatic partial release up to the first signal (including) ..."*. This setting means that the route is not cancelled in its entirety at the end, but that the part up to the entry signal of the route is released beforehand.
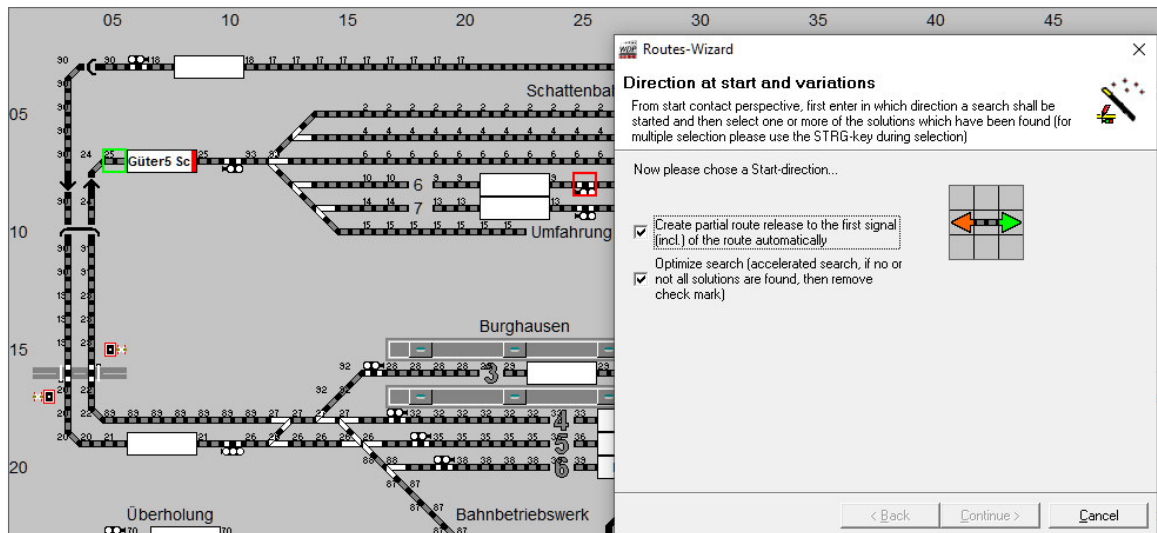
Fig. 7.23   Selecting the direction of travel and setting up a section release.

This tick, which you must set **before clicking** on the start direction, automatically creates the routes with a partial and a main route.

In later operation, this means that a following train can set its route to the entry signal now when the train has passed the entry signal.

Drag the mouse to the left arrow, which will turn green, and left click on the green direction arrow.

Immediately after clicking on the green direction arrow, **Win-Digipet** searches for the possible variants of the first start/destination combination and offers them for selection.
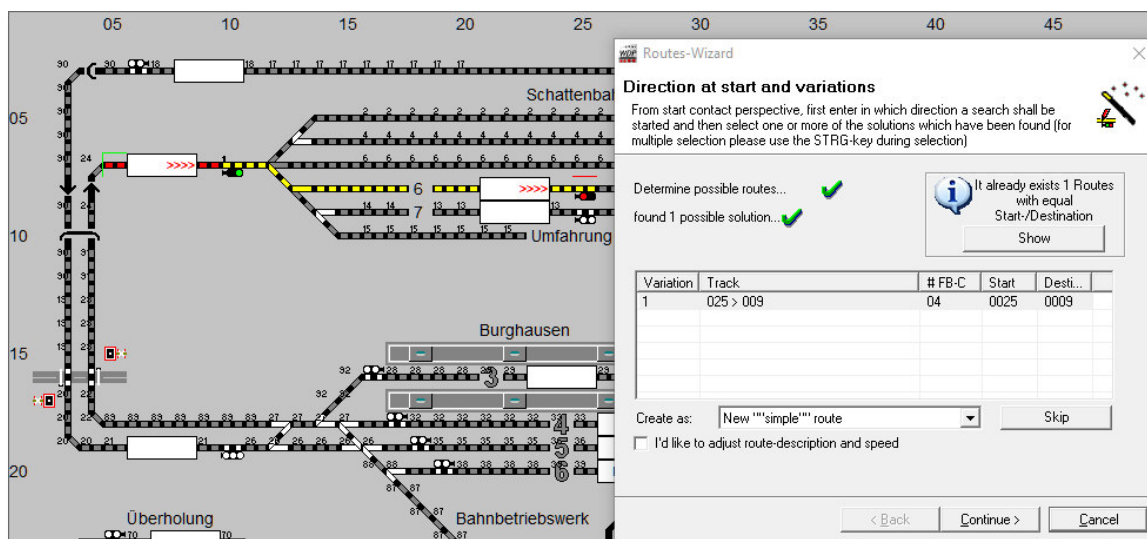
Fig. 7.24   A possible route was found to the first destination.

In this case, there is only one variant, which is also marked. The first section up to the entry signal is shown in red and the main section is shown in yellow. A small "**1**" above the entry signal indicates that this signal is integrated into partial recording 1.

This entry signal, which is now released much earlier due to the partial section release, is the destination signal for one or more routes from Burghausen station. These can then be set and executed in automatic mode immediately after the partial section is released.

The other options for adjusting the route description and speeds as well as setting up the route as a "simple route" can be left as preselected.

After clicking on the **'Continue'** button, the screen in the routes wizard changes so that the start direction and the possible variants of the second route can be selected.

To enable the section up to the entry signal to be released again after the train has left the station, leave the box *"Automatic partial release up to the first signal (including) ..."* ticked.

This tick in turn automatically creates the route with a section and a main route.

The next steps are like the procedure just described. After selecting the direction, **Win-Digipet** searches for the possible routes and displays the variant(s) found in a list. After confirmation, the routes are recorded and finally confirmed by the routes wizard (cf. Fig. 7.19).

> If you do not click on the '**Continue'** button before creating the second route, but on '**Cancel'**, the displayed route is not created, the routes wizard is closed, and the last route created is displayed in the route list of the routes editor.

7.4.3 Automatically create route set for exits.

In In this section, a route set is to be created for two exits from the "Overtaking" area. To do this, the third option *"Create a set of routes to one exit" is* selected in the start dialogue of the routes wizard.

After clicking on the **'Continue'** button, you will be asked to mark the start and destination symbols of the new routes, as shown in the graphic of the routes wizard.
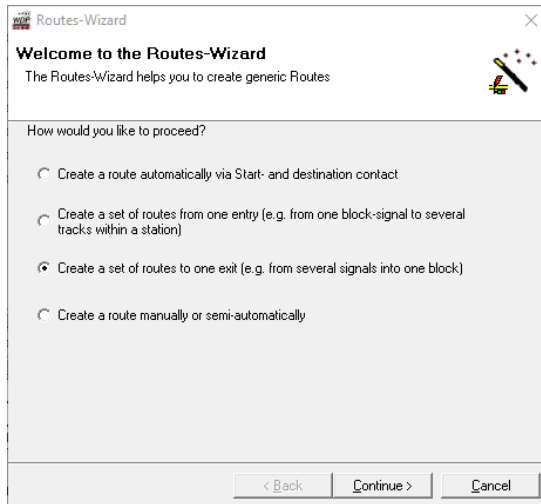
Fig. 7.25   Create a set of exit routes
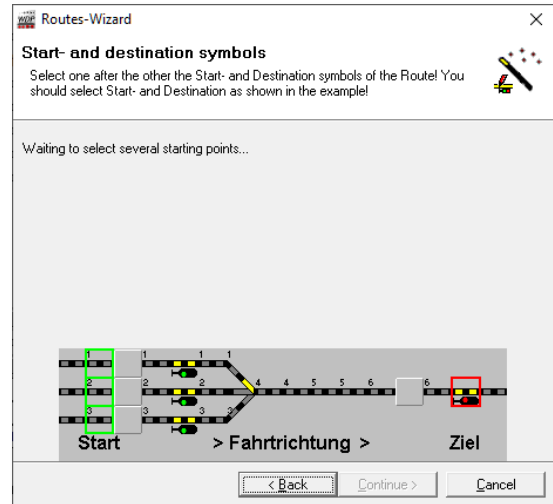
Fig. 7.26   Selecting multiple starting points and one destination point.

The difference to the procedure described in section 7.4.2 is that several routes with different starting points but a common destination point are to be created here.

The graphic in the routes wizard dialogue again shows an **example** of a route set. This example representation is also not identical to your personal track diagram.

Left click on the track sections to the left of the start vehicle displays in your track diagram. These are now framed in green.

After clicking on the **'Continue'** button, proceed in the same way with the destination signal. This is framed in red, and another green tick appears behind the text line with the destination point.

If you "mis clicked" when selecting the start or destination points, you can correct your entry by right-clicking on the incorrectly selected symbol and selecting *"Delete start or destination point"* from the menu that appears.

In the demo project, we choose as an example the track sections to the right in front of the "overtaking" vehicle displays and the first block signal on the route to Burghausen station as the destination point. The Fig. 7.27 shows this situation.
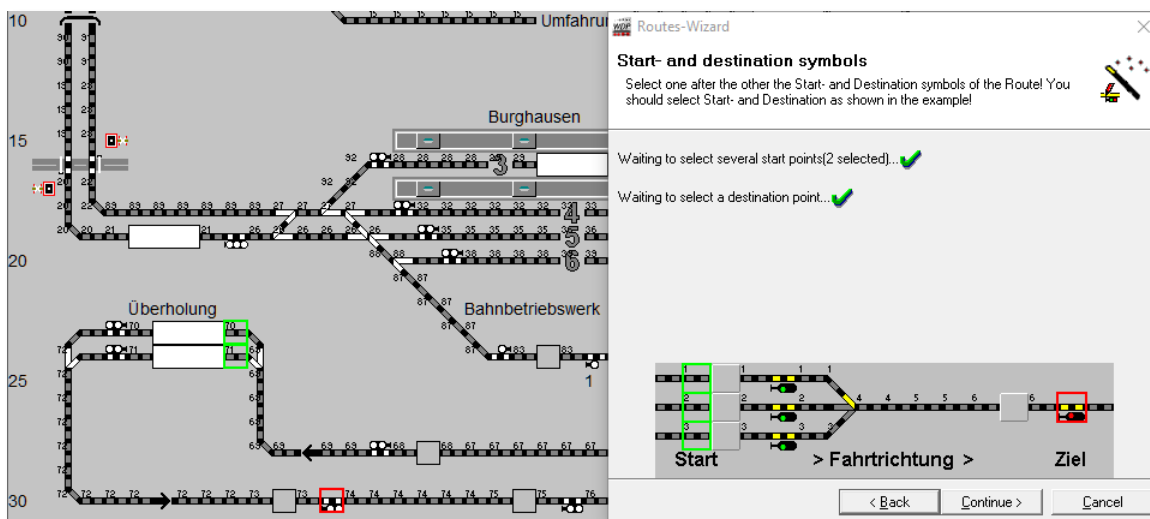
Fig. 7.27   Two starting points and one destination point were selected in the track diagram.

After clicking on the **'*Continue*'** button, the screen in the routes wizard changes so that the start direction and the possible variants can be selected.

In this example, please also select the option *"Automatic partial release up to the first signal (including) ..."*. This setting means that the route is not cancelled in its entirety at the end, but that the part up to the entry signal of the route is released beforehand.

This tick, which you must set **before clicking** on the start direction, automatically creates the routes with a partial route and a main route. In subsequent operation, this means that a following train can set its route to the entry signal now the train has passed the entry signal.

Drag the mouse to the arrow pointing to the left and then click with the left mouse button on the now green direction arrow. Immediately after clicking, **Win-Digipet** searches for the possible routes and offers them for selection.
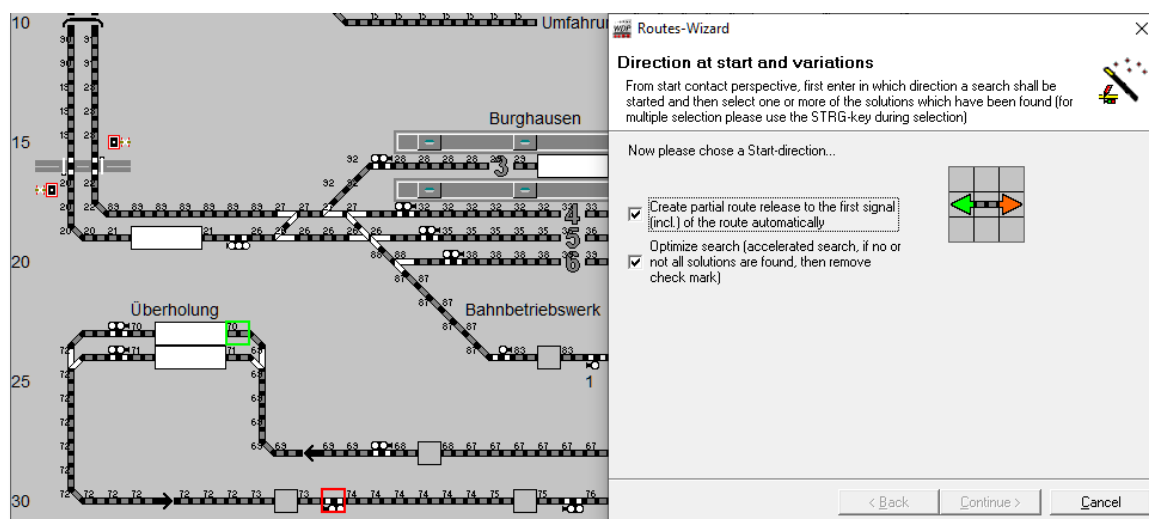
Fig. 7.28   The selection of the start direction for the first possible route
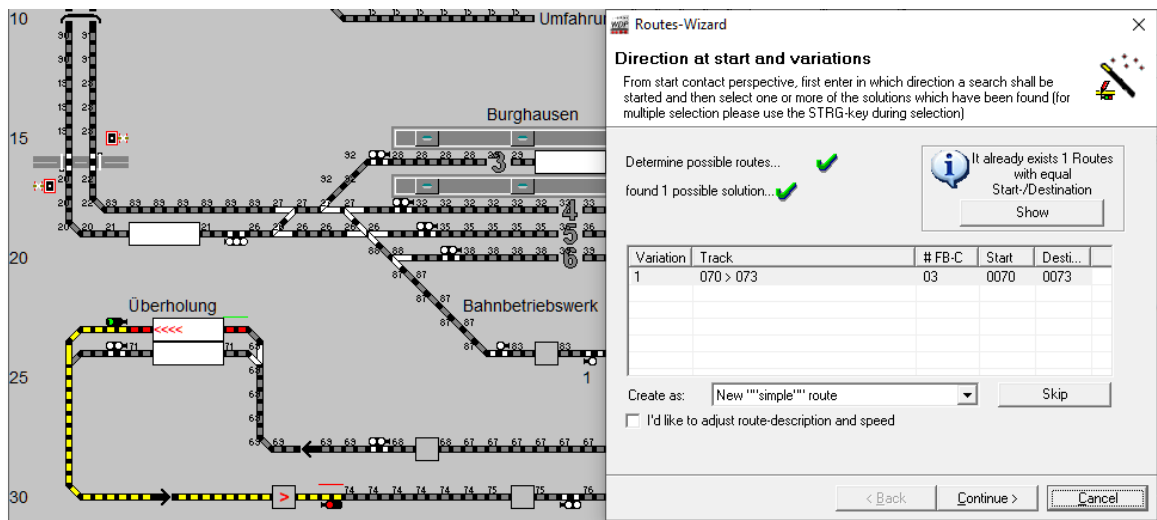
Fig. 7.29   A possible route was found from the first starting point to the destination point.

In this case, there is only one variant, which is also marked. The first section up to the exit signal is shown in red and the main section is shown in yellow. A small "**1**" above the exit signal indicates that this signal is integrated into section recording 1. Please set the option to adjust the route description and speeds here.

The Fig. 7.30 shows the standard entries for the ID text and description for your route.
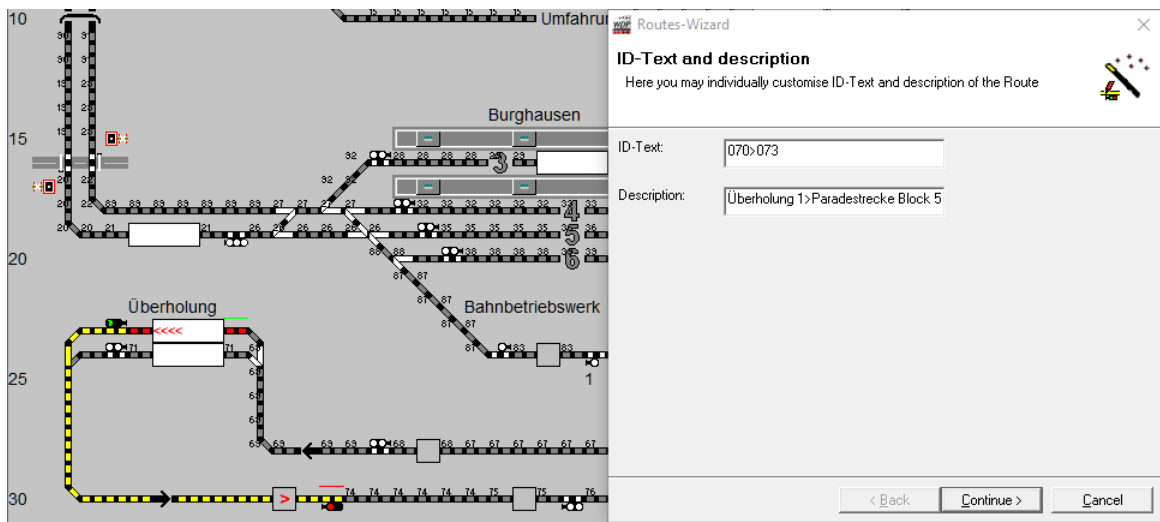
Fig. 7.30   The description and the ID text can still be customised here.

These entries are generated from the names and descriptions of the vehicle displays that you have already assigned in the track diagram editor or in the property's dialogues for the vehicle displays. The entries are combined from the start and destination vehicle displays and separated from each other by the **">"** character.

> The recommendation at this point is to enter the names and descriptions of the vehicle displays in the track diagram editor or in the property's dialogues for the vehicle displays.
>
> The entries created there are automatically adopted when a route is created or can be updated manually or automatically when changes are made.

After clicking on the **'Continue'** button, the route assistant displays a dialogue in which you can adjust the speeds within the route.

The dialogue essentially contains the speed specifications that are run within the route at the entered feedback contacts. A route usually consists of a start contact, a brake contact and a destination contact (here FB-No. 070, FB-No. 072 and FB-No. 073).
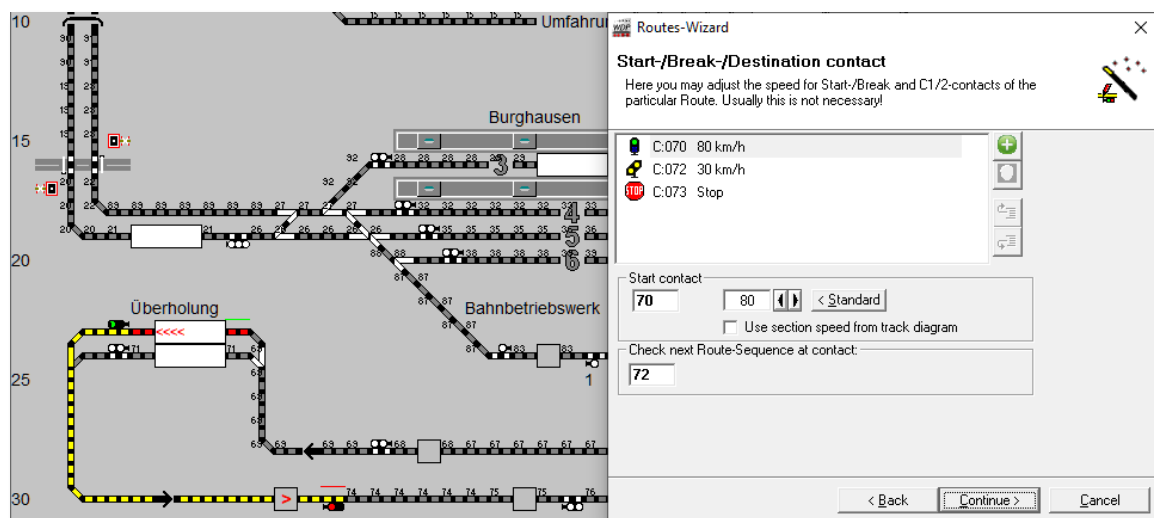
Fig. 7.31   The speeds in the route can be adjusted here.

As a result, you will find the speed information for these three contacts listed in a table in this dialogue. Apart from the destination contact (here the speed is 0), you can enter the desired speed (> 0) in km/h for each of these fields. By default, the values from the system settings (see section 3.9.6) of **Win-Digipet are** stored here by default.

If additional contacts have been recorded with the route, you can add them to the list here using the ⊕ button and assign them a speed. Regarding the driving behaviour within the routes, go to and take another look at the Fig. 6.1 once again.

The dialogue in Fig. 7.31 shows you the selection option *"Use section speed from track diagram"*. By setting this checkbox, the speed that you have assigned to the selected contact in the "Feedback contact properties" dialogue is adopted. The (default) speed entered in the field is deactivated. If you have not assigned a speed value to the contact in the track diagram, this will be displayed as a corresponding message.

The "Check next route sequence on contact" field contains the so-called test contact in **Win-Digipet**. This entry is of fundamental importance for automatic operation. You can

read the exact functional description in the chapters with the automatic functions. By default, the test contact is always the brake contact of a route.

After clicking on the **'Continue'** button, the screen in the routes wizard changes so that the start direction and the possible variants of the second route can be selected.

So that the section up to the exit signal can be released again after the train has left the station, leave the box *"Automatic partial release up to the first signal (including) ..."* ticked.

This tick in turn automatically creates the route with a section and a main route.

The next steps are like the procedure just described. After selecting the direction, **Win-Digipet searches for** the possible routes and displays the variant(s) found in a list. After confirmation, the routes are recorded and finally confirmed by the routes wizard (cf. Fig. 7.19).

> ⚠️ If you do not click on the **'Continue'** button before finally creating the second route, but on **'Cancel'**, the displayed route will not be created, the routes wizard will be closed, and the last route created will be displayed in the route list of the routes editor.

7.4.4 Route wizard reports existing routes.

After starting the routes wizard, entering the start and destination points of the route to be created and clicking on the start direction arrow, you will receive a message if routes with identical start and destination contacts already exist (cf. Fig. 7.29).

Click on the **'Show'** button to display the existing routes in a new window. If you realise that you do not want to create the route a second time, close the window and end the route creation in the routes wizard by clicking on the **'Cancel'** button and the routes wizard will close.

Fig. 7.32 3!
A route already exists with the same start and destination point.

However, if you want to create additional routes with the routes wizard, you can prevent the existing route from being created.

You can use the key combination <Ctrl> key and <u>left mouse button</u> to deselect the route found (click several times to activate or deactivate the selection).

After cancelling the previously selected route, click on the **'Continue'** button and in the window that then appears, you must answer the security prompt with **'Yes'** or **'No'**. If you click on **'Yes',** no route will be created, and you can use the routes wizard to create further routes.

However, if you click on the **'No'** button, you will return to the previous window and must start your selection again.

7.4.5 Automatically create routes with two partial sections

In the previous sections, you used the convenient routes wizard to create routes including a first section up to the start signal. However, a route in **Win-Digipet** can contain up to two route sections in addition to the main route. You can also use the routes wizard to define the second section.

In the following example, a route with...

- 🚂 a first section up to the start signal
- 🚂 a second section of track over the points in the station forecourt and
- 🚂 a Main line to the entry signal for the staging yard

...can be created.

To do this, select the first option in the initial dialogue of the routes wizard, "*Create a route automatically via Start- and destination contact*".

To mark the start or destination point, you can also use the <u>right mouse button</u> instead of the <u>left mouse button</u>.
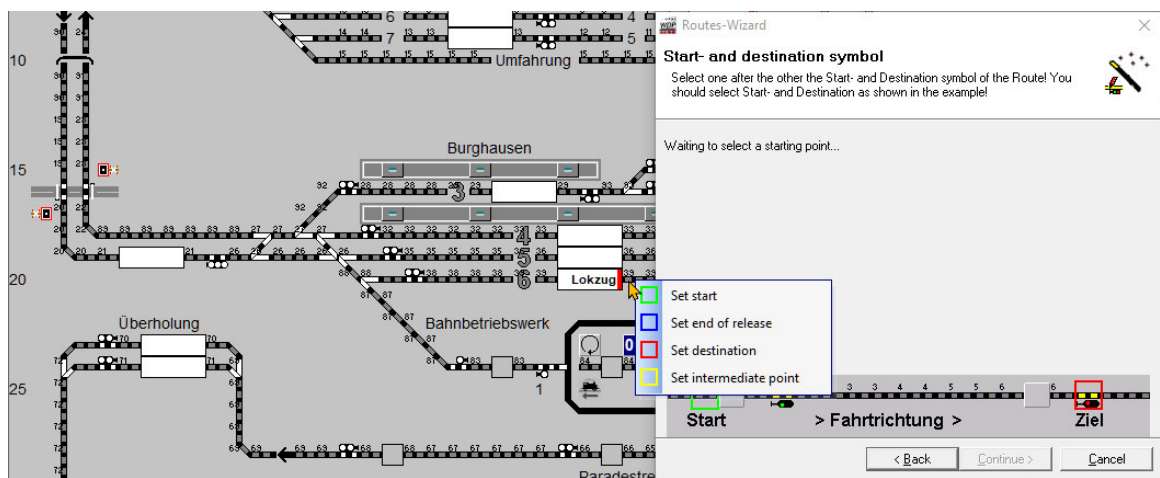
Fig. 7.33   When selecting the starting point with the right mouse button, a short menu is displayed.

After click with the <u>right mouse button</u> on the track section in front of the vehicle display, the short menu appears with the four menu commands shown in the picture. To set the starting point, click with the left mouse button on the upper menu command <Set start> and the track section is immediately given a green frame and a green tick is placed behind the text line with the starting point in the routes wizard.

Now <u>right-click</u> again on the first signal in the track diagram and you will again see the short menu with three selectable commands. The starting point is already set and therefore the menu command <Set start> is displayed as not selectable.

To mark the end of the 1st section, click with the left mouse button on the menu command <Set end of release> and the start signal is immediately marked with a blue frame. With the track section to the left of the turnout (cf. Fig. 7.35) in the same way and thus define the end of the 2nd section.
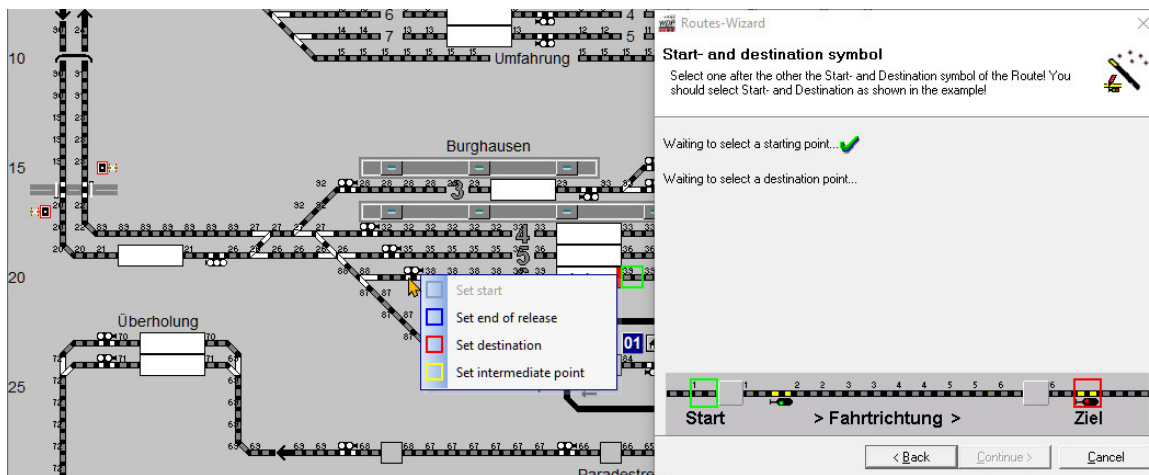
Fig. 7.34   The 1st section release is set to the exit signal.

The destination of the route by clicking the <u>right mouse button </u>on the Bergheim entry signal. In the short menu, you can select the menu command <Set destination>.

By clicking the left mouse button on this command, the destination signal is framed in red, and a green tick is placed behind the text line with the destination point in the route assistant.
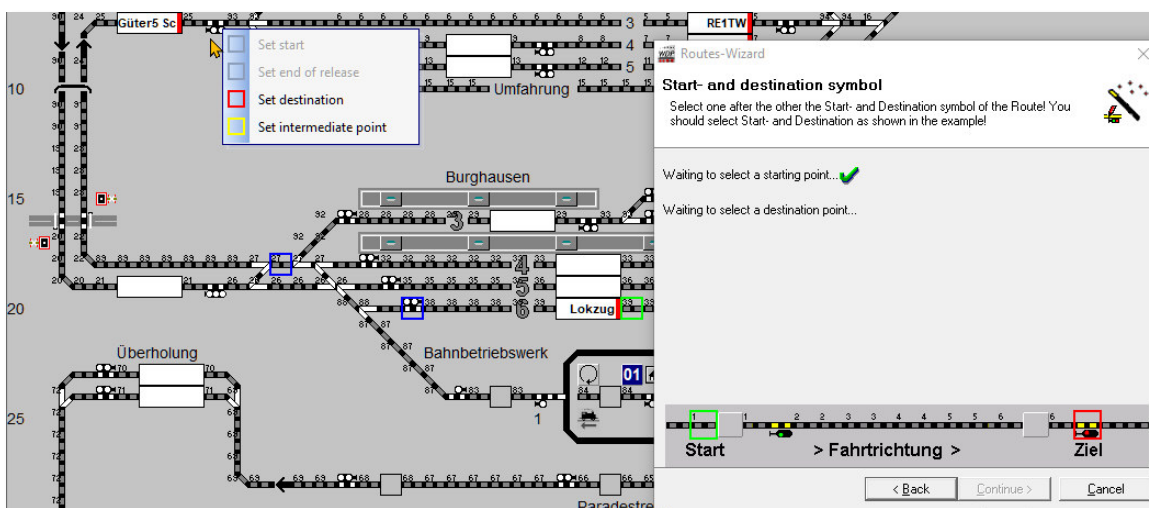
Fig. 7.35   The section releases 1 and 2 are marked with a blue frame.

If you need to change a marking, <u>right-click on </u>the marking, delete with the possible menu command and now mark the desired symbol in the track diagram.

> The blue markings for the sections (end of release) can also be made using the Shift key and left mouse button combination. However, an existing marking can only be deleted with the menu commands after clicking the <u>right mouse button.</u>

If all entries are correct or corrected, click on **'Continue'**, whereupon the start direction and the possible variants can be selected in the routes wizard.

If view the Fig. 7.34 or Fig. 7.35 you will recognise the menu item <Set intermediate point> in the submenu shown. This is used to reduce the search results for complex track layouts where the route assistant may find many routes between the selected start and destination. In this case, set one or more intermediate points. The intermediate points do not affect the functionality of the routes, but only serve to limit the search results for automatic creation.

You will also find the menu and the option to create intermediate points in the route navigator and in the semi-automatic route creation in the routes editor.

After the search process, the route assistant displays the variant found in the track diagram with the two sections and the main route in different colours. You can recognise the solenoid devices of the sections by the small numbers (1 or 2) next to the symbols in the track diagram.
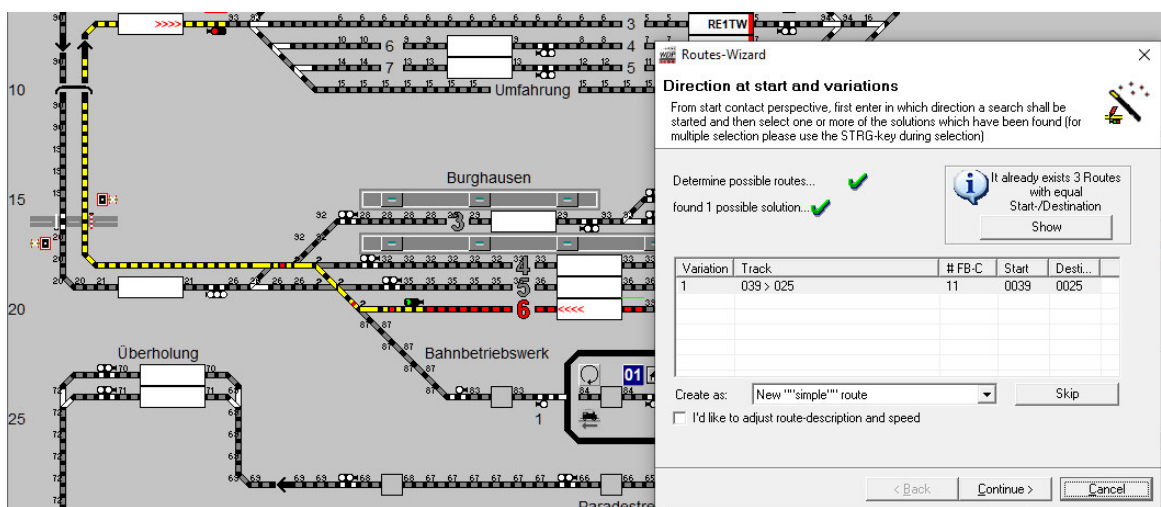
Fig. 7.36   Display of the route found with the two section releases.

What is the purpose of the 2nd partial section approval?

You have already approved the 1st section in section *7.4.2* already. The aim here was to allow a subsequent train to start much earlier, as the destination signal was already enabled by the section. We achieve the same effect with this example.

The partial section 2 begins with the track symbol after the exit signal and ends on the track symbol behind the penultimate turnout (cf. Fig. 7.36). It also includes all the turnouts in this area, which are marked with a small number "2".

With section release 2, all marked solenoid devices are now released as soon as the train has cleared this area or reached a subsequent contact (here FB-No. 027). This means, for example, that a train waiting in the opposite direction at the entry signal can enter track 5 or the railway depot after the section release.

If you do not want to create another route, click on the *'Finalize'* button, and return to the routes editor. The route you have just created is added to the end of the list and is highlighted.
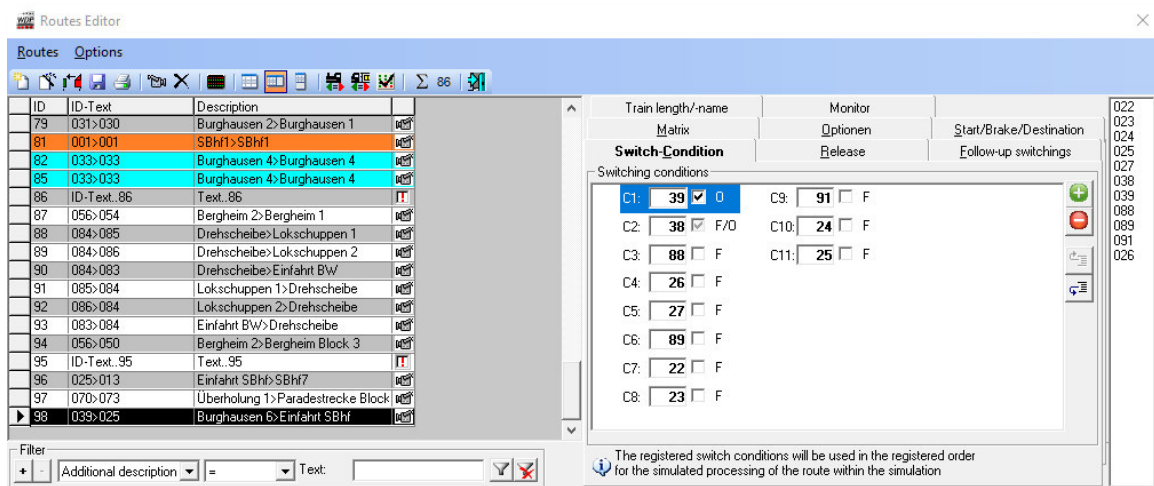
Fig. 7.37   4 last route created in the routes editor.

7.4.6 Automatically create several long routes via different paths

In the previous sections of this documentation, only short routes were created from one signal to the next.

You should also focus on such short routes in your future work with **Win-Digipet**, as they form the basis for smooth automatic operation. Blocking long routes due to the mandatory interlocking of solenoid devices is not conducive to this.

However, there may also be situations in which longer routes can be useful. Think, for example, of goods trains that need to pass through a station.

The route assistant can provide you with very convenient support when creating such routes. This is shown here for a long route over several paths and signals.

In the routes wizard, select the first option, create a route from a start point to a destination point. Select the start point (green) and the destination point (red) of the route to be created.
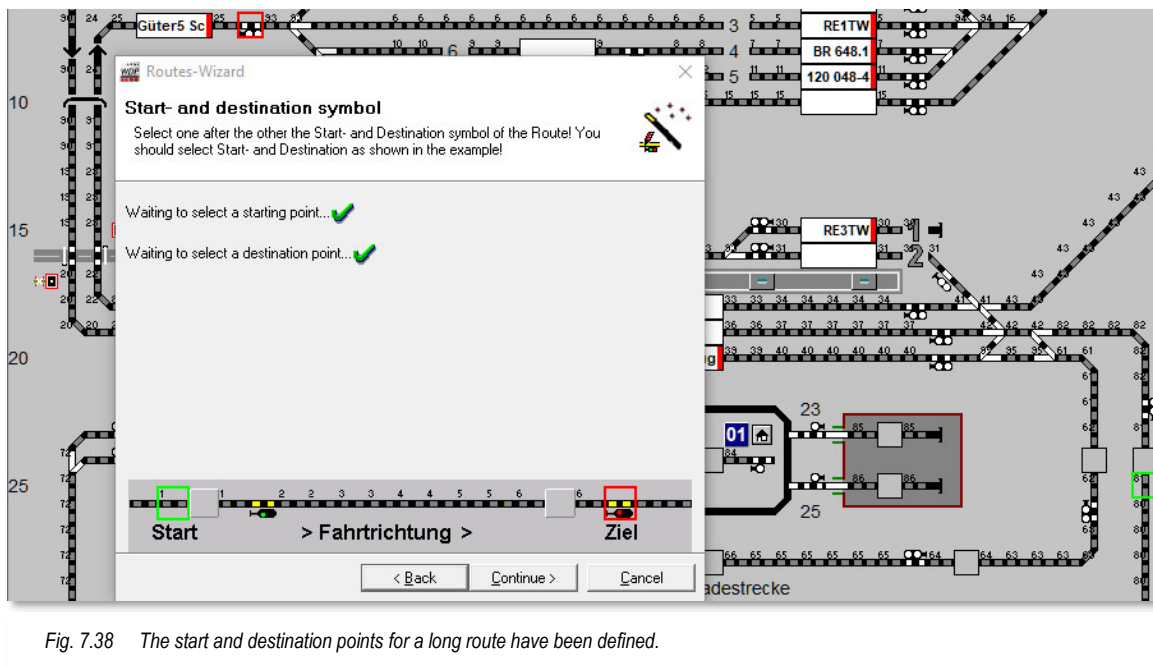
Fig. 7.38   The start and destination points for a long route have been defined.

For section release, set the familiar tick, select the start direction of the route creation and **Win-Digipet** will immediately offer you four possible routes to choose from, whereby the first route found is marked.

When automatically creating sections with the route assistant, only one **first section** is ever created up to the start signal. For long routes, you should create **two** sections, depending on the route. The modification of existing routes is shown in a later section, and you can adapt the routes created here accordingly.

You can sort the entries in the list of variants found in ascending or descending order by clicking on the column heading.

For example, if you click on the *"#FB-C"* column heading, the rows are sorted in ascending or descending order according to the number of feedback contacts contained in the route. You can change the sorting with further clicks on the column header, but the first route found remains selected as long as you do not change this by clicking on another row.
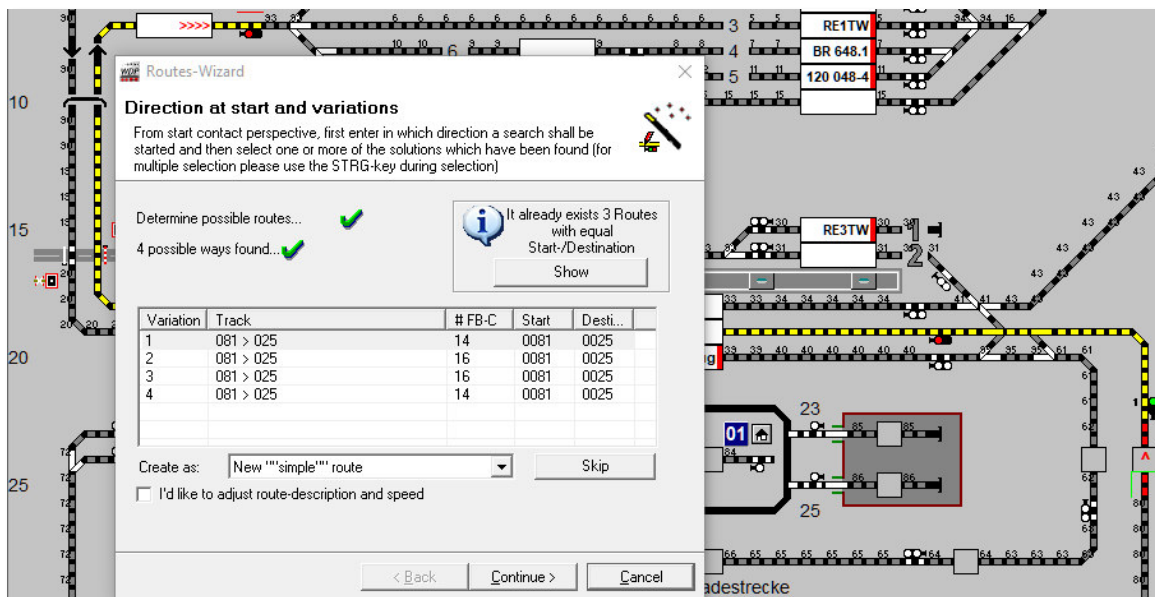
Fig. 7.39   Four possible routes are displayed for the selected start and destination combination.

In this example, you should not only create the route for the first marked line. Click on the four lines one after the other and look at the routes found.

We want to create three routes through Burghausen station from the list of four variants found. Track 3 at the house platform is not included here, as this route is not to be created.
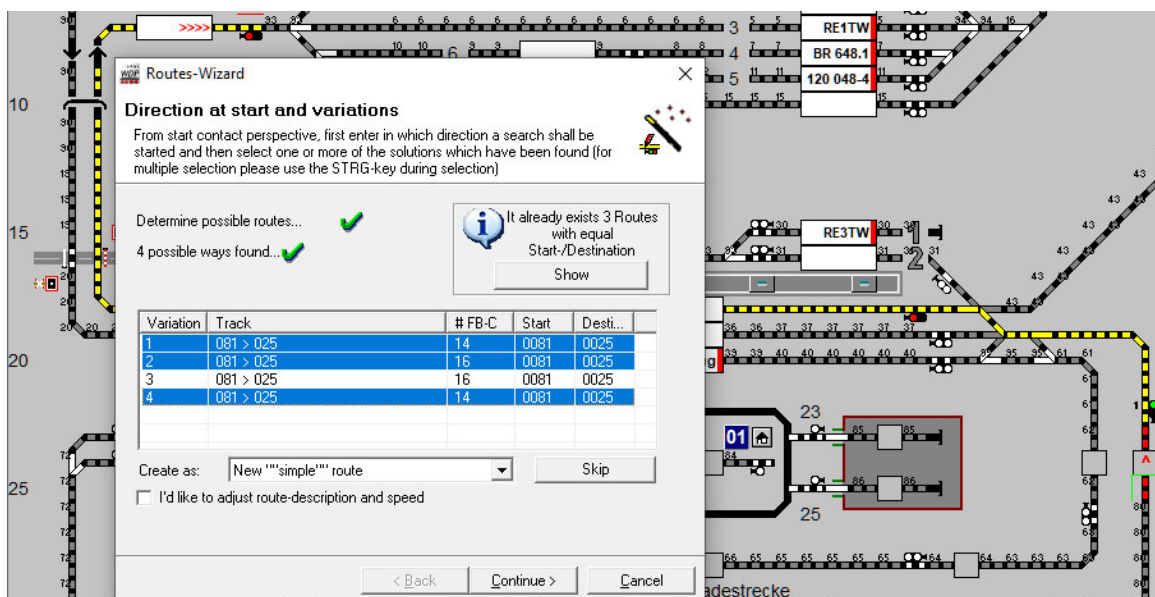
Fig. 7.40   A route should be created for several entries from the variant list.

You can use the Ctrl key and left mouse button combination to activate or deactivate the marking of the route found and mark the desired lines in this way.

The routes for the selected lines are then created in one go after clicking on the **'Continue'** button.

> You should only uncheck the option to optimise the route search in the start direction selection dialogue if a desired route was not found by the route assistant.
>
> If such a route is still not found, you will have to create the desired route semi-automatically or manually. Often there are simply no jump markers in the track diagram at the points where there are interruptions due to track designations and the like.

7.4.7 Record a route semi-automatically without a section.

You can also create a manual or semi-automatic route using the routes wizard. To do this, select the fourth and last entry in the routes wizard and click on the **'Continue'** button.
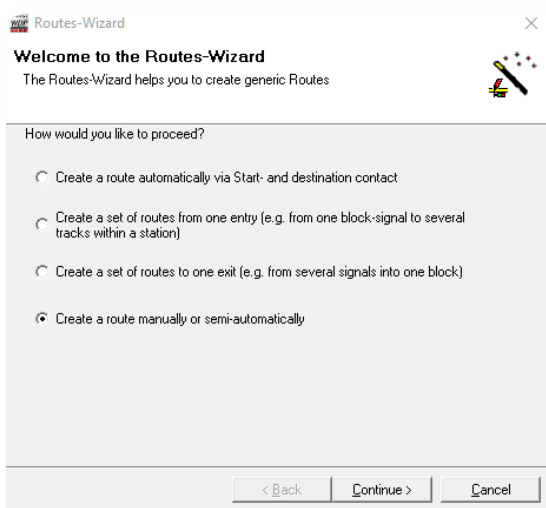
Fig. 7.41   Creating a route manually or semi-automatically.
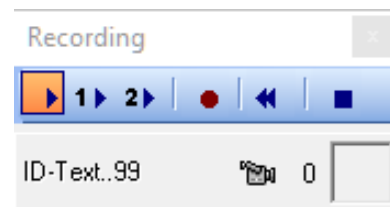
Fig. 7.42   The recording window for a route

A small "Recording" window opens with six symbols, the meaning of which you can immediately recognise from the "Quick info" highlighted in yellow. The ID-Text (e.g. 99) of the route to be recorded is displayed at the bottom left of the window.

> At this point, the basic rule should be mentioned once again that a route in **Win-Digipet** always consists of a main route and can contain up to two partial sections.

Between the camera symbol and the small window on the right with the symbol field (still empty here), ... is displayed.

- 🚂 a **"0"** the main part of the route
- 🚂 a **"1"** the 1st partial section of the route and
- 🚂 a **"2"** the 2nd partial section of the route

⚠️	The small number between the camera and the symbol only changes its value when a turnout, signal, or other symbol (not a track symbol) is recorded and retains this value until the route recording (sections or main route) is changed.

The three symbols ▶1▶2▶ are used to record the route. To record routes **without partial** sections, please only click on the left-hand symbol (main recording) and ignore the other two symbols.

To start the semi-automatic route recording, hold down the <Shift>-key and click with the left mouse button on the start track symbol **to the right** of the start vehicle display (here in the example track 1 Burghausen). The symbol is immediately framed in green. Now, while still holding down the Shift key, click on the destination signal to **the left** of the destination vehicle display in track 3 of Burghausen station.
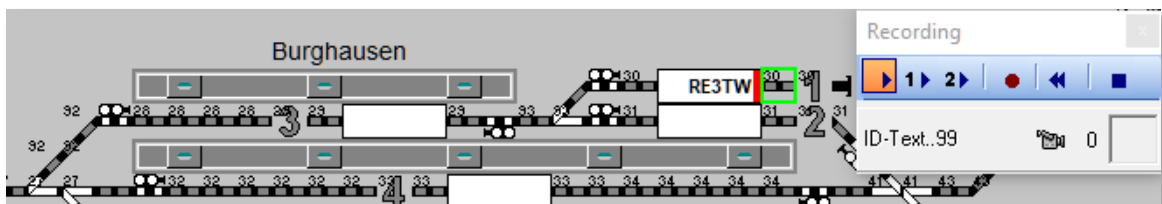
Fig. 7.44   A route without section release is recorded semi-automatically.
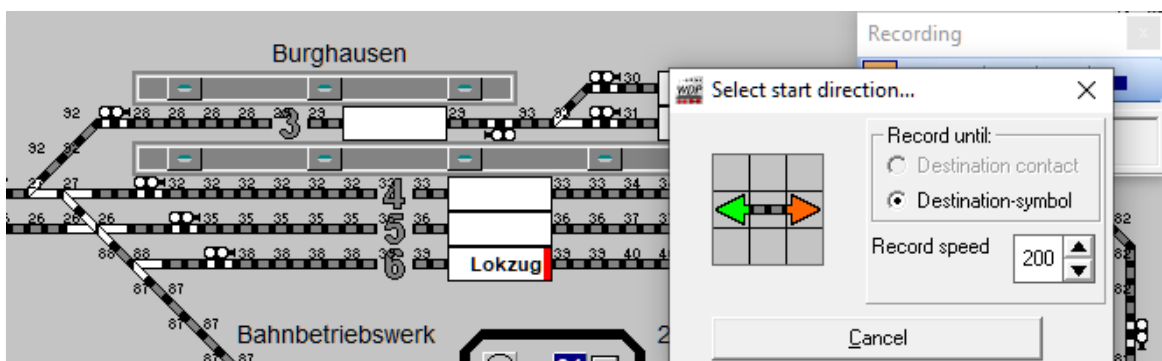
Fig. 7.43   Selecting the start direction for semi-automatic route recording

After clicking the mouse, the *"Select start direction..."* window appears with the various setting options, the meaning of which you can recognise by the "Quick info" highlighted in yellow when you move the mouse over them.

You can set the recording speed between 10 and 200 msec, i.e. during recording the next symbol is illuminated after the set time value.

You cannot change the radio button for *"Record until:"* here because you clicked on the destination symbol with the left mouse button.

Drag the mouse to the left arrow, which will turn green, and left click on the green direction arrow. The small "Select start direction..." window disappears immediately after clicking on the direction arrow. If the recording speed is set to 200 msec. (the default value is 50 msec), the recording of the route can be followed very well on the screen. The feedback contact numbers are also hidden after recording if you have ticked the box in the routes editor under <Options><Always show RM numbers>.

As you can see in the following Fig. 7.45 **Win-Digipet** has recorded the first track sections and marked them in yellow. In addition, the direction information of the route is shown in red in the start vehicle display.
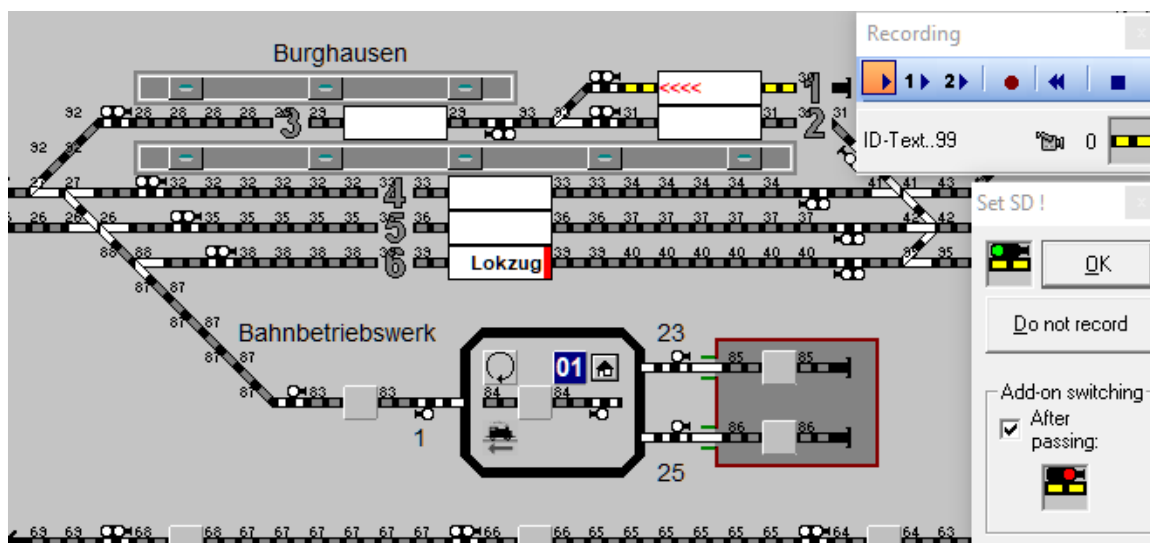
Fig. 7.45   The nominal position of the solenoid device is queried.

The semi-automatic route recording was interrupted at the start signal and the small *"Set SD!"* window with the signal symbol is displayed. Here you must confirm the pre-selected symbol settings or change them by clicking on the symbols in the window.

With the start signal shown here, everything is already set correctly, because the signal should display the signal image Hp1 (green) and after leaving the start contact it should be reset to Hp0 (red).

Therefore, click on the **'OK'** button so that the route recording can be continued.

The recording does not stop at the next turnout and the signal in the opposite direction, as the turnout and signal position is automatically determined here. The symbol display (red signal) is also correct at the destination signal, and you do not need to change anything.
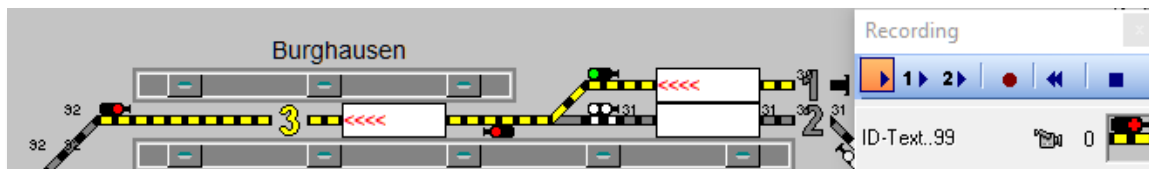
Fig. 7.46   5 route has been recorded up to the destination signal and all solenoid items show the correct position.

The recorded route can now be saved by clicking on the ● button in the recording window.

You should answer *'Yes'* **to** the following question regarding the automatic adoption of the setting conditions etc.
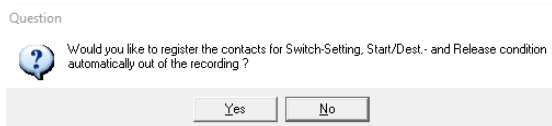
Fig. 7.47   6 contacts for the switching conditions can be entered automatically.

Fig. 7.48   The add-on switching can also be transferred automatically.

Thus the feedback contacts are entered in the correct order of recording in the switching conditions for the route.

Also the start, brake, and destination contacts as well as the release of the route are also automatically transferred to the route in this way.

The next query concerns the sequential switching of the recorded solenoid items. In our example, you have selected the *"Set SD!"* dialogue (see Fig. 7.45), you have switched the first signal back to red after passing.

You can have these follow-up switching's entered automatically by clicking on the **'Yes'** button.

The routes wizard now confirms the creation of the route, and you could now adjust the route description and speeds by ticking the box. However, this should not be done here, so click on the **'Continue'** button.

7.4.8 Record a route semi-automatically/manually with sections.

A route must always be recorded with **all** signals (usually the start and destination signals, but also any signals in the opposite direction).

This is the only way to interlock the route, as only the solenoid items (real or virtual) ensure safety during subsequent operation on the model railway layout.

If a vehicle or train is travelling on a route, the solenoid devices recorded in the route are blocked, so contact with or crossing of the route by other vehicles is impossible.

You can only set the solenoid items of a route without sections for other vehicle movements once the vehicle or train has reached the end, the **destination** of its route and the route has been "released" (release condition fulfilled).

With very long routes with many solenoid devices, this planned safety can sometimes slow down operation in one area of the system or another. To counteract this, but above all to make operation even livelier, you can define up to two sections in each route. These sections are released as soon as they are free, even before the train has reached the destination of its route.

Using the example of a so-called "zigzag marshalling line" with a section of track, this mode of operation will be illustrated once again.

The route here should start in track 2 of Burghausen station, run over track 3 and end in track 1.

Use the routes wizard to start the manual or semi-automatic route creation described in section 7.4.7.
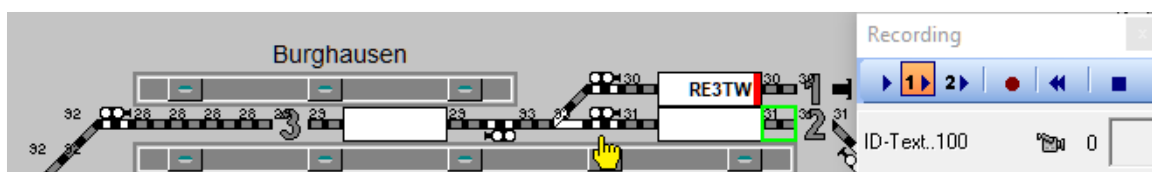
Fig. 7.49   The 1st partial section is recorded.

To record the 1st section, select the switch ![1▶] in the small "Recording" window and then, holding down the <Shift>-key, left-click on the start feedback contact 31 to the right of the start vehicle display (it is framed in green) and then, again holding down the <Shift>-key, left-click on the signal symbol (here the one marked with a yellow hand).

Immediately after clicking, the *"Select start direction..."* window familiar from the previous sections appears again. Drag the mouse over the arrow to the left, which will turn green. If

you now click on the green direction arrow with the left mouse button, the "Select start direction..." window is immediately hidden and the two track sections to the right and left of the start train number field are displayed in red as symbols for the first section. The start signal contained in the first section is marked with a small "1".

The semi-automatic route recording was stopped at the start signal, as this signal marks the end of the first section. You can enter the position of the signal in the *"Set SD!""* window as described in the previous section. As this is a shunting movement, leave the signal symbol in the Hp0 position.
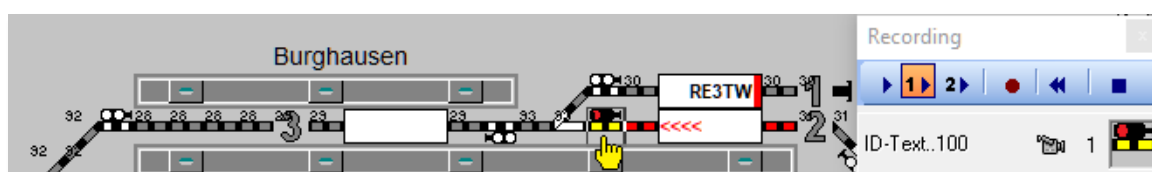
Fig. 7.50   The recording of the 1st partial section is illuminated in red.

The main route recording of the zigzag shunting route should start with the turnout (Burghausen centre), so switch to the main route recording ▶ in the small "Recording" window.

From this point onwards, manual recording should be used instead of semi-automatic route recording as before. With manual recording, the individual symbols are clicked on one after the other with the left mouse button and displayed in yellow to indicate that they belong to the main route.
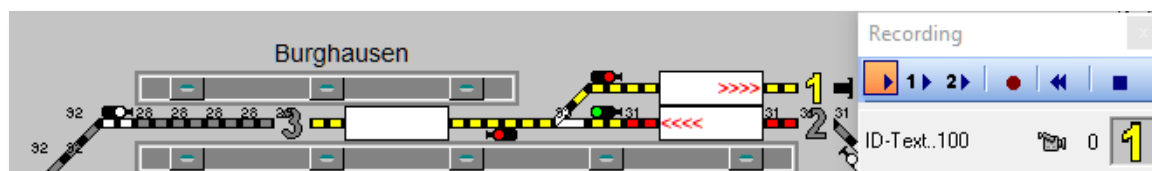
Fig. 7.51   The main route recording is displayed in yellow.

The eastern signal in track 3 of Burghausen is also recorded for the following reasons:

- 🚂 the shunting route can only be set if no train is there yet or is on its way there from the left.

- 🚂 after the zigzag shunting route has been set, no train can travel there, as the signal is interlocked.

During these recording steps, also pay attention to the small numbers between the camera and points or signal symbol in the "Recording" window and the small numbers in the track diagram for labelling the sections.

> You can interrupt the semi-automatic route recording at any time, as already described. When clicking on the start and destination points, you can also proceed in sections, as shown here.
>
> Please note that the recording can only be started or ended on track sections and signals (not on turnouts, three-way turnouts, and double-crossing points).

After reaching feedback contact 29, the locomotive should turn and then reverse to track 1 in Burghausen.

To do this, however, the Burghausen centre turnout must be set to the "branch" position. You can do this with a sequential switching after recording your route or with a profile in which the necessary turn command is also executed. For the moment, this turnout remains in the "Straight" position, as shown in the picture. Click on the symbols for track 1 Burghausen one after the other.

The complete route should now be as shown in Fig. 7.51 and can be saved by clicking on the ● button. After the other already known messages, the control conditions, the sequential switching, and the destination release conditions are entered. The routes wizard now confirms the route creation by clicking on the **'Continue'** button and then on **'Finalize'**; if no further routes are to be created, exit the routes wizard, and return to the routes editor.

The follow-up switching of the turnout must still be entered manually in this case, as the main line was recorded manually in this example. The following graphic shows the entry of the follow-up switching on the corresponding tab of the routes editor.
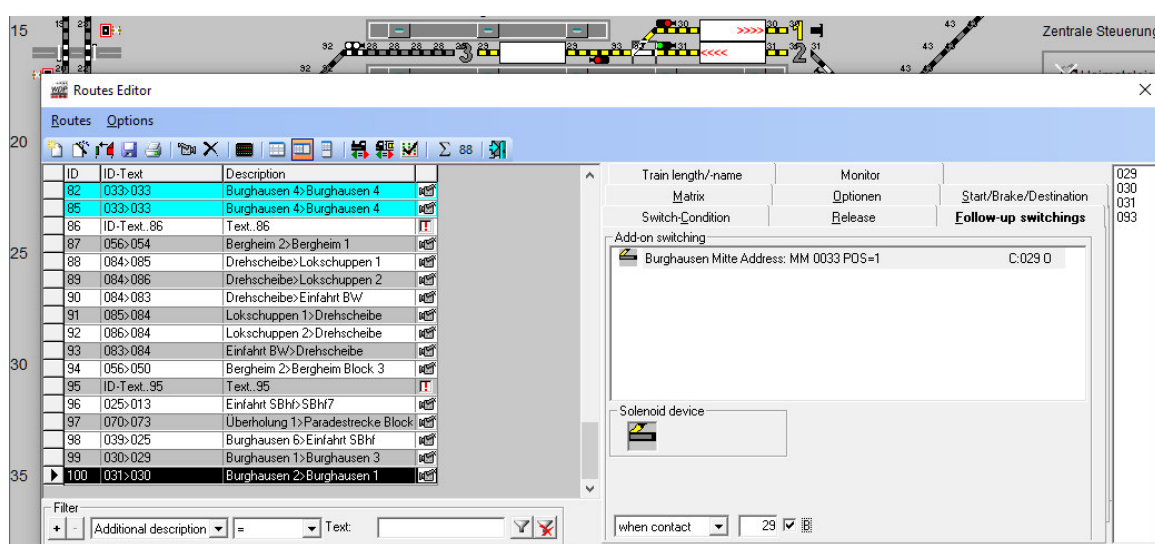
Fig. 7.52   The entry of the sequential circuit for the points in the zigzag manoeuvring route

In this example, the turnout is switched to the "Branch" position as soon as contact 29 is occupied. To do this, first enter the corresponding contact entry and then drag the symbol of the solenoid device from the track diagram into the field provided.

You will learn more about the handling of sequential circuits and follow-up actions later in this chapter, but for now we will leave it at that.

> Creating routes with the convenient routes wizard works very quickly and without errors.
>
> Please note, however, that these routes are only created with **standard settings** for the releases, sequences, and speeds, as **Win-Digipet** cannot know and consider the conditions on your model railway layout in detail.
>
> Therefore, after creating these routes, you will need to "do it again" and correct the following settings if necessary.

Some examples of changes that may be necessary are.

- Change or enter partial section approval(s)
- Change the speed at the brake contact or enter additional line contacts with the corresponding speeds.
- Select stopping point for "intelligent vehicle displays".
- Change the test contact for route sequences or enter a safety contact.

However, it is recommended that you also check the settings not mentioned here and adjust them if necessary.

7.4.9 Create a new route without the routes wizard.

New routes can also be created without the convenient routes wizard. To create new routes, click on the icon in the toolbar of the routes editor. As an alternative to the icon, you can also select the <New> command from the <Routes> menu.

A new line with a unique number assigned by the programme, an ID-Text and a corresponding name is inserted and displayed in the routes editor.
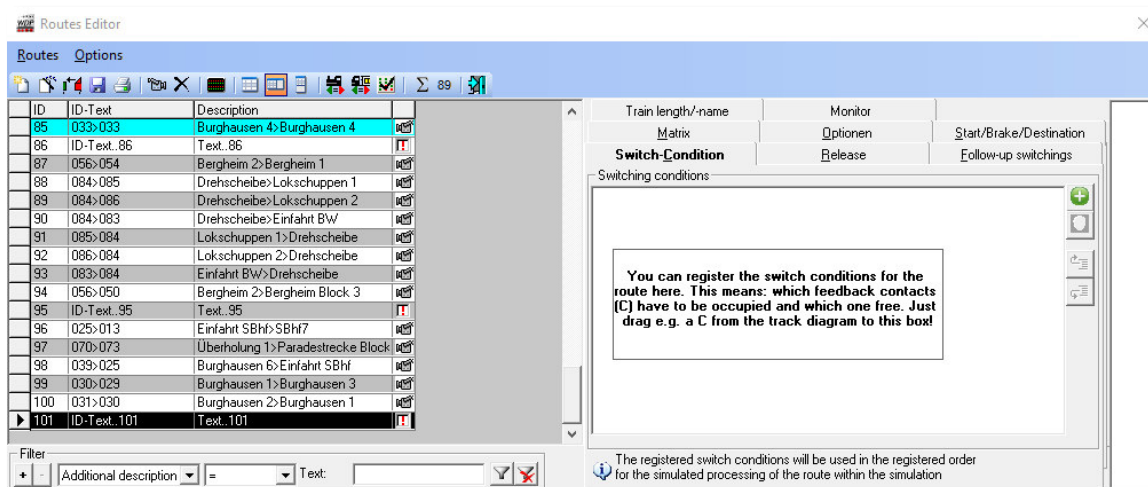
Fig. 7.53   A new empty data record has been created for a route.

To the right of this you will see a red exclamation mark, indicating that the route has not yet been recorded; the data record has been created but not yet filled at this point.

The new data record is displayed in the route list at the end of the list or at the bottom. The new data record can also be displayed at the top by clicking on the "ID" column heading.
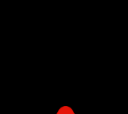
To start route recording, click on the small camera symbol in the toolbar of the routes editor. You carry out route recording in the same way as for manual/semi-automatic recording with the route assistant (see section 7.4.8). It is therefore not described again here.

Carry out the route recording very carefully and in the exact sequence of the contacts to be travelled. You will save yourself a great deal of work if you proceed in this way and answer the above messages with **'Yes'**.

The switching conditions, the target release and the entries for the start, brake and target contacts in the corresponding tabs are made by the programme.

⚠	The exact sequence of the contact entries is very important for the correct sequence in the simulation.

⚠	**Routes with sections must always** include a **main route**, otherwise there will inevitably be problems with approvals and the general process in **Win-Digipet**.
	
	Always specify the sections...
	
	  🚂 where should it begin or end and
	
	  🚂 when and how it should be released,
	
	...so that the operating process is accelerated but remains safe.

Also consider whether your feedback contacts are working properly or whether the train triggers the feedback along its entire length if you want to release the sections with the "*FREE*" option. If this is not always the case, then you can safely release a section with a busy signal from the feedback contact that the **longest train** on the model railway layout reaches at the earliest.

7.5   Change routes automatically created by the routes wizard.

If you have created routes with the routes wizard, you will still have to edit them in many cases. Some of the reasons for this have already been mentioned, including the route sections, the stopping points, or the speeds at the route contacts.

The following sections explain the changes that apply to **all** routes that have **already been created**.

7.5.1   Correct route without driveway changes

A post-processing of a route is always necessary if the route has been recorded correctly in the route, but the signal positions, the speed at the brake contact or additional speed changes at other route contacts are to be entered, for example.

To do this, with the routes editor open, click with the middle mouse button on the start **vehicle display** of the route you are looking for in the track diagram and then click again with the middle mouse button on the destination **vehicle display**. The route is highlighted in the list and illuminated in yellow in the track diagram. All other routes are hidden in the route list and can be shown again by resetting the filter ![filter icon] at the bottom of the routes editor.
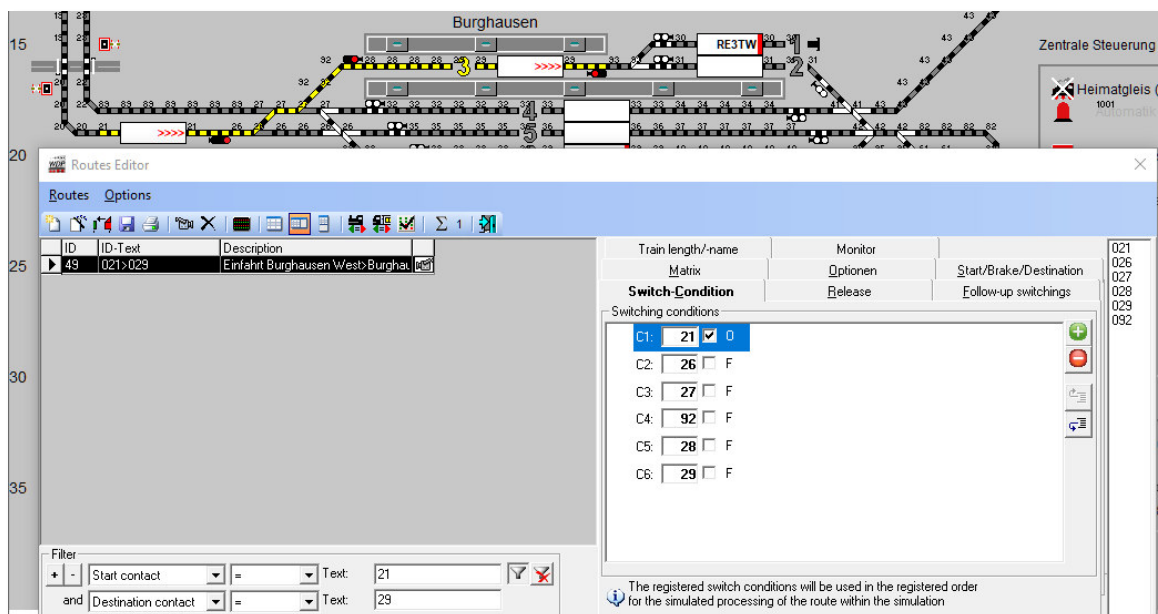
Fig. 7.54   Selecting a route in the routes editor.

As you can see in Fig. 7.54 the route 021>029 was recorded with the entry signal Hp0 (red) in the signal position. This should now be changed subsequently, as the signal should display Hp2 (green, yellow) when travelling over the downstream points.
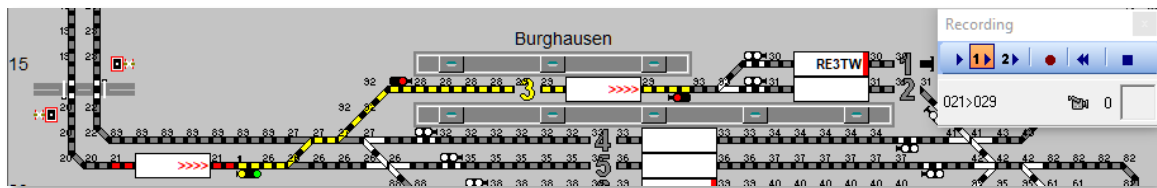
Fig. 7.55 The setting of the signal was corrected in the route recording.

To correct the route recording, click on the camera icon [icon] in the toolbar of the routes editor.

The route has only been recorded with a route section 1 and a main route, so in this example you must ensure that the signal belongs to route section "1".

Now click several times on the signal symbol in the track diagram until it displays the desired position (here Hp2).

Save your changes again by clicking on the [icon] icon in the recording window, exit recording mode and save the route in the routes editor by clicking on the [icon] icon.

7.5.2 Change route with sections.

For long routes, it often makes sense to set them up with sections. The route with ID no. 50 and ID text 021>068 should serve as an example. In this example, a long route leads from Burghausen station to the overtaking area. To speed up the process in the station, a second section should be set up in the station across the exit points.
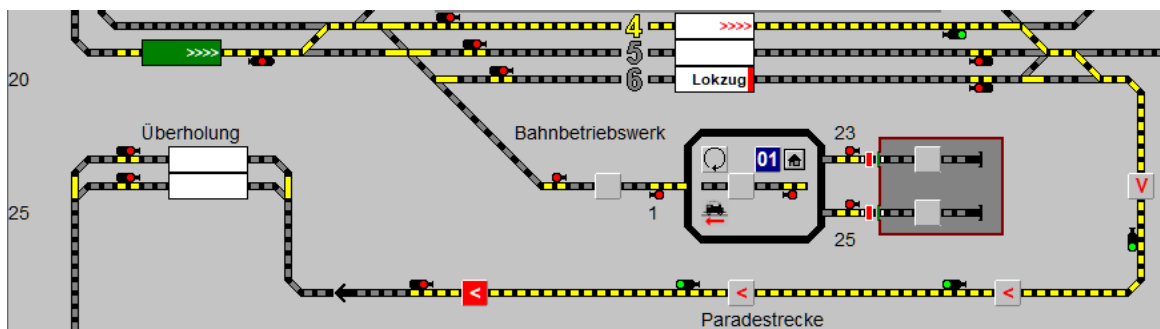
Fig. 7.56 A second section is added to a route with one section.

After selecting the route, you have created, click on the [icon] icon in the toolbar of the routes editor to access the recording mode for routes.

The route was recorded with a section up to the first signal. The entire rest of the route has so far been defined as the main route. You can recognise this by the red marking of the start contact 21 and the small "1" at the first signal.
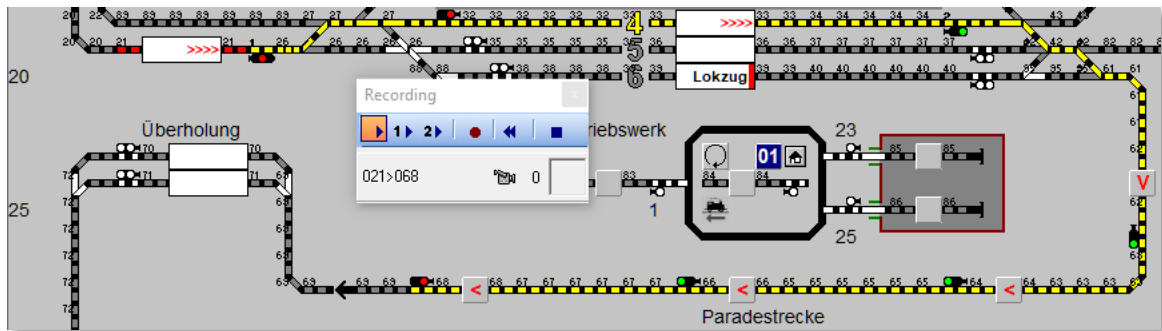
Fig. 7.57   The route runs without a second partial section through Burghausen station to the destination.

The route is now to be adapted so that a second partial section, starting at contact 27, is set up through station track 4 to the exit switch field.

To do this, select the **"2"** button in the *"Recording"* window to set up the second partial section. Now select all the symbols that are to be added to the 2nd section. You can either do this manually by clicking on each individual symbol or you can conveniently use the semi-automatic route recording function, as described in the previous sections of this documentation.
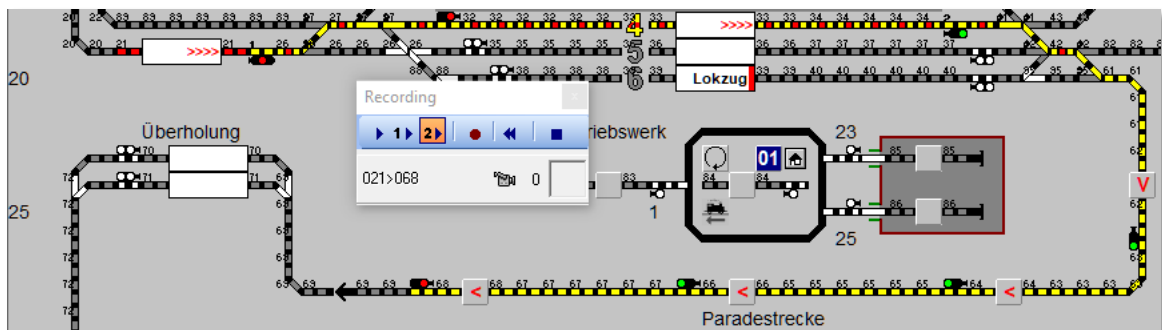
Fig. 7.58   The symbols for the second partial section release have been recorded.

The result should be as shown in Fig. 7.58. You can see that all track symbols belonging to the 2nd partial section are now marked in yellow/red. All solenoid devices belonging to the 2nd section are labelled with a small "**2**".

You can save your changes again by clicking on the ● icon in the recording window.

⚠ It can happen that the small numbers on the solenoid items are not easily recognisable. In such a case, change the zoom level of your track diagram or select a different symbol table during this work.

This time, answer the following question about automatic acceptance of the control conditions etc. with '**No'**, as no feedback contacts etc. have been added or changed.

Since a second section has been created, you must subsequently change or add to the existing entries on the *"Release"* tab of the routes editor.

The C1 field of section release 2 is still marked red in this dialogue. A red field indicates an error in **Win-Digipet.** At this point, this is the missing entry for the partial route release. Enter FB-No. 61 in the "Partial route release *2"* field and the field previously marked red is no longer visible.
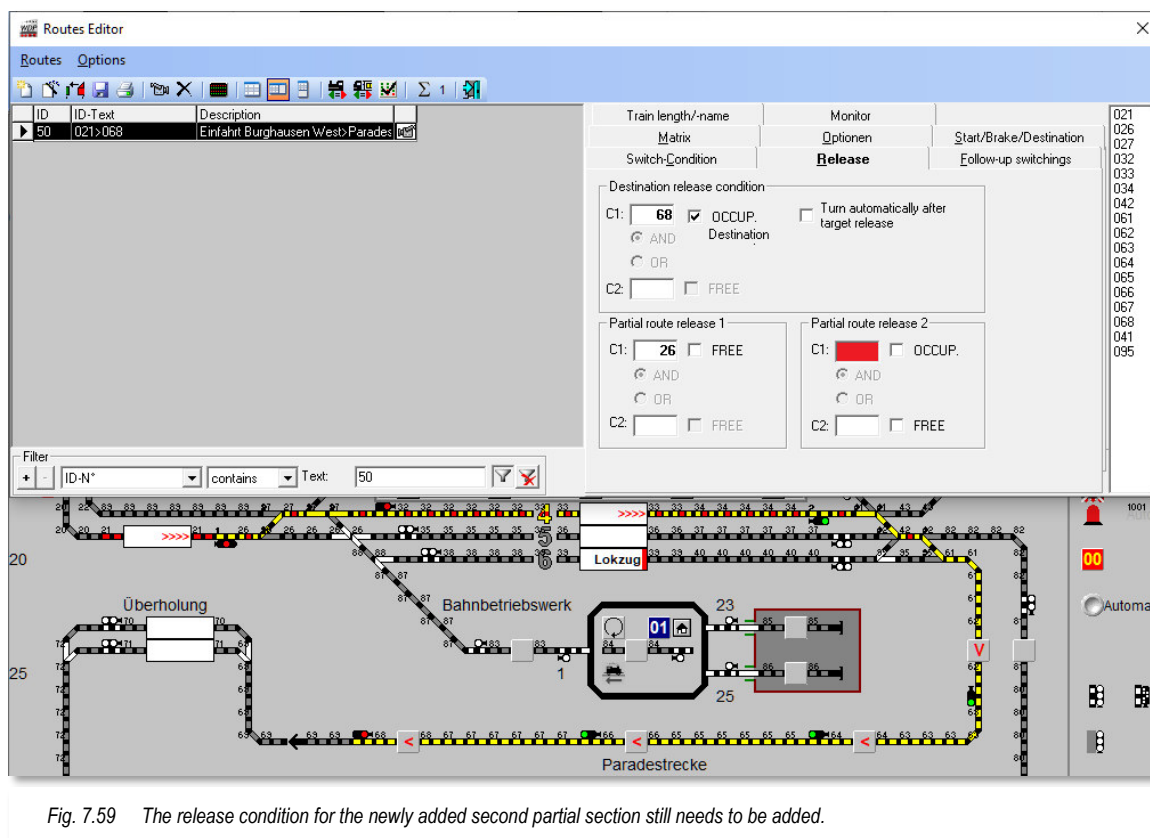
Fig. 7.59   The release condition for the newly added second partial section still needs to be added.

To the right of the field with the entered contact number (here 61) next to the field, a tick with "*O*" is set as standard. This means that the second section is released as soon as contact 061 reports "Occupied".

However, both sections should be entered with *"FREE (F)"*, and therefore remove the tick with a click of the left mouse button, now the section is only released again when the entered contact **was occupied and** is **free again.**

The details for the section releases should now be as shown in Fig. 7.60and the changes made are saved by clicking on the 💾 icon in the toolbar of the routes editor.
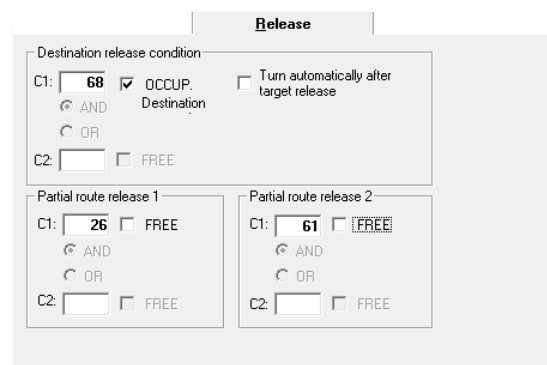
Fig. 7.60   The contact for the second section release has been entered.

7.5.3   Change route no longer required.

If you no longer need a route you have created, you can delete it or use it to create a new route.

To change an existing route recording, click on the 🎬 icon in the bar and the "*Recording"* window will appear immediately.

To delete the existing route recording displayed in **Win-Digipet**, click on the symbol ◀◀ , whereupon the previous route recording is reset.

The remaining data record for the route is now "empty" and you can start recording the route again manually or semi-automatically.

Once you have completed the route recording, click on the 🔴 icon to save your recording.

In this case, always answer **'Yes'** to the following questions regarding the transfer of the positioning conditions etc. and the sequential circuits, as the route has been completely re-recorded and the routes editor is displayed again.

Finally, you must rename the route by <u>right-clicking </u>on the list entry of the newly recorded route and selecting the entry *"Name route automatically"* from the short menu that appears.

7.6 Route list

After you have closed the routes wizard, the routes editor appears again with the automatically entered routes. The last route created is marked in the route list and is highlighted in yellow in the track diagram.
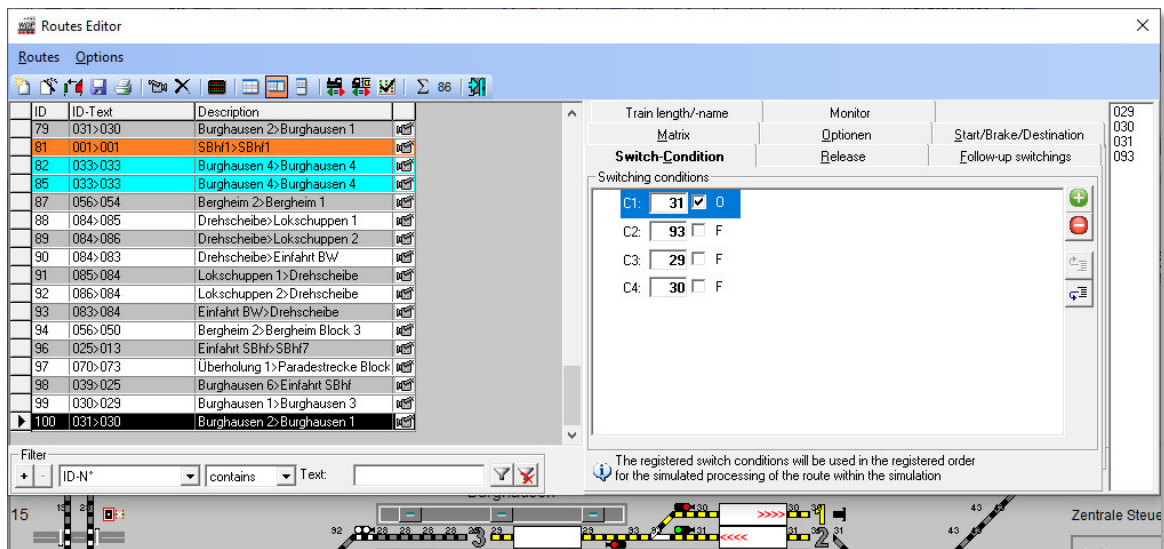
Fig. 7.61   7 route list with the most recently created, marked route.

The route list, which contains all routes in the project, is located on the left-hand side of the routes editor window.

Up to nine associated tabs are arranged to the right. These tabs contain all the parameters associated with the selected route. You can check these for correctness or add to them if necessary. The most important entries have already been entered for you by the routes wizard.

The parameters of a route include.

- Switching conditions,
- Release,
- Follow-up switching,
- Matrix,
- Options
- Start/brake/destination definitions.
- Train length/ name
- Monitoring
- Coupling options (only visible with train coupling route in expert mode)
- Disconnection options (only visible with train division route in expert mode)

The tab set (detail area) can be hidden or moved downwards. To do this, use the three icons [icons] in the toolbar of the routes editor to hide the detail area of the editor or to arrange it to the right or below the route list. You can see which display is triggered by the "Quick info" highlighted in yellow on each symbol.

The "No detail area" function reduces the overall view of the routes editor. This view helps to obtain a larger overview of your track diagram when searching for a specific route via the route list.

> If you have an extensive route list, the start/destination function (click with the middle mouse button on the start vehicle display and then click again with the middle mouse button on the destination vehicle display) very quickly displays the desired route(s).
>
> The routes found are displayed "filtered" from the overall list.
>
> The filtered and marked route is highlighted in yellow in the track diagram and only the routes found by the system are listed in the route list.

The following image shows a route selected with the start/destination function with the corresponding illuminated route. A route was found for the route from the SBhf entrance to SBhf track 2.
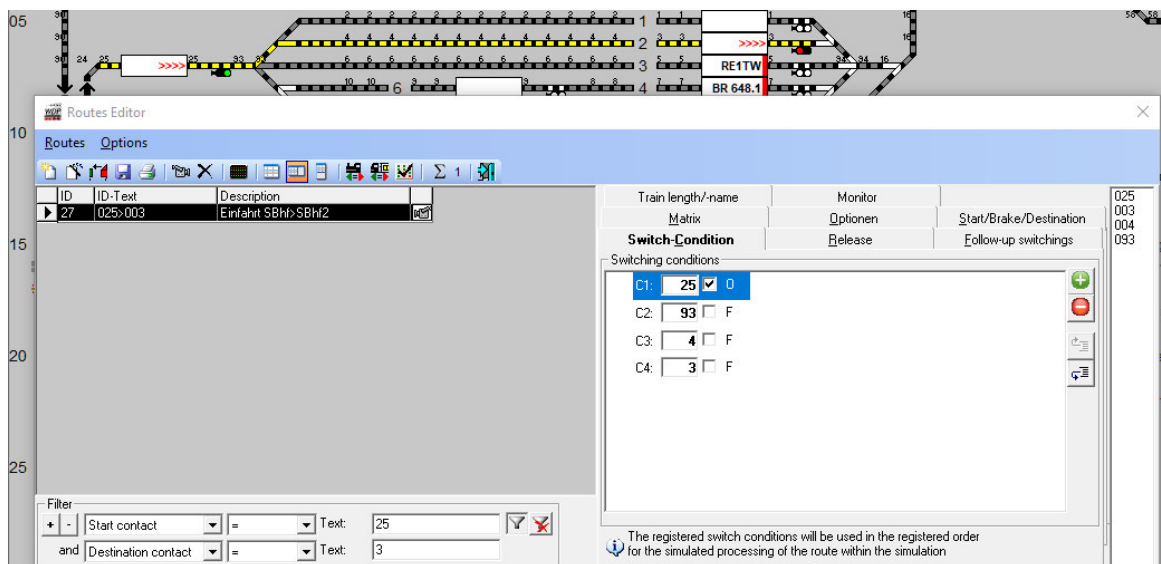
Fig. 7.62   A route was "filtered" from the route list using the start-destination function.

You can easily edit the entries in the ID-Text and Description columns of the route list. Activate the relevant route by clicking on its list line - it will be highlighted in black. A second click in the corresponding list column opens the input cursor for overwriting. To the left of

the ID number, you will also see a small pencil to indicate the editing option. To save your changes, click on the ⊞ icon in the toolbar.

7.6.1 Name the route.

The programme must of course be able to clearly identify each route. In addition to the ID number, it uses the "ID-Text" (identification text), an entry with a maximum length of 15 characters, which was automatically assigned by the route assistant or which you assign yourself and enter here.

> The clear recommendation is the automatic naming of routes by the routes editor or the routes wizard. Only special routes, which may exist several times with the same name, should be clearly labelled.

The great advantage here is that you can later use the various search functions of the routes editor to search for routes very quickly and specifically. This labelling is also very advantageous when recording routes, as you can find your way around very quickly when the feedback contact numbers are displayed.

Under "*Description"* of the route, enter a text with a maximum of 50 characters, e.g. "Entry Burghausen GI 1" or as the route assistant does with e.g. "Entry SBhf>SBhf2" (cf. Fig. 7.62) automatically. The descriptions used here are the name of the vehicle displays that you have already learnt about in the chapter 6 "Vehicle displays" .

Internally in the programme, each route also receives a unique ID number for further identification, but this is not displayed in the main programme. You will find this ID number in the first column of the route list; you will encounter it again later in the profile editor and in the higher automatic functions of **Win-Digipet.**

> In principle, it is completely irrelevant for the programme sequence whether the ID numbers are in the correct order or whether this order is complete. An ID number that has been used once by the programme for a route cannot be used again, even if the route has been deleted.

Once the ID-Text and description have been entered and/or changed, click on the ⊞ icon in the toolbar of the routes editor.

You can recognise a recorded route by the fact that the 🖼 symbol appears next to the description, otherwise a red "!" exclamation mark would be displayed. This exclamation

mark indicates that although a route has been created, it has not yet been recorded. There is an empty envelope for a route. The camera symbol indicates that the route has also been recorded.

If you find a line in your route list in which the ID text and description have the same content, the vehicle displays have been created in accordance with section 6 have not been assigned a description. Please make up for this and rename the route.

After marking the line, right-click and select the menu command <Name route automatically>.
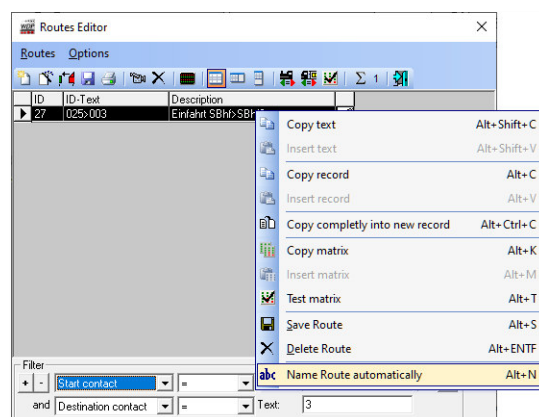
Fig. 7.63   Naming a route automatically.

7.6.2 Changing, copying, and pasting routes in the list

When in a list line with the right mouse button, a short menu opens with the various command lines.

You can save the ID-Text and the description of an activated list line with <copy texts>, activate another list line and transfer it to with <insert texts>.

You can also save the entire recording of the route - not just the text - of this list line with <Copy record>, activate another list line, select <Insert record> with the right mouse button and copy the route recording to by clicking on the list line. You also have the option of copying the selected data record completely to a new data record. This is useful, for example, if the new route created is only to apply to one vehicle or train.
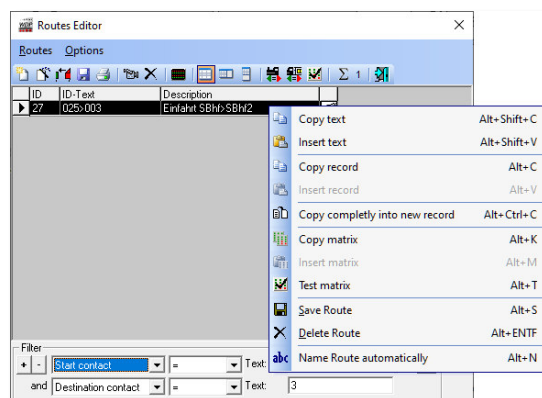
Fig. 7.64   8 for various route operations

Be very precise when creating routes, especially when copying them to new data records, and then correcting the route recording and the other data on the other tabs.

Smooth driving with **Win-Digipet** will thank you later.

And remember that a normal route always begins **one track section before** the start vehicle display and ends **at the** destination signal or viewed in the direction of travel, at the track section behind the destination vehicle display.

7.6.3 Additional columns in the route list

Optional three additional columns can be displayed in the route list via the menu item <Options><Column selection>. These are in detail:

- 🚂 Start contact.
- 🚂 Destination contact
- 🚂 Additional description

In the additional description column, you can enter a short note on the relevant data record and customise the font and background colour of this entry.
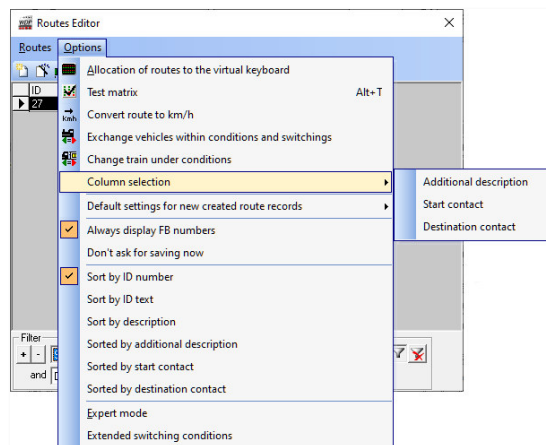
Fig. 7.65   Additional columns for the route list

7.6.4 Delete routes.

To delete a route, select the corresponding entry in the route list with a mouse click and then click on the icon ✖ in the toolbar of the routes editor.

As with all databases (vehicle, route, profile, and route sequence database) in **Win-Digipet,** at least one data record must remain.

The ID number of the data record is irrelevant.

7.6.5 Always display feedback contacts

So that the numbers of the feedback contacts are displayed in the track diagram **each time** the routes editor is started, click on the <Options> menu command in the routes editor and tick <Always display FB numbers>.

The feedback contact numbers are then added to all feedback-capable symbols (tracks, turnouts, etc.) as small digits in the track diagram. This display has the great advantage that you can immediately see which track sections have already been recorded when recording the route, as this small number disappears from the track diagram when you click on the track sections, etc. If you do not wish to use this function, uncheck this function.

You should **not** create routes using the DB or SP3 symbol tables, as it is difficult to recognise the small digits ("1" and "2" on solenoid devices in partial route sections) when recording sections. Try it out...

7.6.6 Sorting functions in the routes editor

If you want the routes in the route list are to be displayed in a specific order, click on the <Options> menu command and then tick the desired sort order. Here you have the option of sorting the data records according to three criteria.

You can also sort the routes list by simply clicking on the column heading of the list (ID, ID-Text or description). You will certainly be familiar with this functionality from other Windows applications such as Windows Explorer.

Each click on the desired header changes the sort order (descending / ascending).
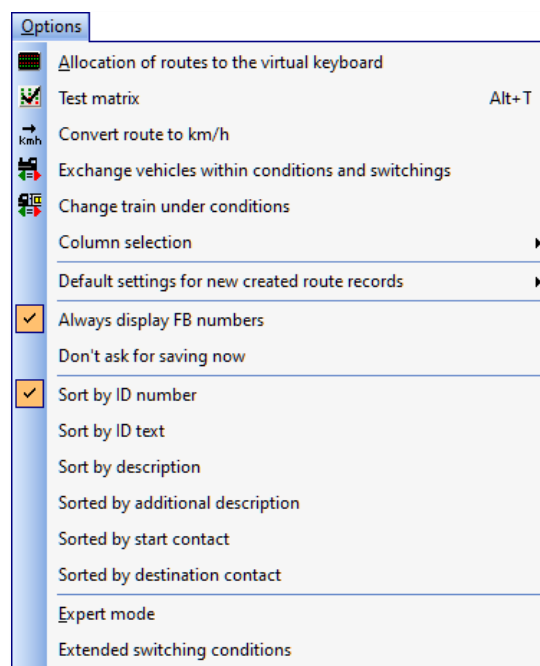
Fig. 7.66   The options menu with the sorting functions

7.6.7 Filter function in the route list

With the filter function at the bottom of the routes editor allows you to find a specific route or a group of routes within the route list very quickly. In Fig. 7.67 for example, all routes whose ID-Text begins with the character string "021" are found after clicking on the funnel symbol and displayed in the now "filtered" route list.

You can refine the "Filter" in the left selection window using the criteria in the centre selection window and enter your desired search text in the "*Text:*" input field on the right.

You can also subdivide the search result more finely by adding further filter criteria. To do this, select the icon. Conversely, added filters can be removed again using the symbol.
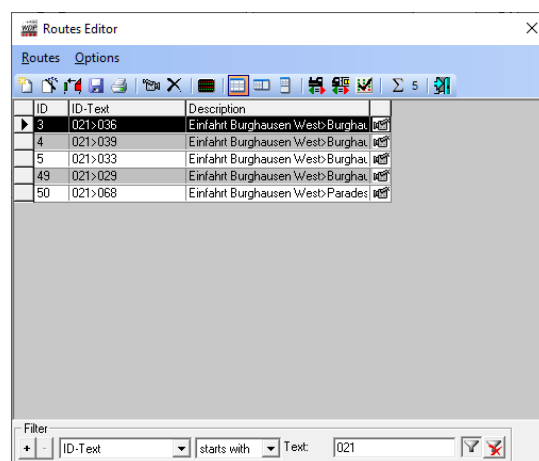
Fig. 7.67   A "filtered" route list.

The following entries are available in the filter selection:

- ID number
- ID-Text
- Description
- Route
- Vehicle address
- Additional description
- Start contact.
- Target contact

The possible criteria for the filters are.

- Starts with
- Contains
- Ends with
- Is equal to (=)
- All

After your selection and input, click on the ⌑ icon to trigger the filter function. All routes that fulfil one of the search criteria appear in the list window and the first route of the selection found is also highlighted in yellow in the track diagram.

You can reset a "filtered" list using the symbol ⌧ . After clicking on this symbol, the complete route list is displayed again in the routes editor.

You can find a specific route within the track diagram even **more quickly** using the start/destination function. With the routes editor open, click with the <u>middle mouse button on </u>the start **vehicle display** of the route you are looking for in the track diagram and then click again with the <u>middle mouse button </u>on the **destination** vehicle display. **All** routes with the selected start and destination points are then listed in the route list.

Another "trick" for filtering routes is to double-click with the <u>middle mouse button on </u>a track symbol with an FB-No. to list all routes that contain this contact. Give it a try!

7.7 Record positioning conditions, releases, start, brake, and target contacts

When creating routes with the routes wizard, all positioning conditions, the target release, the start, brake, and target contact are entered automatically.

However, you should always check this information, as the route assistant always enters the route **sections** as "*FREE*"". If this is not desired, you must change this.

When recording routes manually or semi-automatically without the route assistant, **no** section releases are entered automatically.

> To ensure smooth operation, it is essential that the positioning and release conditions as well as the start and finish contacts are entered for each route.
>
> In contrast, the information on the "Follow-up switching", "Matrix", "Options" and train length/name tabs is not necessary.

7.7.1 Switch-condition tab

As mentioned above, the switch conditions are entered automatically when creating routes with the routes wizard.

However, if you have recorded the route manually or semi-automatically without the route assistant, you should answer **'Yes' to** the subsequent question about accepting the switching conditions after saving the recording. Only by clicking on the **'Yes'** button will the data be entered on the "Switching conditions" tab of **Win-Digipet.**

What is a switching condition?

The switching condition of a route is explained by the fact that the contact properties specified here must apply, i.e. all contacts entered in the route and here must have the specified status.

The "Switching-conditions" tab contains all the information on the conditions under which the recorded route, whose ID-Text and description are shown on the left in the route list, can be set and the vehicle or train travels the specified route.

The switching conditions for the execution of a route are usually:

- Start contact occupied (this is also where the vehicle or train is located)
- All other route contacts are free and
- the target contact is also free.

The Fig. 7.68 shows a simple example of the switching conditions for a route. To execute this route, the start contact (FB-No. 25) must be engaged (occupied), while all other

feedback contacts must be "free". You can see that contact 25 is marked with a tick and an "O". At this point, the "O" stands for "occupied", while an "F" means "free".
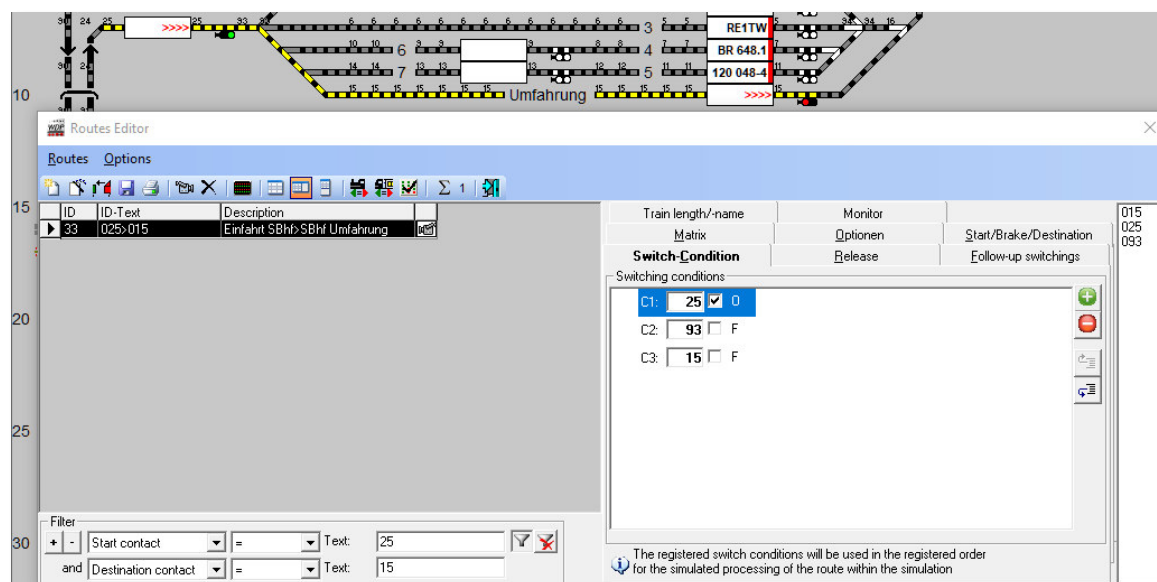
Fig. 7.68   The switching-conditions specify the status that the entered feedback contacts must have to set the route.

If you answered **'No'** to the above question about automatic data transfer, you must now enter all the feedback contacts for the route yourself.

In the right-hand column, you will find a list of all contacts that were recorded for this route. Click on the contact number that you want to enter in the tab; it will be highlighted in blue. Hold down the left mouse button, drag the number to the input field and release the left mouse button ("drag & drop"). Alternatively, you can also enter the feedback contact numbers using the 🟢 symbol. Enter the desired contact number using the keyboard. Entries can be removed from the list using the 🔴 symbol. A route can contain up to 64 (C1 to C64) feedback contacts.

When entering the data manually, however, make sure that the contacts in the route are in the correct (real) order, i.e. the contacts are triggered in the sequence in which the route is travelled based on its direction information. For our example, this means the contact sequence 25, 93 and 15.

7.7.2   Add switching conditions for stub track.

For various routes, it may be useful to add the route recording manually after the route has been created. In the following example, this is shown using a track with a buffer stop at the end.
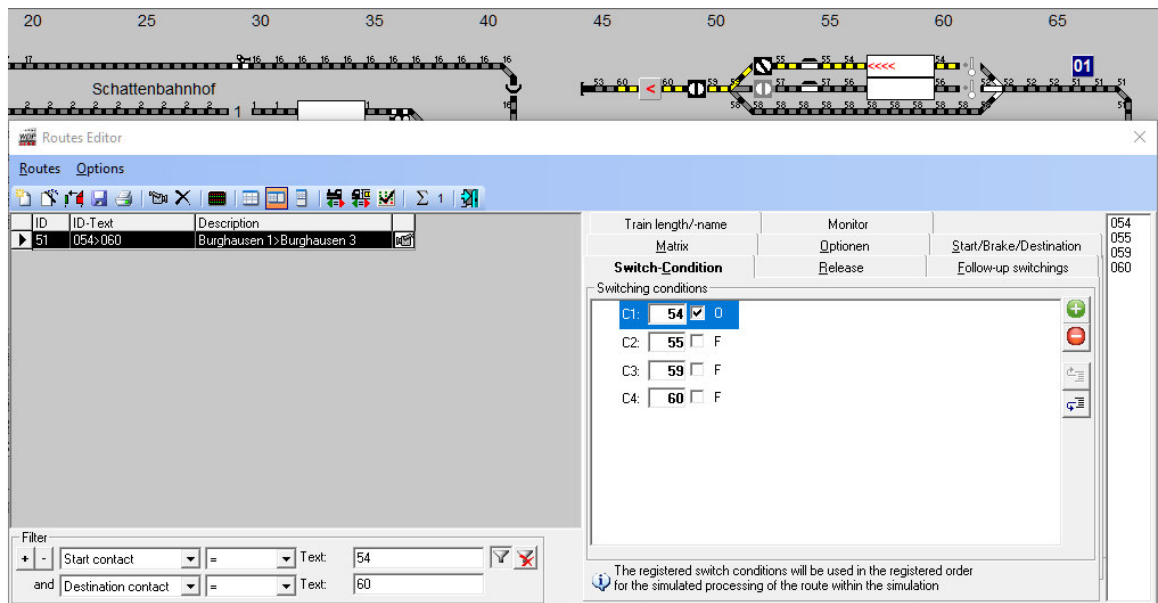
Fig. 7.69   The feedback contact (53) after the destination vehicle display was not detected by the automatic route recording.

The route shown was created automatically with the route assistant. It starts in front of the vehicle display in track 1 of Bergheim station (FB-No. 54) and ends behind the vehicle display in the stub track. The number of the contact for the vehicle display is 60. There is another contact with the number 53 in front of the buffer stop, but this contact was correctly not recorded as it does not represent the destination contact with the vehicle display.

To ensure that this feedback contact 53 can also be checked for "FREE*"* before the route is set, it must be added to the setting conditions of the route already created.

You could now simply enter the number 53 using the procedure described in the previous section by adding it and entering it on the keyboard, but then this field will be highlighted in yellow as a warning, as contact 53 has not been recorded in the route.

To include contact 53 as part of the route in the route conditions, you must record it subsequently. You can do this as usual using the camera icon 📷 in the toolbar of the routes editor.

In the "Recording" window, click once on the track symbol with the FB-No. 53 to be recorded, here in the example with the selection "Main line". This is immediately displayed in yellow, and you only need to click on the symbol 🔴 to save the correction of the route recording.

You must answer *'No'* to the subsequent message after accepting the positioning and other conditions, otherwise only feedback contact 53 would be entered in the list of positioning conditions and the existing contacts would be discarded.

Also, the data entered on the other tabs would then be incorrect and would have to be changed manually.

However, as you have answered the message with **'No'**, nothing is changed on the tabs for this route and the positioning conditions only need to be supplemented by the subsequently recorded contact 53.
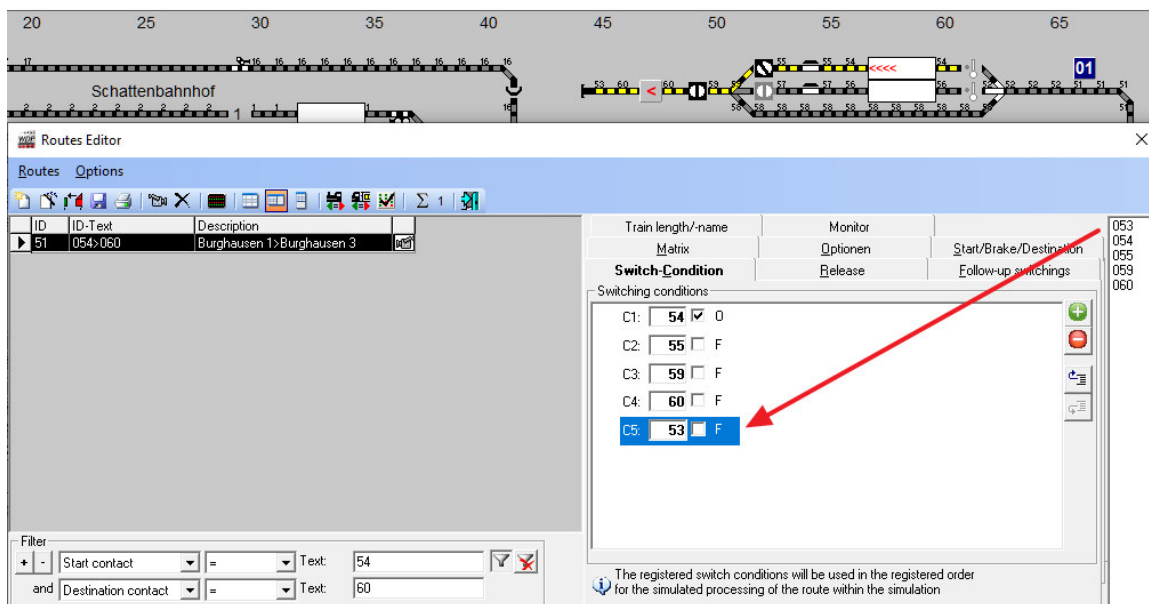
Fig. 7.70   The subsequently recorded contact is added to the positioning conditions.

In the routes editor, you can see the feedback contact numbers of all feedback contacts recorded within the route in the right-hand column. The subsequently entered contact 53 is now also listed here (see Fig. 7.70).

Click on contact number 53 in the right-hand column, it will be highlighted in blue, hold down the left mouse button and drag the number to the last position in the list and release the left mouse button ("drag & drop"). Contact 53 is then entered in the list.

Use the information on the tab to determine the control conditions for this route, whereby in the example the start contact is entered as "Occupied" and all other contacts as "*Free*".

Click on the symbol 🔲 to save the change to the route.

7.7.3   Change switching conditions for return journey.

If your trains not only stop at their destination and then continue in the same direction, but also return in the direction they came from after stopping, i.e. **turn**, then you may have to change the automatically entered positioning conditions of the (automatically) generated route. This applies to vehicle displays that are not set up as intelligent vehicle displays.

"Why do I have to change the parking conditions if I'm travelling back by train?"

The answer is: "Because on the return journey of the train, depending on its length, feedback contacts are occupied, but they are set to "FREE" in the switching conditions".

The following example of the stub track in Bergheim will illustrate this. The start contacts for route 060>056 is contact 60 here. There is a second contact in the track, directly at the blocking signal, with the number 59. The vehicle display in this track is set up as a normal vehicle display.

A train has arrived on the track which, due to its length, occupies both above-mentioned feedback contacts after the stop. After a turn, the train should now start its return journey to Bergheim station.
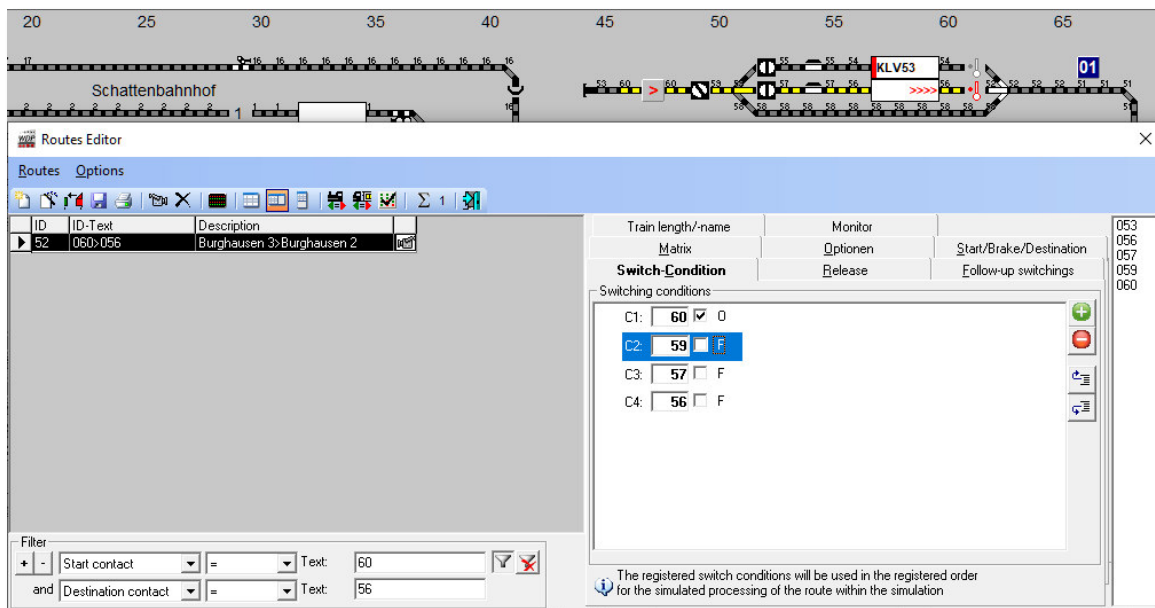
Fig. 7.71   9 switching conditions for the exit from the stub track may have to be adjusted.

In the setting conditions of route 060>056, start contact 60 has been entered as "*OCCUPIED"* and all other contacts as "*FREE"*. This was entered by the route assistant in accordance with the basic rule for a route.

However, depending on the length of the retracted train, contact 59 may still be illuminated as occupied. This also depends on whether all wheels of the train trigger a feedback signal or not.

To allow a long train that reports both contacts of the track as occupied to set off again safely, you could simply delete the contact entry "C2" and thus remove it from the check of the setting conditions.

However, the more elegant way is to enter the relevant contact with "*F/O"* for free **or** occupied (neutral).

To do this, click several times with the left mouse button in the checkbox in front of the "*F"* and until the programme displays "F/O". The result shows the Fig. 7.72 for the feedback contact 59.
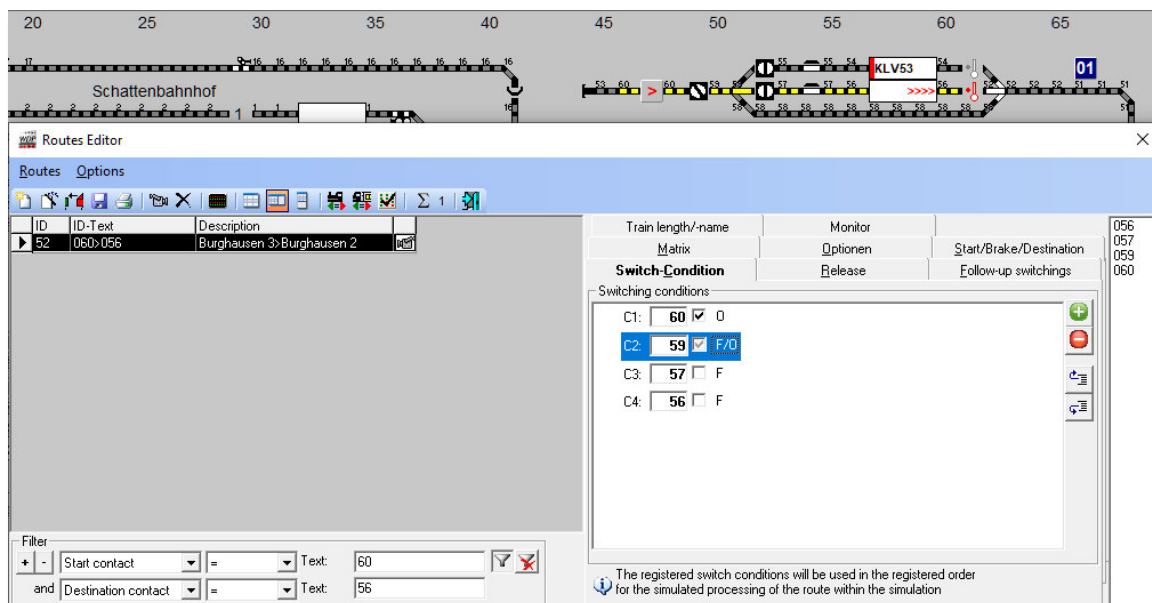
*Fig. 7.72   The switching condition for contact 59 has been changed to "**F**ree/**O**ccupied".*

If you did not change the control conditions in this example, the train would never be able to move off if contact 59 was occupied, because the control conditions would not be fulfilled and **Win-Digipet** would acknowledge this with an error message, "*Switch condition K59=0 not fulfilled"* in the start/destination selection window.

7.7.4   *Warnings for the operating conditions*

For this example, the feedback contacts 53 was also entered in the control conditions of the route. As this contact does not belong to the originally recorded route, it is highlighted in yellow in the list of actuating conditions.

However, **Win-Digipet** cannot judge whether this contact entry is an error or, for example, whether it has been entered additionally in a route to protect against flank travel, the yellow warning is displayed, and you can decide for yourself whether the entry is correct.
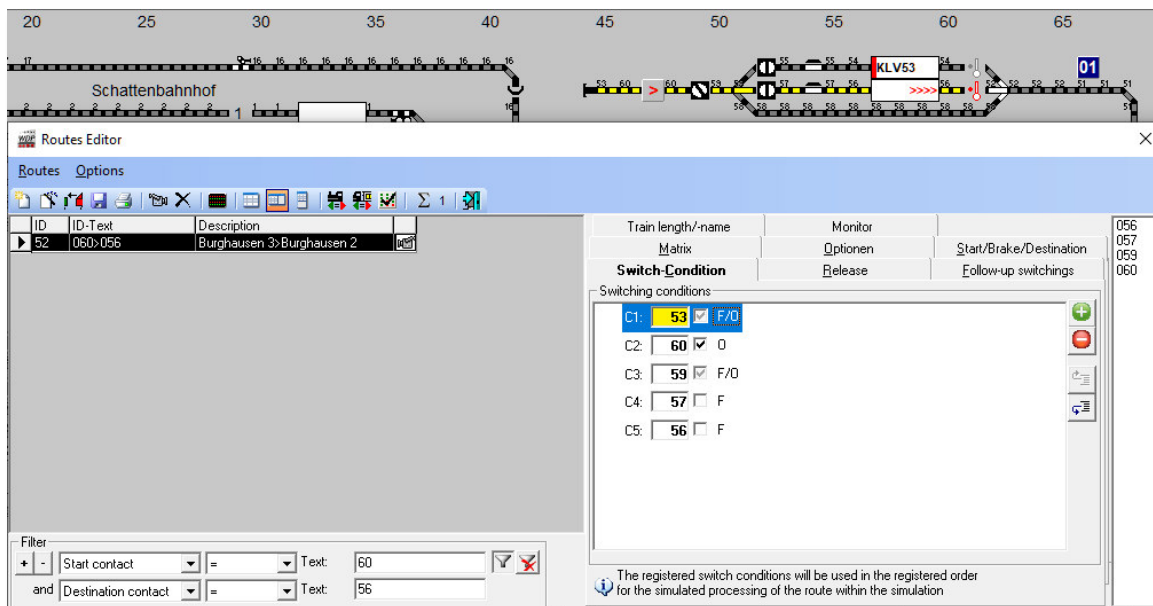
Fig. 7.73   The contact marked in yellow does not belong to the recorded route.

> A yellow marking in **Win-Digipet is** always to be understood as a warning or note.
>
> In contrast, a red marker always indicates an error status.

7.7.5 Extended switching conditions

Via the <Options><Extended switching conditions> menu can be used to add additional conditions to the status of the feedback contacts associated with the route recording. The recorded feedback contacts represent the route.

> To correctly display the processing of the route in the simulation, it is important that the recorded contacts of the route are listed in the sequence that physically exists on the model railway layout.
>
> The correct sequence is essential when operating with road-related vehicles and the vehicle displays (IVHD) have been set up for several vehicles travelling one behind the other.

Once you have ticked the above option in the menu, the tab is supplemented by the extended conditions area.
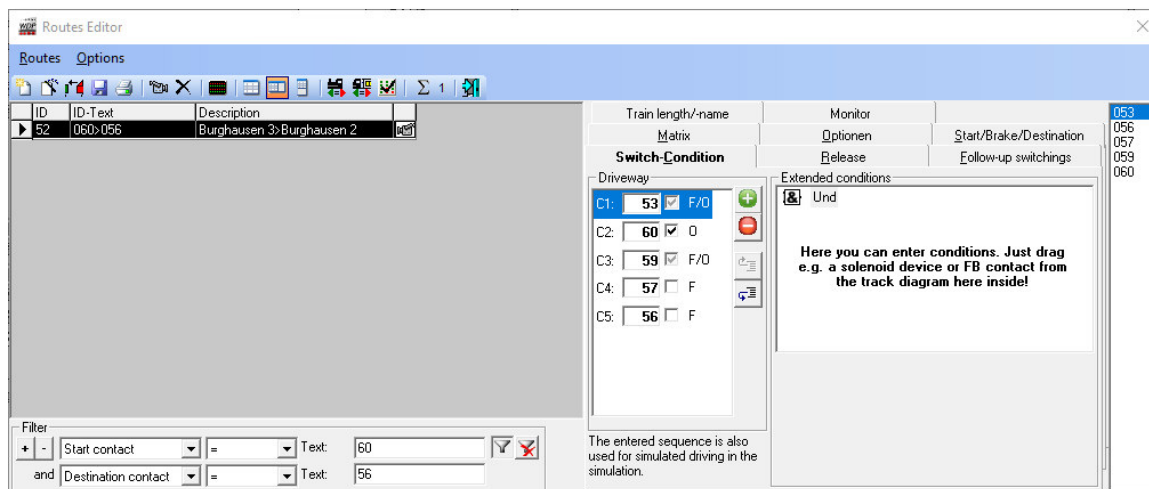
Fig. 7.74   Further, additional switching conditions can be added to a route.

In the "Extended conditions" field, you can, for example, simply drag and drop a solenoid device, a counter or feedback contact from the track image or select other entries from the condition's palette. The status of the object defined here is then queried when the route is set.

Right-click in this field to open a sub-menu that you can use to compile very complex condition trees. We will encounter these conditions several times during this documentation. All conditions and their functionalities are documented in detail in the chapter 13.

7.8 Release tab - the release conditions

Next, select the "Release" tab in the routes editor.

Here, **Win-Digipet** has automatically entered the destination and, if applicable, the route section(s) when creating the route with the route assistant. In the example route shown here, a section from the start contact to the first signal was entered. You can recognise this by the red marking of the track symbols or the small "1" at the entry signal to the shadow station.
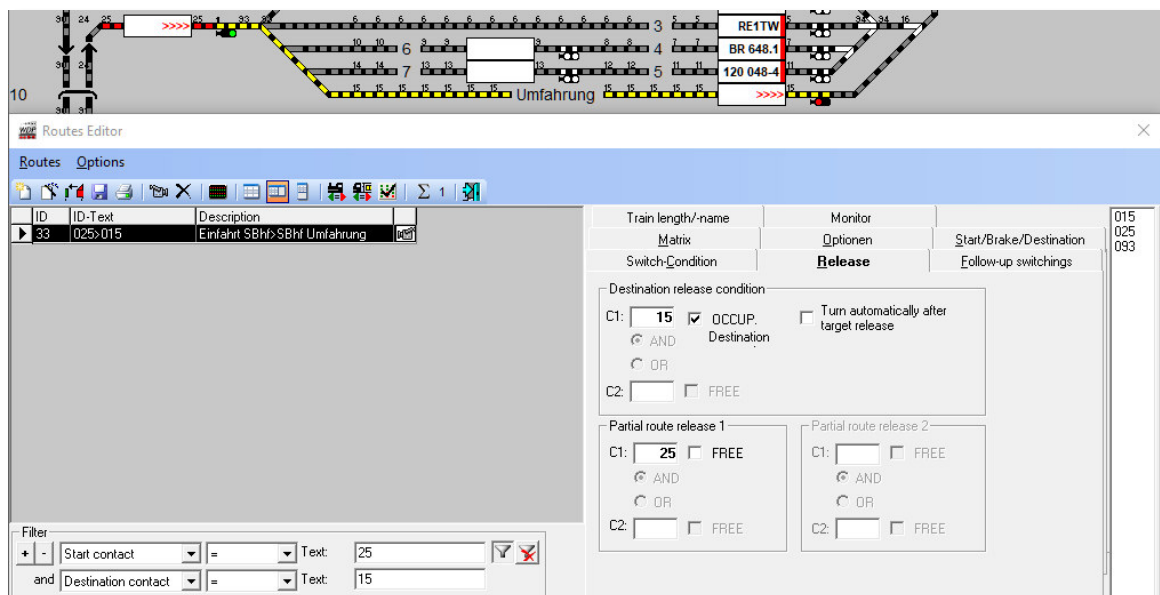
Fig. 7.75   The conditions for releasing (resolving) the route

The standard settings for releasing a route are:

- the destination contact (C1) of the route, in this case FB-No. 15, with "*OCCUPIED*" (with tick)
- the partial route release(s) (C1) with "*FREI*" (without tick)

"Destination release condition"

Here you define the conditions under which the route is released (resolved).

means "release":
The route is resolved, and the solenoid devices of the route can be used for other purposes if the **destination contact (C1)** is **occupied, and the vehicle or train** has **stopped**.

Another route that contains blocked solenoid devices of the set route can only be set once the conditions for releasing the blocked route have been met.

> Once again, the basic rule:
>
> A route cannot be executed if it contains a solenoid device that is already being used by another route.

For this reason, **it** is essential that **the release conditions** are entered for **each route.** Normally, this will be when the destination contact (C1) is "*OCCUPIED"*, i.e. the vehicle or train has correctly completed the route and stopped at the destination contact.

The destination release also offers the option of automatically turning the vehicle or train when the route is cancelled. This can make sense when travelling into a stub track. Activate the corresponding checkbox on the tab but think carefully about where in the programme you enter direction changes **Win-Digipet** offers you many options for this.

"Partial route release 1 or 2"

As you can release recorded sections of long routes even though the vehicle or train has not yet reached the destination release. Here you determine the conditions under which partial sections of the route are released.

If the partial route release condition is fulfilled, the section is deleted from the screen and the locking of the solenoid devices within this section is cancelled.

> The entry for the release contact for a section reads "when contact x is free". Correctly speaking, however, it should read "only released again when the entered contact x **was occupied and** is **free again".**
>
> When the route was processed, contact x was occupied first and became **free again** when the vehicle or train continued its journey.

An AND/OR link is possible for the two section releases and the destination release, so you can make the releases dependent on a wide variety of conditions.

Furthermore, **all** entered positioning conditions (except for the occupied start contact of the route) are also checked for "*FREE"* or "*OCCUPIED"* in the route sequences and observed.

This also prevents a route from being set in a route sequence if, for example, the turntable or transfer table has not yet reached the platform contact (occupied). However, this requires a functioning and activated position feedback of the platform connection tracks.

You should therefore check your routes with section releases for these options. However, this is only recommended if the feedback signals on the model railway system function perfectly in terms of hardware.

7.8.1 Contact error messages for unregistered partial route release

If you have If you have recorded routes with sections, the section releases must also be entered.

If this is forgotten, the error is displayed on the "Release" tab with fields highlighted in red. These errors must be corrected, as otherwise the correct function of the relevant routes cannot be guaranteed.

You will also be shown such errors by the check routine. We will discuss the check routine in detail later in this documentation.

> If you have recorded routes with partial sections, the sections must be released individually. A resolving at the end of the route is not sufficient, as the interlocks of the sections are not released.
>
> If partial routes were not resolved during operation, you must resolve them using the tour-event inspector (F7) and correct the route **immediately.**

7.8.2 Destination release conditions with AND/OR

You can add an AND/OR condition to the destination release as well as the partial route releases.

If you have defined an **AND** condition for the destination release, the vehicle will only be stopped, and the route resolved if both conditions entered are fulfilled.

Some example situations for a meaningful **AND** condition would be:

- 🚂 You drive long trains.
- 🚂 have long turnout roads in routes.
- 🚂 have each provided a short section of track behind the turnout road with a feedback contact
  ...then the train will only come to a stop and release the track again when both conditions are met if the corresponding release condition is met (target contact is OCCUPIED and track section behind the turnout road is FREE).

For example, you can prevent the last carriage of the long train from coming to a stop on the turnout road. Of course, this assumes that the long train with the locomotive does not come to a stop in the next turnout area, in which case a length limit would also come into play. It is also important for such scenarios that all vehicles in the train trigger a reliable feedback signal.

7.8.3 Start/brake/destination tab

Next, let's look at the "Start/Brake/Destination" tab in the routes editor. Here **Win-Digipet** has automatically entered the contacts recorded with the route when creating the route with the routes wizard or after answering in the affirmative to the question about accepting the switching conditions etc.

The values for the start and braking speeds stored as default speeds in the system settings are automatically transferred to the tab. You may want to make changes here if the speeds do not match the characteristics of the route.
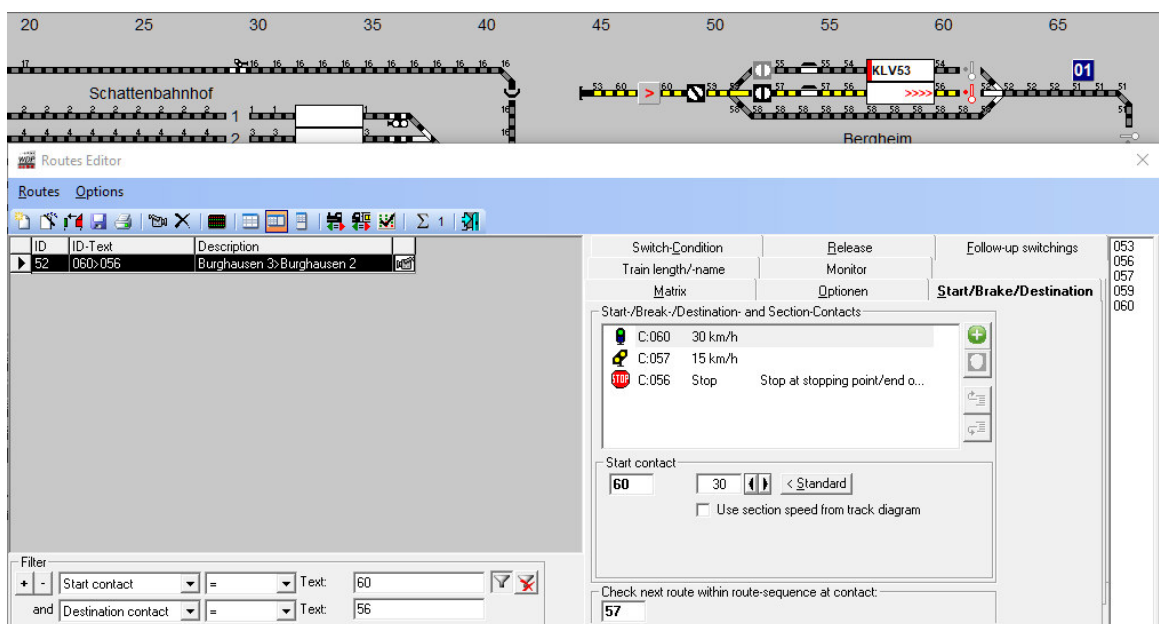
Fig. 7.76   The start, brake, and destination contacts as well as the maximum speeds at the contacts are entered here.

In addition to the start, brake, and destination contacts, you can enter up to 61 route contacts with speed specifications in this list of contacts. These contacts must of course have been registered in the route recording. A route can therefore contain up to 64 feedback contacts in total.

In the example in Fig. 7.76 the speed values have been significantly reduced, as this route is a shunting route.

You can also use the line speed entered for a contact. We have already described the procedure for assigning a line speed to a feedback contact in section 6 of this documentation.

On the "Start/brake/destination" tab, the feedback contact numbers of the **start** and **finish contacts** of the recorded route are **necessary**.

The so-called testing contact should also be entered here. It takes on an important function in the route sequences or in later automatic operation. **Win-Digipet** enters the brake contact of the route as the testing contact by default. In the case of an intelligent vehicle display, the testing contact must be on the first contact of the intelligent vehicle display at

the latest. This is the only way to ensure that the testing contact is reached at every stop position.

In the list, use the symbol to enter the speed values in km/h at which the vehicles should travel on the individual sections (start contact, any existing route contacts and brake contact).

Clicking on the *'< Standard'* button resets any changed values on the start or brake contact to the values defined in the system settings. However, the speed values for all other contacts remain unchanged.

> The track contacts should be in the route **before** the actual brake contact. If this is entered incorrectly and the train triggers the "real" brake contact, **any subsequent "route contacts"** are also considered.

When controlling the vehicles or trains via the start/destination function and in automatic journeys **without profiles**, the sequence of a route is as follows:

- Vehicle or train is on start contact and is entered in the vehicle display.
- Vehicle or train departs at registered speed according to km/h.
- The same applies to line contacts: If the contact is reached, the vehicle or train travels at the speed entered here after km/h.
- The same applies to the brake contact: if it is reached, the vehicle or train will travel at the speed entered here after km/h.
- The vehicle or train is stopped at the target contact with the braking deceleration set in the vehicle database if no AND link is entered.
  If an AND link is entered, the vehicle is only stopped when both set conditions are fulfilled.

> If you search for a vehicle in the vehicle database by section 4.16.4 If you have set "*Immediate stop*" for a vehicle in the vehicle database, the vehicle is **stopped immediately** after the target release conditions have been met. A set braking delay is then ignored.
>
> However, this **does not** apply to a braking delay set in the vehicle decoder; **Win-Digipet** cannot influence this.

7.8.4 Error messages if the start or destination vehicle display is missing.

If the entries for the start and/or destination vehicle display are missing, these fields are displayed in the routes editor with a crossed red symbol. In addition, the field for entering the feedback contact number is filled in red.

The Fig. 7.77 shows two errors. The start and destination contacts are not assigned to a vehicle display. This means an error in both cases, so you should correct the route recording.

The picture shows an example of an incorrectly recorded route.

Similarly, many possible incorrect entries are displayed. These input errors are also displayed

Fig. 7.77   Errors are highlighted in red.

by the check routine in **Win-Digipet.** We will go into this error search option in detail later in this documentation.

7.8.5 Start, brake and target contacts (intelligent vehicle display)

The example below shows what you need to bear in mind for a route with an "intelligent vehicle display (iVHD)" as the destination.
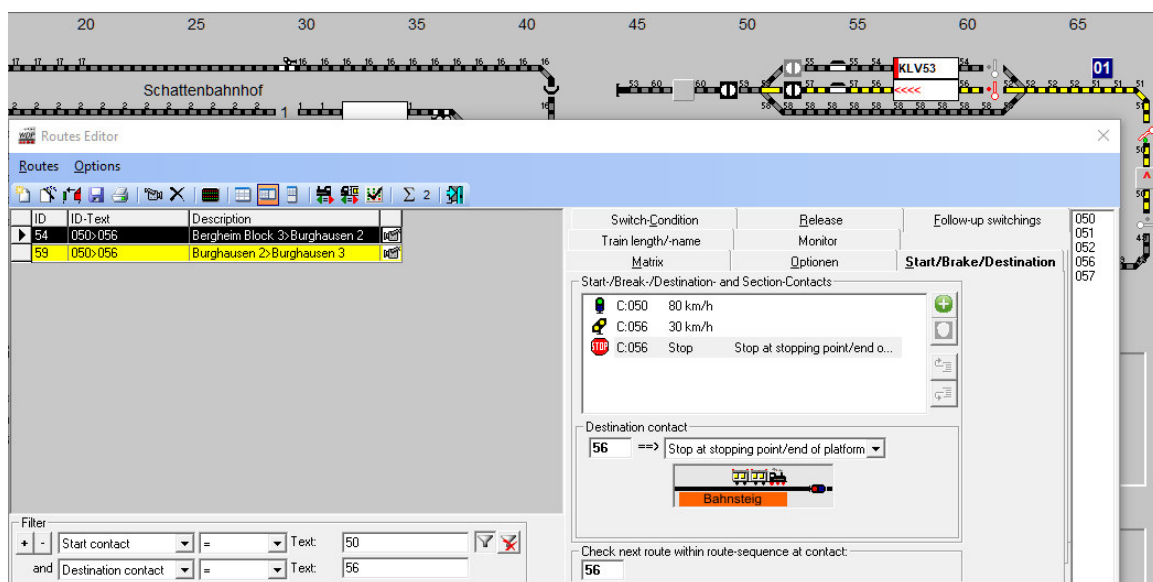
Fig. 7.78   The destination is configured as an intelligent vehicle display.

The Fig. 7.78 shows the routes editor with a route 050>056. The start, brake and stop contacts are entered in the "Start/brake/destination" tab. The start speed has been left at the default setting from the system settings.

7.8.5.1 Check next route within route-sequence at contact.

In the lower part of the tab is the entry for the so-called "Testing contact". **Win-Digipet** always enters the brake contact of the route here during automatic data transfer. You should also enter this during manual editing.

In subsequent automatic mode or within the route sequences, this means that once the FB-No. number entered here is reached, the system checks whether the following route can be set. As standard, the test contact is placed on the brake contact of the route, but in special situations it can also be useful to move the test contact to an earlier contact or to the start contact in the route.

The vehicle display 056 is set up as an intelligent vehicle display (iVHD). Open the properties dialogue for a vehicle display as described in section 6.1.1 by right clicking the vehicle display at and selecting the <Properties Vehicle display> entry from the menu that pops up with the left mouse button.

This example shows the effects that the definition of an "iVHD" has on the entries in the route.

The iVHD in our example consists of two contact sections, FB-No. 056 and FB-No. 057. These contacts have been entered in the correct order for an iVHD with two directions from left → right. For clarification, these contacts are highlighted in colour when the properties dialogue is called up in the track diagram.

The graphic in the lower part of the dialogue shows the dimensions for the various distances from the start or end of the iVHD to various points.

We will not limit the train length at this point as it is not relevant here.

Fig. 7.79   The settings for the intelligent vehicle display 056

The Start/Brake/Destination tab in the routes editor is set up as shown in Fig. 7.78 is displayed. An additional list field is now displayed when the stop contact is selected, which you can use to specify the desired stop position. The entry "*Stop at stopping point/end of platform"* is set as the default for a new route that contains an iVHD as the destination.

The following sections explain the meaning of the various holding positions.

The aim of the intelligent vehicle displays is to stop the vehicles or trains more gently at the destination instead of gradually reducing the speed at the contact limits. We have already dealt with this procedure in chapter 6 of this manual. In the routes editor, you can

specify at which point of the intelligent vehicle display the vehicle or train should be stopped. The following options are available here:

- 🚂 Stop at contact.
- 🚂 Stop at signal.
- 🚂 Stop at the stopping point / end of platform.
- 🚂 Stop in the mid of platform.
- 🚂 Stop at the begin of the platform.
- 🚂 Stop at individual stopping point 1 or 2.

7.8.6 Intelligent vehicle display with stop position at the stopping point / platform end

The *"Stop at stopping point / end of platform"* means that the front of the vehicle or train comes to a stop at the end of the platform. The small graphic on the Start/Brake/Destination tab is intended to illustrate this.[23]

If you have hidden the platform in the properties dialogue of the intelligent vehicle display, the stopping position "Stop at stopping point / platform end" is not offered in the routes editor.

Fig. 7.80   The "Stopping point/platform end" stop position.

You can duplicate an existing route using the short menu command <Copy complete to new data record> and add the suffix "Start" to the name of the route if necessary and provide it with an alternative stop position.

7.8.7 Intelligent vehicle display with stop position in the centre of the platform

The *"Stop in mid of platform"* means that the centre of the vehicle or train comes to a stop at the calculated platform centre. The small graphic on the Start/Brake/Destination tab is intended to illustrate this. However, this only applies if the train length is less than the platform length. However, the braking behaviour of the train will vary depending on the train length.

---

[23] Bahnsteig means platform in German language

If you have hidden the platform in the properties dialogue of the intelligent vehicle display, the stopping position "Stop in mid of platform" is not offered in the routes editor.

So that you always "get the right one" later when selecting routes, you can add a meaningful name to the ID text suggested by **Win-Digipet**, for example with the addition "centre".
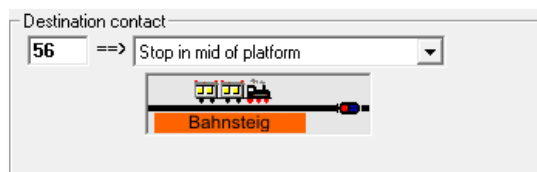
Fig. 7.81   The "middle of platform" stop position.

7.8.8   Intelligent vehicle display with stop position at the start of the platform

The *"Stop at the begin of platform"* means that the **end of the vehicle or train** comes to a stop at the start of the platform, depending on the length of the train. However, the braking behaviour of the train will vary depending on the length of the train, i.e. the shorter a train is, the steeper the braking ramp will be.

If you have hidden the platform in the properties dialogue of the intelligent vehicle display, the stopping position "Stop at begin of platform" is not offered in the routes editor.
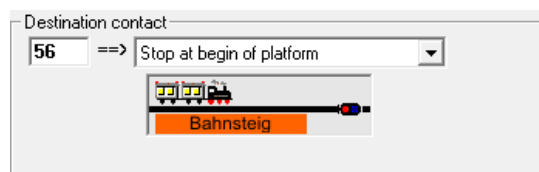
Fig. 7.82   The stop position at the start of the platform

7.8.9   Intelligent vehicle display with stop position at the signal

The *"Stop at signal"* means that the vehicle or train drives up to the signal, possibly beyond the end of the platform, and then comes to a stop in front of the signal. This stopping position could be used for goods trains, for example, which do not necessarily have to stop right at the platform when stopping at the station. In operation with road-related vehicles, the "signal" stop position represents the stop in front of a traffic light.

Fig. 7.83   The "Signal" stops position.

If you have hidden the platform in the properties dialogue of the intelligent vehicle display, only the stopping positions "Stop at Signal" and "Stop at Contact" are offered in the routes editor.

7.8.10 Intelligent vehicle display with stopping position "individual stopping point 1 / 2".

The configuration of up to two individual stopping points is carried out in the "Intelligent vehicle display" properties dialogue. For example, you can define the position of a decoupler as an individual stopping point.

The route now determines which point of the vehicle or train should come to a standstill at the individual stopping point. For example, the train should come to a standstill with the rear coupling of the locomotive above the uncoupler, i.e. the locomotive is at the individual stopping point minus the length of the locomotive to the end of the track. It almost goes without saying that the length of the vehicle from the vehicle database is used here.

Let us now look at the configuration of the stopping position in the route configuration.

The Start/Brake/Destination tab in the routes editor provides the individual stopping point 1 as the stopping position. The dimensions have been previously determined and entered in the iVHD properties dialogue.

We now want to ensure that the locomotive can be separated from the train with the help of the uncoupler. This means that the rear coupling of the locomotive must come to a stop above the uncoupler.

We achieve this with the list fields in the "Destination contact" area of the tab. By combining the individual fields, you can achieve precise positioning at almost any point in the train. The prerequisites for this are that the lengths of the individual vehicles are stored in the vehicle database, that their locomotives have been calibrated and that the individual vehicles of the train are entered in the train composition.

Fig. 7.84   The "individual stopping point" stop position.

7.8.11 Intelligent vehicle display with stop position on the contact

With selecting the *"Stop at contact"* stop position "virtually" overrides the intelligent vehicle display and stops the vehicle when it reaches the destination contact of the route. There is no "gentle braking"; instead, the recorded speeds take place at the contacts recorded in the route.
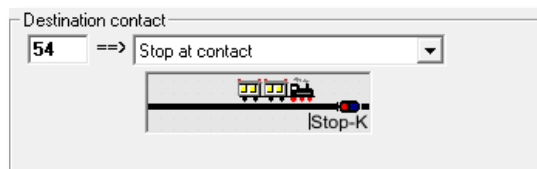
Fig. 7.85   The "Contact" holding position.

7.8.12 Multi-intelligent vehicle display with stop position at the signal / behind the last vehicle

With a route that has a multi-intelligent vehicle display (MiVHD) as its destination, only the stopping positions are available.

- 🚂 Stop at signal / behind last vehicle.
- 🚂 Stop at contact.

are available. Other stopping points make no sense when using a MiVHD, the purpose here is to automatically determine the stopping point by **Win-Digipet**.

7.8.13 Instructions for stopping positions on the intelligent vehicle display.

You can easily create similar routes with different stop positions using the short menu command <Copy complete into new record>.

In the Fig. 7.86 we have changed the testing contact so that it is now on a contact that is part of the intelligent vehicle display. This entry for the test contact is now highlighted in light blue.

A route sequence or a connecting journey in an automatic journey cannot be continued properly if the testing contact is not processed. The colour light blue indicates this.

Depending on the defined stop position in the iVHD, the test contact may not be reached. You should correct this information and move the test contact further forwards in the route, for example to contact 052. The first contact of an iVHD would be the last possible contact here, which is guaranteed to be reached when the route is processed.
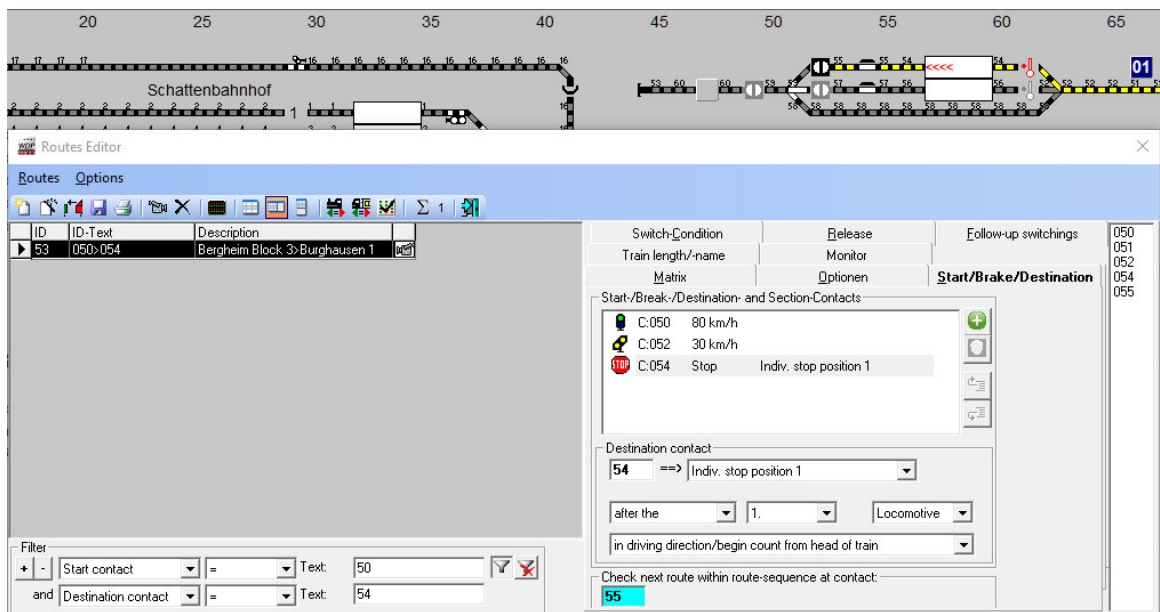
Fig. 7.86   Fields highlighted in blue indicate a special situation.

The brake contacts, for example, are also highlighted in blue if they belong to an iVHD and you have specified a speed on the tab. This entered speed would be ignored when braking on the iVHD, as **Win-Digipet** calculates the braking distance to the defined stopping point on the iVHD.

If routes are recorded automatically using the route assistant or the route navigator, there are two variants regarding the testing contact. These must be considered in relation to an iVHD as the destination of the route to be created.

New routes to an iVHD use the first contact within the iVHD as the testing contact. Routes that have a normal VHD as their destination, on the other hand, use the brake contact as the testing contact.

The route check tests whether the destination has been set up as an iVHD. If this is the case, a further check is carried out to determine whether the testing contact is on the second or subsequent contact within the iVHD.

In this case, the value entered in the routes editor is highlighted in light blue as information for the user. If the testing contact is on the first contact of the iVHD, no message is issued as this contact is always reached when travelling on an iVHD.

The description of the various stopping positions in the previous sections is only intended to illustrate the various options for stopping at the platform. You do not have to create every variant shown above for your platform tracks if, for example, your trains should always stop in the centre of the platform because that is where the entrances to the platform have been built for the small "people" on your model layout.

You should also consider where in the programme it makes sense to assign different stopping positions to the routes.

For example, you could enter the route used here in the examples several times in an automatic journey and set the various stopping positions depending on the vehicle or train lengths, types or similar. In this way, you can keep your route database lean and clear.

If you always want to stop at the start of the platform, because this may be where the entrances to the platform are located, then you should consider the extent to which the braking distance needs to be extended by an additional contact before the actual station track in the iVHD, so that short trains can come to a stop in good time.

If the train is longer than the platform defined in the "intelligent vehicle display", the train will stop at the signal. Unless the end of the platform is behind the signal, in which case the train is stopped there, i.e. if the train is too long, the position that offers the most space to accommodate the train.
If the train then comes to a stop with the end of the train in a turnout area, the matrix setting, or the length limit of the route must be changed or the information in the "intelligent vehicle display" must be adjusted.

If this does not produce the desired result either, you must create another route with a stop before the signal (stop at contact plus destination release with "AND" if "FREE"). This

means that the train will no longer come to a stop as "aesthetically" as it did in earlier versions of the programme, as it will be slowed down gradually.

7.8.14 Save route.

Once you have made all the entries on the three tabs (Positioning conditions, Enables and Start/brake/finish), click on the 💾 icon in the toolbar of the routes editor.

For security reasons, you can and may of course also temporarily save after editing the other tabs to prevent any loss of data.

7.9 Enter follow-up switching (follow-up actions).

Here **Win-Digipet** has automatically entered the follow-up switching during automatic route creation with the route assistant or after confirming the transfer of follow-up switching's. This only affects the signals in the recorded route that are set to stop (red) after the train has passed.

However, **Win-Digipet** makes it possible to carry out further switching of solenoid items or other actions within the set route. In addition to normal turnouts and signals, switching can also be carried out on turntable and transfer table symbols, double crossing points, etc.

Some examples of the circuits of solenoid devices:

- "Switch the signal to red after the train has passed".
- "Switch the virtual switches to green".
- or in block section operation, "Switch the cover signal to red after the train enters the next block section", "Switch the signal in front of it to green".
- "Set counter "abc" to value x".

For each route, you can have up to **20** entries of sequential switching (follow-up actions) switched via the entered feedback contacts after the route has been set.

In previous versions (before 2018) of **Win-Digipet,** this was for switching solenoid devices and counters. You can now define various actions here as a "follow-up action" to the busy or free message of a feedback contact. These can be the following actions, for example:

- Switching of solenoid devices/counters
- Switching a virtual or momentary contact

Some of the sequential actions described below are only available after activating the expert mode in the routes editor. These functions require a fundamentally deeper understanding of the interrelationships and mode of operation of **Win-Digipet**. You can activate expert mode via the menu item <Options><Expert mode> in the routes editor. In section 7.15 of this chapter you will find more detailed information on the expert mode of the routes editor.

Further actions are then available to you in the expert mode of the routes editor:

- Vehicle-related actions:
  Matrix changes, change train name, change digital system, reset maintenance time, set battery charge value.
- Calculation with counters
- Logbook / memo / text entry
- Activation and deactivation of dispatcher and train director entries
- Blocking of vehicle displays
- Set clock.

If the *"Follow-up Switching"* tab is selected, circuits of solenoid devices are already entered on the tab if you have answered the question about the automatic entry of sequential circuits in the affirmative when creating the route with the routes wizard.

7.9.1 Follow-up switching of solenoid device

In example road in Fig. 7.87 a follow-up switching has been entered for the Bergheim Block 3-wing signal. This signal is to be switched from position Hp 1 (when setting the route) to position Hp0 when contact 050 is signalled '**(again) free'**. In this example, contact 050 is the start contact and is therefore inevitably 'occupied' when the route is set. The signal will now switch to position Hp0 as soon as the last reported vehicle has left contact area 50.
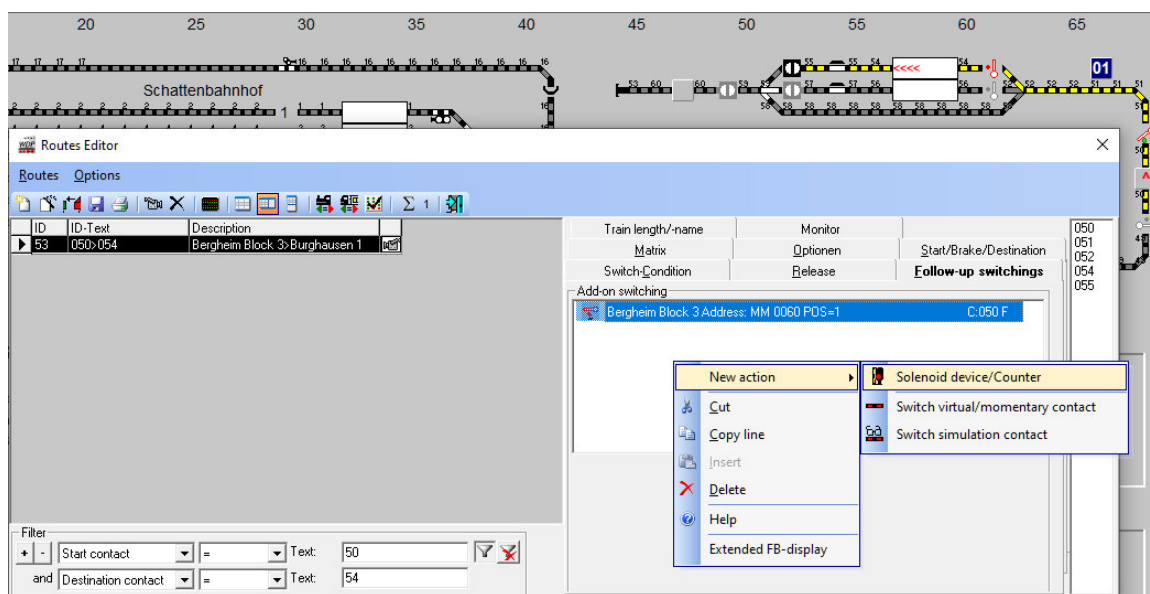
Fig. 7.87   The "Follow-up switching" tab with the action menu displayed.

The characters behind the contact numbers of the individual lines mean (O=OCCUPIED, F=FREE), like the logic for the control conditions of the route.

During automatic route creation with the route assistant, the follow-up switching of the start signal is always entered with start contact "*FREE*".

This is based on the role model operation where the start signal is set to stop again about 55 metres after the train has passed.

The solenoid items entered in the follow-up switching's do not necessarily have to belong to the recorded route but could also be in a different route.

You can enter a solenoid device in the list field in two different ways. Either drag the desired solenoid device from the track diagram into the *"Add-on switching" list field* by holding down the <u>left mouse button</u>, or right-click in the list field, whereupon **Win-Digipet** will display shows you the sub-menu shown in Fig. 7.87.
From here, select the entry <New action><Solenoid device/counter>.

A solenoid item on which a sequential circuit is to be executed is framed in black in the track diagram when you "hover" over the entered symbol on the tab with the mouse.
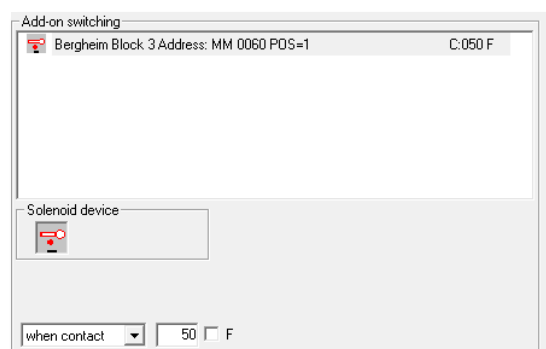
Fig. 7.88 A solenoid device was placed for an add-on switching in the routes editor.

As the Fig. 7.88 makes it clear, the sequential circuits of the solenoid items can be entered or switched at a feedback contact with either "*OCCUPIED*" or "*FREE*".

The position "*FREE*" in the entries of the routes editor always means that the contact **must** first be switched to "OCCUPIED" and then to "*FREE*".

As further options for executing a follow-up action, these can be executed not only at a defined contact, but also at the beginning or end of a route. You make this selection using the list at the bottom of the tab. The default selection here is always "*when contact*".

You can delete follow-up switching entered for a route by <u>right-clicking</u> on the list entry and selecting <Delete> from the sub-menu.

7.9.2 Follow-up switching counter

Just like "normal" solenoid items, the counter symbols can also be used for follow-up switching in the routes. You can use the counters to create dependencies (e.g. lap counters[24]) in subsequent automatic operation.

In the example, a counter symbol was dragged from the track image into the display field in the same way as described above.

The circuit shown here causes the counter entered with the name "Lap counter" to be increased by the value 1 (+1) when contact 52 is signalled as "OCCUPIED".

The counters can be used for the following operations by clicking on the icon entered in the tab:
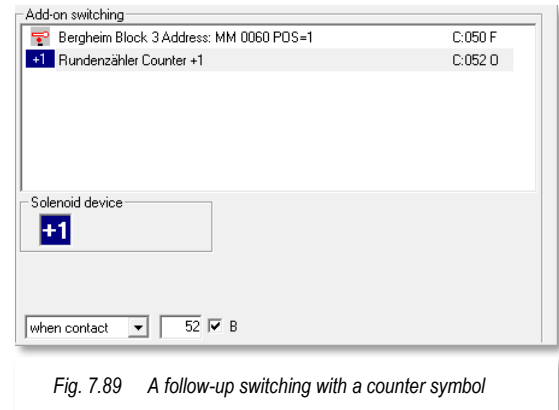
Fig. 7.89   A follow-up switching with a counter symbol

+1   set the value of the counter in the track diagram higher by "1",

-1   reduce the value of the counter in the track diagram by "1",

00   set the value of the counter to 0 or another value between "0 and 9999". You can set the individual values by right-clicking on the counter symbol in the input field and setting a target value between 0 and 9999. However, right-clicking does not work for the two previous counter settings "+1" or "-1".

7.9.3 Follow-up switching for a virtual / momentary contact.

With you can use the "Switch virtual contact" follow-up circuit to switch a feedback contact (vFB-No.) that is not physically present on or off or to switch off a momentary contact that has been switched on by a vehicle, for example. Please also refer to the section 5.7.5.2 in the "Track diagram editor" chapter of this manual, where we have already covered the topic of "Setting up momentary contacts".

Virtual contacts are contacts that do not exist in the feedback system. They may also not be assigned to a feedback system. Virtual contacts are defined in the programme section "Virtual contacts & clock generators".

As soon as you enter the follow-up switching "Switch virtual contact/momentary contact", the switching of a momentary contact is suggested as standard, and the necessary fields are displayed at the bottom of the tab (cf. Fig. 7.90).

---

[24] Lap counter means "Rundenzähler" in German language
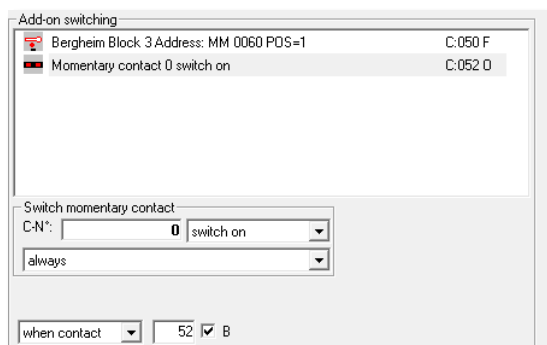
Fig. 7.90   The follow-up switching "Switch momentary contact".

Fig. 7.91   The "Switch virtual contact" follow-up switching.

Enter the number of the momentary contact that you want to switch on or off with the sequential circuit in the "C-No.:" field. The switching selection is made via the list field to the right of the contact number.

The switching of the momentary contact can also optionally be made dependent on a vehicle or train entry on the corresponding vehicle display. To do this, use the corresponding entry from the list field at the bottom of the "Switch momentary contact" block.

As soon as you enter a contact number on the tab that is assigned to a vFB-No., the labelling of the block changes to "Switch virtual contact" However, the setting options for a virtual feedback contact remain the same as for a momentary contact (cf. Fig. 7.91).

7.9.4 Follow-up switching "Counter calculation" (expert mode)

With The "Counter calculation" follow-up switching allows you to set values from various queries and operations for the counters in the track diagram.

In detail, these are:

Fig. 7.92   The follow-up switching counter calculation

- 🚃 **Counter is equal to value of counter**
  The value of another counter from the track diagram is adopted for the counter entered.

- 🚃 **Subtract the value of a second counter**
  The value of another counter is subtracted from the value of the counter entered.

- 🚃 **Add the value of a second counter**
  The value of another counter is added to the value of the counter entered.

- 🚃 **Equal to number of vehicles on vehicle display**
  The value of the counter entered is set to the number of vehicles on a specific vehicle display.

- 🚃 **Train length on vehicle display**
  The value of the entered counter is set to the value of the train length on a specific vehicle display.

- 🚃 **Digital address on vehicle display**
  The value of the entered counter is set to the value of the digital address of a vehicle on a specific vehicle display.

- 🚃 **Priority on vehicle display**
  The value of the counter entered is set to the priority level of the vehicle or train on a specific vehicle display. The priority levels are assigned in the **Win-Digipet** system settings.

- 🚃 **Vehicle position in the train**
  The value of the counter entered is set to the position of a vehicle in the train. The criterion for this is the series designation of the vehicle. Enter the model designation in the corresponding field by holding down the left mouse button and dragging the vehicle image from the vehicle control or the vehicle bar into the field. You can still select the position count from the start or end of the train.

- 🚃 **Train positioning in the vehicle display**
  The value of the counter entered shows the exact distance of the vehicle or train to the start or end of the vehicle display in centimetres or millimetres.

- **Battery level on vehicle display**
  The value of the entered counter is set to the charge level of the battery of a (road-related) vehicle on a specific vehicle display.

- **Random value**
  The counter entered is set to a random value. A value range between 0 and 9999 with an increment of 1 to 500 can be set for this.

- **Change colour(s)**
  You can change the display colour of the entered counter.

- **Current central clock hour**
  The value of the entered counter is set to the hour value of the central clock of **Win-Digipet.**

- **Current central clock minute**
  The value of the entered counter is set to the minute value of the central clock of **Win-Digipet.**

- **Current central clock second**
  The value of the entered counter is set to the seconds value of the **Win-Digipet central clock.**

- **Current central clock day**
  The value of the entered counter is set to the day value of the central clock of **Win-Digipet. The** following digits apply to the day value:
  Mon=00, Tue=01, Wed=02, Thu=03, Fri=04, Sat=05, Sun=06

- **Transport service provider status**
  The value of the entered counter is set to the status value of a dispatcher. For example, you can use this display to determine the number of trains on a single-track route managed by a dispatcher entry.

7.9.5 Follow-up switching logbook/memo/text entry (expert mode)

With this follow-up switching can be used to generate or display information texts or similar at various points in the programme.

Fig. 7.93 Follow-up switching for multiple messages

🚐 **Logbook message**
On the one hand, you can enter freely definable texts in the **Win-Digipet** logbook here. The logbook is **Win-Digipet's** operating log and runs in the background. It records all events from the start to the end of the programme. You can generate a message in the operating log using the sequential circuit.

🚐 **Memo entry**
A memo entry creates a "virtual sticky note" with the text entered here on your screen. The texts entered can be supplemented with additional variables, for example by displaying counter values, vehicle addresses or train names on vehicle displays on the "sticky notes". The variables are used with the help of the "Editor for extended text mode". You can access this editor via the symbol ⬚.

🚐 **Delete memo entry**
You can also delete a memo entry with this follow-up function.

🚐 **Text in track image**
The text entered here is displayed in the track image instead of an existing text. You determine the selection by dragging the start of the text from the track diagram into the coordinates field. You can assign various attributes (e.g. bold or italics) to the texts using the "Editor for extended text mode". It is also possible to change the colour of the display here.

🚐 **Win-Digipet Mobile message**
You can use this follow-up switching to send a message text to the **Win-Digipet** Mobile app on your smartphone. A message can be sent to all or only certain connected clients.

🚐 **UDP message**
A text (code) is sent over the network via the UDP protocol to a client defined via the IP address. In addition to the IP address, you must specify the UDP port of the external programme on the client.

🚐 **External programme**
With the help of this sequential circuit, you have the option of starting an external (executable) programme on your computer and transferring the entered text to it as a parameter. In addition to the text, you must also enter the correct file path to the executable file.
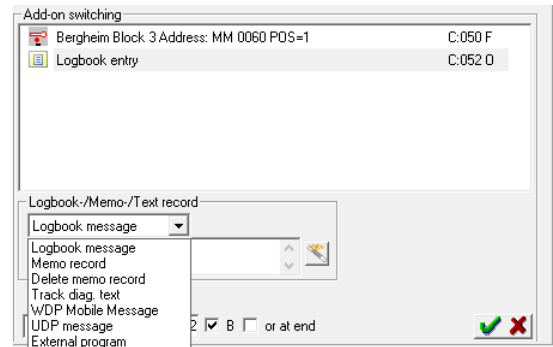
7.9.6 Activate or deactivate follow-up switching train director or dispatcher entries (expert mode)

The circuit allows you to deactivate or (re-)activate entries in the dispatcher or train director programme sections. To do this, select the programme section (train director or dispatcher), the numbered entry and the action to be performed in the list fields. If you have not created any entries in the programme sections mentioned, nothing will be offered to you in the selection list.

The in the Fig. 7.94 is meaningless and is only intended to show the appearance of this sequential circuit in the routes editor.
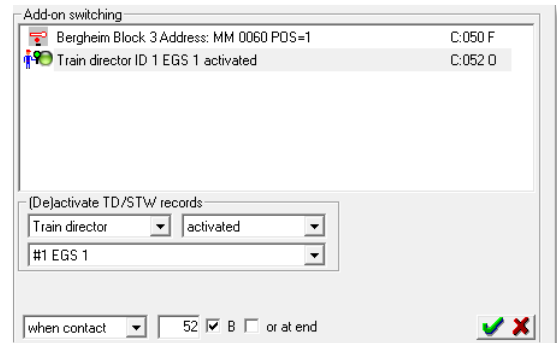
Fig. 7.94   Follow-up switching for (de)activating train director or dispatcher entries.

7.9.7 Follow-up switching "Train director interaction" (expert mode)

This sequential circuit allows you to influence an entry in the train director shadow station control (TD SBS).

As an action, you can force the exit from a vehicle display defined here. Select an entry for an TD SBS from the selection list and specify which vehicle display should be next in line for exit.

If you have not created an entry for an TD SBS in your project, you will not be offered anything in the selection list.
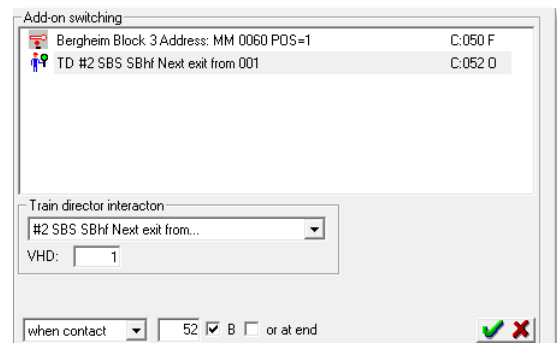
Fig. 7.95   Follow-up switching for influencing the FDL SBS

7.9.8 Follow-up switching "Change extended FB-No. status" (expert mode)

The "Change extended FB-No. status" follow-up switching relates to so-called "frozen" feedback contacts. With these contacts, the last status is "frozen" in **Win-Digipet** if, for example, the track is temporarily not supplied with track voltage during a train lift.

You can use this sequential circuit to "freeze" the relevant contacts. Please note that this function can only be carried out when the feedback system is active.
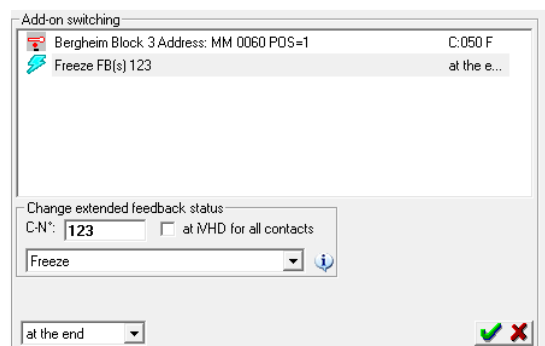
Fig. 7.96   10

7.9.9 Follow-up switching "Set clock" (expert mode)

This follow-up-switching allows you to carry out various manipulations of the times in **Win-Digipet.** In detail these concerns

- 🚂 the change in the central clock time
- 🚂 the adjustment of the time factor of the central clock
- 🚂 Changing the time in a tour automatic
- 🚂 the adjustment of the time factor in a tour automatic
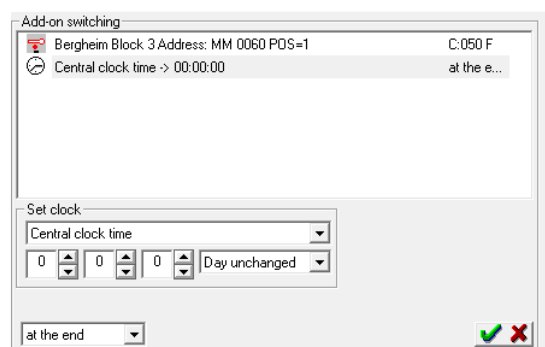
Fig. 7.97   The "Set clock" follow-up switching.

Select the desired action using a selection list
and set the required time values for hours, minutes and seconds or the day of the week using the arrow keys or by entering them using the keyboard.

Use the same procedure for the values when adjusting the time factors.

7.9.10 Follow-up switching "Vehicle display blocking" (expert mode)

You can use this sequential circuit to initiate or cancel various blockings on vehicle displays. The blocking of vehicle displays can be assigned a destination or passage blocking and could also be direction dependent.

Vehicle displays that are blocked against passage are shown in red and marked with an "X". Vehicle displays with a destination block are marked in red with a "Z".
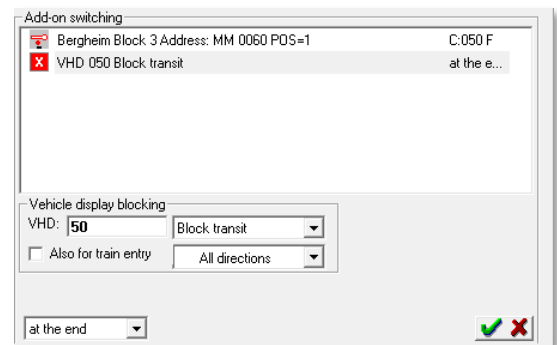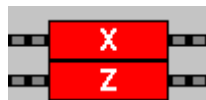
Fig. 7.98   The follow-up switching "vehicle display blocking".

We will encounter the blocking of vehicle displays more frequently later in this documentary.

Select the required actions and directions for the defined vehicle display as usual using the list fields.

Activate the option "Also with train entry" if you want a block to take place even if the vehicle display in question has a vehicle or train entry.

7.9.11 Vehicle-related actions (expert mode)

Some other follow-up switching is summarised in the programme under the term "Vehicle related actions". You can only access this group when the "Expert mode" of the routes editor is switched on. In detail, the group of vehicle-related actions includes:

- 🚂 Changes to the matrix types or the train name
- 🚂 Modification of the digital system for the vehicle or train
- 🚂 Switching off the acceleration or braking deceleration set in the programme.
- 🚂 Reset the maintenance time of a vehicle.
- 🚂 Setting the battery charge value of a vehicle

7.9.12 Follow-up switching "Change matrix type or train name" (expert mode)

With this group of follow-up switching allows you to change the matrix settings vehicle type, waggon type or the length (X) when processing the route.

As already explained several times in other switching, select the necessary settings for the matrix using the list boxes.

It is also possible to change the train name by selecting the corresponding add-on switching type. Here you have the option of assigning a new name for the train or adopting the model designation of the leading locomotive as the name for the train.

7.9.13 Change follow-up switching "Change digital system for vehicle or train" (expert mode)

This follow-up switching causes the control of the vehicle or train to be taken over by another digital system entered in the system settings.

> Make sure that the track areas of the different digital systems are 100% electrically isolated from each other and that there is no brief contact between the vehicles!
>
> Otherwise, you risk destroying your digital control centres!

7.9.14 Follow-up switching "Control in routes/profiles/macros without delay" (expert mode)

This follow-up switching (de)activates the deceleration set in **Win-Digipet** when accelerating or decelerating a vehicle. This switch-off does not affect any existing values in the vehicle decoder, but the values set in the vehicle database.

The circuit acts on the movement in routes, profiles, or macros. Select the required action for the defined vehicle display as usual using the list fields.

7.9.15 Follow-up switching "Reset maintenance timer" (expert mode)

This follow-up switching is used to reset the time value of the vehicle's maintenance counter on the specified vehicle display in the **Win-Digipet** vehicle database to the value "0" (see section 4.10).

7.9.16 Follow-up switching "Set battery charge" (expert mode)

This follow-up switching is mainly important for road-going vehicles. You can set the battery charge of a vehicle to a defined value here. For example, you can set the value to 100% if the vehicle is travelling on a route that leads out of an automatic charging station after a charging process.

7.9.17 Set follow-up switching depending on conditions (expert mode)

For all sequential circuits that can only be set up in the expert mode of the routes editor (see sections 7.9.4 to 7.9.16), you have the option of assigning additional conditions to these circuits.

As soon as you press the button ![buttons] (this is only displayed for circuits in expert mode), a window for editing conditions opens.

This editor has no function at the beginning and is only labelled with the "*And"* folder and a corresponding note. The folder represents the top "tip" of a condition tree. This means that the inserted conditions are displayed in a tree structure, as you know it from Windows Explorer.

This tree is then processed from bottom to top, i.e. the conditions in the folder must be fulfilled for the higher-level folder to change to the "fulfilled" status.

In principle, a folder represents the linking function for the conditions arranged below it. The simplest link is the "AND", i.e. all conditions under this "AND" must be fulfilled before the folder changes to the "fulfilled (TRUE)" status. In addition to the "AND" folder type, there are also the "OR" and "NOT" folder types in the condition trees.

Fig. 7.99   The editor to add conditions"

Right-click on the "*And"* folder to open a short menu with the various commands. If you then hover over the <New condition> menu command with the mouse, another window appears with the commands listed in the opens with the menu commands shown in Fig. 7.100.

The picture already gives you an idea of the many possibilities for controlling the model railway layout that **Win-Digipet** makes available to you.

The following table lists all the conditions available in **Win-Digipet** and in which parts of the programme they are available. The individual conditions are described in chapter 13 of this manual, as many conditions have the same functionality in the individual programme sections. These conditions can then be linked with various switching tasks and other actions.

Fig. 7.100   The menu with the possible conditions

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴
…on vehicle display							
Vehicle on VHD	●	●	🔴	🔴	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train name on VHD	●	●	🔴	🔴	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of maintenance times on VHDs	●	●	●	●	●		●
Compare of driving directions on VHDs	●	●	●	●	●		●
Compare of locomotive colours on VHDs	●	●	●	●	●		●
Compare of train lengths (LoB) on VHDs	●	●	●	●	●		●
Compare of vehicle counts on VHDs	●	●	●	●	●		●
Compare of waiting times on VHDs	●	●	●	●	●		●
Compare of vehicle types on VHDs	●	●	●	●	●		●
Compare of wagon types on VHDs	●	●	●	●	●		●
Compare of length (X) on VHDs	●	●	●	●	●		●
Compare of priorities on VHDs	●	●	●	●	●		●
Vehicle with colour	⬤	⬤	●	●	●		⬤
Vehicle position in train	●	●	●	●	●		●
Driving direction		⬤			⬤		
Vehicle with maintenance/oper. hours/battery	●	●	●	●	●		●
Route/Route-Sequence/Macro/Vehicle/Train active	●	●	●	●	●		●
Train director state	●	●	●	●	●		●
Turntable/transfer table/train storage status	●	●	●	●	●		●
Tour automatic status	●	●	●	●	●		●
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

7.10 Enter details for the matrix check – the matrix tab.

Also all details for the matrix check were also entered in the "Matrix" tab **during** automatic route creation with the routes wizard if you have already entered the details in the dialogue for the properties of a vehicle display (see section 6.1.6) dialogue box. However, if the routes were created manually, you must enter the information yourself.

You can use the information on the "Matrix" tab to control the traffic on the layout in terms of vehicle/train type, length (X), epoch, so that, for example, no electrical locomotive runs into a track without overhead lines, or, for example, a long train runs into a short station track.

> If you have made changes to the matrix settings in the Vehicle display properties dialogue **after** creating the route, you must **always make** the matrix entries for the **affected** routes in the routes editor yourself.

Permit the route for:

As already described in the system settings at section 3.14 you can enable or disable a route for certain types of vehicles. Your entries in the system settings are displayed in the selection fields.

Using the vehicle type, train type, length (X) and epoch, you can enable a route for vehicles that correspond to the selected categories.

Click on the individual fields to switch them on (green) or off (white). If you click on the column heading with the left or right mouse button, the entire column is switched on or off.

If you click on the '*All*' button with the left or right mouse button, the entire list is switched on (green) or off (white).

Here the colours mean:

- 🚂 Green = Vehicle/train may drive on the route
- 🚂 White = Vehicle/train is blocked for the route.

This so-called matrix check is then carried out using the train number on the start contact with the internally stored vehicle/train type and the length (X) from the vehicle database or from the train composition and the information entered here.

You will see the result of the check in the start/finish function as a warning ("Route blocked for vehicle matrix!") or in the automatic journey function with the selection of a valid route.

If you have inadvertently deactivated all columns, all columns are automatically reactivated when you save.

The Fig. 7.101 shows that route 050>056 may not be used by vehicles of the electric locomotive type, among others. The length category must also match one of the categories marked in green.
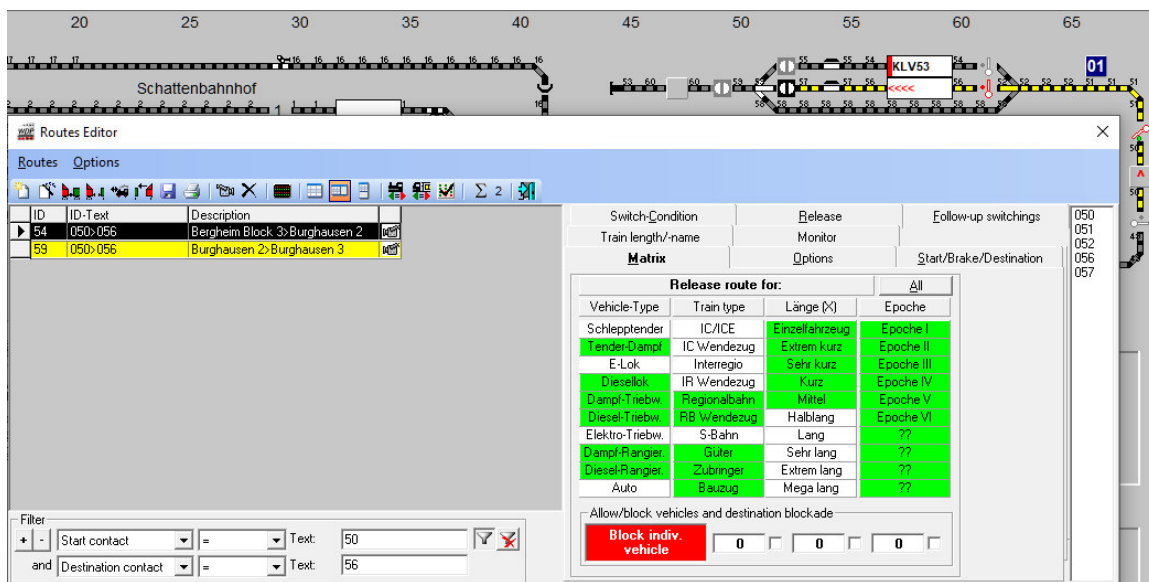
Fig. 7.101   Only certain vehicle or train types are authorised for the route using the matrix.

The prerequisites for a matrix test are:

🚂 that the general switch for this check function is set in the system settings under "Routes".

🚂 that up to 10 descriptions are entered for the four columns in the system settings.

🚂 that you have assigned a matrix type to each vehicle in the vehicle database.

🚂 that a vehicle or train is entered in the VHD of the start contact of this route.

Allow/block vehicle and destination blockade:

With Click on the red button '***Block individual vehicle'*** or the green button '***Allow vehicle only'*** to switch between the two options.

The selection means:

Allow vehicle only:

After clicking on the red 'Bl*ock individual vehicle'* button, the labelling of the green button changes to 'Allow *vehicle only'*.

- 🚂 If you enter up to three vehicles here, the matrix check will only apply to the vehicle(s) entered here.

- 🚂 If you then tick the box(es) next to it, the vehicle will be switched to "RED" in the tour automatic function when it reaches the destination of the route and will stop. This function is also referred to as "destination blockade" or "home track function".

Block individual vehicle:

- 🚂 After clicking on the green 'Allow vehicle only' button, the labelling of the now red button changes to 'Block individual vehicle'.

- 🚂 If you enter up to three vehicles here and click on the 'All' button with the left mouse button, this route will only be blocked for these vehicles.

- 🚂 However, you can also block/release additional trains for the route via the upper "matrix".

You can use the information on this tab to block or release the routes for specific trains in a very targeted manner so that no vehicle or train can drive onto the wrong track, or a road vehicle cannot use a road that is prohibited for it, regardless of whether you want to control your vehicles or trains with the automatic journey or with the start/finish function.

> After clicking on the red '**Bl*ock individual vehicle'*** button, the labelling of the green button changes to '***Allow vehicle only'***.
>
> If you **do not enter a** vehicle in the three fields, the route is enabled for **all** vehicles.
>
> Therefore, only click on this button if you only want to enable the route for up to three vehicles. If you have done this by mistake, click on the button a second time and the previously valid matrix settings will remain unchanged.

7.10.1 Check matrix data.

The information for the matrix check can be checked very quickly. To do this, click on the 🏁 icon in the toolbar of the routes editor.

The following window opens with all vehicles or trains that fulfil the selected route (cf. Fig. 7.102) are authorised to travel on the selected route.

The follwing vehicle/trains are allowed due to the settings

Class (Digital address)	Loco type	Train type	Länge (X)	Epoche	Length (cm)	min. radius
81 001 (81)	Tender-Dampf	Zubringer	Einzelfahrzeug	Epoche III	12.8	
BR92 (93)	Tender-Dampf	Güter	Einzelfahrzeug	Epoche III	13.0	
T 16.1 (94)	Tender-Dampf	Güter	Einzelfahrzeug	Epoche II, E...	29.7	
KLV53 (1053)	Diesel-Rangier.	Bauzug	Einzelfahrzeug	Epoche V	15.0	
106 530-9 (1106)	Diesellok	Güter	Einzelfahrzeug	Epoche IV	85.6	
120 048-4 (1120)	Diesellok	Güter	Einzelfahrzeug	Epoche IV	20.2	
VT137 (3137)	Diesel-Triebw.	RB Wendezug	Einzelfahrzeug	Epoche III	24.0	

Limitations
Allowed for:
-Loco type: Tender-Dampf, Diesellok, Dampf-Triebw., Diesel-Triebw., Dampf-Rangier., Diesel-Rangier.
-Waggon type: Regionalbahn, RB Wendezug, Güter, Zubringer, Bauzug
-Länge (X): Einzelfahrzeug, Extrem kurz, Sehr kurz, Kurz, Mittel
-Epoche: All

Maximum vehicle-/train length LoB: 100cm

Fig. 7.102   The displayed vehicles are authorised to use the route.

If you compare the information with the matrix from the Fig. 7.101 then only steam and diesel vehicles are allowed to use this route according to the entries, there and the settings in the vehicle database or the train composition.

By double-clicking in the table, you can also invert the display and display the list of vehicles blocked on this route. The blocked vehicles are listed on a red background.

Double-click in this table to switch back and forth between the two views and quickly find errors in the matrix settings of the route.

7.10.2 Permitted vehicle/train length LoB for a route – the train length/name tab.

The entries for the matrix check can be further refined if you enter the vehicle/train length permitted for the route in length over buffer (LoB) on the "Train length/-name" tab.

In the route shown in the Fig. 7.101 the matrix settings in the third column are (Length(X)); all vehicles in the categories "Single vehicle" to "Medium" are permitted.

These designations in the "Length (X)" category do not, of course, represent a true indication of length, rather the vehicles or trains are categorised here according to your personal definition.

On the "Train length/name" tab, the maximum train length was defined to the centimetre by ticking the box "*Maximum vehicle-/train length LoB*" and entering "*100* cm".
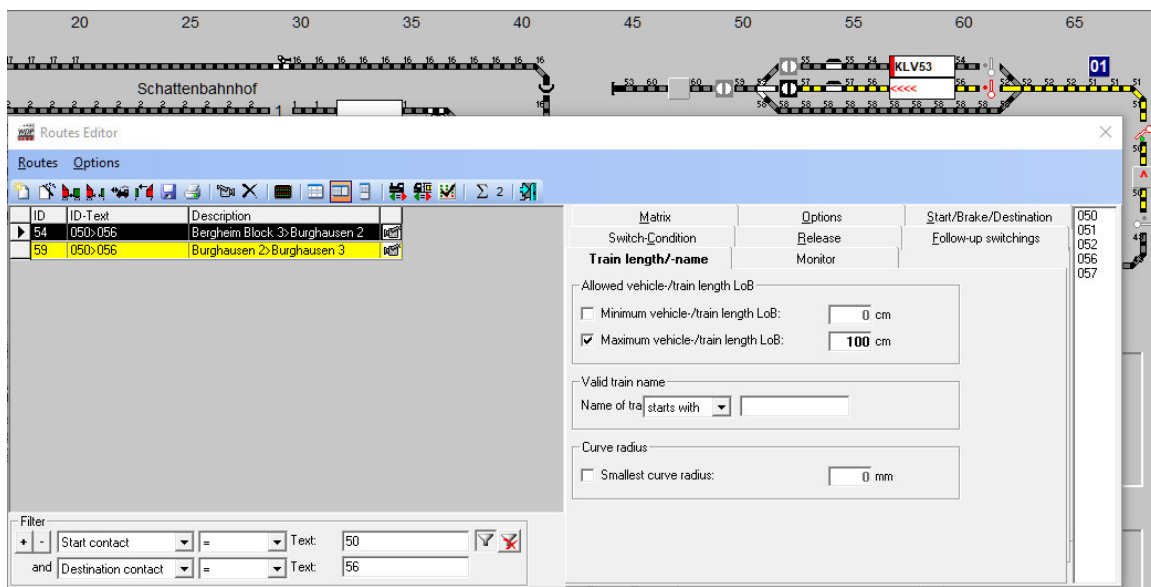
Fig. 7.103   The train length entry here processes the "real" vehicle or train length in centimetres.

For this setting to function correctly, it is essential that the vehicle lengths in the vehicle database are correct and that the trains have been entered in the train composition.

You can also define a minimum train length here by ticking the box "*Minimum vehicle/train length LoB*" and entering the corresponding value in the field behind it.

In our example here, however, this makes no sense; instead, you could think of staging yard tracks that are only to be reserved for long trains by blocking shorter trains due to the minimum length.

> Please note that limiting the maximum length here in the routes editor is the second option for limiting the length in addition to the iVHD properties.
>
> You should give some thought here to which entries make the most sense for your model railway layout.

7.10.3 Permitted train name for a route – the train length/name tab.

On the "Train length/name" tab, you can also allow the route to be used for specific train names. To do this, enter the desired name of the train in the "*Train name*" field.

In combination with the adjacent selection list, you can authorise both individual trains and groups of trains for the selected route.

In the selection list, the entries *"starts with"*, *"contains"*, *"ends with"* and *"is equal to (=)"* are available.

One example:

An entry for the train name "IC 1234" in conjunction with the selection "*is equal to (=)*" would have the effect that only the train with the name "IC 1234" would be authorised to use the route.

However, if you enter "IC" for the train name in conjunction with the selection "*starts with*", the route could be used by all trains whose train name begins with the character string "IC" (e.g. "IC 1234", "IC 4321", "ICE 1090").

7.10.4 Permitted curve radius for a route.

Finally, tab also includes the option of assigning a value for the minimum curve radius. You could assign a corresponding value in the settings for your vehicles in the vehicle database. This value is analysed here, and the use of the route may not be permitted.

7.11 Options tab, external control panel

The Options tab in the routes editor contains the function for setting the route via an external control panel.

It makes life much easier for users of external control points if the routes and train movements to be executed can be called up using two contacts (start and destination).

Up to two contacts of a control panel can be entered in the routes editor and later in the route sequence editor, which then set the desired route or route sequence as an 'AND' link. The buttons of a control panel are connected to the normal feedback modules of your system.
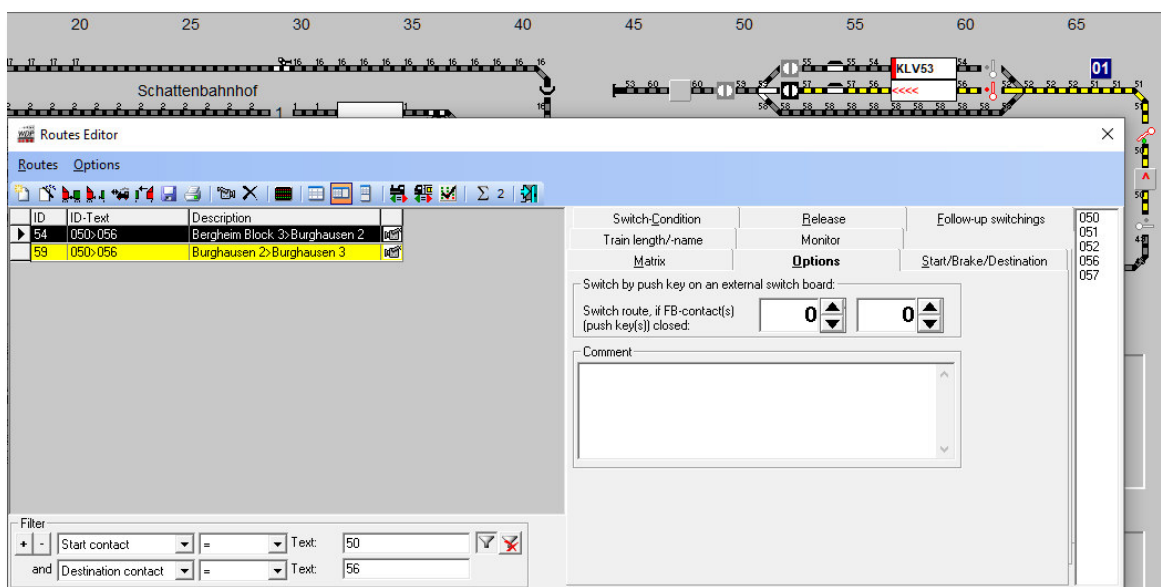
Fig. 7.104   The "Options" tab in the routes editor

7.11.1 Set the route via a button on an external control panel:

To be able to use this option, you must activate the switching of routes/solenoid items via external track layout desks using buttons in the system settings (Routes tab).

Fig. 7.105   11 for external track diagram control panels in the system settings

The image shows the section from the system settings once again. The three selection options allow the following functions:

1. Activation: Set routes/route sequences and solenoid devices by pushbuttons (external switch desks)

2. Start the vehicle automatically if the start contacts of the route/route sequence set via push-button.

3. ...and if there is information on the direction of travel, turn if necessary.

The first option must always be selected if you want to call up routes/route sequences via buttons.

In previous program versions (before 2018), **Win-Digipet** only displayed one route when the start/destination dialogue was pressed, which was assigned to the button in the routes editor. Now, if the button(s) are assigned (in the same order) to several routes, they are all displayed.

The further behaviour of the start/finish dialogue that appears depends on the selection in the second option. If this is not activated, you can select from the list of available routes and start them yourself.

If the second selection option is activated, the dialogue first checks the entry in the list, if it is available, it is taken and placed, but if it is not available, it tries the next entry in the list. If no entry in the list can be selected, the dialogue closes again.

The contacts entered in the two fields (see Fig. 7.104) now have the following effect:

- If you only enter one contact for a route or route sequence, it works as in the previous versions of Win-Digipet:
  Press contact → Execution of the route (or route sequence)

- Enter two contacts for a route or route sequence:
  Press both contacts simultaneously → Execution of the route or route sequence.

- However, if you have entered the contact combination x+y for route 1 and the same contact combination for a second route, only in reverse, i.e. y+x, Win-Digipet expects you to press and hold the button entered first and then press the second button. Win-Digipet can therefore also differentiate between this case.

Provided this is the case, you can enter the corresponding contacts here in the routes editor.

For each individual route, you can enter your own comment in a free text field, for example on the setting options via buttons for the relevant route.

7.12 Route monitoring, wrong way detection, safety contact – the monitor tab

7.12.1 Wrong-way detection via vehicle detection systems

If a vehicle or train located in an active route is detected at another location with the aid of a vehicle detection system, it must be assumed that the train in question is travelling in the wrong direction.
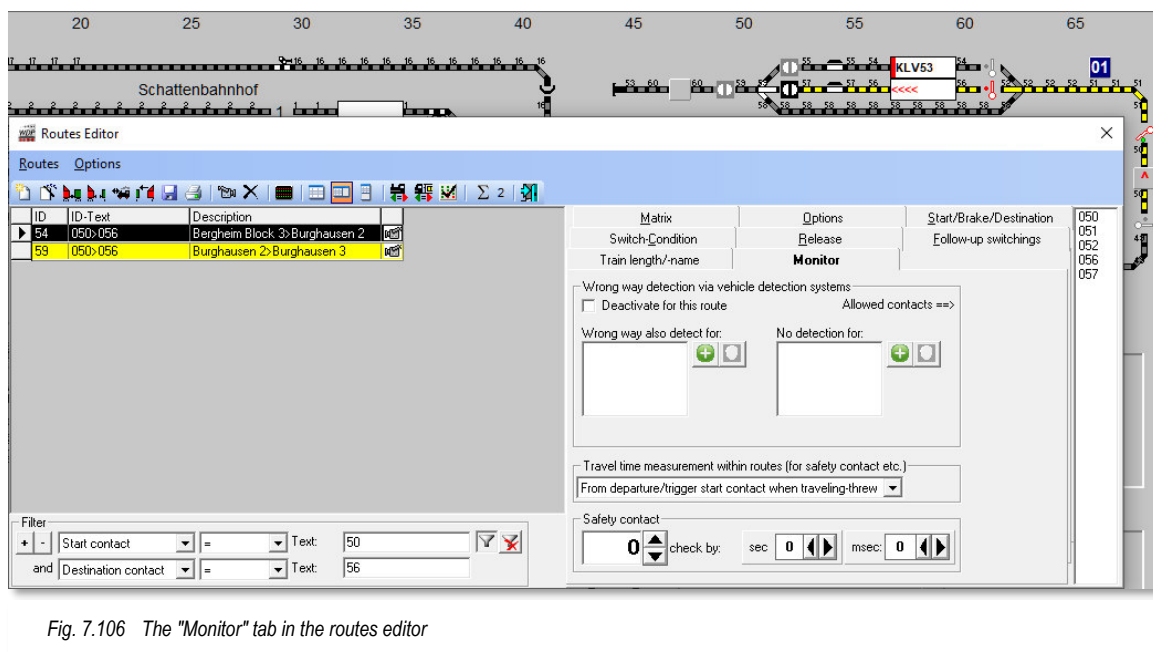
Fig. 7.106   The "Monitor" tab in the routes editor

This incorrect movement can be cancelled after you have made the corresponding setting in the system settings on the "Routes" tab. You can choose between several options, from stopping the vehicle or train in question to an emergency stop for the entire system. If you select the option "Only stop affected vehicle or train" or "Stop individual digital system", the measure will affect the vehicle/train travelling incorrectly as well as a vehicle or train on a route that may be crossing.

All FB-No's that have been recorded in the route, i.e. all FB-No's that are listed in the contact list on the right in the routes editor, are considered "permitted" contacts of a route. These contacts do not trigger false journey detection.

In addition, you can enter further FB-No's on the "Monitoring" tab in the routes editor that must not lead to wrong-way detection even though they do not belong to the recorded route or contacts belonging to the route that must not trigger wrong-way detection.

Finally, you can also completely deactivate wrong-way detection for the selected route.

7.12.2 Safety contact

This is intended to ensure that your rolling stock is protected if train collisions can occur due to inadequacies in the turnouts of the model railway layout (do not always switch correctly).

Win-Digipet cannot prevent this one hundred per cent, but it can mitigate it if you enter the required data here.

> ⚠️ If problems occur with the "hardware", such as turnouts that do not switch, you should always look for the cause and not try to cover up inadequacies with the help of the software.

If the turnouts in a route do not always switch correctly, proceed as follows:

You drive the slowest train along the set route and use the stopwatch or like measure the travelling time of the train until it reaches the contact behind the turnout in question. Enter this contact and the measured time in sec. and msec. on the tab (see Fig. 7.106). You must test and enter the time until the safety contact is triggered by travelling the route several times with different trains. The start of the travel time measurement in an active route can take place when the start contacts or another contact in the route is triggered, which you can specify on the "Monitor" tab.

If the train does not reach the contact entered after the set time because the points have not switched or there is another fault, the train or all trains are stopped. There is a dependency here on the "Routes" tab in the system settings (see section 3.9).
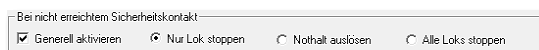
Fig. 7.107   12 for the safety contact from the system settings

You must decide for yourself which of the three switches to activate, but you should only set an emergency stop in exceptional cases. It is better to stop all vehicles here, because in this case all stop commands are still sent to the vehicles before everything "stops".

7.13 Convert routes to km/h.

If you have switched from a previous version (**Win-Digipet** Pro X.3 and older) to the new version of **Win-Digipet,** your old project will automatically be switched to driving with speeds according to km/h the first time you open it. It is no longer possible to drive with the old speed step mode.

If, for example, you still have unconverted routes in your database from an old data backup of your project, you can convert these to the current format using the menu item <Convert routes to km/h> from the "Options" menu in the routes editor.

After clicking, you will see a window with the total quantity and the number of unconverted routes.

As already mentioned above, the need for conversion lies in travelling by km/h in **Win-Digipet**. In the past, this was done according to speed steps.

The speed levels are converted into km/h values based on a conversion table.

You can display this table in the dialogue shown here and edit it if necessary. To do this, click on the '*Show conversion table*' button.

Here you can see the data from the old routes with the values from -70 to 70 in the top line, which cannot be changed. Below this are the new values for travelling by km/h. You can

Fig. 7.108   Old routes can be converted to the current format.

change these values upwards or downwards using the arrow buttons, as shown in the image for the old value 0.

Automatically converted routes can be reset to the old values at any time by clicking on the '*Undo*' button. However, if you have changed a route or simply saved it again, this function is no longer possible for this route.

7.14 Assign routes to the virtual keyboard.

In the main programme, you can set **32** frequently used routes particularly quickly by clicking on the command buttons of a **virtual keyboard.**

To do this, assign these maximum 32 routes to the command buttons of the virtual keyboard in the routes editor.

Click on the ▦ icon in the toolbar of the routes editor.

When you do this for the first time, the "Virtual keyboard" window opens with 32 command buttons.

In the left selection field, use the down arrow to select the digital system used and in the right selection field, select the keyboard number, which will usually be keyboard 1.

The **keyboard number** in the right-hand display field only applies to owners of an **Intellibox**; explanations on this are provided later in this section. If you do not have an Intellibox, select "1" as the keyboard number.
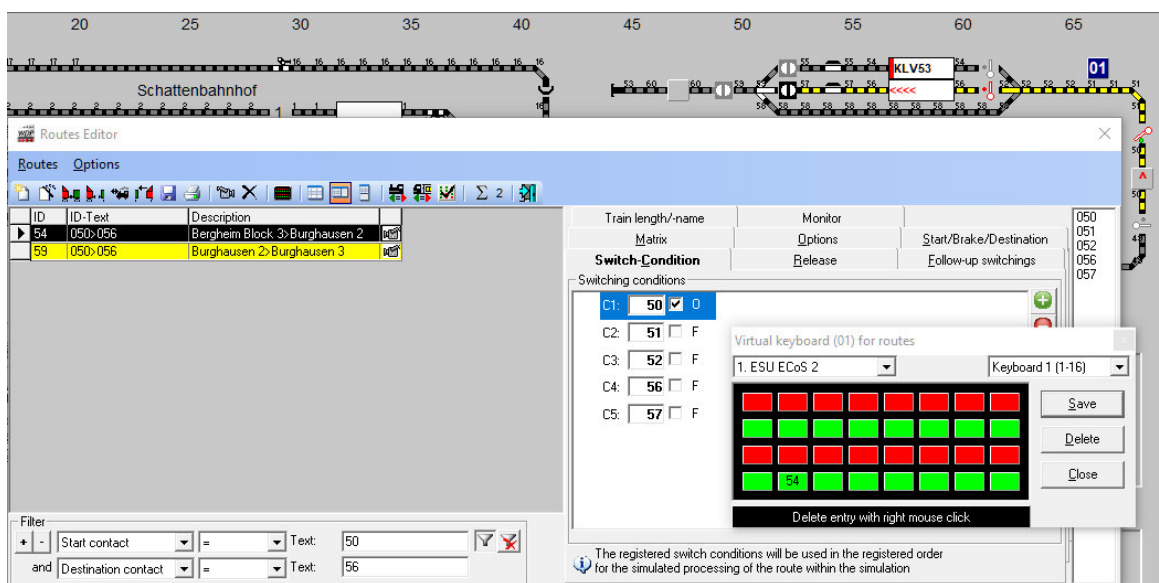
Fig. 7.109   A route has been placed on a virtual keyboard.

In the route list, select the route that you want to assign to a command button on the virtual keyboard or select the route using the start/target function. Then click on the highlighted list line, hold down the left mouse button and drag the route to the desired command button and release the left mouse button.

The assigned command button has the **ID number** of the route, and its ID text appears in the lower display line of the window. The ID text always appears as soon as you move the mouse pointer over an assigned command button.

Once you have assigned all the desired routes to the buttons, click on '**Save'**. The routes entered are saved and are ready for setting with the virtual keyboard in the main programme.

You can delete the route entries **individually** by right-clicking on the corresponding command buttons.

Use the **'Delete'** button to remove **all** route entries in the virtual keyboard.

Special feature for owners of an Intellibox:

As already described in the chapter on system settings, the Intellibox provides real feedback from your model railway layout to your computer.

You can therefore use an existing real keyboard - plugged in to the left of the Intellibox - to set the first group of 16 of your routes at the touch of a button.

All you need to do is select the address of this keyboard under "Keyboard no." and tick the "*Position display of solenoid items when entering via keyboard*" checkbox on the "Hardware - Digital systems" tab in the system settings.

The additional activation of the "*Start vehicle automatically when on start contact of the route set via button*" switch also allows the locomotive or train to start when the button is pressed. Without this option, you would have to drive the vehicle manually via the set route.

7.15 Expert mode

The routes editor, like other parts of the **Win-Digipet** programme, contains a so-called expert mode. You can activate it in the <Options> menu of the routes editor.

> Please only activate expert mode after you have familiarised yourself thoroughly with how **Win-Digipet** works.
>
> Trouble-free use of the functions in expert mode requires in-depth knowledge of the interaction between the various parts of the programme.

The expert mode was implemented here because many users have learnt to appreciate the benefits of the route assistant when creating routes. Manual or semi-automatic recording is only rarely used, if at all. For the special routes described below, however, it is essential to deal with this again.

Once activated, three additional icons are available in the toolbar of the routes editor. They can be used to create the special train coupling or train division routes mentioned above as well as so-called relocate routes . The corresponding entries can also be found in the <Routes> menu.

Furthermore, two new tabs (coupling and separation options) are available in the routes, although these are only displayed for a route of the corresponding type. These tabs are not displayed when a "ordinary" route is selected.

7.16 Routes for special tasks

7.16.1 Move-up routes

A move-up route is used to move vehicles or trains that are entered one behind the other on a multi-vehicle display (MiVHD) up to the position of the following vehicles after the vehicle has left the first position. A move-up route therefore includes movements that all take place on a MiVHD. Move-up routes are probably more likely to be used for road-related systems (several vehicles stopping at a traffic light) but can also be used for rail-related operations.

The recording of a route can be carried out both with the route assistant and in semi-automatic or manual recording mode . In this example, we are using the route assistant.

The Fig. 7.110 shows the selection of the start and destination points for the move-up route. You can see that only the MiVHD has been selected here as the start and destination. This area only includes FB-No. 1 as the start and destination contact. However, due to the functionality of the "intelligent VHD", all FB-No. s that are assigned to the MiVHD are included in the move-up route.

Fig. 7.110   The selection of the start and destination point for a move-up route.

In the next step, you define the direction in the route assistant; here, the vehicles or trains should move to the right. As usual, click on the arrow pointing to the right and the routes wizard will offer you the variant found.
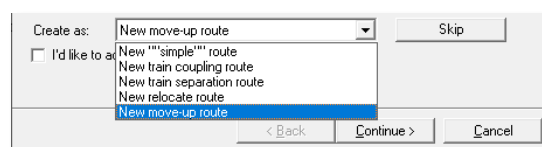
Fig. 7.111   Selecting the route type.

From the selection list "Create as:" below the table with the variants found, select the entry "New move-up route". After confirmation, the wizard creates the new move-up route and displays it in the route list. In the route list of the routes editor, the move-up routes are highlighted in orange colour.

Fig. 7.112   A move-up route in the route list

Some rules on the subject of "Move-up" routes:

- 🚂 A move-up route always requires a MiVHD.

- 🚂 For a MiVHD, only the signal position is specified in the vehicle display properties.

- 🚂 It is not possible to turn in a move-up route.

- 🚂 A move-up route can be called up using the start/destination function or integrated into a tour automatic

The data record of a move-up route naturally contains the familiar tabs. However, some special features must be pointed out at this point.

🚂 **"Switch-Condition" tab**

The tab differs in that, unlike a conventional route, no contacts are listed or can be entered here.

Only the contact of the MiVHD was included in the recording of the move-up route. This FB-No. may be free or occupied when the route is executed. The correct length specifications for the contact sections and the actual length specifications for the vehicles or trains are important for the correct execution of a move-up route.

The entry on the tab specifies the minimum distance that must be travelled to move up to the vehicle in front (plus distance) or to the signal position. The default setting here is 1 cm.
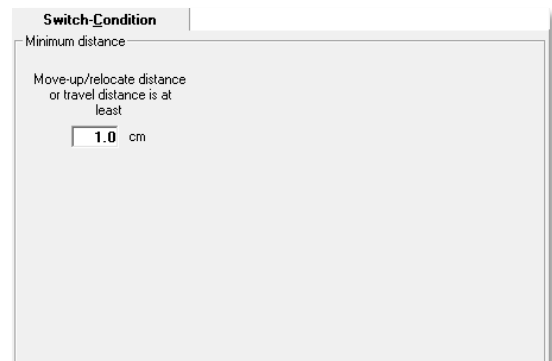
Fig. 7.113 Switching conditions for a move-up route

🚂 **Start/brake/finish" tab**

There are no significant differences to the "normal" routes on this tab. It should only be noted here that only the stop at the signal or behind the last vehicle is available as the target position. The value for the braking speed from the system settings is used as the default speed here. However, this can be changed, but make sure that you do not set the value entered here too high.
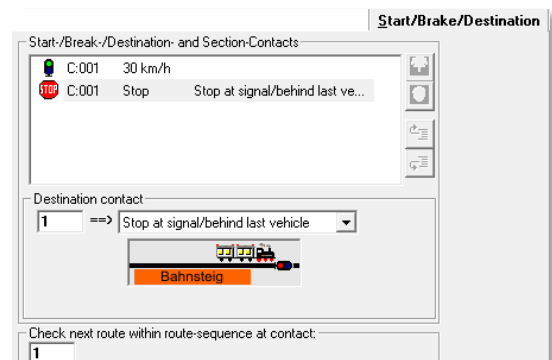
Fig. 7.114 13 for a move-up route

7.16.2 Relocate routes (expert mode)

The so-called relocate routes have the task of transferring a vehicle or a train within a track from one stopping position to another stopping position. For a transfer route within a track, you can use either an intelligent vehicle display for two directions of travel or two iVHD, each for one direction of travel.

A transfer route can be recorded both with the route assistant and in semi-automatic or manual recording mode . In this example, we are using the route assistant.

In the Fig. 7.115 you can see that the two exit signals of the track have been selected as the start and destination points. The vehicle display in the centre of the track is set up as an iVHD for two directions and includes contacts 32, 33 and 34.

The Fig. 7.116 shows a relocate route with two iVHD. Contact 129 was assigned to both iVHD. The route was again recorded from signal to signal here. In contrast to a transfer route with only one iVHD, the start contact here is not the same as the destination contact. The assignment of the FB-No. 129 to both iVHD causes the programme to save the route as a transfer route.

In the next step, you define the direction in the routes wizard; here, the vehicles or trains should travel to the right. As usual, click on the arrow pointing to the right and the routes wizard will offer you the variant found.

From the "Create as:" selection list below the table with the variants found, select the "New transfer route" entry. After confirmation, the new transfer route is created by the assistant and displayed in the route list. In the route list of the routes editor, transfer routes are marked with a light blue colour.
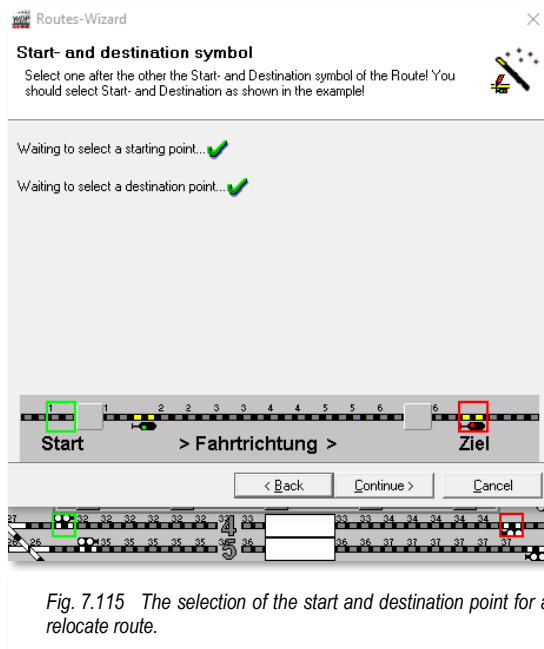
Fig. 7.115   The selection of the start and destination point for a relocate route.
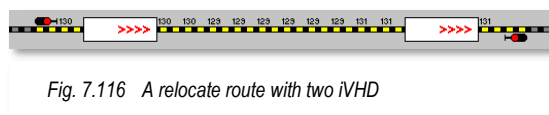
Fig. 7.116   A relocate route with two iVHD
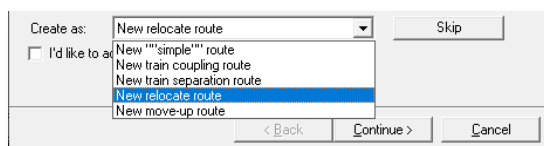
Fig. 7.117   The selection of the route type relocate route

Fig. 7.118   A relocate route in the route list

Some rules on the subject of "Relocate routes":

🚂 A relocate route always requires one or two iVHD.

🚂 If two iVHD are used in the track, one of the feedback contacts <u>must</u> be present in both iVHD.

🚂 It is advisable to set up a relocate route for each direction in a track with two directions of travel.

🚂 A relocate route can be called up using the start/destination function or integrated into a tour automatic.

The data record of a transfer route naturally contains the familiar tabs. However, some special features must be pointed out at this point.

🚂 **"Switch-condition" tab**
The tab differs in that, unlike a conventional route, no contacts are listed or can be entered here.
The contacts of the iVHD are included in the recording of the relocate route. The correct length specifications for the contact sections and the actual length specifications for the vehicles or trains are important for the correct execution of a relocate route.
The entry on the tab specifies the minimum distance for transferring to another stopping position on the track. The default setting here is a minimum distance of 1 cm.
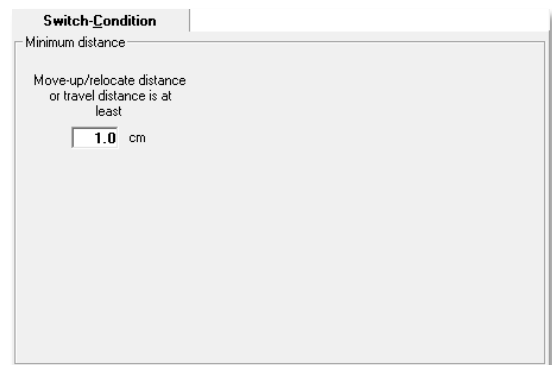
Fig. 7.119   Switching conditions for a relocate route

🚂 **"Start/brake/destination" tab**
There are no significant differences to the "ordinary" routes on this tab. The opposite signal, the start or end of the platform and the centre of the platform can be selected as target positions. The braking speed value from the system settings is used as the default speed here. However, this can be changed, but make sure that you do not set the value entered here too high.

7.16.3 Train division routes (expert mode)

A train division route means that part of a train remains on one vehicle display and part continues to another vehicle display. So, to speak, what was previously one train now becomes two trains.

In the routes editor, only the logical separation of the trains is carried out with the train division routes. The physical separation then takes place with the help of uncoupling tracks, automatic couplers, or manual uncoupling. For this purpose, profiles (see chapter 9) must be created subsequently for the train division routes.

The routes for separating the trains can be recorded manually or semi-automatically using the routes wizard or after creating the train division route by clicking on the 🔳 icon. After saving, you will already see a difference to a "normal" route. The entry of a train separation route is highlighted in green in the route list of the routes editor for better differentiation.

Later, in the "start/destination" dialogue, train separation routes are marked in bold.

A tab with the separation options is now also available for the newly created train separation route (cf. Fig. 7.120). A distinction is made between the following separation types, which have been created based on realistic situations on the large railway:

- **Locomotive exchange**
  the locomotive(s) is uncoupled from the train and driven away.

- **End double heading**
  one or more locomotive(s) are uncoupled at the beginning of the train.

- **End trailing locomotive**
  one or more locomotive(s) are uncoupled at the end of the train.

- **Uncouple waggons**
  Waggon(s) is uncoupled from a train and remain uncoupled.

- **Divide train**
  A train is to be separated (e.g. railcar A continues to destination 1 and railcar B to destination 2, quasi wing trains).

- **Release train**
  The train is cancelled.

- **Manual**
  New names can be assigned to the train parts.
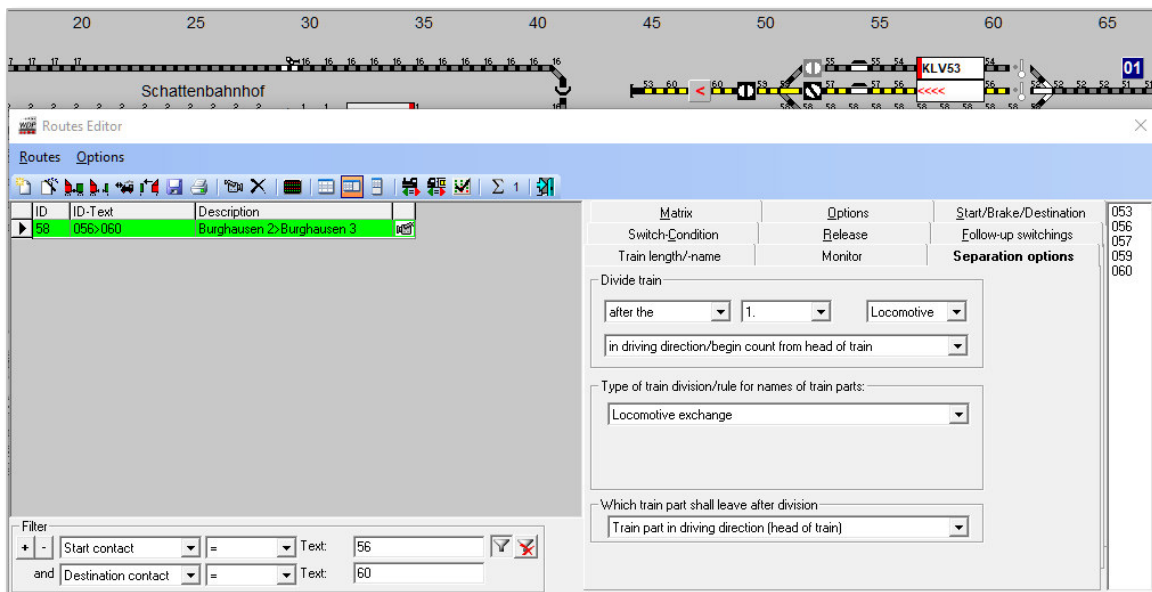
Fig. 7.120   A train division route with the associated "Separation options" tab

On the tab with the separation options, use the list boxes to specify the following parameters:

🚂 **At which point of the train is the train separated**

By combining the list fields, you can separate the train at almost any position on the train.

As an alternative to the selection list, a counter from the track diagram can also be placed in the centre list field (cf. Fig. 7.121). To do this, hold down the left mouse button and drag a counter symbol from the track diagram into the centre selection list.
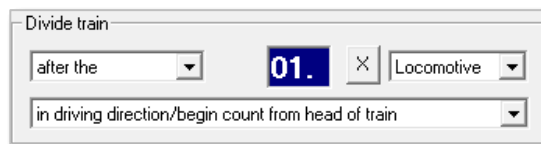
Fig. 7.121   Dividing position with counter

The counting direction in the lower selection list always depends on the current direction of travel of the train. The start of the train is always defined at the front in the direction of travel.

🚂 **Type of train division**

With the selection in this list field, the different types of train separation mentioned above can be realised independently of the separation position. The name assignment and settings of the matrix after the separation are regulated here. The rules for the train separation types and for assigning names are summarised in the following table.

🚂 **Determining which of the two train sections moves away**

At this point, you can define whether it is the front or rear part of the train as seen from the direction of travel.

The following table summarises the regulations regarding the matrix settings and the train name for the various separation scenarios:

Separation type	Train section affected	Name	Matrix	Break up a partial train with one vehicle
Locomotive exchange	Standing bl. Train part	from the previous train	from the previous train	no
	moving train section	from the leading vehicle	from the leading vehicle	Yes
End double heading	Front train section	from the leading vehicle	from the leading vehicle	Yes
	rear train section	from the previous train	from the previous train	no
End trailing locomotive	Front train section	from the previous train	from the previous train	Yes
	rear train section	from the leading vehicle	from the leading vehicle	no
Uncouple waggon(s)	Standing bl. Train part	from the leading vehicle	from the leading vehicle	Yes
	moving train section	from the previous train	from the previous train	no
Divide train	Standing bl. Train part	from the previous train +A (9th position)	from the previous train	no
	moving train section	from previous train + B (9th position)	from the previous train	no
Release train	Standing bl. Train part	from the leading vehicle	from the leading vehicle	Yes
	moving train section	from the leading vehicle	from the leading vehicle	Yes
New name for remaining part	Standing bl. Train part	according to routes editor	from the previous train	no
	moving train section	from the previous train	from the previous train	no
New name for departing train section	Standing bl. Train part	from the previous train	from the previous train	no
	moving train section	according to routes editor	from the previous train	no
New name for both train sections	Standing bl. Train part	according to routes editor	from the previous train	no
	moving train section	according to routes editor	from the previous train	no

When names are assigned by the routes editor, each train that uses the route is given the name set here.

> The separation options must be formed in such a way that a separation of the train is also possible due to the respective situation.
>
> For example, if you have too few wagons in the train than the specified separation position, the route will not be executed, and you will receive a corresponding error message instead.

7.16.4 Train coupling routes (expert mode)

A train coupling route has the effect of joining a train or locomotive with an existing train. Two trains are combined into one train, so to speak. In the routes editor, the train coupling routes are used to logically link the trains. It goes without saying that the train coupling routes, just like the train division routes, must also be run with profiles.

After creating the train coupling route by clicking on the ![symbol] symbol, manual or semi-automatic recording and saving, you will see a difference to a "normal" route.

The entry of a train coupling route is highlighted in yellow in the route list of the routes editor for better differentiation. A tab with the coupling options is now also available.
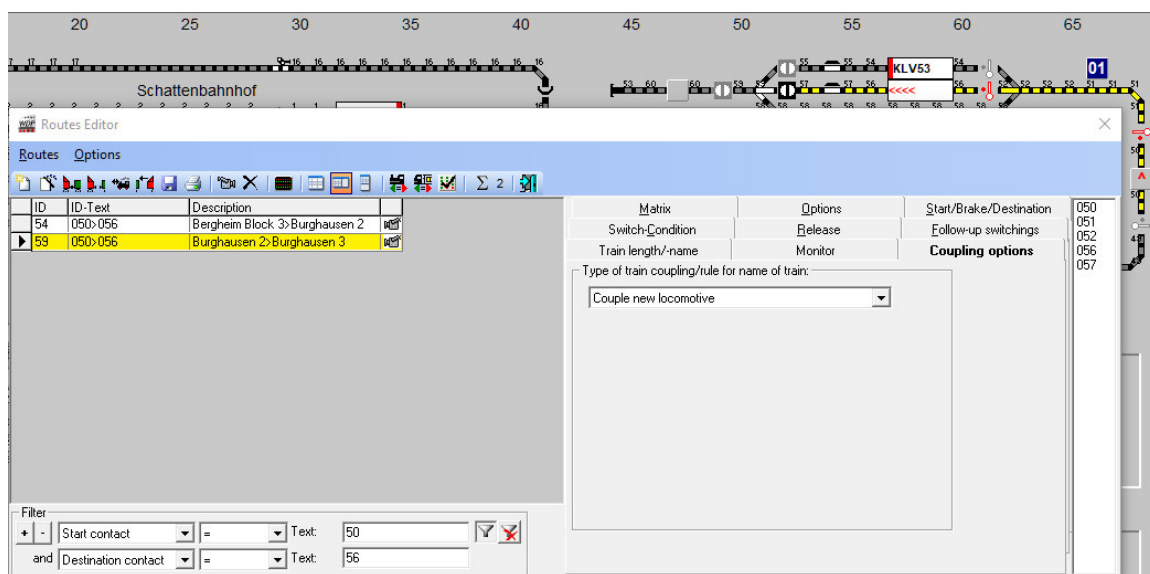
Fig. 7.122 A train coupling route with the associated "Coupling options" tab.

In the "start/destination" dialogue, train coupling routes are marked in bold.

Like the train division routes, different types of train couplings are offered. Here, too, the focus is on naming and the matrix of the new train.

- **Couple new locomotive**
  A locomotive is coupled to an existing train.

- **Start double heading**
  A locomotive is coupled to an existing train as a lead locomotive.

- **Add trailing locomotive**
  a locomotive is coupled to an existing train as a push-pull locomotive.

- **Couple waggons**
  either the wagons are brought by a locomotive, or the train manoeuvres up to parked wagons. Win-Digipet makes the distinction automatically depending on whether there is a locomotive on the destination train.

- **Train junction**
  can only be executed if the result of a train split is two trains with identical names supplemented by the letters A and B in the 9th position of the train name.

- **Manual**
  Any logic can be compiled with this selection.

The rules for the types of train couplings and for the assignment of names are summarised in the following table:

	Name	Matrix	Leading vehicle	Only available if
Coupling a new locomotive	From train section at destination	From train section at destination	From approaching train section	
Coupling the leader	From train section at destination	From train section at destination	From train section at destination	Standing train section includes locomotive
Coupling supplies	From train section at destination	From train section at destination	From train section at destination	Standing train section includes locomotive
Coupling wagons	From the train section at the destination, if there is a locomotive in it (shunting locomotive brings further wagons)	From the train section at the destination, if there is a locomotive in it (shunting locomotive brings further wagons)	From the train section at the destination, if there is a locomotive in it (shunting locomotive brings further wagons)	
	From the arriving part of the train if there is no locomotive at the destination (train shunts up to other wagons)	From the arriving part of the train if there is no locomotive at the destination (train shunts up to other wagons)	From the arriving part of the train if there is no locomotive at the destination (train shunts up to other wagons)	
Train merging	From train section at destination (minus 9th character)	From train section at destination	From train section at destination	If division result of a division route (same name +A/B)
Manual	Selection box in the routes editor: From stationary train section From the approaching train section manually	Selection box in the routes editor From stationary train section From the approaching train section	Selection box in the routes editor: From stationary train section From the approaching train section	If leading is set to "from stationary train section", this can only be set if a locomotive is present

7.16.4.1 *Stopping position in a train-coupling route*

As an alternative to the default stop position "Stop at contact", you can select the "intelligent" stop position "Stop at stationary train" for a coupling route.

This allows you to approach and couple the stationary train with pinpoint accuracy. The position of the stationary train is known to **Win-Digipet** if you have ticked the corresponding box in the system settings. This means that coupling routes can also be executed without the corresponding profile lines.

You can also extend the approach by a value to be defined in cm, for example to ensure a safe coupling process.

An optional feedback contact upstream of the iVHD, which you can enter by specifying the distance, rounds off this dialogue window.

Fig. 7.123   The "Stop at stationary train" stop position.

As usual, you can check this feedback contact for "OCCUPIED" if, for example, there is still a free contact between the start contact of the coupling route and the destination iVHD. If there is no intermediate contact, the upstream FB-No. can also be checked for "(again) FREE". At this point, you must also define the distance between the upstream FB-No. and the start of the iVHD. This distance is greater than 0.0 cm, for example, if there is an unmonitored switch between the end of the upstream FB-No. and the start of the iVHD.

> For the function described here to be used correctly, both the contact and vehicle or train lengths must be recorded accurately. Furthermore, the feedback must function reliably and without interference. Approaching a stationary train section should take place at relatively low speeds (< 20 km/h).

7.17 Test routes

You can also routes you have just created can also be checked immediately with **Win-Digipet.**

You can test the routes with...

- 🚂 the simulation of Win-Digipet (you can immediately check your created route "live" on the screen)
- 🚂 the route test drive in the routes editor with the simulation
- 🚂 and the route test run in the routes editor with system connection.

7.17.1 Find feedback contacts in the track diagram.

Individual Feedback contacts can be located very quickly in the track diagram by clicking with the <u>middle mouse button</u> in a field for feedback contacts in the routes editor, e.g. on the switch-conditions tab, and holding the mouse button down. The corresponding track symbols of the feedback contact entered in the field are then marked with a red frame. This marking is deleted again as soon as you release the <u>middle mouse button.</u>

> ⚠️ You can use this function in all **Win-Digipet** editors in which fields are provided for contact entries. Try it out!

7.17.2 Magnifying glass for feedback contacts

Not only in the routes editor, but also in the main programme, you can tick <Always display FB numbers> in the <Options> menu so that the feedback contact numbers are displayed in the track diagram. This function has another advantage.

If you display your track image in 12 x 12 zoom mode, for example, these numbers are very small and very difficult to read. If you now click on a feedback contact with the mouse, a magnifying glass will open, and the feedback contact number concerned will be easier to read.

Fig. 7.124 Contact number displayed enlarged 14   the screen magnifier.

The magnifying glass does not work if you have also ticked <Complete symbol information under mouse pointer> in the <Track diagram> menu of the main programme. In this case, only the symbol information is displayed.

If you call up the simulation with this "Show all feedback contacts" function switched on, the feedback contacts on which there are vehicle displays with entered vehicle numbers are not illuminated in red, as is usually the case.

You cannot click on any track sections with the mouse to report them as occupied or free for the simulation.

Therefore, always switch this function off before starting the simulation.

If you have switched on the function **after** switching on the simulation but **before** setting a route with the start/destination function or the automatic route function, this function will be switched off by **Win-Digipet** at the latest, as otherwise the simulation cannot run correctly.

7.17.3 Test routes with the simulation

You have just created your routes and want to quickly test whether everything works as you imagined.

Win-Digipet offers you a fully-fledged simulation for this purpose. Exit the routes editor and, holding down the right mouse button, drag a vehicle from the vehicle selection (vehicle bar, vehicle control or vehicle monitor) onto the start vehicle display of the route to be tested.

Now click on the icon in the main toolbar. The "Simulation" window appears.
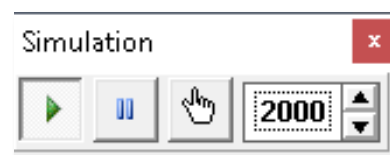
The time for the speed at which **Win-Digipet** runs the simulation can be set here in milliseconds. You can set this to the value 2000, for example, so that the next contact is "processed" every 2 seconds during a route.

The simulation is active immediately after switching on. However, you can start or pause the simulation using the buttons in the window.

The symbol with the hand interrupts the automatic process and you can process the individual contacts manually.

After calling up the simulation, all feedback contacts are illuminated in red on the screen if there is an occupied vehicle display with an entry for a vehicle or a train. The first setting condition (start contact occupied) for a route to be executed is therefore already fulfilled and you do not need to do this yourself.

Now use the start/destination function to set the route to be tested.

This is then immediately illuminated on the screen after **'Switch + Drive'** and the train is moved forwards on the screen as if by "magic". Any error messages in the start/destination dialogue window could be an indication of an incorrectly created route.

- The vehicle number moves to the destination vehicle display according to your settings in the control panel.

- The feedback contacts are illuminated red one by one (the vehicle or train "moves") in the order of your entries in the route after the time you have set (see Simulation window). If you have not entered the feedback contacts in the correct order in the route, you will see this here at the latest and should then correct it.

- The follow-up switching operations entered in the route are also triggered when the respective feedback contact is reached.

- The partial sections are released when the corresponding feedback contact is reached and deleted from the screen.

- The speed of the vehicle is displayed in the vehicle controls ("Maxi" or "Mini") or in the vehicle bar if the vehicle is visible there.

- When the destination vehicle display is reached, the vehicle is stopped, and the total or remaining route is released.

If the route was executed incorrectly (incorrect sequence of feedback contacts, incorrect vehicle speed, etc.), change the route data in the routes editor.

Then drag the vehicle or train back to the start vehicle display after the **Win-Digipet** safety prompt and change the track diagram illumination of the route with the left mouse button (you can switch the feedback contacts on and off at the relevant points in the track diagram by clicking on the track symbols) and restart the route with the start/destination function. If you want to test other routes, proceed in the same way.

In this way, you can test the routes you have created without a system connection (even during your lunch 😎 on the office PC). Any errors do not result in expensive damage but are only visible on the screen. If you **switch off** the simulation again (do not confuse this with pausing), a reset prompt appears, which you must confirm with '*Yes*' or '*No*'.

> If you must test a route with many feedback contacts and sequential circuits, it is sometimes useful to stop the simulation and trigger the individual feedback contacts (occupied/free) with the left mouse button. This gives you plenty of time to monitor all functions

> If you test the simulation on your model railway PC with a system connection, the system connection will be disconnected, and no solenoid items or locomotives will be controlled.

When exiting the simulation on the model railway computer, you should **always** answer '*Yes*' to the **Win-Digipet** reset query. Otherwise, the actual state of your model railway layout may no longer match the situation on your screen.
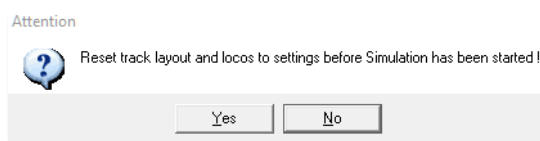
Fig. 7.125   Important safety query when exiting the simulation.

7.17.4 Route test drive on the system

Exit the routes editor and, holding down the <u>right mouse button,</u> drag a locomotive or vehicle from the vehicle selection (vehicle bar, vehicle control or vehicle monitor) onto the start vehicle display of the route to be tested.

Now place the registered vehicle on the start contact of the route to fulfil the setting condition of the route (start contact occupied). Now open the vehicle control of the vehicle, if it is not already open, so that you can follow the journey of the vehicle via the vehicle control.

To track the test drive on the screen, choose the <tour inspector> in the <Monitor> menu. The tour inspector can be a valuable aid for any troubleshooting, especially when the detailed view is open. In the detailed view, each individual step in the processing of routes is displayed in an easy-to-follow graphical tree structure.

To start the test drive, click on the start vehicle display with the middle mouse button and then click on the destination vehicle display of the route to be tested with the middle mouse button.

The "Selecting Start/destination" dialogue opens immediately and displays the first of the routes found in the track diagram (cf. Fig. 7.126). In our example, two routes are found for the selected route. Based on the display of the two routes in the start/destination dialogue, you can see that the second entry (ID 59) in the list is a special train separation route.
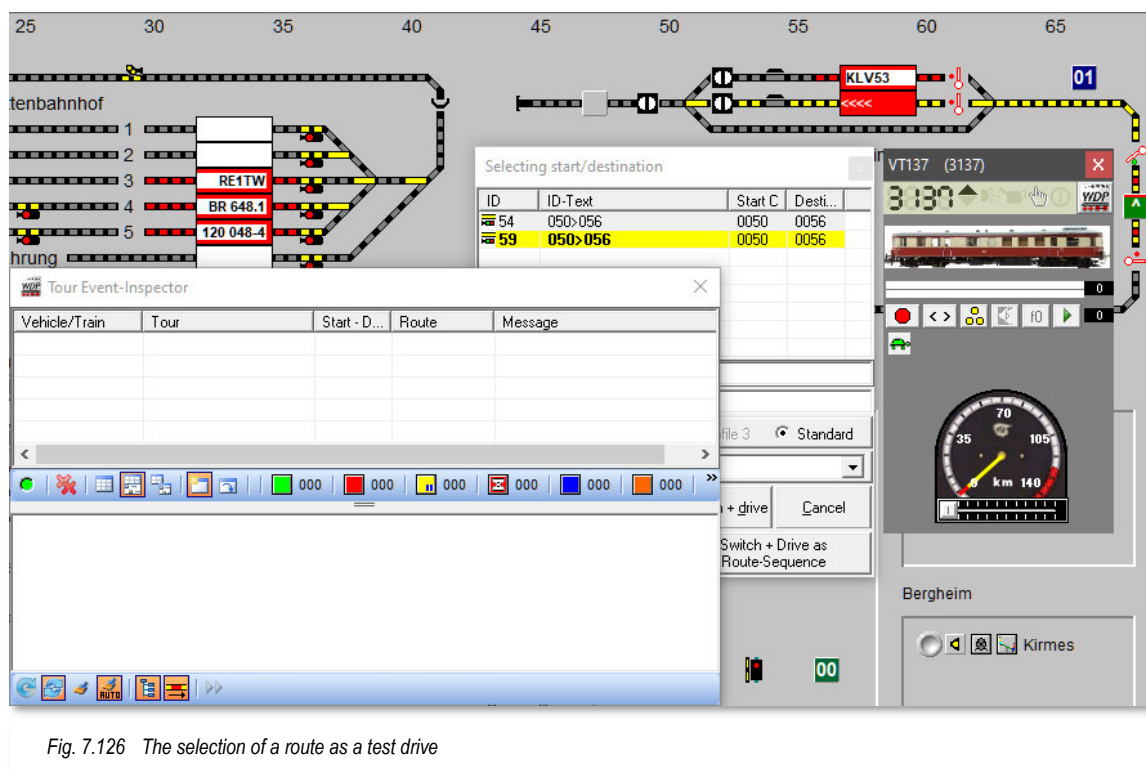
Fig. 7.126   The selection of a route as a test drive

The first entry contains a route with ID 54, which we want to use for the route test. After selecting the line, click on the **'Switch + Drive'** button. The route is set immediately, and the locomotive starts moving at the speed you have set.

You can see this in Vehicle Control, and all activities associated with the route are also listed in the Journey Sequence Inspector.

In the detailed display of the tour event inspector, you can see ...

- 🚂 the drive commands.
- 🚂 the follow-up switching
- 🚂 and the releases

...that are to be carried out during this journey.

Once the test run is complete, there must be no more entries in the train monitoring system. Errors should be rectified immediately so that operation can run smoothly later.

> An exception to this, however, are the sequential circuits entered with "*FREE*" if the train has not yet released these feedback contacts again, as they are still occupied when the train stops in front of the signal.

7.18 Other functions in the routes editor

7.18.1 Suppress query for saving.

If you are bothered by the permanent security queries for saving a data set in the routes editor, you can deactivate them. To do this, click on the menu command <Options> <Don't ask for saving now>.

> If you switch off the security prompts, you may end up duplicating work, as many tasks and settings may have to be repeated because of a single incorrect mouse click.

7.18.2 Replace vehicles under conditions and circuits.

If you have If you have assigned individual vehicle addresses to many routes, it can be very tedious if you want to change vehicles.

If you want to swap vehicles, e.g. to redefine the "home tracks", click on the 🔧 icon in the toolbar of the routes editor and the window shown will open.
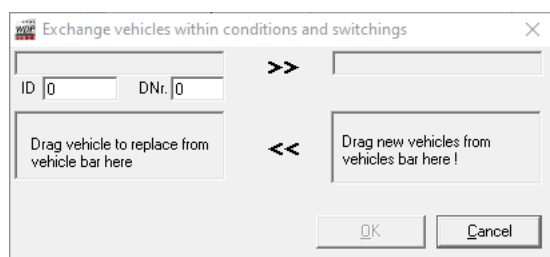
Fig. 7.127   Dialogue for a vehicle exchange in the routes
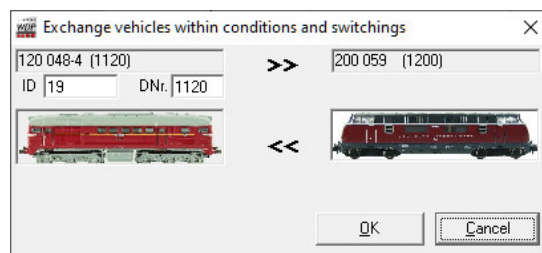
Fig. 7.128 The vehicles intended for replacement are dragged into the dialogue window.

If you have dragged the "old" and "new" vehicle into the fields (cf. Fig. 7.128), the routes editor runs through all existing routes after clicking on **'OK'** and swaps the selected vehicles with each other if the condition is met (e.g. locomotive x on VHD y).

7.18.3 Replace trains under conditions.

You can also perform the same function as described in the previous section for entire trains using the 🔧 symbol.

7.18.4 Print route list

To print out the route list, click on the icon 🖨 in the toolbar of the routes editor.

The processes are described in the same way as in section 4.17 -Print vehicle database - explained. The screen displays are self-explanatory. A wide range of selection options makes it very easy to customise the paper output of your route list.
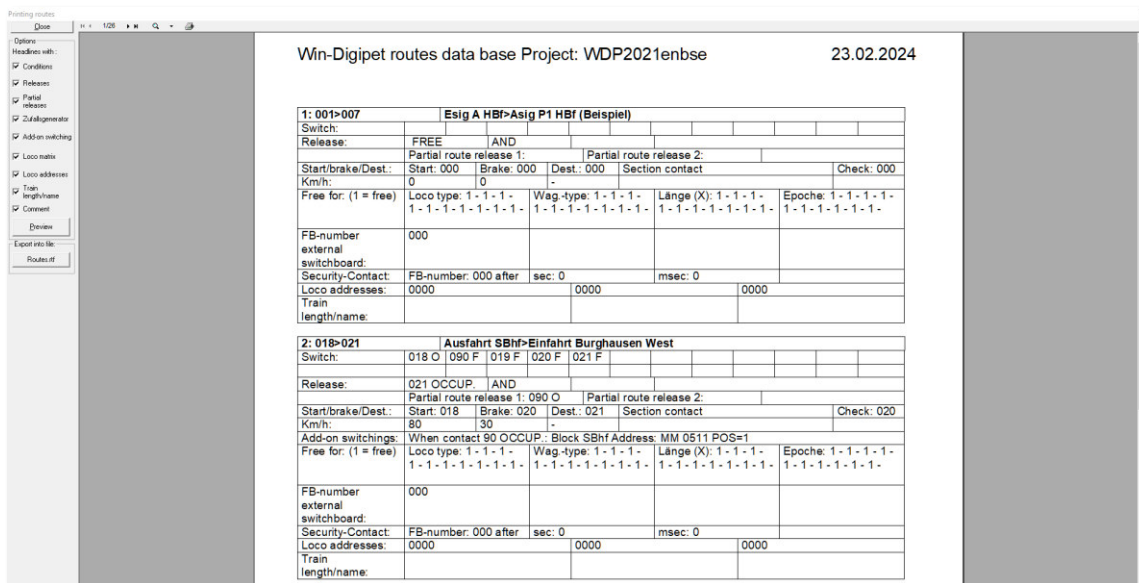
Fig. 7.129   printout of the route list

Export to a file format that can be read by a word processing programme is also possible via a corresponding button *'Routes.rtf'.*

If you have changed the selection in the options, this will only be displayed again after clicking on the **'Preview'** button.

7.19 Exit routes editor.

To do this click on the ⬛ icon in the toolbar.

After a possible confirmation prompt to save the last changes in the routes editor, you will return to the main **Win-Digipet** programme.

You can use the check routine in the main programme to check the correctness of your routes.

Version 2021
Premium Edition

Chapter 08

8. THE ROUTE SEQUENCES

8.1 Principles and general information

In the previous chapters you have already learnt about some renaming compared to the previous versions of **Win-Digipet.** The term "route sequences" has also been newly created for version 2021 and replaces the term "train journeys".

> From now on, route sequences will replace the term and functionality of train journeys.

The route sequences in **Win-Digipet** are a superordinate form of routes. They also define the route of a vehicle or train from a start contact to a destination contact. Route sequences are combined (concatenated) from **existing** routes and, just like the routes, always have **a unique start contact** and **a unique destination contact**.

Unlike routes, however, the start contact can be the same as the destination contact in a route sequence, provided there is at least one block (route) in between. Based on this, the vehicle or train travels from block to block, but only stops if the block in front of it is not "free" and there are no possible or valid alternative routes.

The route sequences are created in table form. Each entry in the route sequence table means a travel movement via a route defined with a start and destination contact and this travel movement leads via routes that you specify. The route sequence can also use almost the same route over your system several times, but **never** over the destination point of the route sequence more than once.

For the so-called route sequence editor is used to create route sequences in **Win-Digipet**. This offers you the following options:

- Combine several routes that have already been created into a route sequence.
- Insert intermediate stops and link them with conditions.
- In the route sequences, fixed alternative routes must also be considered if tracks are still occupied by another vehicle or train.
- To guide the vehicle or train several laps of the layout before it reaches its destination.
- Enable forward and reverse movements of vehicles/trains in the route sequence. Necessary turns are carried out automatically according to the direction information of the routes.
- Created route sequences can also be used by several vehicles/trains in succession or simultaneously.
- All entries in the routes editor relating to the matrix are considered.
- Integrate created route sequences into the tour automatic.

8.1.1 Testing contact defined in routes for route sequences.

The so-called testing contact is stored in the routes. We have already discussed this in the section 7.8.5.

Whenever a subsequent route could be set when the test contact is reached, the speed settings of the current route are ignored from the brake contact entered in the route or the first contact of the current route entered in the "intelligent vehicle display (iVHD)" and replaced by the speed settings of the start contact of the subsequent route.

If the following route is not yet free when the testing contact is reached, the speed of the vehicle or train is controlled according to the settings of the active route. Even if the train is already on the destination contact, the vehicle/train is accelerated again at the set speeds of the following route when the following route is released and therefore does not come to a stop. This means that a vehicle or train can almost come to a stop and then accelerate again.

You should pay particular attention to the testing contact when using the "intelligent vehicle display (iVHD)", as the route assistant uses the first contact within the iVHD as the testing contact for newly created routes to an iVHD. Routes that have a normal vehicle display as their destination, on the other hand, use the brake contact as the testing contact.

You should follow the same logic for manually created routes. It is essential to ensure that the testing contact is reached when a route is processed. Otherwise, a route sequence cannot be continued. The subsequent route is only checked for executability once the testing contact of a route has been reached.

In chapter 7, sections 7.8.5 ff. the topics of testing contact and iVHD have already been explained in detail.

8.1.2 Switching conditions in routes for route sequences

When route sequences, the switching conditions entered in the routes are observed in the same way as they were entered. This means that you can also enter the contacts with "*FREE"* or "*OCCUPIED"* for the partial section releases of routes.

8.1.3 Releasing routes for route sequences

Also The entries for the releases or partial route releases for routes are also processed according to the entries in the routes editor.

8.2 The route sequence editor - Creating route sequences.

Open the route sequence editor by clicking on the ⬚ icon in the toolbar (editors) of the main programme.

When you open the route sequence editor for the first time, you will find an example entry that you can overwrite when creating your own route sequences. **Win-Digipet offers** you two options for creating route sequences:

🚂 the convenient route sequence assistant and

🚂 the manual creation of route sequences.

Before you start creating a route sequence, you should think about the purpose of your new route sequence.
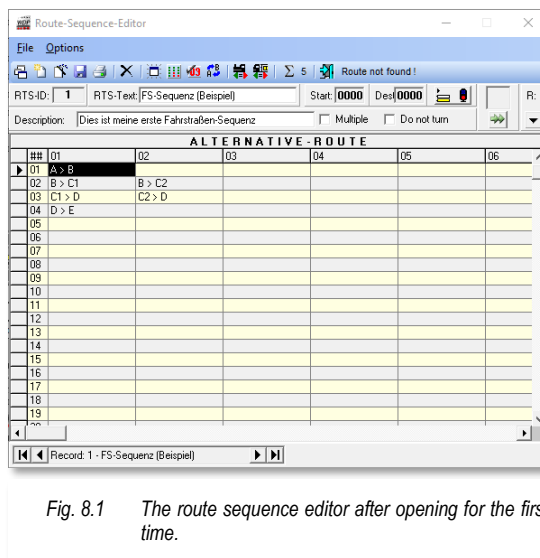
Fig. 8.1   The route sequence editor after opening for the first time.

> ⚠️ A route sequence (FSS) only ever has **one** unique start point and **one** unique destination point.

Your considerations should include these points of reference:

🚂 At which vehicle display should the route sequence begin?

🚂 at which vehicle display the route sequence should end

🚂 Which path should the route sequence take on the system?

🚂 Which alternative routes should the vehicle or train use as an alternative?

🚂 Which vehicles or trains (passenger, freight, etc.) should be allowed to use the route sequence

🚂 the route sequence should also be used simultaneously by several trains.

You should only start creating a route sequence once you have completed these preliminary considerations.

To ensure that the creation of the route sequence with the route sequence wizard runs smoothly, you should, however, pay attention to a few important points.

🚏 All routes have been created.

🚏 A matrix check of the routes was carried out.

🚏 The test contacts of the routes have been entered correctly and, if necessary, corrected for the use of the iVHD.

Only when you have completed this preliminary work in the routes editor should you start creating routes with the route sequence wizard.

8.2.1 Creating route sequences with the route sequence wizard

In the open route sequence editor, click on the 🖰 icon in the toolbar. The "Route Sequence Wizard" window then opens and the first thing you are expected to do is enter a starting point for the route sequence to be created. You are already familiar with this procedure in a similar way from the route wizard (see section 7.4)

In the following example, a route sequence is to be created as a round trip from track 3 of the staging yard via the layout back to the starting point.
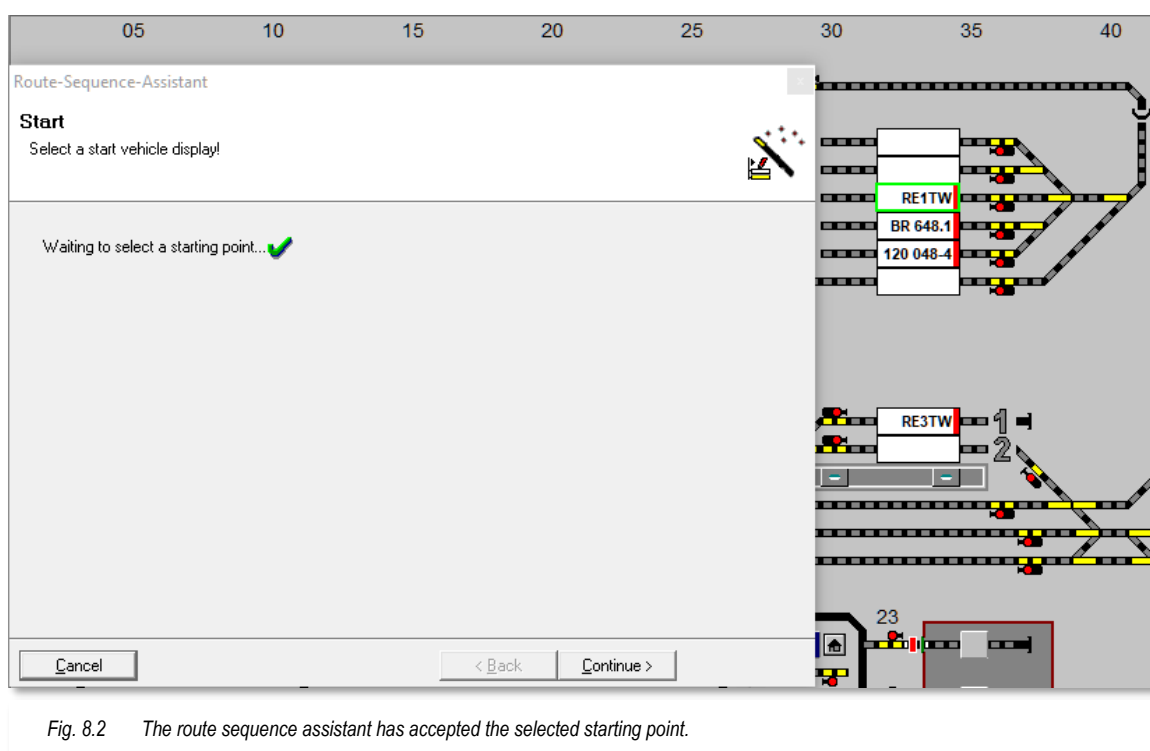
Fig. 8.2   The route sequence assistant has accepted the selected starting point.

To do this, click on the start vehicle display with the <u>left mouse button</u>. It is given a green frame, and a green tick is placed behind the text line with the starting point in the route sequence wizard. Only now will the previously grey **'Continue'** button be visible and selectable.

With a "large" vehicle display, it does not matter which position (left, centre, right) you click on. The Fig. 8.2 illustrates this, the complete vehicle display has been marked.

To select the starting point of a route sequence, you must **always** click on a **vehicle display** and not on any other track symbol!

After clicking on the **'Continue'** button, the possible routes with a start on this vehicle display are displayed in the list on the left. In this example, there is only one route (005>018) that starts from the selected vehicle display. Click to highlight this line and the route will be highlighted in yellow in the track diagram.
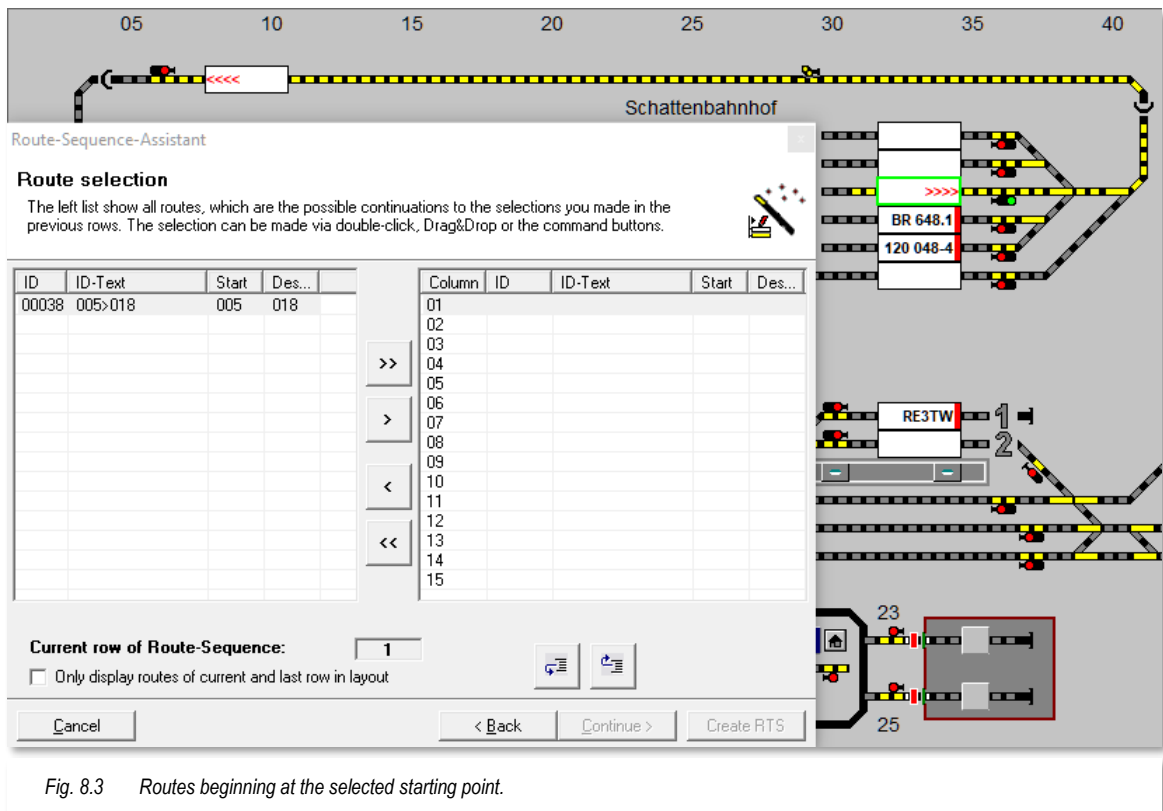
Fig. 8.3   Routes beginning at the selected starting point.

You must now transfer the selected route to the right-hand list. You can do this by dragging and dropping with the mouse. However, four buttons are available in the centre of the window for this action, as well as for all other movements between the lists.

The buttons with an arrow symbol each move a selected entry in the selected direction, the buttons with two arrow symbols each move the entire displayed list in the selected direction.

You only want to transfer the route selected in the left-hand list to the right-hand list field, so please click on the second button from the top (with an arrow pointing to the right). You can now also select the **'Continue'** button and click to go to the next step and add the first route to the route sequence.
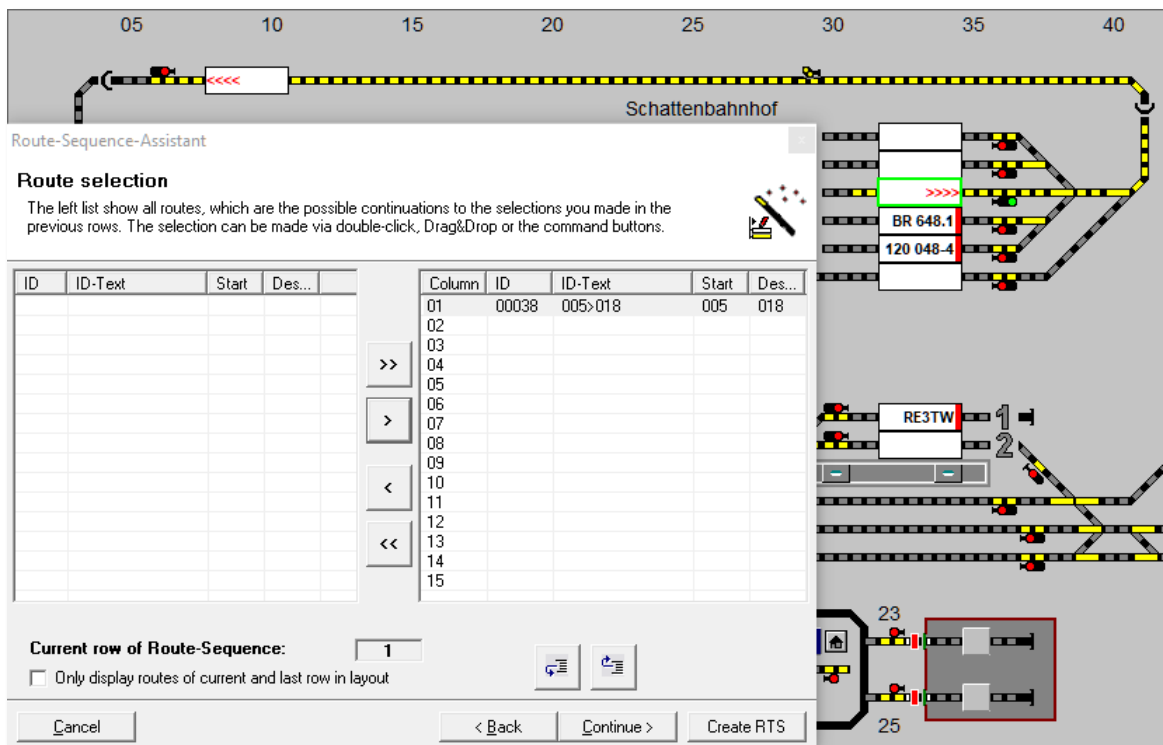
Fig. 8.5   the first route has been added to the route sequence.
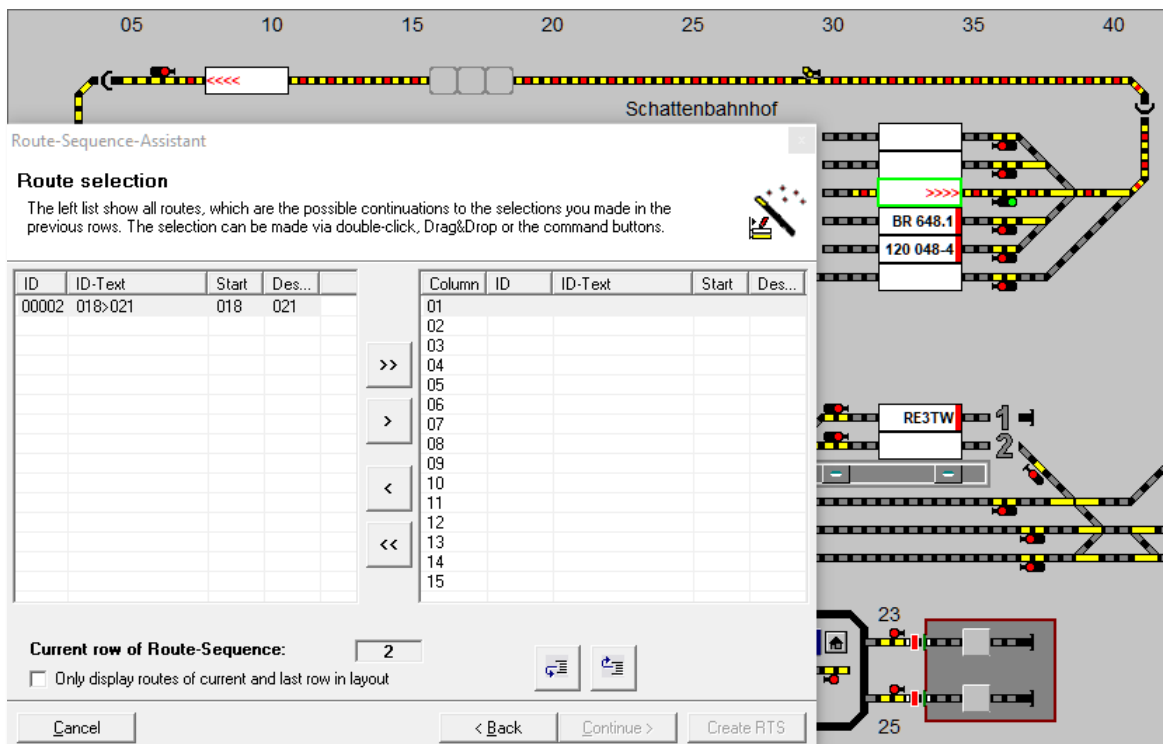
Fig. 8.4   A second route can be added to the route sequence.

The route sequence can now be continued at the destination point (018) of the first route entered. Here, too, the route sequence wizard offers you a list of possible routes, in this case only one route, which you can transfer to the right-hand list using the arrow button (cf. Fig. 8.5**Fehler! Verweisquelle konnte nicht gefunden werden.**).

Incidentally, the route sequence you have created so far is illuminated in colour in the track diagram. The individual routes that have already been added are illuminated in red, yellow. The direction information in the vehicle displays is also displayed here.

At the following vehicle display (021) in our example, there are five possible routes to choose from. To define alternative routes through the station, you could now transfer all routes to the list on the right.

However, we want to leave it at the selection of a route and select route 021>039 for transfer to the right-hand list.
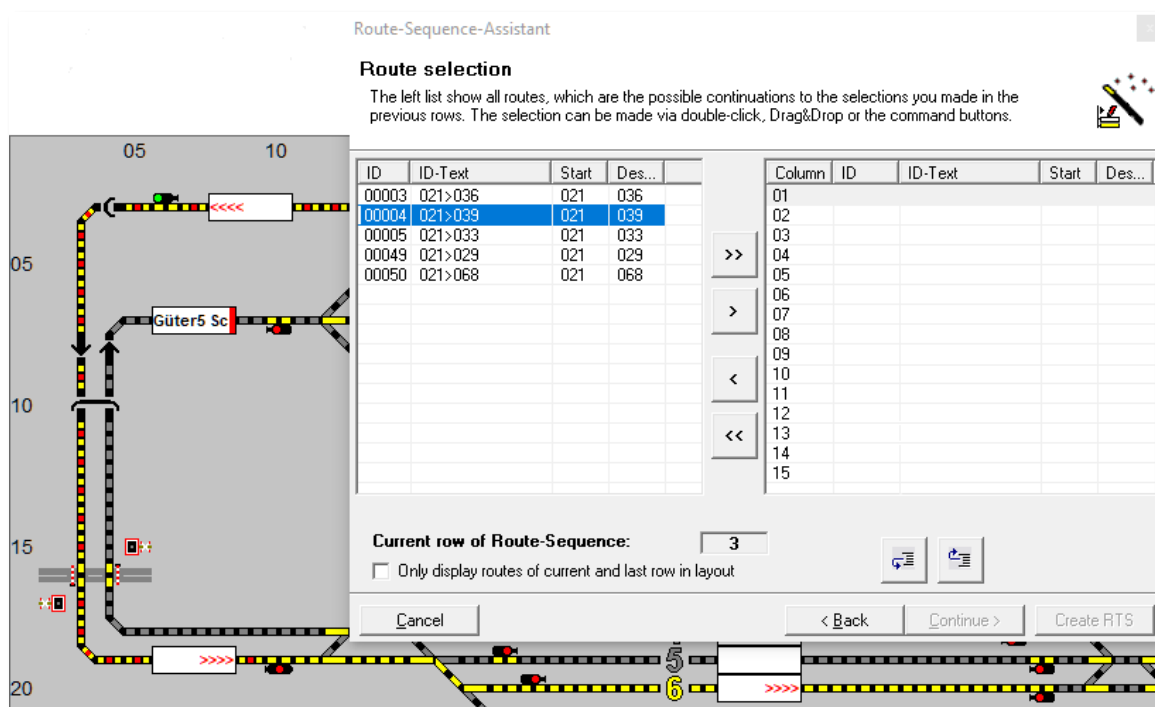
Fig. 8.6   the station passage here should always be through track 6.

By setting a tick here in the dialogue window, you can restrict the display in the track image to the last added route and the currently selected route. This option is recommended for better clarity when creating longer route sequences.

In our example, we will now shorten the description of the individual steps, as the procedure is basically always the same.

Up to the step that will be shown here, the following routes have been added according to the procedure described above:

- 🚂 039>062→ Burghausen 6 to parade route block 1
- 🚂 062>064→ Parade route block 1 to parade route block 2
- 🚂 064>066→ Parade route block 2 to parade route block 3
- 🚂 066>068→ Parade route block 3 to parade route block 4
- 🚂 068>070→ Parade route block 4 after overhaul 1
- 🚂 070>073→ Overhaul 1 after parade route block 5
- 🚂 073>075→ Parade route block 5 to parade route block 6
- 🚂 075>077→ Parade route block 6 to parade route block 7
- 🚂 077>079→ Parade route block 7 to parade route block 8
- 🚂 079>081→ Parade route block 8 to parade route block 9
- 🚂 081>033→ Parade route block 9 to Burghausen 4
- 🚂 033>025→ Burghausen 4 after SBhf entrance
- 🚂 025>005→ Entrance SBhf to SBhf 3

The route sequence previously composed of the individual routes is displayed in the track diagram.
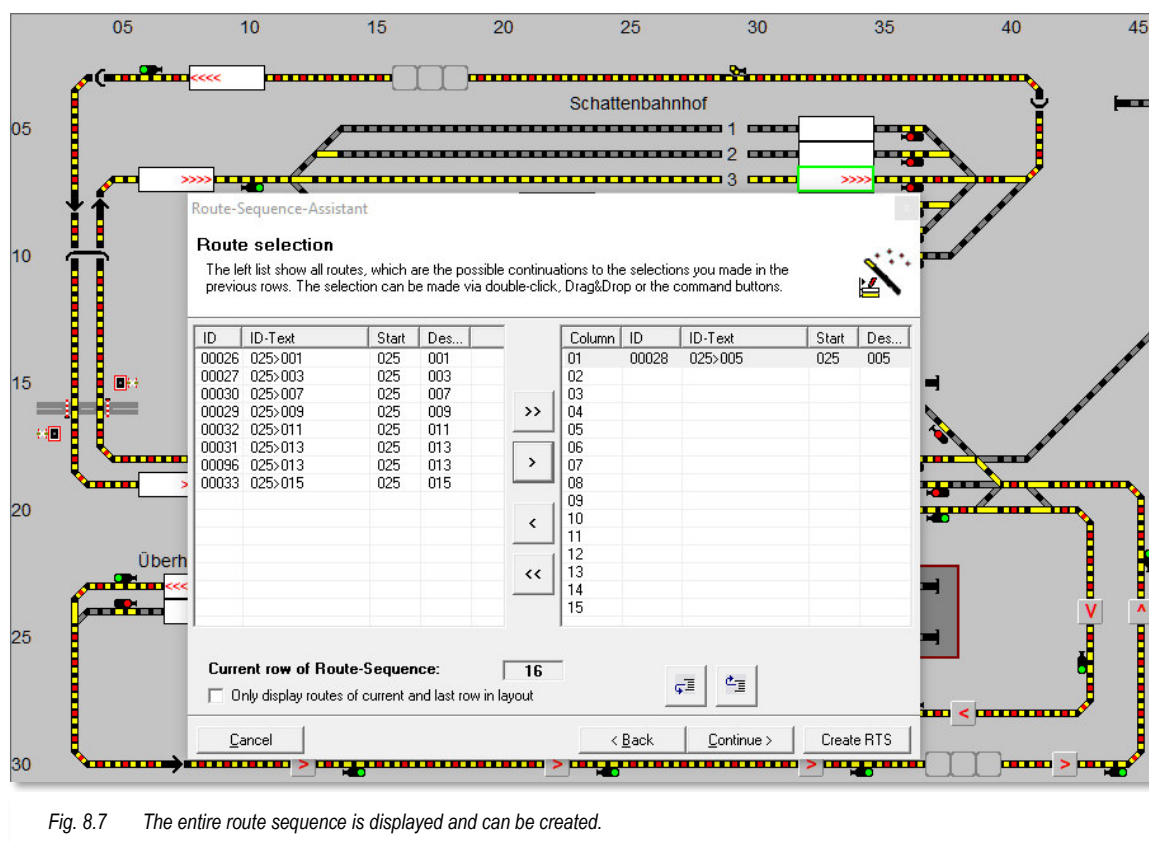
Fig. 8.7   The entire route sequence is displayed and can be created.

Our example route sequence has reached the starting point as a unique destination point, the '**Create RTS**' button is also selectable and so click on this button to finalise the route sequence.

After clicking on the '**Create RTS**' button, the route sequence wizard enters an RTS text and a description from the information on the routes or vehicle displays. You can still customise this information if necessary.

If you want to create another route sequence, tick the box "*I want to create another route sequence immediately*", otherwise click on the '**Finalize**' button and the sequence created with the wizard should now appear in the route sequence editor window as shown below (see Fig. 8.9).

You can you can see that all the routes previously added with the wizard have been entered one below the other in the first column of the route sequence editor.

The route sequence has automatically been assigned an identification number (RTS ID) and the start and destination contact (here 0005 in each case) is displayed in the window alongside the description.

The Route Sequence Wizard has also ticked the "*Multiple*" checkboxes so that **several** vehicles or trains can use this route sequence **at the same time.**
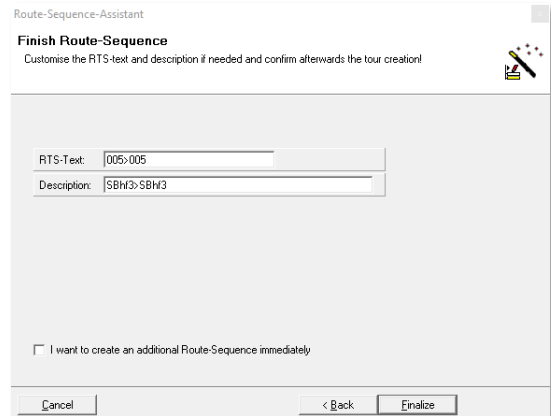
Fig. 8.8   A description was automatically added to the route sequence.
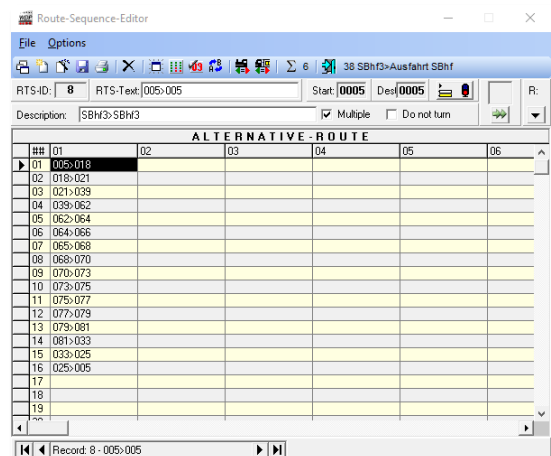
Fig. 8.9   The route sequence created in the route sequence editor.

This means that **several** trains can use this route sequence **at the same time** and thus virtually follow each other.

This is particularly useful for very long route sequences over many blocks so that no traffic jams occur, and you do not have to define an unnecessary number of route sequences over the same route sections.

By Selecting the "*Do not turn*" checkbox allows you to suppress an automatic turn within a route sequence. Automatic turning is dependent on the direction of travel information of the routes combined in the route sequence.

8.2.1 Display a complete route sequence.

A complete route sequence can be displayed in the track diagram by clicking on the ![icon] icon in the toolbar of the route sequence editor.
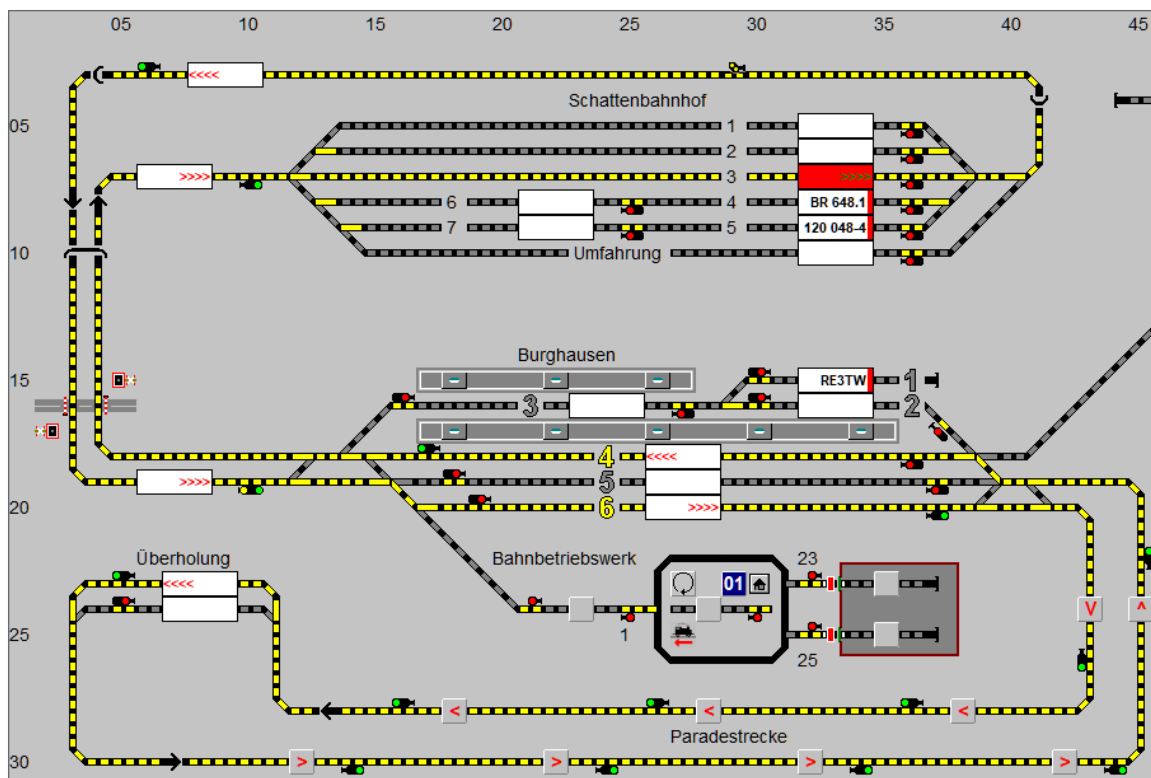
Fig. 8.10   The display of a complete route sequence from the start VHD (green) to the destination VHD (red)

The start vehicle display is always displayed in green, and the destination vehicle display in red. The routes themselves are illuminated in the usual yellow colour. The example shown here is an exception in that the start and destination vehicle displays are identical in the displayed route sequence. In this case, there is no red-green display.

> The ![icon] icon remains activated until you either deactivate it or exit the route sequence editor. This allows you to "click through" your route sequences and see the complete route sequences briefly if required.

8.2.2 Enter new route sequence manually.

In the following sections, the creation of further route sequences will be shown. The route sequence wizard should not be used to create the following route sequence; instead, the next route sequence from track 1 of the staging yard to block 4 of the parade routes should

be created manually. To do this, click on the 🗋 icon in the toolbar of the route sequence editor. After a confirmation prompt, an empty data set is displayed in the form of a table.

The routes are entered in columns (vertical) and rows (horizontal), whereby the direct route from the start to the destination is entered in column 01 and any alternative routes in the other columns next to it.

Win-Digipet always processes the entries in the individual cells of the table from top left to bottom right (reading direction), i.e. if a subsequent route is not found in the first column of a row, the next columns of the row are checked for possible positions.

If a route can be set in the line, the other entries in this line are ignored and the subsequent route is searched for in the next line.

If no journey option is found in this line either, the journey continues in the next line(s). The subsequent journey does not necessarily have to be in the next line.

You can enter the routes in the rows and columns in two ways, the first of which is simpler and faster.

First select the table cell in which you want to enter a route and then enter the route according to the desired variant.

🚂 **Variant 1:**
Click with the middle mouse button on the start and destination vehicle display (start/destination function) of the desired route in the track diagram.

Click on the '**Transfer to route sequence editor'** button in the 'Start/destination dialogue' that then appears, and the route is immediately entered in the highlighted empty cell in the table, the 'Start/destination window' is closed and the next row in the same column is highlighted for the entry of another route.

You can ignore any messages displayed in the "Start/Destination selection" at this point, as you do not want to drive at this point, but only want to transfer the selected route to the route sequence editor.
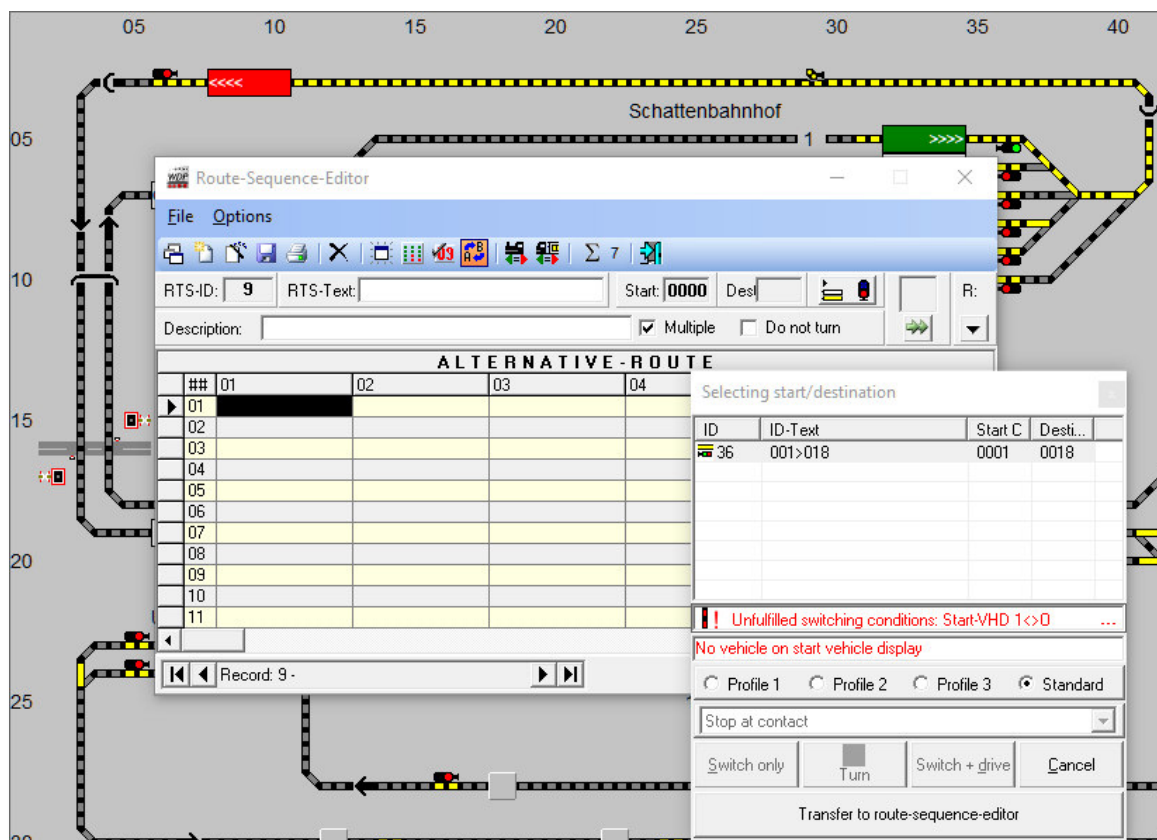
Fig. 8.11   the route was selected with the start/destination selection for the entry in the route sequence editor

🚒 **Variant 2:**

<u>Right-click</u> in the selected table cell and then click on the menu command <Routes list> that appears in the short menu or click on the arrow at the top right under the designation *"R:"*.

A list of all existing routes is then displayed. Select the desired route here; this will also be highlighted in yellow in the track diagram.

After double-clicking on the route, it is entered in the still empty selected table cell, the route list is closed and the next row in the same column is selected.
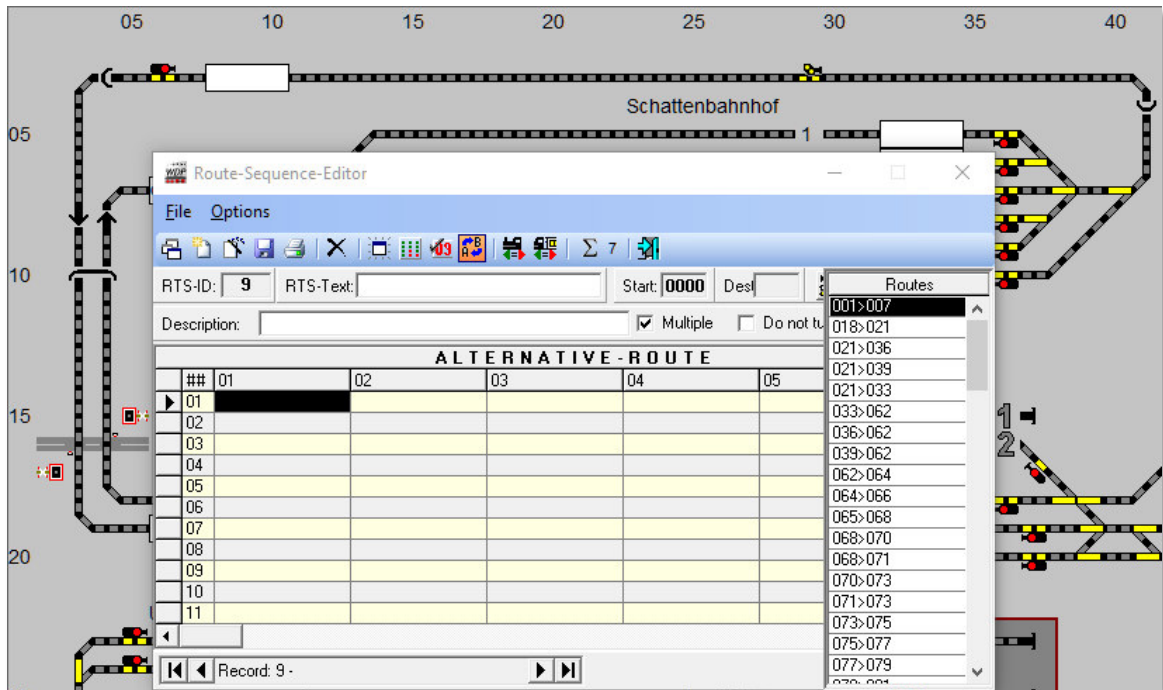
Fig. 8.13   A route is selected from the route list for entry in the route sequence editor.

The other routes in the route sequence are entered one below the other in the first column of the table, following one of the variants described.

The result with the entered roads should then be as shown in Fig. 8.13**Fehler! Verweisquelle konnte nicht gefunden werden.**.

For a better overview Fig. 8.14 the "*Display entire route sequence*" function has been called up with the symbol.
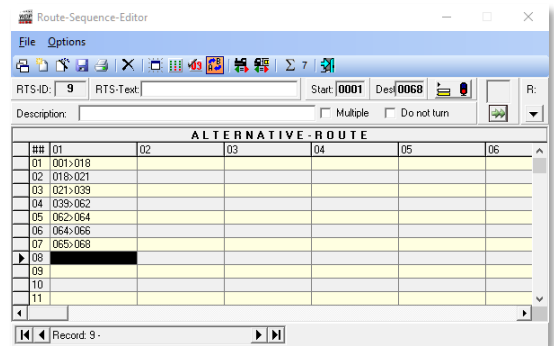
Fig. 8.12   The manually compiled route sequence is complete.
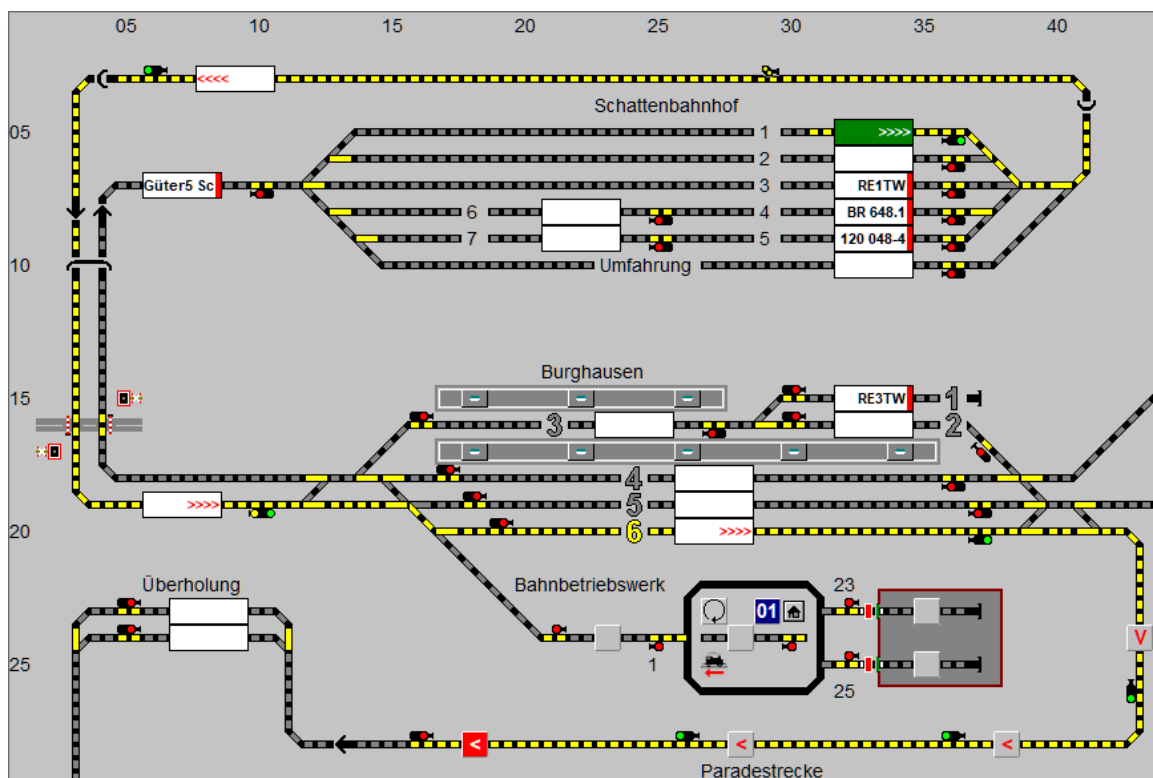
Fig. 8.14   The manually created route sequence is displayed in full.

Once you have finished creating the route sequence, you should name it automatically according to the following section and, if necessary, tick the "*Multiple*" boxes.

8.2.3 Name route sequence automatically

With right-click in the route sequence table to open a short menu and select the menu command <Name route sequence automatically>.

This command names the route sequence automatically, like the function for naming routes in the routes editor. The feedback contact numbers, and the names assigned to the vehicle displays are also used for this purpose. To better distinguish between almost identical route sequences, you can make manual additions or changes in the two text fields.

8.2.4 Test the route sequence immediately with the simulation.

You have just created your route sequence and want to quickly test whether everything works as you imagined.

	Routes list	Alt+F
	Insert cell(s)	Alt+EINFG
	Delete line	Alt+ENTF
	Cut	Ctrl+X
	Copy line	Ctrl+C
	Insert	Ctrl+V
	Delete cell	Ctrl+ENTF
	Save data record	Alt+S
	Copy completely into new data record	Alt+Ctrl+C
	Show entire Route-Sequence	Alt+Z
	Show Route-Matrix	Alt+M
	Name Route-Sequences automatically	Alt+N

Fig. 8.15   The short menu in the route sequence editor

You can use the simulation in **Win-Digipet** again for this. You have already used this in the section 7.17.3 of the chapter on routes.

Exit the route sequence editor and, holding down the <u>right mouse button,</u> drag the Güter5 Sc train with the BR132 locomotive to the start VHD SBhf 1 in the staging yard, if it is not already entered there.

> If you want to reproduce the examples presented here from the WDP2021 demo project, please first compare the positions of the locomotives or trains with the images shown here and then start the simulation.

Start the simulation again by clicking on the 🔛 icon in the **Win-Digipet** toolbar (Operation).

Set the elapsed time back to a value of around 2000 msec so that you can easily follow what is happening on the screen.

The simulation is active immediately after switching on. **Win-Digipet** has illuminated all feedback contacts on the screen in red if there is a vehicle display with a vehicle number or train name entered.

The first switching condition (start contact occupied) for a route to be executed in the route sequence is thus already fulfilled and you do not need to do this yourself.

Now set the route sequence to be tested using the start/destination function - in this example, click with the middle mouse button on the start VHD and then with the middle mouse button on the destination VHD on block 4 of the parade route. The "Start/destination selection" window appears after clicking.

In this example, the route sequence you created manually in the previous sections is displayed. Route sequences are identified in the start/finish dialogue with a small route sequence symbol and the FSS ID. As you already know, routes are labelled with a small route symbol and the FS-ID.

After *the* "Start/Destination selection" window is closed immediately, the "Tour Event inspector" window opens and displays the route sequence. The first route of the route sequence is also set and illuminated in the track diagram.
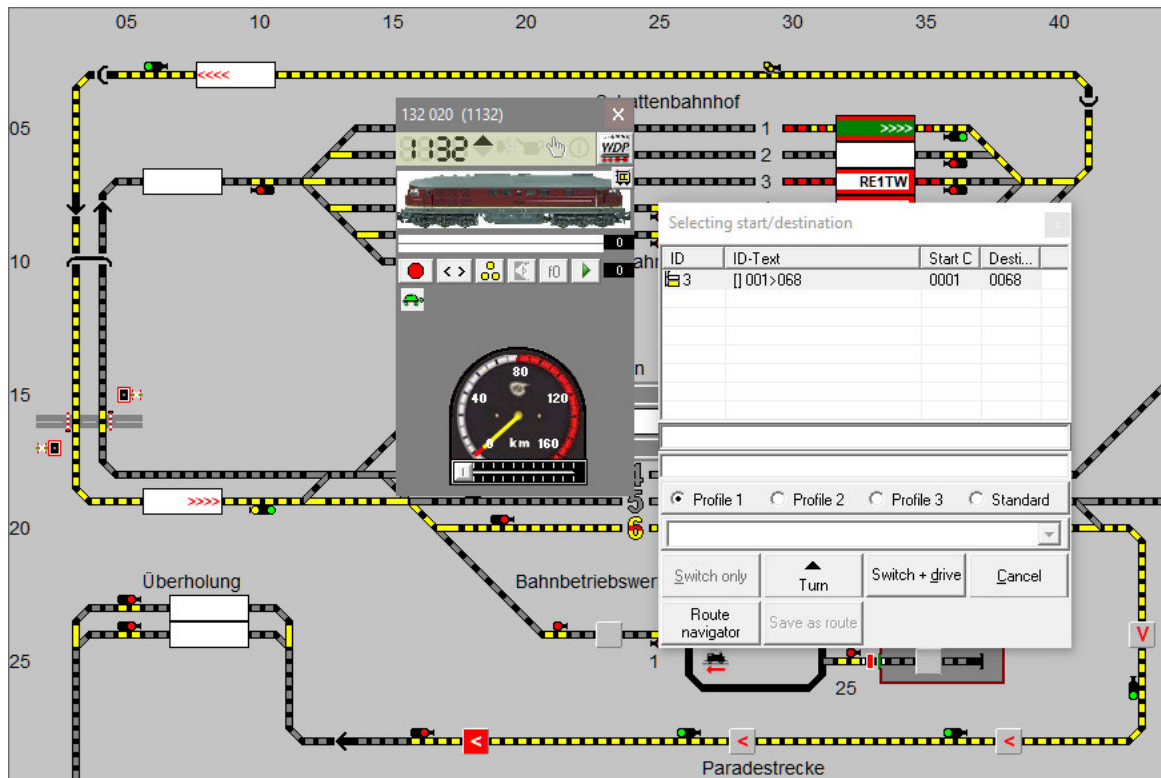
Fig. 8.16   The route sequence created is to be tested in the simulation.

The train moves forwards on the screen as if by "magic" and the train number moves from vehicle display to vehicle display. If you now open the vehicle control of the moving vehicle and the train monitoring in the details area of the journey sequence inspector, you can follow everything very clearly on the screen.

In the window of the "Tour Event inspector" you can see which route is currently set, in the vehicle control you can follow the speedometer display and in the train monitoring all details from the routes are displayed and deleted step by step after processing.

If you detect any errors in the route sequence, you should rectify them immediately, as accidents involving material damage cannot occur during this test in the simulation.
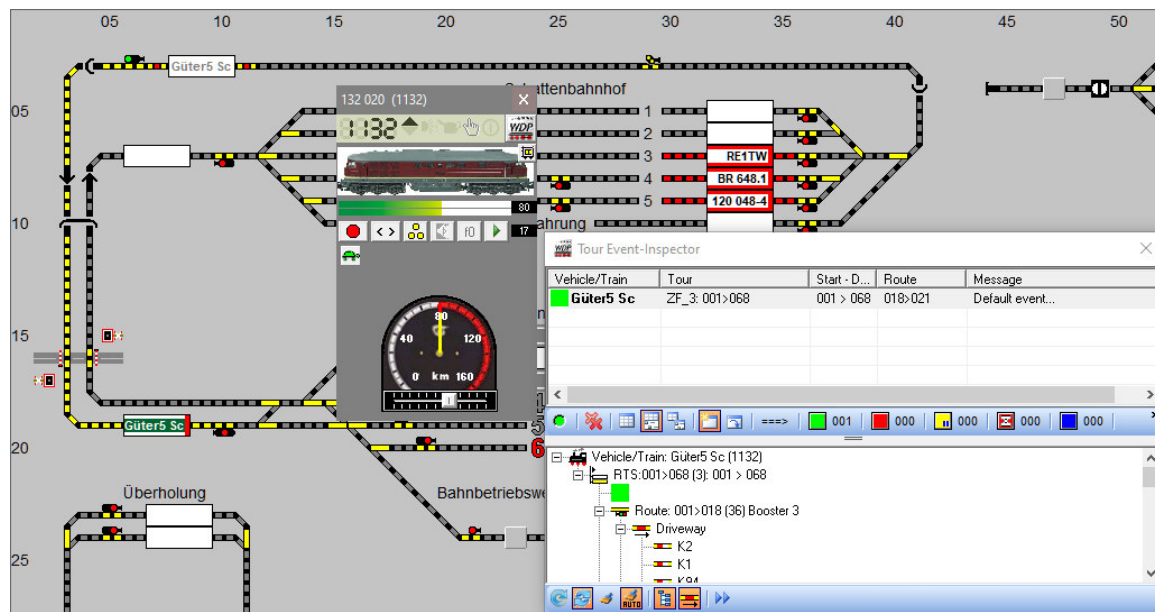
Fig. 8.17   The route sequence is displayed in detail in the tour event inspector.

> A vehicle number or train name entered on the start VHD is always displayed with red lines at the top and bottom. If the vehicle number or train name is transported to the destination VHD, the lines at the top and bottom are white. They are only displayed in red again when the vehicle or train occupies the destination contact or the first contact entered in the "intelligent vehicle display" and the vehicle can no longer continue its journey.
>
> This applies if the destination has already been reached or the route sequence cannot be continued because the control conditions for the next route have not (yet) been met.

8.2.5 Add alternative routes to a route sequence.

In this example, the procedure described in section 8.2.2, alternative routes are to be added. Up to now, only track 6 has been used to pass through Burghausen station. For operation, however, this means that the route sequence can no longer be continued if this track is occupied. In this case, the train coming from the staging yard would stop in front of the Burghausen West entry signal and wait for station track 6 to be cleared.
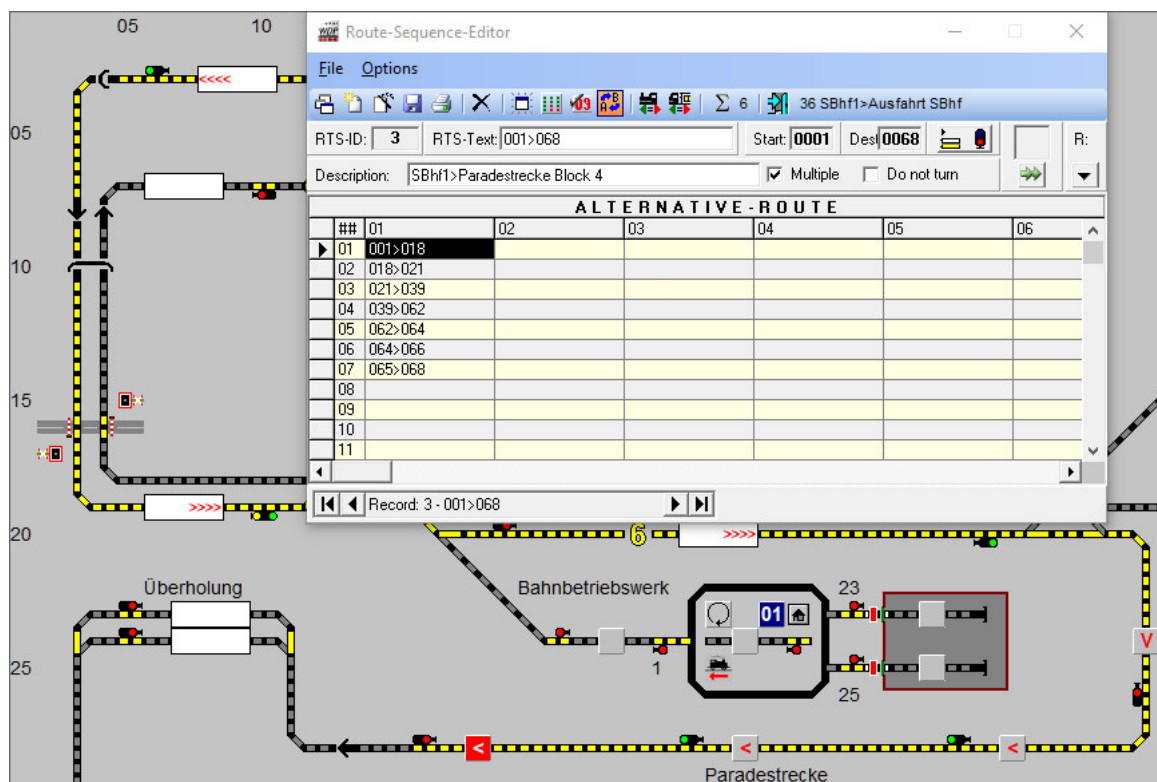
Fig. 8.18   Two alternative routes are to be set up for the passage through the station.

A remedy for such situations is to set up alternative routes. In this example, two additional passages (track 4 and track 5) are to be added.

If you look at the situation in the track diagram, you can see that the common point for all three passages is the Burghausen West entry signal. The corresponding vehicle display here is number 021.

In the route list, the routes 021>036 (track 5) and 021>033 (track 4) are available with this start VHD. A route then leads from both tracks to the first block of the parade route, the vehicle display 062 (036>062 and 033>062).

After entering the above-mentioned routes, the route sequence supplemented by two alternative routes appears as shown in Fig. 8.19. You can recognise the additionally entered routes in columns 2 and 3 of the route sequence editor.
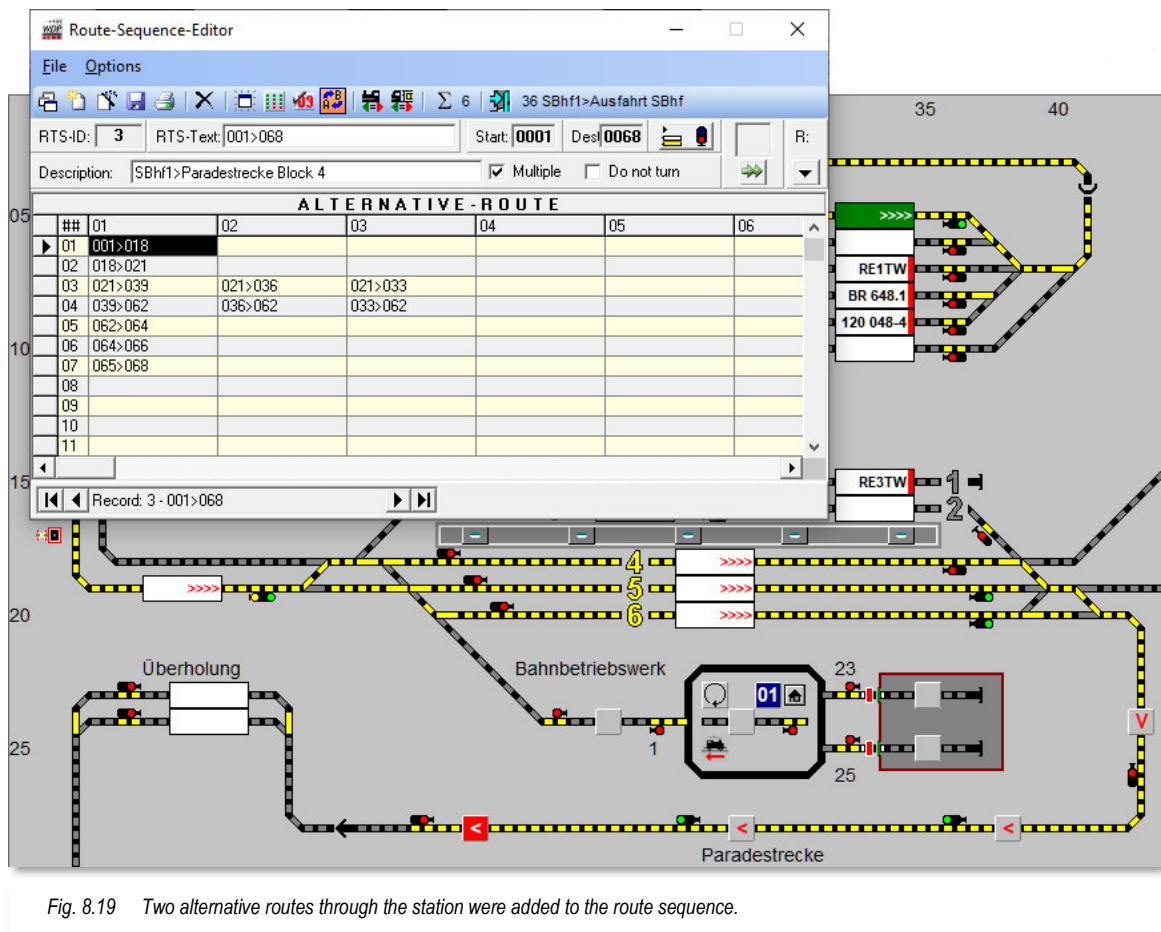
Fig. 8.19   Two alternative routes through the station were added to the route sequence.

Win-Digipet always processes the entries in the individual cells of the table from top left to bottom right (reading direction), i.e. if a connecting route is not found in the first column of a row, the next columns of the row are checked for possible positions.

If a route can be set in the line, the other entries in this line are ignored and the subsequent route is searched for in the next line.

If no journey option is found in this line either, the journey continues in the next line(s). The connecting journey does not necessarily have to be in the next line.

All routes entered here in line 03 have the same vehicle display (021) as the start and different destination VHDs (036 and 033). Line 04 then contains the routes to the common VHD 062. The rest of the route is unchanged and therefore the basic condition of a unique start and destination point for a route sequence is also fulfilled in this example.

> If you enter alternative routes, you must ensure that the vehicles can continue travelling and do not end up in a "dead end". However, you do not have to enter additional routes just to maintain the connection to the routes in the left-hand column.
>
> If **Win-Digipet** does not find an executable route in the line, it jumps to the following line and searches there for a suitable connecting route.

8.2.6 Back-up routes as an alternative route in a route sequence

As soon as you have integrated routes in a route sequence which have a MiVHD as their destination, it is necessary to also integrate the move-up routes within a MiVHD into the route sequence.

The move-up routes are entered as alternative routes in the second column. For example, the route sequence A>B and B>C is entered in the first column in the FSS, whereby "B" is defined as MiVHD. As soon as there are several vehicles or trains behind each other, the move-up route must be executed to bring another vehicle to the foremost position if the first vehicle to date has left the MiVHD in the direction of "C".

The entry in the route sequence editor for this simple example is made as follows:

	01	02
01	A>B	
02	B>C	B>B

8.2.7 Turns in a route sequence.

In a route sequence, turns can be executed automatically. For this purpose, the direction of travel information of the combined routes is analysed in a route sequence.

The example shows a route sequence from Burghausen track one to Bergheim track 2 and back. All necessary turnaround commands are executed automatically within the route sequence. In addition, two intermediate stops are included in this route sequence (see section 8.2.8, which pause the route sequence in Burghausen track three and in Bergheim track 2 for 30 seconds each.

If you combine the routes with necessary turns in a route sequence, you must not configure any additional turn commands in any profiles for these routes or later in a tour automatic journey, as otherwise double turns may occur, and the vehicles or trains may continue their journey in the wrong direction.
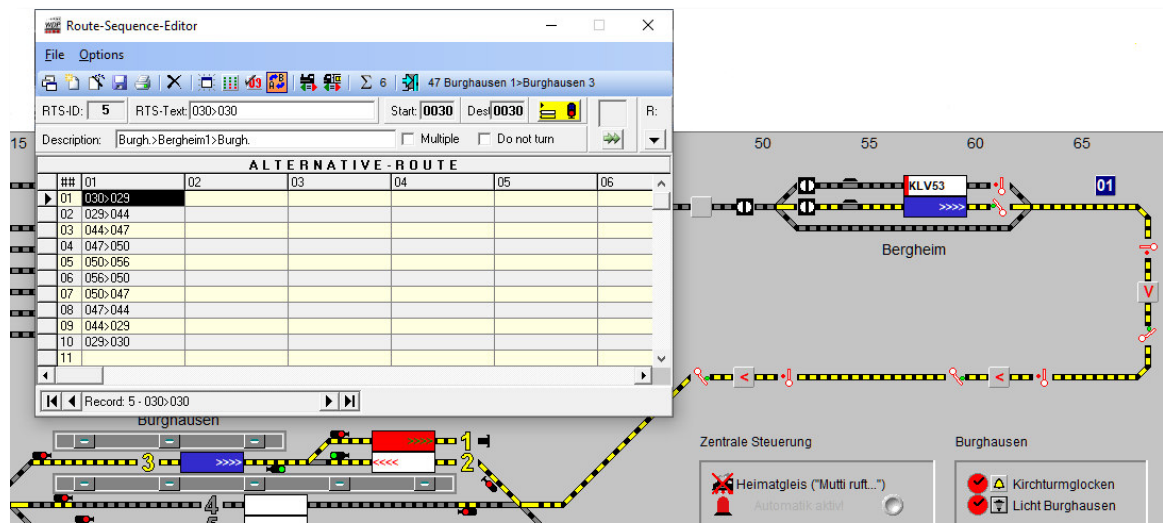
Fig. 8.20   A route sequence with turns and intermediate stops

However, you have the option of preventing automatic turning within the route sequence by setting the "Do not turn" option here in the route sequence editor. In this case, you would then have to configure any necessary turn commands in the profiles or in a tour automatic journey. The route sequence shown in **Fehler! Verweisquelle konnte nicht gefunden werden.**Fig. 8.20 will be taken up again later in this documentation about tour automatic journeys.

8.2.8   Intermediate stops in route sequences

In so-called intermediate stops can be inserted in a route sequence. Normally, a route sequence is processed one after the other without interruption, provided that the routes can be set. However, it is sometimes desirable to allow the vehicle or train to stop briefly at a station, for example, and to resume the interrupted journey after a short waiting time.

The example from the Fig. 8.20 contains a route sequence in which two intermediate stops are planned. The start and destination VHDs are track 1 (stub track) in Burghausen station. The train should now stop for 30 seconds at Burghausen station (track 3) and at Bergheim station (track 2).

You can add a new intermediate stop by clicking the ⬛🔴 icon in the toolbar and then right-clicking in the large field on the tab. A short menu will then appear from which you can select the *"New intermediate stop"* entry with the left mouse button.

As soon as an intermediate stop has been added to the route sequence, the symbol for intermediate stops is highlighted in yellow ⬛🔴. In this way, you can easily see that one or more intermediate stops have been added even when the dialogue is closed.

You can recognise two entries on the tab in Fig. 8.21. These entries specify at which feedback contact the route sequence is to be interrupted. The entered contacts **must** again represent a vehicle display. In this example, the feedback contacts are 029 and 056, the vehicle displays for tracks three in Burghausen and track 2 in Bergheim station. Enter the contact numbers in the text field (VHD) as usual using the keyboard or by dragging a track symbol with the contact number.

You can also use the various stop positions for the intermediate stops if this is an intelligent vehicle display.

In addition, further conditions can also be linked to an intermediate stop, which only execute the intermediate stop if the defined boundary parameters are fulfilled. Conditions can be set both for the execution and cancellation of the intermediate stop.

Fig. 8.21   Two intermediate stops were added to the route sequence.

These can be, for example, virtual switches in a certain position or that a certain train is on the neighbouring track. As in other parts of the **Win-Digipet** programme, the complete condition tree is available for the conditions (see table below). The condition tree can be extended, if necessary, by activating the expert mode in the <Options> menu of the route sequence editor.

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	●	●	●		●
Feedback contact	●	●	●	●	●		●
Time of day	●	●	●	●	●		●
Counter comparison	●	●	●	●	●		●
…on vehicle display							
Vehicle on VHD	●	●	●	●	●	●	●

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train name on VHD	●	●	🔴	🔴	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of wagon types on VHDs	●	●	●	●	●		●
Compare of length (X) on VHDs	●	●	●	●	●		●
Compare of priorities on VHDs	●	●	●	●	●		●
Vehicle with colour	●	●	●	●	●		●
Vehicle position in train	●	●	●	●	●		●
Driving direction		●			●		
Vehicle with maintenance/oper. hours/battery	●	●	●	●	●		●
Route/Route-Sequence/Macro/Vehicle/Train active	●	●	●	●	●		●
Train director state	●	●	●	●	●		●
Turntable/transfer table/train storage status	●	●	●	●	●		●
Tour automatic status	●	●	●	●	●		●
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

We will discuss the topic of conditions in chapter 13 CONDITIONS AND CIRCUITS

In the *"Switch next route"* area, enter the desired duration of the planned intermediate stop, in this case 30 seconds. You can select whether the time count begins when the vehicle or train stops (speed = 0 km/h) or when it reaches the testing contact of the (previous) route. Intermediate stops are marked with the colour "blue" in the tour event inspector (see section 8.2.8).

Another setting option is the "Waiting time before departure". This time starts after the time set above has elapsed. The route is set, but the train does not run until after the waiting time entered. This waiting time will later be marked in the colour "orange" in the tour event inspector (see section 8.2.8).

8.3 Editing aids in the route sequence editor

With right-click in the route sequences table to open a short menu offering you editing aids for entering/changing/deleting.

The first and last commands <route list> and <name route sequence automatically> have already been covered in the sections above, the other entries are largely self-explanatory or are described in more detail below.

The routes editor can be opened at the same time as the route sequence editor. Double-click in a cell with an entered route to select it in the routes editor and make any changes to the route.

	Routes list	Alt+F
	Insert cell(s)	Alt+EINFG
	Delete line	Alt+ENTF
	Cut	Ctrl+X
	Copy line	Ctrl+C
	Insert	Ctrl+V
	Delete cell	Ctrl+ENTF
	Save data record	Alt+S
	Copy completely into new data record	Alt+Ctrl+C
	Show entire Route-Sequence	Alt+Z
	Show Route-Matrix	Alt+M
	Name Route-Sequences automatically	Alt+N
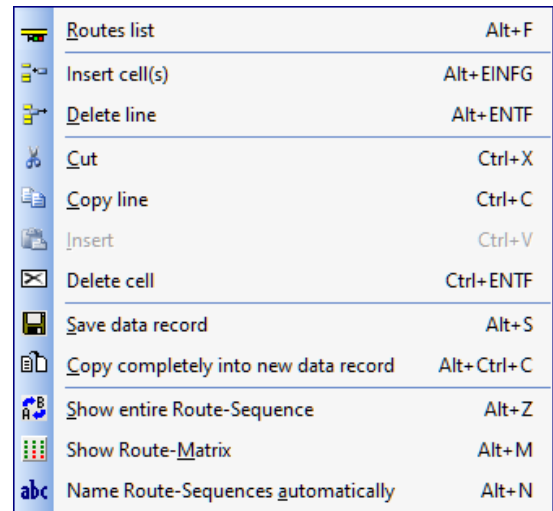
Fig. 8.22   The short menu in the route sequence editor

8.3.1 Cut, copy, and paste entries in the route sequence editor.

You can easily mark, copy, or cut parts of already created route sequences and then insert them into a new or existing route sequence.

To do this, you must select the relevant sub-range. To do this, click with the left mouse button on the top left cell of the area to be edited and then, while holding down the Shift key, click on the bottom right cell of the sub-area to be edited. The entire area between the two cells is then selected.

Copy the selected area to the Windows clipboard by clicking the right mouse button and selecting the <Copy> or <Cut> menu command.

Fig. 8.23   A marked section in the route sequence editor.

To paste the copied or cut area into another route sequence, for example, open or create it and then click on the top left cell of the sub-area to be pasted.

By selecting the <Paste> command from the short menu, which you can also open here with the right mouse button, the copied section is copied from the Windows clipboard into the (new) route sequence.

Only a rectangular area, as shown in Fig. 8.23 and not individual cells in addition, as is possible in a spreadsheet application such as Excel using the Ctrl-key

8.3.2 Number of rows and columns in the route sequence editor

The route sequence editor, 60 rows and 15 columns are provided for entering created routes.

By selecting and copying rows/columns, you may unintentionally come up against this limitation with a long route sequence. You may have to ask yourself whether such long route sequences make sense and define shorter route sequences if necessary.

If you have filled all 60 rows in a route sequence with routes, you will receive an error message if you try to paste additional copied cells from the clipboard. The same applies if you exceed the maximum possible fifteen columns.

Even when inserting empty rows or empty columns with the <Insert field(s)> command, you will receive the message shown opposite if this would exceed the maximum number of rows or columns.

8.3.3 Copy entire route sequence to a new data set.

If you have created If you have created route sequences that are very similar over large parts, you can copy the respective route sequence completely into a new data record and then change or add the respective differences - such as the selection of alternative routes - accordingly.

Select the route sequence in the route sequence editor and right-click button. A short menu opens (see **Fehler! Verweisquelle konnte nicht gefunden werden.**Fig. 8.22) and the route sequence is copied with the command <copy complete to new data set>.

The data record is inserted at the end of the routes list. The description of the route sequence is preceded by the characters "(C)..." to differentiate between them.

Make the other changes (RTS-text, description and changes to the routes entered) to the copied route sequence as described above.

8.3.4 Display entire route sequence.

The entire route sequence can be displayed in the track diagram. In this way, you can check the route sequence you have created to see how the route, including any alternative routes, looks.

The start vehicle display of the route sequence is shown in green, while the destination vehicle display is shown in red. You can still read the direction information of the routes belonging to the route sequence in the vehicle displays. The routes themselves are illuminated in the usual yellow colour.

You can also see from the points positions how the alternative routes run through Burghausen station. The routes first run through track six, then through track 5 and the last alternative route through track 4.
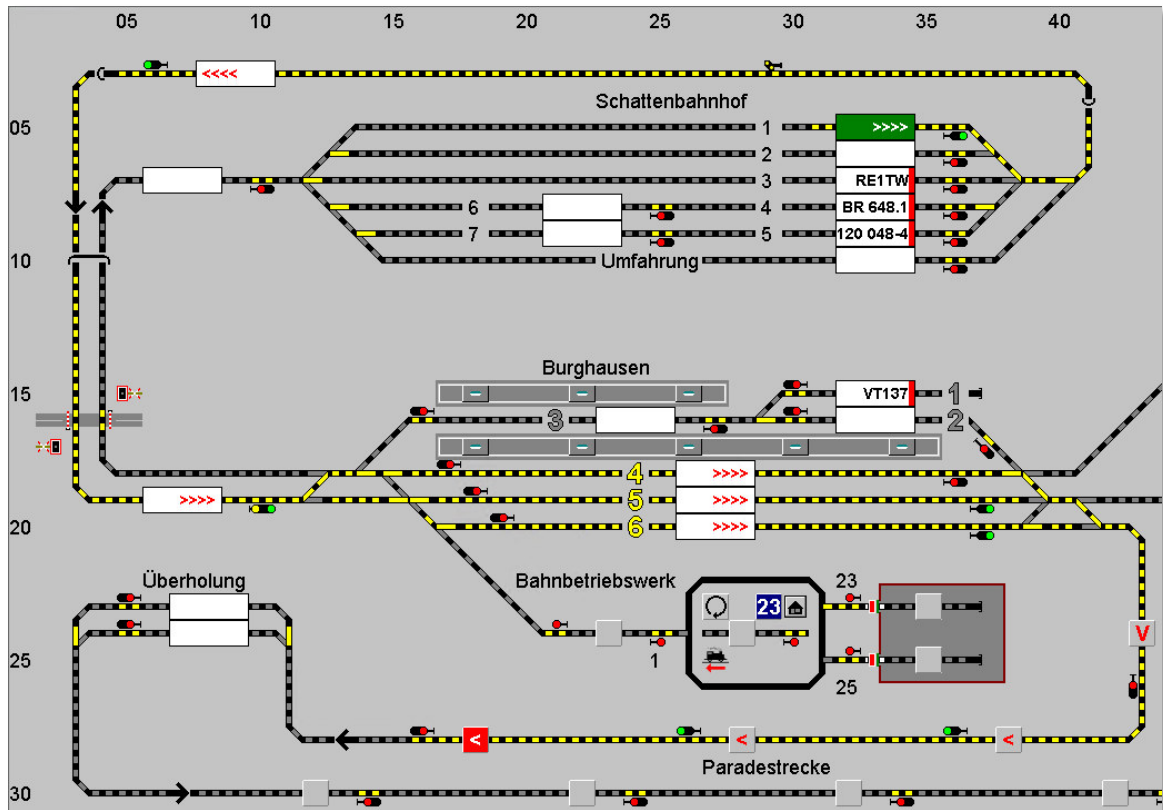
Fig. 8.24   The display of a complete route sequence with alternative routes in the track diagram

You can display the entire route sequence in various ways:

- 🚂 Click on the ⧉ icon in the toolbar of the route sequence editor.

- 🚂 If you click with the <u>right mouse button,</u> the short menu appears with the menu command <Display entire route sequence>

- 🚂 In the route sequence editor, click on the menu command <Options> and then <Display entire route sequence>

> The ⧉ icon remains activated until you either deactivate it or exit the route sequence editor. This allows you to "click through" your route sequences and see the complete route sequences briefly if required.

8.3.5 Display route matrix

When creating your route sequences, you must not create a "dead end", otherwise the vehicles or trains using the route sequence may not reach their destination. For this reason, you should subject the created route sequences to a matrix check.

You can access this matrix check in three different ways.

🚃 Click on the ▦ icon in the toolbar of the route sequence editor.

🚃 If you <u>right-click</u>, the short menu with the command <Display route matrix> appears.

🚃 In the route sequence editor, click on the menu command <Options> <Route matrix>

If you move the mouse pointer over the column header "01" of the **first column**, the mouse pointer changes to a downward arrow. If you now click, the matrix check is performed and displayed.

During the matrix check in the first column, all rows are searched and checked; the heading of the check window indicates this accordingly with the heading *"Total matrix column 1"*. The result is displayed in the route sequence editor. The matrix check therefore relates to the actual **main route**.

For the alternative routes, you must click on the individual route entries individually so that the matrix check is carried out and displayed.
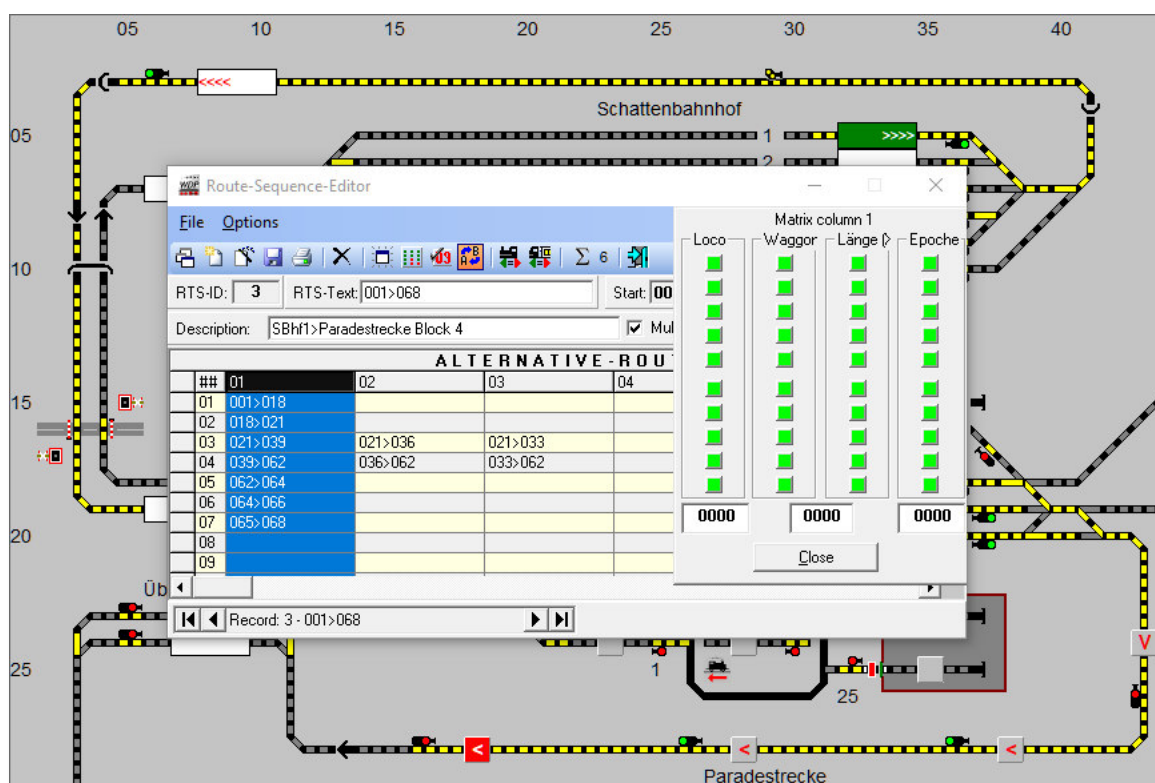
Fig. 8.25   The total matrix of the first column shows no blocking in the four matrix columns.

If restrictions are displayed during this matrix check, you must now ensure that your vehicle or train does not get stuck in a dead end and cannot continue. If you no longer know the restriction in the route, click in the table cell and the matrix check will display the result.

During the matrix check of the individual cells in the first column, the restriction of the route is displayed. Here, the route 021>039 entered in row 03 is only authorised for wagons of the 8th type (in this case freight). This restriction means that only vehicles or trains whose wagon matrix is set to the "Freight" type can use this route. All other vehicles or trains must use the alternative routes configured in the route sequence.
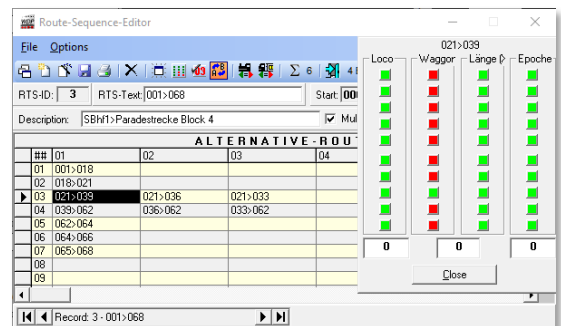
Fig. 8.26   the detailed check shows which route contains the restrictions for the wagon types.

You should **always** carry out a matrix check for your route sequences. This is the only way to ensure that there are no dead ends for vehicles or trains.

And if it does happen once, the route sequence is stopped and you must now manually ensure that your vehicle or train can continue its journey (clear another track, etc.). In this case, however, you should correct the route sequence immediately so that the error does not occur a second time.

8.4 Vehicle number at the destination of the route sequence set to "RED".

This function means that a train number is switched to "RED" when the target contact of the route sequence is reached, e.g. if a previously defined solenoid device in the track diagram has been switched.

Vehicles or trains with a red vehicle number are no longer considered during contact-based automatic operation of the tour automatic system. This allows you to ensure that all vehicles or trains stop at the destination of the route sequence at the end of operation.

To do this, draw a correspondingly labelled virtual switch in the track diagram and assign a solenoid item address so that you can switch this switch as usual with the mouse.

This switch is now entered in the route sequence(s). You can access the required input field by clicking on the icon in the toolbar of the route sequence editor.

To do this, hold down the left mouse button and drag the symbol defined for this purpose from the track image onto the empty field and drop it there.

Fig. 8.27   The virtual switch "Mum's calling..."

Click on the symbol entered to set the desired switch position and then confirm with the **'Transfer'** button. The symbol is then displayed in the route sequence editor. It is up to you which symbol, and which switch position you use. In this example, the switch is shown in the basic position with a red symbol and, if the function is to be activated, the switch must be shown with a green symbol.

You can also delete a previously entered symbol by clicking on the symbol in the route sequence editor and then clicking on the **'Delete entry'** button.

Fig. 8.28 The "Mum's calling..." switch in the route sequence editor

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However, this only has a limited connection with the so-called "home track function".

If this switch is set, then **every** train at the end of the route sequence is set to "RED" and not just the train defined in the route for this "home track function" in the route.

8.5 Route sequence editor - External switch desks

A It makes life much easier for users of external control points if the route sequences or routes to be executed can be called up using two contacts (start and destination).

In the route sequence editor, as in the routes editor, up to two contacts of a control panel can be entered, which then set the desired route or route sequence as an 'AND' link. The buttons of a switch desk are connected to the normal feedback modules of your system.

To activate the routes/route sequences option via external control panels, you must tick "Activation: Routes/..." once in the system settings on the Routes tab. This option allows you to call up routes or route sequences using a track diagram control panel. The three options allow the following functions:

- 🚂 Switch route (-sequences) and solenoid devices by push button(s) (external switch desk)

- 🚂 Start the vehicle automatically, if on the start contact of the route (-seq) which is switched via push button.

- 🚂 ...and if driving direction information is available and necessary turn.

The first option must always be selected if routes/route sequences are to be called up via push buttons.
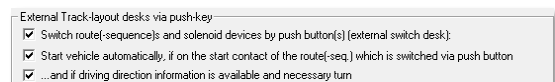
Fig. 8.29   The options for using track diagram control panels in the system settings.

In the versions prior to **Win-Digipet 2018**, the start/destination dialogue only showed one route when the button was pressed, which was assigned to the button in the routes editor. If the button(s) are assigned (in the same order) to several routes, the programme displays all of them.

The further behaviour of the start/finish dialogue that appears depends on the selection in the second option. If this is not activated, the user can select from the list of available routes (-sequences) and start them.

If the second option is activated, the programme first checks the entry in the list; if this is possible, it is taken and placed, but if it cannot be placed, the programme tries the next entries in the list. If no entry can be placed in the list, the window closes again. The one or two contacts entered now have the following effect:
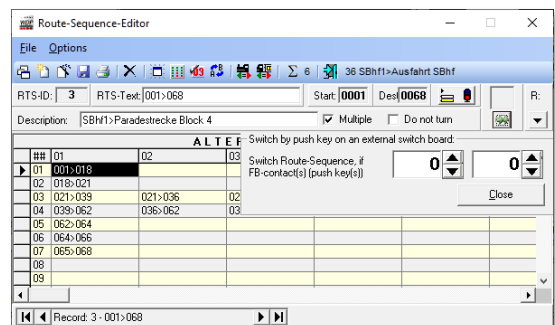
Fig. 8.30   A route sequence will be called using up to two buttons (start/destination)

- 🚂 If you enter a contact for a route or route sequence, it works as in the previous versions (before 2018) of **Win-Digipet**:
  Press contact→ Execution of the route or route sequence.

- 🚂 Enter two contacts for a route or route sequence:
  Press both contacts simultaneously→ Execution of the route or route sequence.

🚅 However, if you have entered the contact combination x+y for route 1 and the same contact combination only in reverse, i.e. y+x, for a second route/route sequence 2, **Win-Digipet** expects you to first press and hold the button entered as the first button and then press the second button. **Win-Digipet** can therefore also distinguish this case.

8.6   Standard window size

When working with the route sequence editor, you can adjust the size of the editor window to suit your needs at any time.

To do this, move the mouse pointer to a window edge or a window corner, the mouse pointer changes to a "smaller/larger arrow", and you can resize the window by holding down the mouse button (typical for Windows).

You can reset the window to the standard window size using the icon in the toolbar of the route sequence editor.
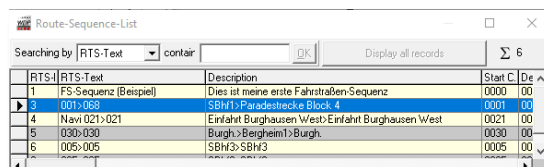
If you double-click on the separator of the respective columns, the column width is automatically set to the required width so that the text is displayed in full.

8.7 Route sequence list

The created route sequences can be displayed in a list. To display the list on the screen, click on the ⊞ icon in the toolbar of the route sequence editor.

By clicking on the column headings in the route sequence list, you can sort by the respective column in ascending or descending order and thus have a very quick overview of everything.

In the route sequence list, you can also narrow down the selection using the two fields under "*Searching by"* and "*Contains:"* or cancel the selection using the **'Display *all records'*** button.

Fig. 8.31   The list of all route sequences created.

If you click on (select) a route sequence in this list, it is automatically displayed in the actual route sequence editor. This is the easiest way to select the desired route sequence in the list window, then reduce or close the window and the last selected route sequence is available for further editing in the editor.
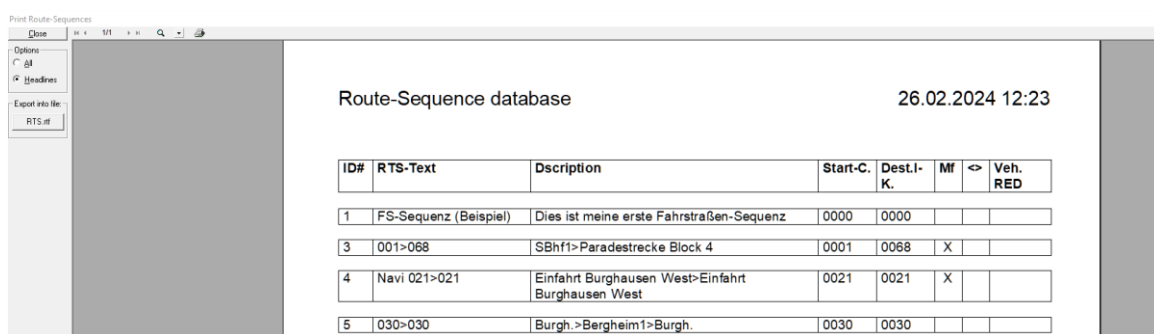
8.8 Print route sequences

To a printout of your route sequences, click on the icon 🖨 in the toolbar of the route sequence editor.

You can choose between the options "*All*" or "*Header*", so that you can now easily select what you want to print.

The other screen displays are self-explanatory.

It is also possible to export to the file "RTS.rtf" on your hard drive. This file can then be further processed with a programme that supports the RTF format[25] (e.g. Microsoft Word or Libre Office Writer).

Fig. 8.32   the "Print route sequences" dialogue allows a detailed overview of the route sequences set up.

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[25] RTF - Rich Text Format

8.9 Exit the route sequence editor.

Use the symbol ⏏ to exit the route sequence editor. After a possible confirmation prompt to save the last changes in the route sequence editor, you will return to the main **Win-Digipet** programme.

8.10 Tour event inspector

As soon as a route sequence has been started, the so-called "Tour Event Inspector" opens. Here you can basically see what is moving on your system, controlled by **Win-Digipet.**

You can read the status of the route sequence in the "Vehicle/Train" column. The different statuses are marked with a colour, whereby the colours here have the following meanings:

🚋 ▫ 000 = Running routes/route sequence(s)

🚋 ▫ 000 = Waiting routes/route sequence(s)

🚋 ▫ 000 = Route sequence(s) on pause

🚋 ▫ 000 = Waiting time of the route sequence expired[26]

🚋 ▫ 000 = Intermediate stop active

🚋 ▫ 000 = Waiting time before departure Vehicle/train active

🚋 ∑ = total number of active routes/route sequences

In the window below, the colour fields are listed again in conjunction with a counter that shows the respective number.

The "Message" column shows a message text on the status of the active route, which can also be used for analysis in the event of an error.

Double-click on a line in the route sequences sequence inspector to open the vehicle control of the associated vehicle.

The green button at the bottom left is used to interrupt all lines, the cross symbol to delete all

Fig. 8.33   The Tour Event inspector with the status of the active routes

entries. Individual journeys can be deleted using a menu, which you can access by right-clicking on the relevant line.

If you have decided to remove individual journeys from the list via the menu mentioned above, you will be asked whether the journey to be deleted should be cancelled immediately or completed.

Three additional icons 🔲 🔳 🔳 in the operating and status bar of the journey sequence inspector are used to display a detail area. You have the choice of either "attaching" the

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[26] The waiting time before the route sequence expires is defined in the system settings (default is 600 sec)

detail area to the bottom of the tour event inspector window or opening it as a separate window that you can then position anywhere on your screen.
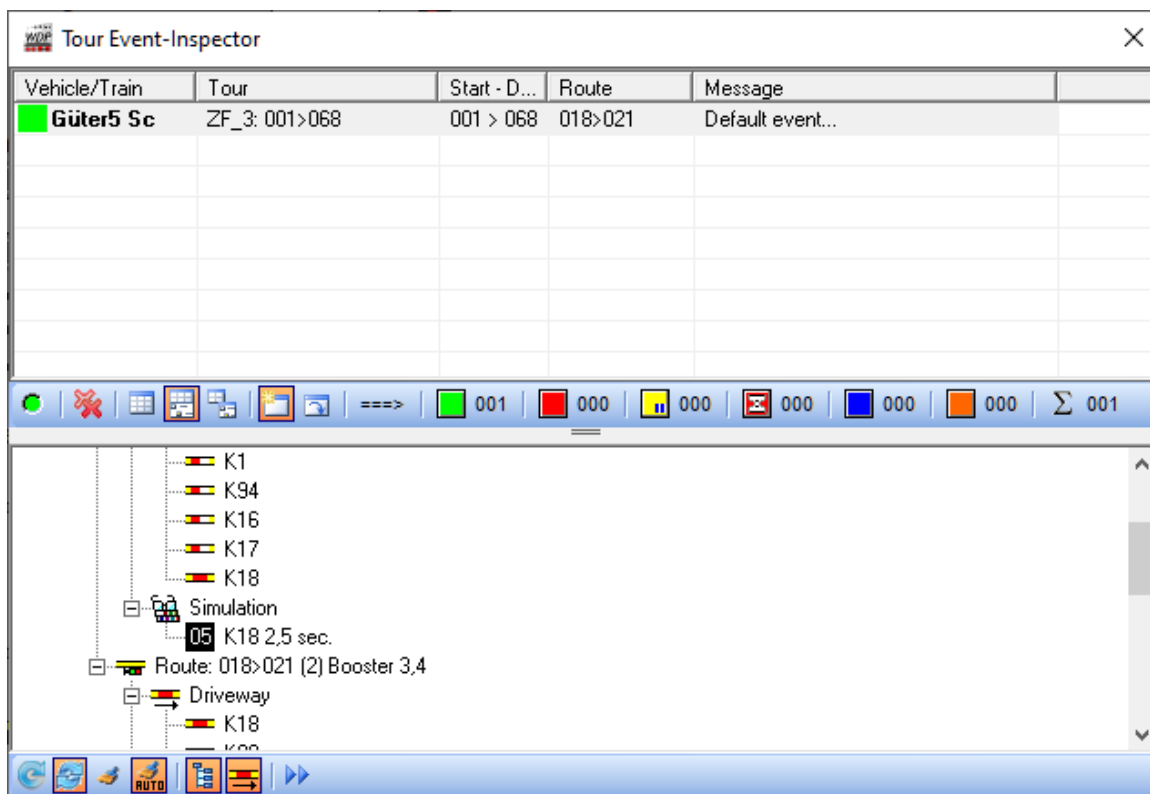
Fig. 8.34   The tour event inspector with detailed area displayed.

The detailed area that appears provides you with valuable information about the progress of your route and is an important tool for solving problems in the event of an error.

The icons for controlling the detailed area are largely self-explanatory or their functionality is explained with the help of tool tips when hovering over them with the mouse.

The symbol with the broom (without auto function) means that processed contact events are displayed in "grey" and are not deleted from the list. If there are more than 40 processed entries, the list is automatically shortened.

The tour event inspector can also be started manually from the Monitoring toolbar using the icon or by pressing the <F7>-key.

Never move the train manually anywhere in an **active** route sequence or delete the train number in the track diagram without first stopping and deleting this route sequence

8.11 Route sequence navigator

The Route Sequence Navigator is a programme part in **Win-Digipet** with very extensive possibilities for controlling the vehicles or trains on the model railway layout.

With the route sequence navigator, vehicles or trains can...

- 🚂 after a cancellation of an automatic mode
- 🚂 after an interruption in the connection to the digital system
- 🚂 after an accident or the like
- 🚂 to start an automatic system with one or more defined starting point(s)

...can be controlled and driven very conveniently from any starting point to any destination point on the track layout if the corresponding route sequences are available.

The start/destination function for the route sequence navigator was created to start a route sequence with the route sequence navigator. You can start the route sequence navigator by pressing the middle mouse button on the start vehicle display and then holding down the <ALT>-key and pressing the middle mouse button on the destination vehicle display.

As an alternative to this procedure, you can also select the vehicle displays with the <u>right mouse button</u> and select <Select start> or <Select destination (RTS-Navigator)> from the short menu. You can also select <Select intermediate point> from this menu to influence the route selection.
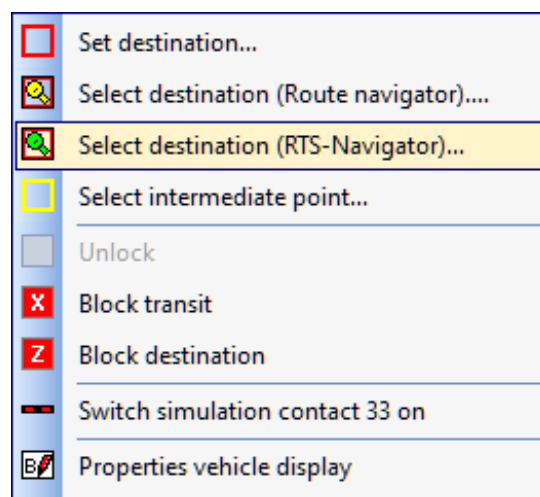
Fig. 8.35   The short menu with the RTS-navigator function

After this start/destination function, **Win-Digipet** now searches for suitable route sequences and offers these for selection.

8.11.1 Example of the route sequence navigator

You can create special route sequences for the route sequence navigator. The route sequence navigator then selects suitable components from these special route sequences to reach the start or destination points you have defined.

How to create such special route sequences is explained here using the example project.

A route sequence is to be created for the route sequence navigator, which offers the possibility of linking almost every start and destination point on the main route of the demo project.
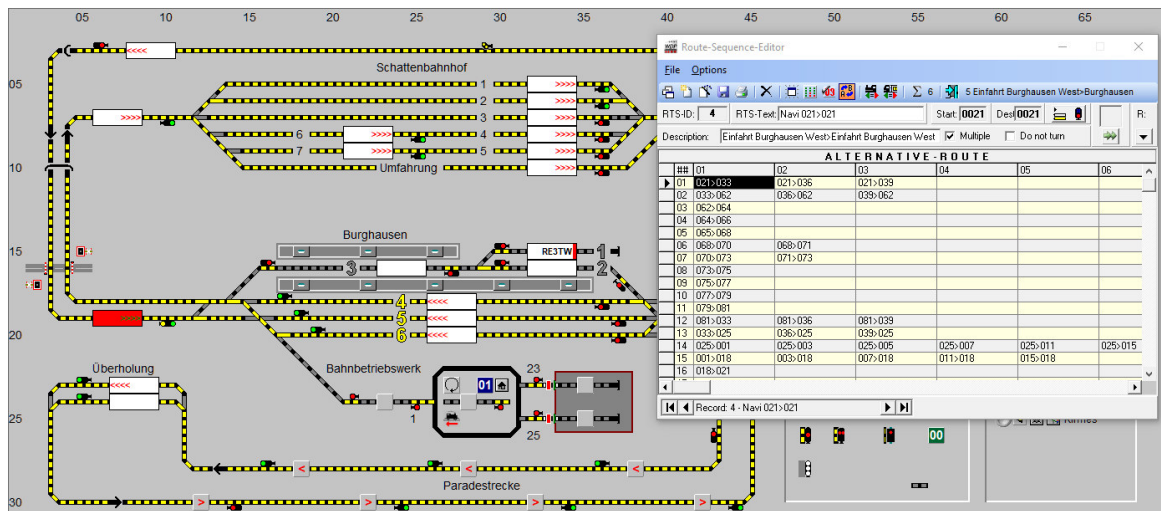
Fig. 8.36   A route sequence for the route sequence navigator

The Fig. 8.36 shows this route sequence for the RTS Navigator. In principle, all routes of the main line including the stations are entered here. With the start/destination function as navigator route sequence, **Win-Digipet** will attempt to navigate to the desired destination from a part of this route sequence.

⚠	Navigator route sequences can have several start and destination points. They therefore **do not** comply with the rules for route sequences and may only be used for the route sequence navigator function.

⚠	After the automatic naming of the route sequence, you must prefix the characters "Navi " with a space in the "RTS *text*" field to distinguish the route sequence so that you can recognise this route sequence immediately and **never** enter it in the tour automatic editor.
	This navigator route sequence would not work in the automatic system. Navigator route sequences are not considered in the check routines.

Version 2021
Premium Edition

Chapter 09

9. PROFILES & MACROS

9.1 General information

The powerful functions in **Win-Digipet** also include the so-called profiles. The profiles allow you to use very individual driving or functional characteristics of your locomotives, trains, road vehicles, cranes, and functional models, even in automatic mode, with minimum effort.

You can create profiles for each route and vehicle or train using the profile editor. The programme-controlled triggering of functions at any point in the system or the individual adjustment of the driving characteristics of your vehicles are thus possible both for simple start-destination driving and in operation with the tour automatic driving system.

This chapter explains how to create profile data records, which give you the following options, among others:

- The driving behaviour of very different vehicles can be individually adapted to the route.

- Vehicles without load-controlled decoders can also be individually adapted to each route.

- The profile editor offers the option of integrating all decoder functions of vehicles, function models, sounds, etc., even in automatic mode.

- If profiles have been created, each vehicle will behave differently for the same route - regardless of the settings in the routes editor or the vehicle database.

- The integration of crane macros in automatic mode is possible.

- Customised sounds can be played at any point and for any situation.

- The inclusion of a turntable, transfer table or train storage can be individually adapted for each locomotive - thus increasing safety.

- The profiles can also be used individually for "Switch and drive" (start/destination dialogue).

- Of course, the profiles are also used in the route sequences and the tour automatic.

You can use the profile editor to create up to three profiles for each route in connection with each vehicle or train. They can then be executed directly in the start/destination dialogue ("Switch and drive") as well as in automatic mode and when calling up route sequences.

Using special routines and filters, the profile editor can already create profiles automatically, i.e. at least the raw profiles with the default values of the route/vehicles stored in the routes editor and vehicle database are then directly available. This makes it much easier to create new profiles, as you do not have to enter the text manually.

Of course, **Win-Digipet** automatically monitors the number of profiles stored so that it is not possible for more than three profiles to be created for a vehicle/road combination.

You must set the profiles in the **Win-Digipet** system settings on the "*General"* tab (see section 3.7.3**)**, only then will the corresponding command be visible and selectable in the "File" menu and the icon in the toolbar.
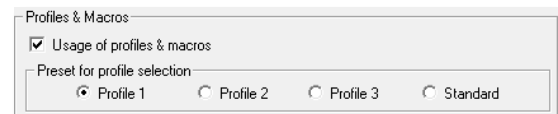
Fig. 9.1   Activating the profiles in the system settings.

9.2   Create profiles.

Click **in the Win-Digipet** main programme toolbar on the ![icon] icon to open the "Profile Editor" window.

When you open the profile editor for the first time, the first line contains the profile text "!Neues Profil! (means "!New profile!" in German language) and is now waiting for you to fill it with data. The profile editor consists of two individual dialogue windows. The first window *"Profile Editor"* lists and manages the individual profile data records, the second window "*Edit contact events*" contains the details for each individual profile, i.e. this is where you enter what happens to the vehicle or train at which contact, for example. We are talking about contact events here. These contact events are displayed in the window with clear texts and symbols.
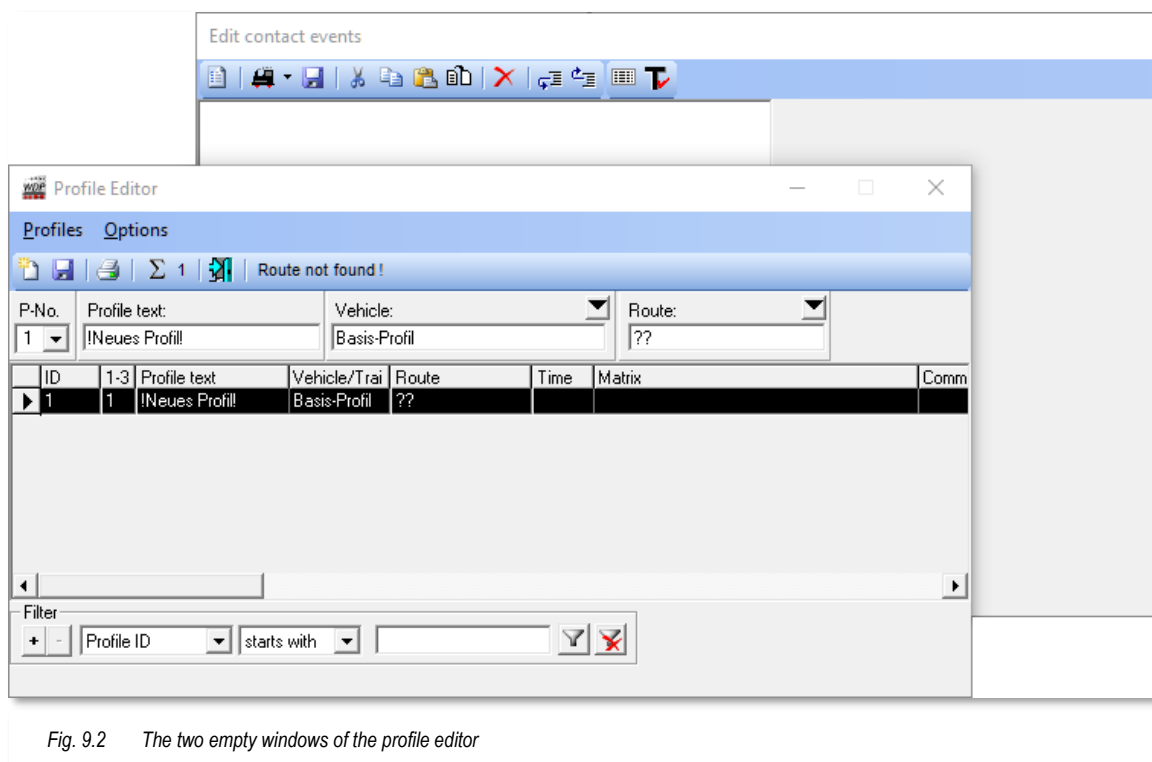
Fig. 9.2   The two empty windows of the profile editor

Before creating a profile, you should think about which vehicles/trains and routes you want to create one or more profiles for.

The number of profiles can grow quickly and therefore become confusing if you want to keep one or even several profiles for each route and vehicle.

Win-Digipet offers the option of combining the vehicles or trains for the routes and thus reducing the number of necessary profiles to a minimum.

In **Win-Digipet** you can set up the following types of profiles:

- **Vehicle-specific profiles**
  the contact event settings apply to a specific locomotive when travelling on a selected route.

- **Basic profiles**
  the contact event settings apply to all vehicles travelling on a selected route.

- **Train profiles**
  the settings of the contact events apply to trains that meet the set filter criteria when travelling on a selected route.

The moment you execute a route, the programme checks whether a profile exists in this hierarchy sequence. If no profile of the above-mentioned types is found, the route is processed according to the settings from the routes editor.

Some example criteria for the creation of profiles could be:

- A vehicle with deviating driving behaviour should be adapted to the driving behaviour of your other vehicles on certain routes.

- At platform departure (as in large-scale operations), passenger trains should first...

  - call the route,

  - a few seconds later, a platform departure announcement will be made,

  - let the train depart with a further delay.

- Give a warning whistle before an unrestricted level crossing.

- Travelling slower with a heavy goods train (transformer wagon, crane, etc.) than with other trains on a winding section of the route.

- Drive slowly with a construction train in the construction site of the line or even stop briefly to load or unload construction material.

- And of course, any other situation you wish, such as switching on the Ferris wheel, switching on/off the lights of a house and the like.

Only after these preliminary considerations as to which tasks are to be performed by the profile should you start creating the profiles. These can be created completely manually or automatically by **Win-Digipet.**

> Your vehicles should be calibrated for operation with **Win-Digipet.** This means that all vehicles should have approximately the same driving behaviour in terms of speed.
>
> The additional use of intelligent vehicle displays for braking and stopping the vehicles or trains reduces the need for profiles to adapt the driving characteristics to driving commands on the track or additional vehicle-independent switching or events.

For the reasons mentioned above, you should only create profiles for...

- Speed adjustments on the routes in special situations
- Functions (e.g. sound outputs) of the vehicle decoder
- Sound output (e.g. platform announcements) via the PC with loudspeaker
- Shunting and turning manoeuvres

If possible, you should also try to work with profiles that apply to all your vehicles (basic profiles) or groups of trains (train profiles).

9.3 Create basic profile for all vehicles manually.

In the profile editor, up to three basic profiles (valid for all vehicles) are possible per route. The term used in **Win-Digipet** to summarise all vehicles is "basic profile" (previously: "LokID0"). The profile number is not assigned automatically, but you must preselect the desired profile number in the "*P-No.*" selection field. This has a major advantage. A small example will illustrate this.

For example, you want to create a profile for each of your vehicles and routes according to the following selection criteria:

- 🚂 Profile 1 - for the functions **without** sound
- 🚂 Profile 2 - for the functions **with** sound
- 🚂 Profile 3 - for established slow speed zones, construction work, heavy goods transport, and other special features.

These profiles can then be specifically assigned to the individual routes in the tour automatic function.

In **Win-Digipet** it is possible to create **a profile** for **all vehicles** for **each** route. The desired functions for all vehicles can then be entered in this profile.

This is useful, for example, if you want to enter the staging yard and switch the following functions off or on when you reach the area that is no longer visible:

- 🚂 the lighting of the passenger coaches
- 🚂 the steam function of the locomotive
- 🚂 the sound of the locomotive (steam locomotive or engine noise)
- 🚂 or other functions
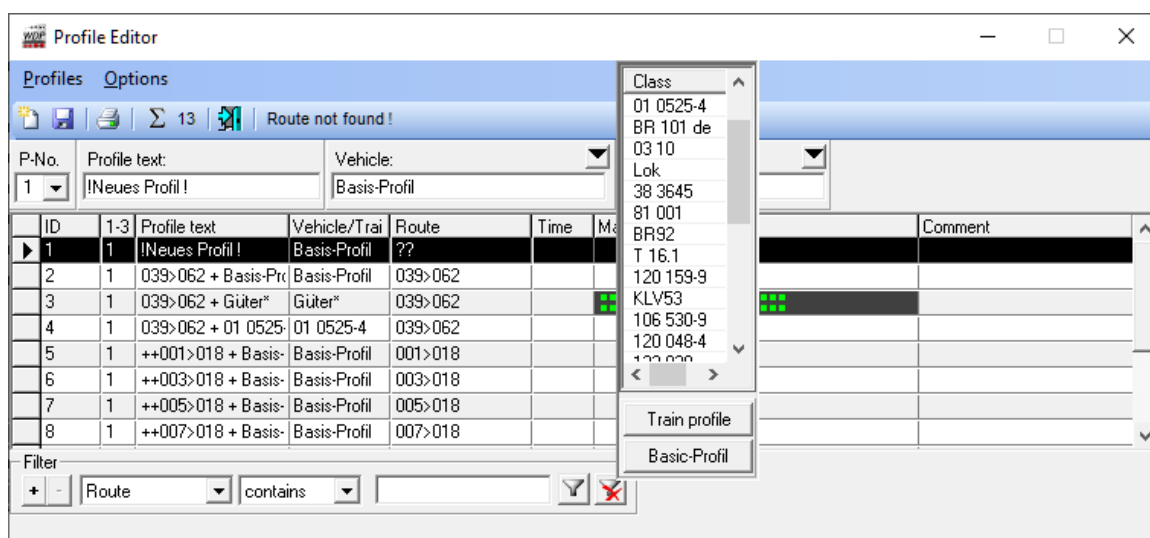
Fig. 9.3   A new basic profile valid for all vehicles is to be created.

To create a profile manually, click on the down arrow in the "*Vehicle*" selection field and then on the "*Basic profile*" button.

> ⚠️ If you cannot see the button, you must pull the profile editor window further down.

Now click with the middle mouse button on the start vehicle display and then on the destination vehicle display (start/destination function) of the route for which the profile to be created is to apply.

The "Start/destination selection" window appears with a list of all routes matching the selection, with their internal ID numbers and the corresponding ID text. The first route found is preselected and is highlighted in yellow in the track diagram. If several routes are found for the selected start-destination combination, select the desired route by clicking on its list line; it will be highlighted in yellow in the track diagram.
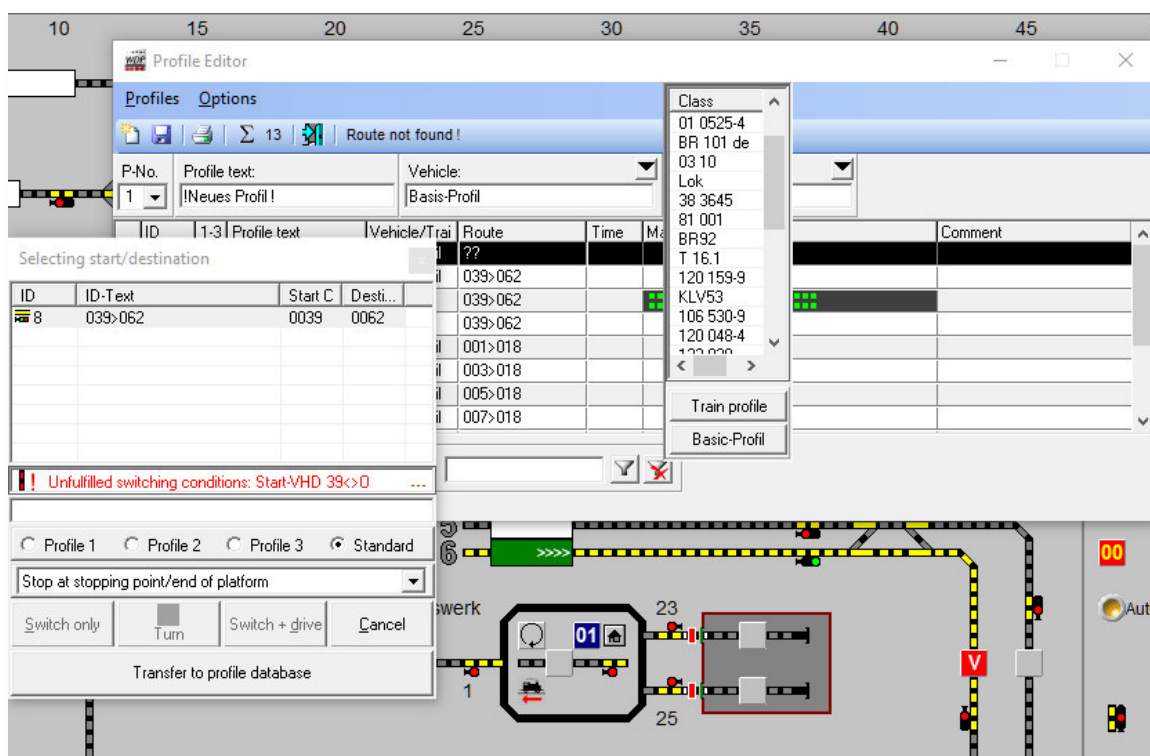
Fig. 9.4   Selecting the route using the start/destination function.

Click on the **'Transfer to profile database'** button in the dialogue window and the route is automatically entered in the profile line in the "*Route*" list field. Any error messages in the window (cf. Fig. 9.4) can be safely ignored at this point.

However, you can also select the route for the profile from a list, because after clicking on the down arrow in the "*Route*" input field, a list appears with the ID texts of all routes already entered.

If you click on the desired route line, it will be displayed in the track diagram if it is not currently hidden by the profile editor window. If you hover over the list line with the mouse, the description of the route is also displayed. If it is the correct route, double-click and the route is entered in the "*Route"* input field of the profile editor.

You can enter a meaningful name in the "*Profile text"* input field **or** have **Win-Digipet** automatically enter the "*Profile text"* by saving immediately.

To save the profile, click on the 🖫 icon in the Profile Editor toolbar.

In this case, **Win-Digipet** automatically assigns a profile text which is made up of the ID text of the route and the vehicle designation "Basic profile" and is separated by the characters "+". However, the automatic profile text assignment does not work in the first line of the profile editor.

After saving, the new profile is entered in the lower list, the "Database", with a unique ID number.
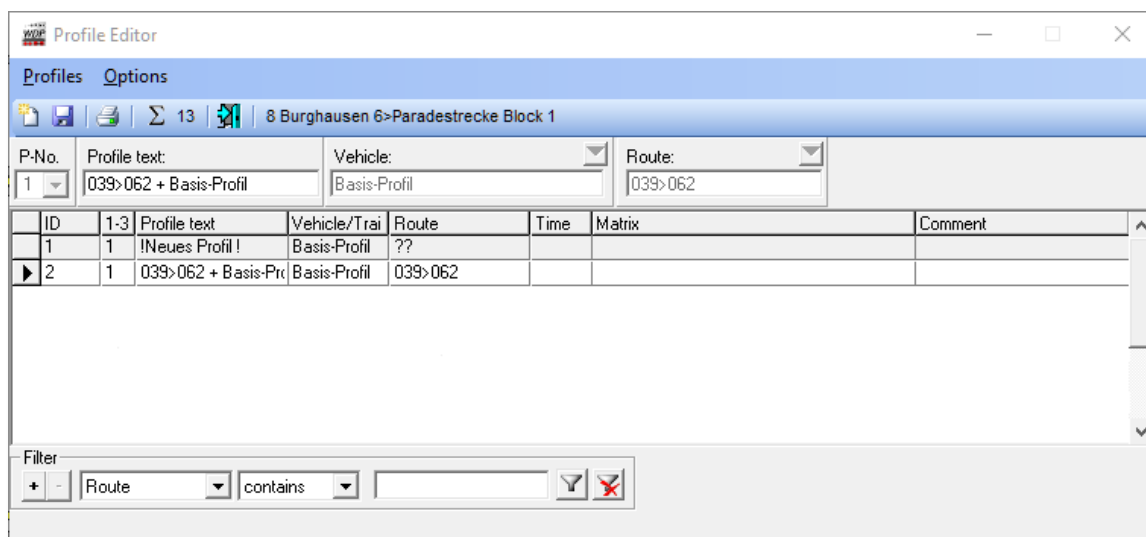
Fig. 9.5   A new basic profile has been saved.

The profile numbers are not automatically assigned by **Win-Digipet** from profile 1 to profile 3. It can therefore happen very quickly that you want to create the profile more than once.

In this case, however, you will receive a warning message from **Win-Digipet** about an existing profile, which you must then answer accordingly.

Click on the **'Yes'** button to switch to the existing profile and you can view the data and change it if necessary.

After clicking on **'No'**, you can now change the profile number in the "*P-No."* selection field using the down arrow and then save the profile.

9.3.1 Create train profile manually.

In principle the statements and steps made for the basic profiles also apply to the creation of train profiles. To create a profile manually, click on the down arrow in the "*Vehicle*" selection field and then on the *"Train profile"* button (cf. Fig. 9.5)
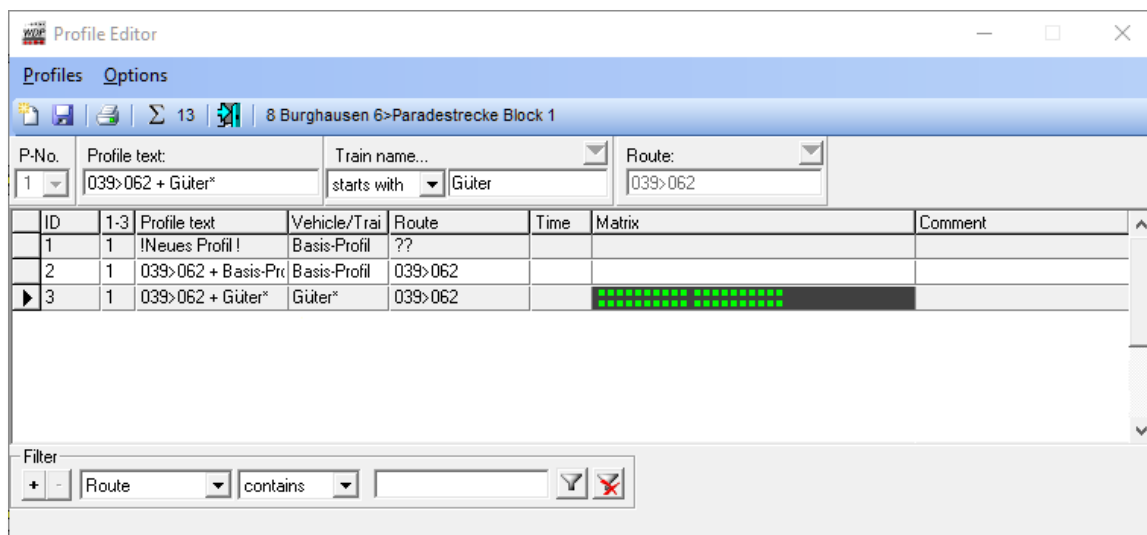
Fig. 9.6   The train profile applies to all trains whose name begins with "Freight" (Güter in German language).

Selecting the **'Train profile'** button replaces the "*Vehicle*" selection list with the "*Train name*" selection list and adds a filter list. You are already familiar with the filter list criteria from the routes editor, for example. For the train names here in the profile editor, we also summarise the groups with the familiar filter rules.

In this example, a train profile is to be created for all trains whose name begins with "Güter"[27]. These trains could then be called "Güter1", "Güter5" or "Güterzug", for example. However, a train with the name "Tankgüter" would be excluded from using this profile from due to the filter, as the character string "Güter" is at the end of the word and not at the beginning.

As with the basic profiles, you select the route using the start/destination function or by selecting an entry from the route list.

After saving, the new profile is entered in the lower list, the "Database", with a unique ID number.

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[27] "Güter" is the translation to "Freight" or "Goods" in German language. Güterzug means freight train.

9.3.2 Manually create a profile for a specific vehicle

Up to three profiles per vehicle and route combination are possible. You must preselect the desired profile number in the "*P No.*" selection field. You can select the vehicle very quickly via the vehicle bar, the vehicle monitors or open vehicle controls.

To do this, click on the image of the desired vehicle and, holding down the <u>right mouse button,</u> drag the vehicle image into the "*Vehicle*" input field of the profile editor and release the <u>right mouse button.</u> The vehicle is entered and can be seen with its image at the bottom right of the profile editor.
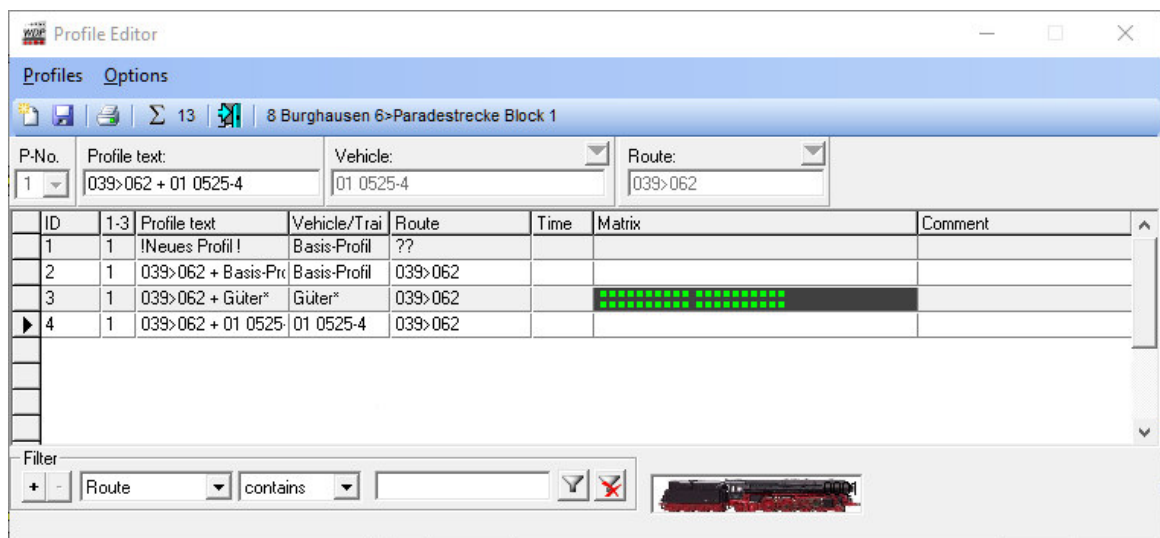
Fig. 9.7   For a vehicle-specific profile, the image of the vehicle is displayed.

However, you can also select the vehicle by clicking on the down arrow in the "*Vehicle*" list field.

Select the route again using the start/destination function or from the route list.

After saving, the new profile is entered in the lower list, the "Profile database", with a unique ID number.

9.3.3 Transfer contact events from the route

In in the last three sections, you created data records for different types of profiles. These data records do not yet contain any entries for the contact events.

To assign contact events to a profile data record, select the desired data record with the left mouse button and then click on the second window *"Edit contact events"* of the profile editor.

This window does not yet contain any entries. Click on the icon 🗐 (automatically generate basic data from vehicle and route) in the toolbar of the *"Edit contact events"* window to transfer the basic data from the route to the profile. The basic data includes the speed data

of the recorded route from the tab "Start/Brake/Destination" and, if applicable, the speed data for the additionally entered route contacts.
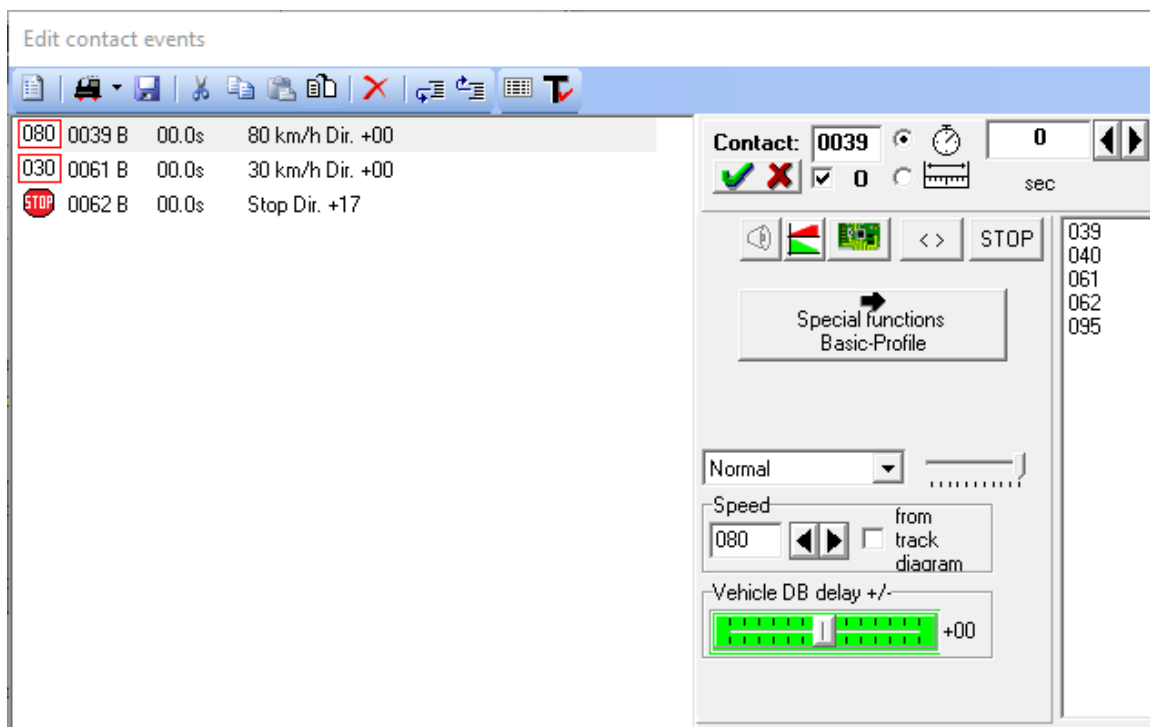
Fig. 9.8   The contact event window for basic profile

The acceleration and deceleration data in the vehicle database is only entered as an absolute value for vehicle-related profiles, whereas the data for basic profiles or train profiles should always be regarded as a relative value (with +/-) to the data in the vehicle database.

In the first example (cf. Fig. 9.8) is a basic profile. Here you can see the values for the acceleration and braking acceleration as a relative value with +00 in the two lines.

The second example (cf. Fig. 9.9) shows a vehicle-related profile and therefore you can see the values for the acceleration and braking acceleration with absolute values on the slider or in the individual lines of the contact events.

Both examples are profiles with routes that contain a normal vehicle display (VHD) with start and braking speed, as well as the stop command at the target contact.
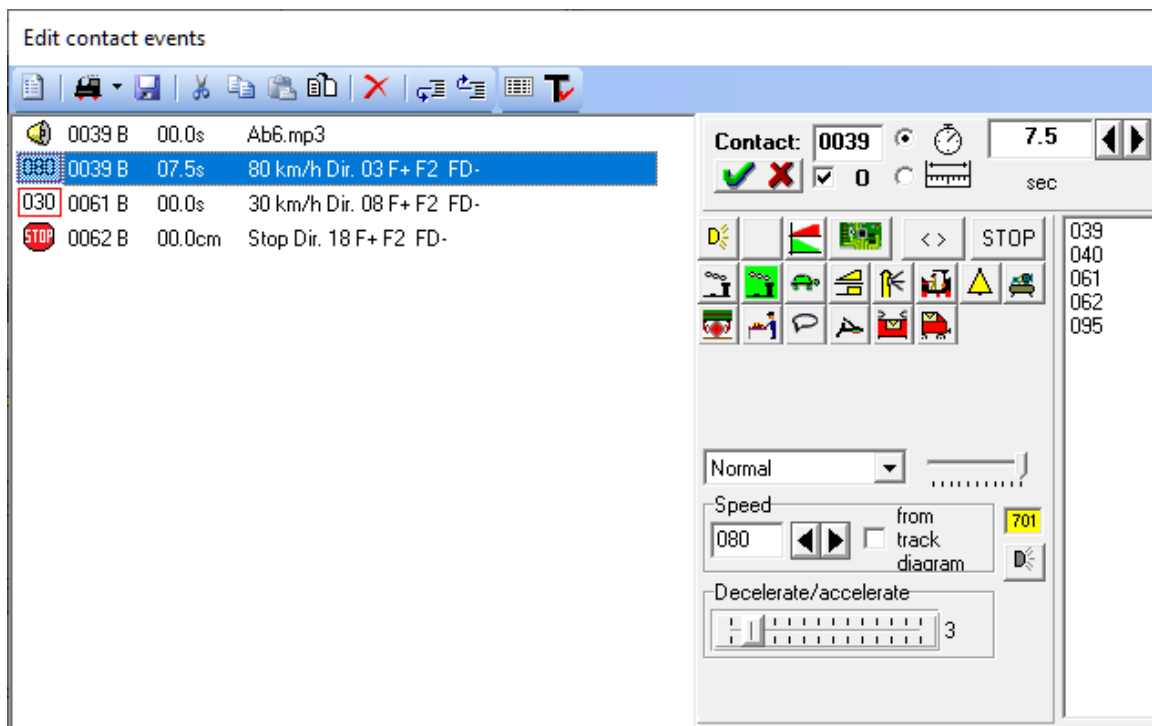
Fig. 9.9   The contact event window for a vehicle-specific profile

In profiles with routes to "intelligent vehicle displays (iVHD)" as destination, the speed changes at the contact events of the iVHD are ignored, as the stepless braking is completely taken over by **Win-Digipet**.

9.4 Change/add entries to the contact events.

The entries of the contact events in the profiles can be customised at any time. You can insert up to 60 lines in total.

The contact events for a profile data record are displayed in the "Edit contact events" window (cf. Fig. 9.8).

> If you want to or must revise an existing profile, be careful when transferring the basic data again (see section 9.3.3), as data that has already been entered will be overwritten after a security question.

When switching from a previous version (before version 2015) of **Win-Digipet,** you will certainly have noticed that the contact events are no longer displayed so cryptically. Instead, they now appear in a graphically enhanced display. However, you can still display the old presentation method by clicking on the icon ▦ in the toolbar of the "Edit contact events" window.

The following graphic shows you how the contact events are displayed. In the graphic, you can see that four contact events are listed in rows in this example, with each row containing several columns with different entries. However, you can also set up several events for each contact, possibly with a temporal or spatial offset. The first two rows in our example graphic show two events at RMK 039 with a time offset of 7.5 seconds.
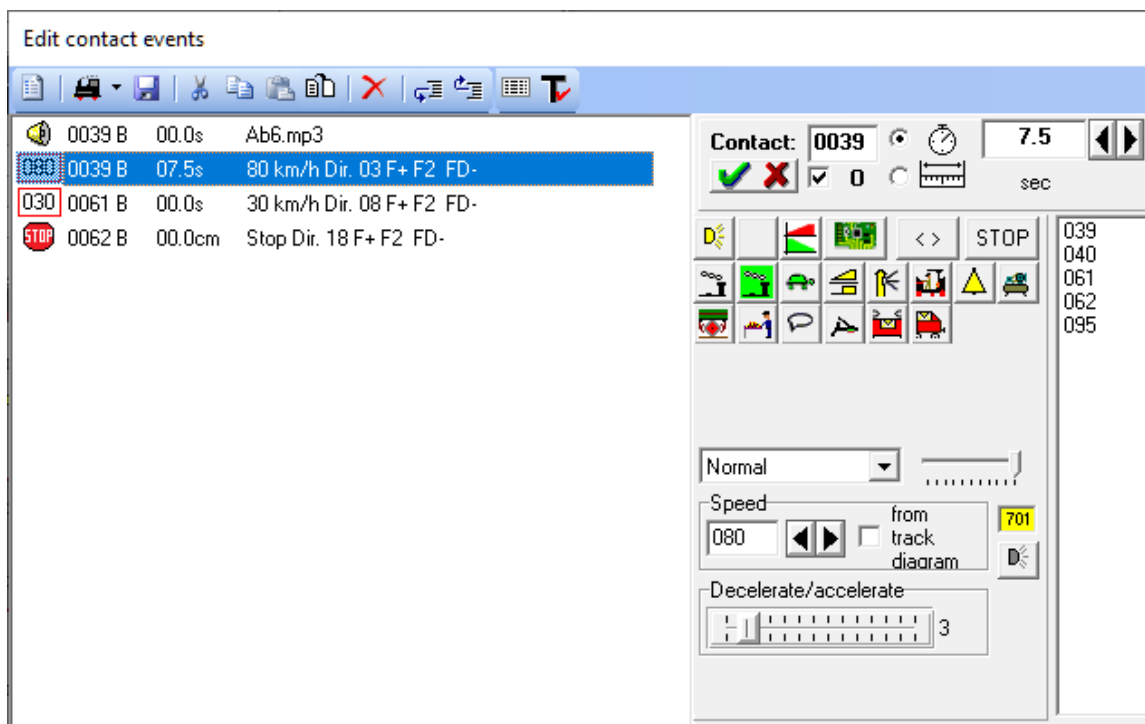
Fig. 9.10   A total of four contact events are assigned to the contacts of the route.

At the beginning of each row, in the first column, the type of contact event is shown graphically. In the marked, second line here in Fig. 9.10 is a drive or function command (speed 80 km/h).

The second column contains the feedback contact number to which this event is assigned (here K 0039). The "O" in the third column indicates that the feedback contact must have the status occupied.

The fourth column specifies a delay time. The event is executed after this time has elapsed. In our example, a time of 7.5 seconds is entered, i.e. the contact event is executed after this time has elapsed.

In the last column, the deceleration during acceleration or braking is entered in addition to the speed. In this example, a deceleration of 3 is entered, meaning that the vehicle accelerates very slowly in this case.

The line is completed by specifying which functions are or will be activated or deactivated. The functions switched on here by default originate from the settings in the vehicle database.

Fig. 9.11   The menu of the various contact events

In total there are 28 different types of contact events (actions) that you can assign here. These actions essentially correspond to the actions that you have already familiarised yourself with in the chapter 7 on the routes editor as sequential actions or follow-up actions.

- Speed and function commands
- Vehicle-related actions
  - Execute vehicle/train macro.
  - Execute T4T action.
  - Change vehicle colour on vehicle display.
  - Set position in vehicle display.
  - Execute crane macro.
  - Change vehicle type.
  - Change waggon type.
  - Change length (X)
  - Change train name.
  - Change digital system for vehicle/train.
  - Change train turn block.
  - Control in routes/profile/macro without delay factor
  - Reset maintenance timer.

- 🚃 Set battery charge.
- 🚃 Output message text
- 🚃 Execute solenoid device or counter circuit.
- 🚃 Perform counter calculation.
- 🚃 Record logbook/memo/text entry.
- 🚃 Play sound from files.
- 🚃 Play video from files.
- 🚃 Switch virtual contact/momentary contact.
- 🚃 Switch simulation contact
- 🚃 Set locomotive number to "Black.
- 🚃 (De)activate train director/dispatcher entries.
- 🚃 Train director interaction
- 🚃 Change extended feedback status.
- 🚃 Set clock.
- 🚃 Vehicle display blocking

Add a new contact event by clicking on the icon 🚃 ▾ in the toolbar of the "Edit contact events" window. The icon is always displayed in the last selected category. You can use the small drop-down arrow next to the icon to add a contact event in the required category.

Alternatively, right-click in a contact event line and select the entry <New contact event →   Type of contact event> from the short menu that appears. The new contact event is inserted under the selected line after selection.

	New contact event	▶
✂	Cut	Ctrl+X
📋	Copy line	Ctrl+C
📋	Insert	Ctrl+V
📋	Duplicate	Ctrl+D
✖	Delete event(s)	Alt+ENTF
📥	Move event(s) down	Alt+U
📤	Move event(s) up	Alt+O
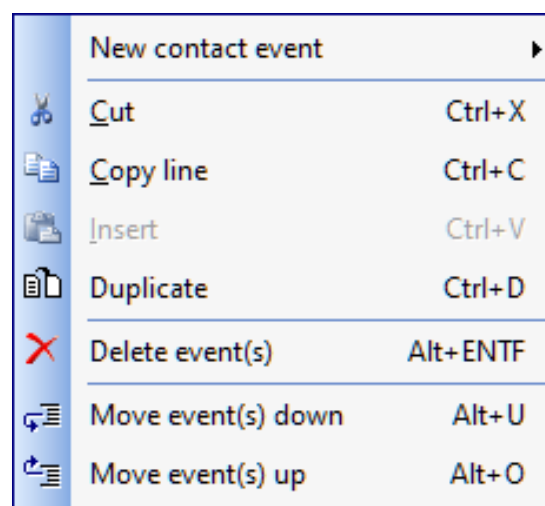
Fig. 9.12   The short menu of contact events

9.4.1   Editing aids

If you still need to insert or delete lines in the contact events or duplicate, copy or paste contact events, a short menu with these commands is available to you after clicking the right mouse button (cf. Fig. 9.12). Always click on the relevant line first so that it is highlighted and then execute the required command.

The <Paste> menu command can only be selected after a <Cut> or <Copy line> command.

The last two commands are used if the selected lines are to be moved up or down in the list. A correct sequence is essential, as the list of contact events is processed from top to bottom and therefore in the order of the contacts in a route.

9.4.2 Functions for vehicle-related profiles

The right-hand side of the "Edit contact events" window shows you the various options for processing the entered event on the feedback contact. The feedback contact number on which the event is to be executed is entered in the "Contact" field. You can drag and drop the feedback contact number from the list into the field or enter it using the keyboard. The "O" indicates that the contact must be "occupied (busy)". You can delete the tick here if the contact is to be checked for "free".
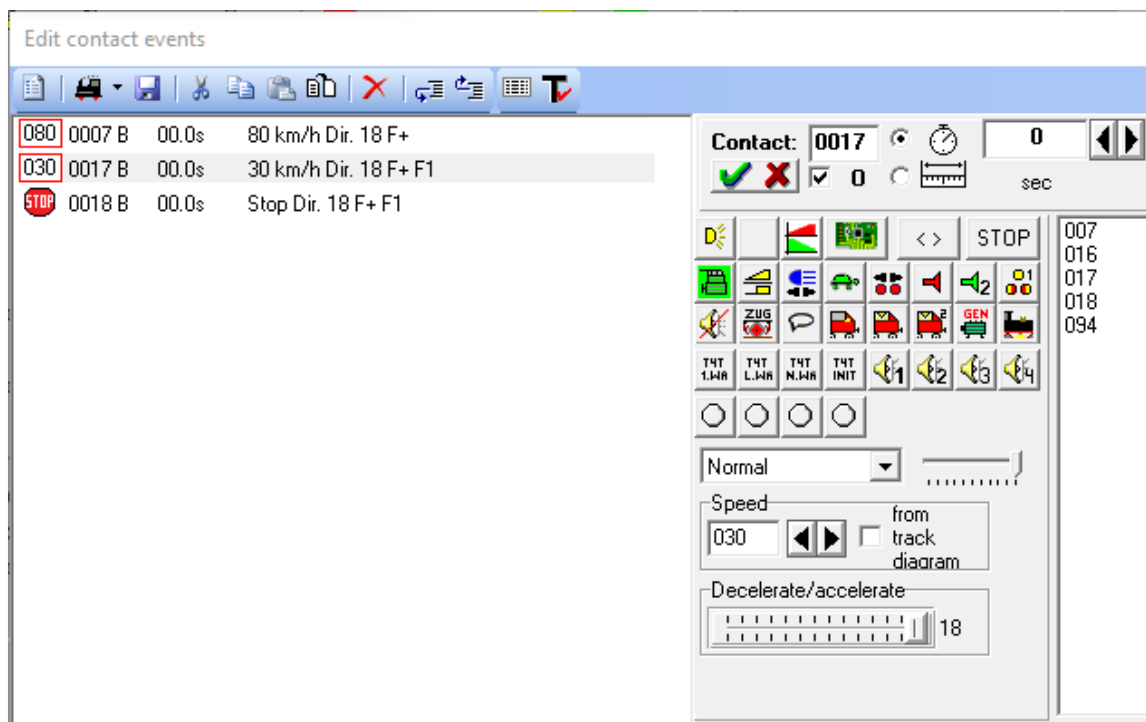
Fig. 9.13   The functions of the vehicle are shown with their symbols.

Please note the special feature for a contact event that is to be executed on a "free" contact.

For this event to be processed properly, this contact must have been busy beforehand and then become "free".

You can use the two radio buttons to enter either a temporal or spatial (by distance) delay for the contact event. Select the desired type of delay and enter the value in seconds and milliseconds or in centimetres and millimetres.

You will also see the setting options for the speeds and the decelerations for accelerating and braking the vehicle in the bottom right-hand section of the window.

The right-hand area of the window is supplemented by the individual icons for the vehicle functions. All functions that have been set up in the vehicle database for the vehicle, both for the vehicle decoder and for any linked function decoder, are displayed here.

The in Fig. 9.13 for the locomotive "BR 101 de" is now to be adapted so that in route 007>018 the engine running noise is switched on when the tunnel exit is reached and the horn sounds shortly after the exit. We assume that the exit of the tunnel is in the centre of feedback contact 016.

The following graphic shows the result. Two contact events in the "Speed/function commands" category were inserted. Both events concern the feedback contact 0016. Since the contact has a length of 120 cm, the event "Operating noise, Motor on (F1)" was entered with a delay of 60 cm. This means that the function is only triggered 60 centimetres after the contact has changed to the "Occupied" status.
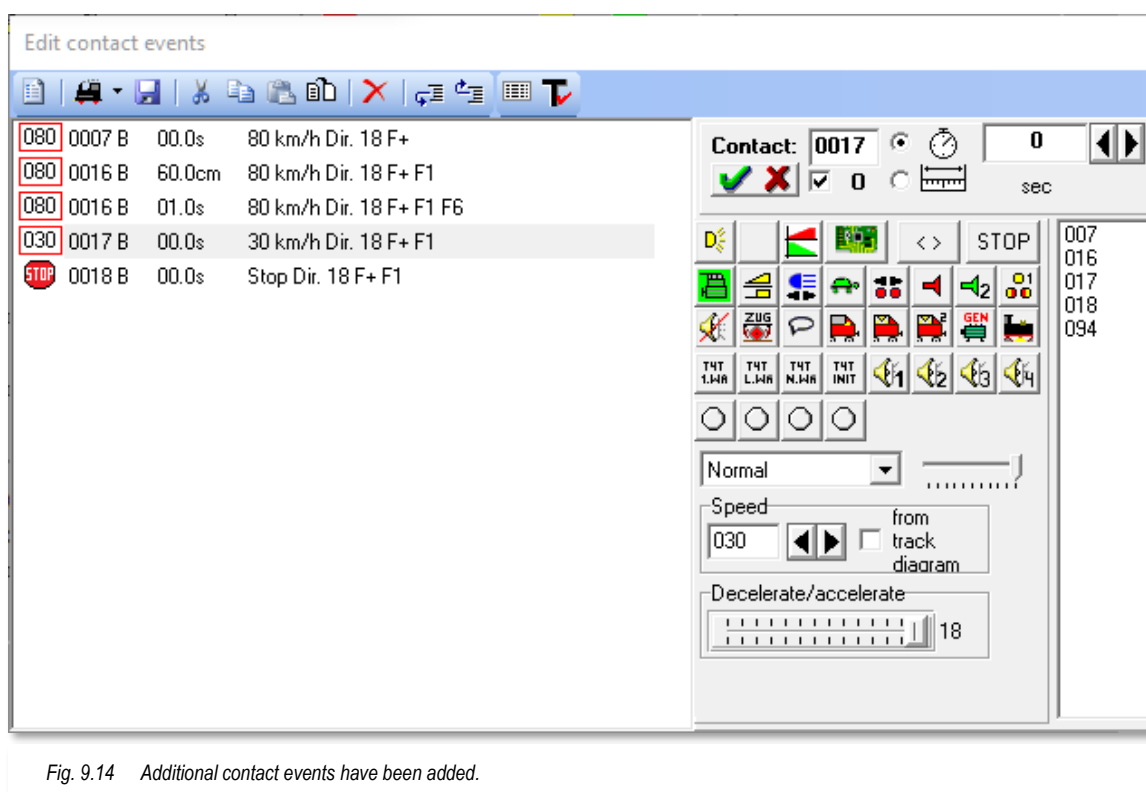
Fig. 9.14   Additional contact events have been added.

The second added event also affects the same feedback contact. With a further delay of 1.0 sec, the "Horn (F6)" function is switched on with this line. The delay time set here begins after the previous line has been processed. At this point, you must ensure that the feedback contact (0016) is still "occupied" at this time. Otherwise, the profile will not be processed correctly.

The "F1" function has also been activated in the following lines, as it is not set as a standard definition for profiles in the vehicle database for this vehicle in each event line (see section 4.5).

You can also see in the graphic that the speed at contact 0016 is set at 80 km/h and has not been changed in relation to start contact 0007. You can freely determine the value for the speed at a contact.

9.4.3 Transfer of the contact speeds from the track diagram

By option, the speed that you have assigned to the contact in the track diagram is adopted.

You can define the speed specification to be run at a contact in the properties of a feedback contact. To do this, right-click on a track symbol with a feedback contact number in the track diagram and select *"Properties feedback contact"* from the short menu. You can enter a speed value on the *"Basic data"* tab. This value is transferred to the profile when the *"From track diagram"* option is selected.

9.4.4 Sound outputs via the special functions

If you have assigned a sound file in the vehicle database for the special functions of a vehicle that is to be played via the PC loudspeaker, you can also have this function executed in a contact event.

The procedure is the same as for a decoder function. You also have the option of assigning the sound file output to a specific speaker of your **2.1**, **5.1** or **7.1 sound system** using the selection list in the centre. You can also use the small slider to the right of the selection list to influence the volume of the sound output.

9.4.5 Add or change vehicle functions for basic or train profiles.

The same example as in section 9.4.2 will now be shown again for the same route using a basic profile.

In principle, the application of the event lines is the same as the vehicle-specific profile. In the following figure, however, you can already see a comparison with the Fig. 9.14 the display for the acceleration and braking acceleration as relative values with "+00" in the two lines.

On the right-hand side of the window, you will notice that no function icons are displayed here.

Why is that?

In the case of a vehicle-specific profile, the function icons can also be clearly assigned to the corresponding "F-buttons". However, this no longer works here, as the individual functions can be assigned to different function buttons for each vehicle.
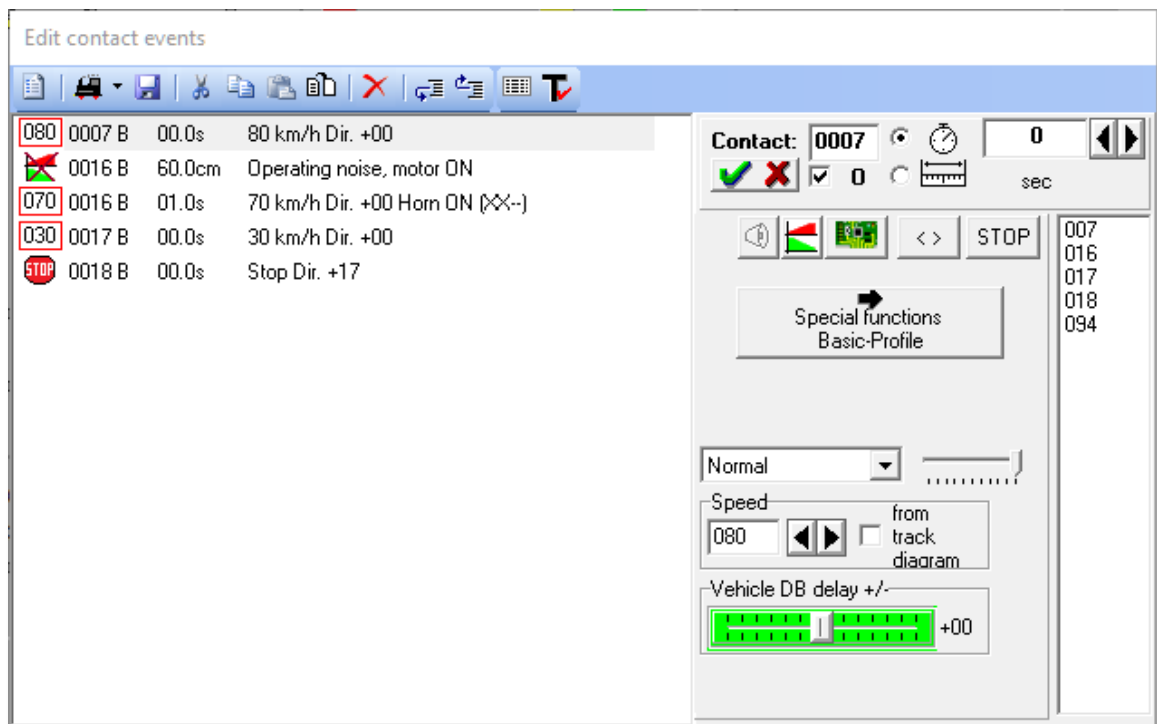
Fig. 9.15   The supplemented contact events in a basic profile

You can now access the individual functions via the *'Special functions basic profile'* button. After clicking on the button, the window expands to the right, and you will see all possible function icons listed in a tree. This is also the solution to the problem. The individual functions are assigned via the respective function icons.

Let's take the horn as an example. In our example in the previous section, the horn on the BR 101 de locomotive was configured to the "F6" function key. If you now look at locomotive 120 159-9, you will notice that the whistle there is on the "F3" button. However, both vehicle controls display the same function symbol for the function.
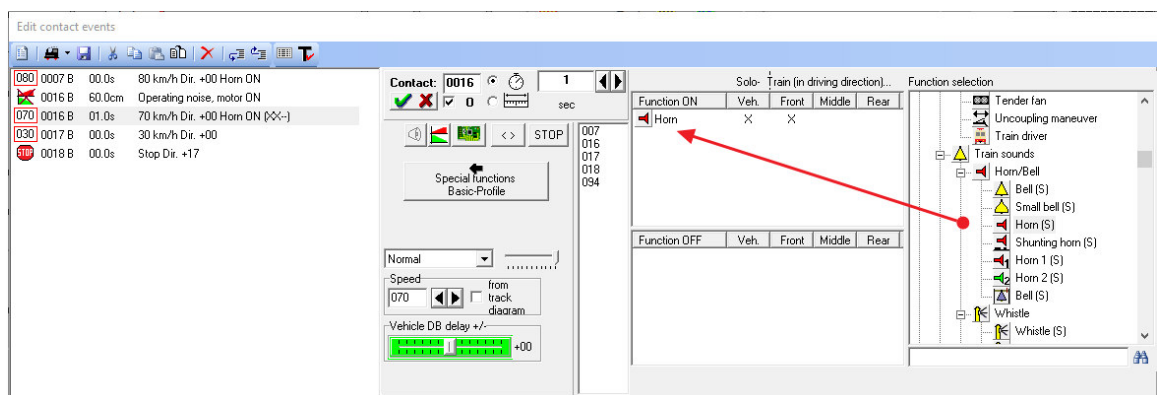
Fig. 9.16   The symbol for the special function is placed using drag & drop.

As a result, we must use these "same" symbols for switching the special functions in the basic and train profiles.

Vehicles that do not have the configured special function will ignore the function triggering. Vehicles that have the "Horn" function but have assigned a different symbol for it will not be able to execute the function in the basic profile.

All special functions are listed with their function icons in the selection list on the right and, after clicking on them with the left mouse button, drag them to the desired function field by holding down the left mouse button. The upper field is used to switch functions on and the lower field to switch them off. The individual function icons are organised thematically in a tree structure. You have already familiarised yourself with this arrangement in the chapter 4 on the vehicle database.

The mouse arrow changes to a double directional arrow. Once you have dragged the symbol to the wrong function field, you can change this again by simply clicking on the symbol again, holding down the left mouse button and dragging it to the right selection list and releasing it there. Then click on the symbol again and drag it into the correct function field.

The functions to be switched are entered in the "*Function ON"* function field in the same order as in the right-hand selection list, even if you have adopted them in a different order.

In the function fields, each function is displayed with four crosses (X). By double-clicking on the respective cross, you can select whether the selected function should only be activated for a solo vehicle (without other vehicles) or in a train formation at the front, centre and/or end of the train.

You can either switch the functions on and off by double-clicking on the cross or by clicking with the right mouse button on the short menu that then appears.

This selection can be narrowed down even further by holding down the Shift key while double-clicking on the cross. You can now specify the direction of travel for which the selected switching of the function should apply. In this case, the cross changes to an arrow symbol that symbolises the direction of travel.

If you have switched special functions on or off in the basic profile or in the train profile, they remain in this state until they are switched on again via a profile.

In contrast to the vehicle-specific profiles, they do not have to be repeated in every line.

However, you can also use the button ![icon]. This leaves all special functions as they are and hides the function icons for the vehicle-specific profiles. During this time, the button changes its appearance ![icon], editing the special functions is then blocked.

9.4.6 Change travelling speeds or leave them unchanged.

In the example below, the basic profile is to be changed so that the speed at the first contact event of contact 0016 remains unchanged, but a special function is to be executed. In the second line of contact 0016, we reduce the speed of the vehicle.
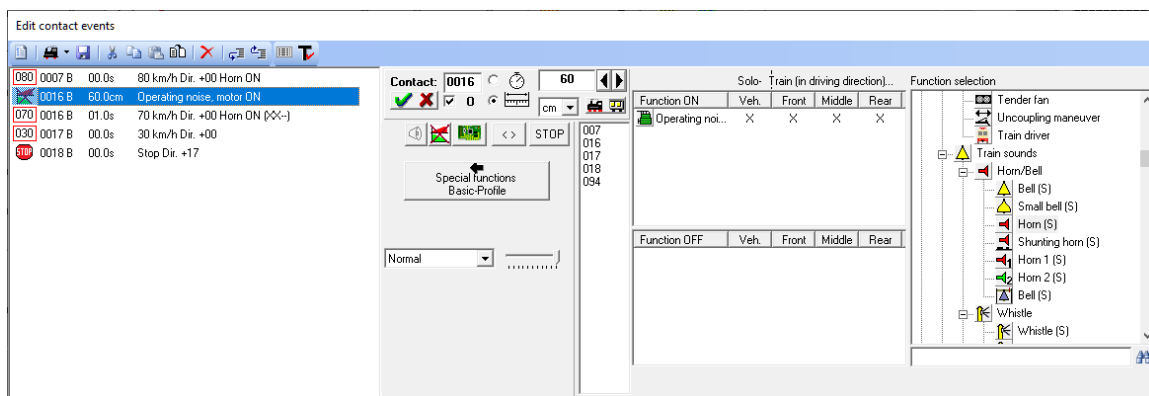
Fig. 9.17   There is no change in speed during this contact event.

The Fig. 9.17 shows the situation. The second line has now been given a different marking. This indicates that there is no change in speed for this contact event. You can access this function via the corresponding button in the centre of the window.

The profile shows the reduction in speed to 70 km/h in the second line for contact 016 (cf. Fig. 9.18). The desired value was entered in the "Speed" text field using the keyboard. Alternatively, the two arrow keys to the right of the text field can also be used here. By selecting the *"From track diagram"* option, the speed that you may have assigned to the contact in the track diagram is used.
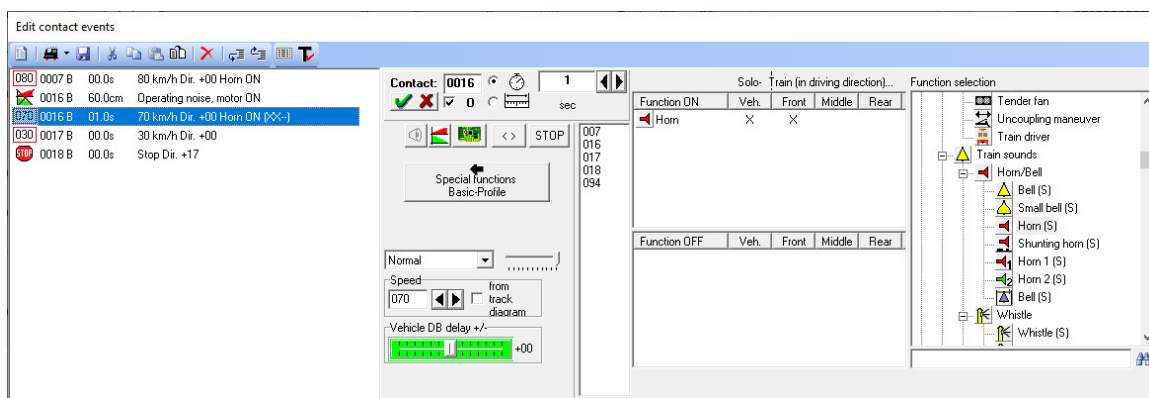
Fig. 9.18   A speed reduction with simultaneous execution of a special function

If you look at the function window again, you will notice that the "Horn" function is only executed in this example if the vehicle (locomotive) is running at the head of a train or as a solo vehicle. If, for example, the train is being pulled by a double traction, this would not be executed on the second locomotive in this configuration.

9.4.7 Switching the direction of travel in front of the buffer stop

You should only execute a turn command ⟨›⟩ a few seconds after the vehicle or train has come to a standstill. Therefore, insert the turn command in an additional profile line with a waiting time of a few seconds after the stop command to the vehicle. Some examples of necessary turn commands in a profile are.

- 🚂 after a stop in front of the buffer stop
- 🚂 during a zigzag manoeuvring drive

> You should carefully consider the use of turn commands here in the profiles for each individual case. Turning commands are also available in the higher automatic functions of **Win-Digipet** or automatic turning in route sequences allows you to turn without your intervention based on the direction information in the routes.
>
> You should also not use the turn command in profiles if you want to combine the associated routes into route sequences later. Against this background, a turn command here in the profile is more likely to be the exception, e.g. within a zig-zag shunting.
>
> In any case, you must ensure that there are no duplicate turn commands because you may have entered them in the profiles and in the tour automatic function.

9.4.8 Switching the direction of travel in a zigzag manoeuvring drive

How The following example shows what a profile for a zigzag shunting movement can look like. The route 054>056 (66) and the KLV53 rotting trolley are to be used for this. You could of course also set up the profile for this zig-zag route as a basic or train profile.

In the first contact event line, the KLV53 starts at a speed of 20 km/h at feedback contact 0054. The light is switched on - all other functions are not relevant for this example.
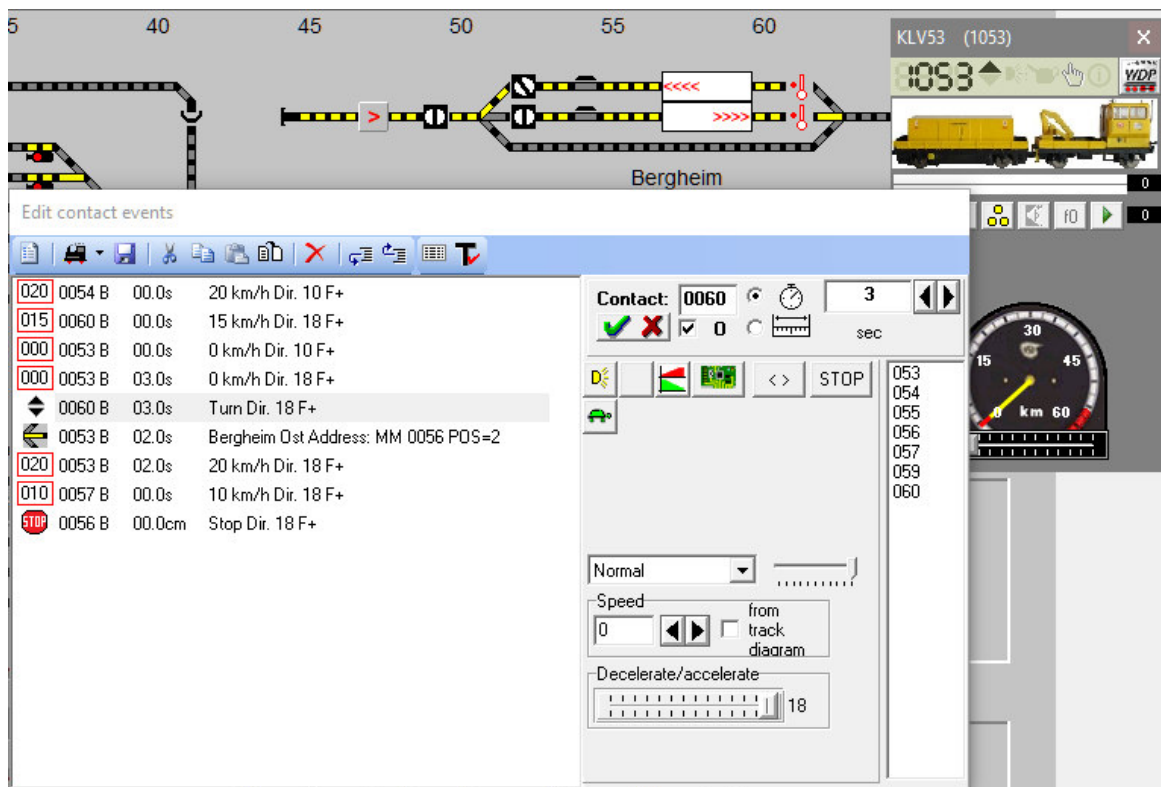
Fig. 9.19   The profile for zigzag manoeuvring drive

The vehicle now drives at the same speed via feedback contact 0055. No further events are provided for this contact in the profile, so you do not need to include this contact in the list of contact events.

In the second line, the vehicle is braked down to a speed of 15 km/h at "occupied" contact 0060 and braked to a speed of 0 km/h (not STOP)[28] at contact 053 in the next line.

In line four, after a waiting time of 3 seconds, the turn command for the KLV53 is given. Of course, we cannot drive off again now because the points in front of our vehicle are still set incorrectly.

The turnout is switched with a delay of 2 seconds in the fifth contact event line. At this point, a contact event from the contact event category *"Set solenoid device"* has been used. Drag and drop the points symbol from the track image into the configuration field and click to move the symbol to the correct position.

After a further 2 seconds, the KLV53 travels to its destination track at a speed of 20 km/h and stops at contact 0056 after braking at contact 0057.

---

[28] V=0 km/h set the speed using the arrow buttons in the Speed field

Contacts 0057 and 0056 are highlighted in light blue here, i.e. the destination vehicle display is configured as an intelligent vehicle display (iVHD). For this reason, the drive commands are ignored, and the stop procedure is carried out independently by **Win-Digipet**.

However, you should still leave these entries as they are, as the contacts are required as brake or stop contacts when driving onto the iVHD with the "Stop on contact" option and otherwise the vehicle would continue to drive unhindered, as there would no longer be a command to stop in the profile.

9.4.9   Vehicle sound

You can select the sound assigned to a vehicle from the vehicle database (see section 4.5.6.3) directly in a profile line.

To do this, click on the ![icon] icon for the vehicle sound in the desired contact event line. The symbol for the vehicle sound is only visible for a vehicle-specific profile if such a vehicle sound is set for the vehicle concerned in the vehicle database.

Although the symbol is always visible and selectable for basic or train profiles, only vehicles with a configured vehicle sound will be able to play it.

9.4.10   Functions of a function decoder of a single vehicle

The functions of a vehicle are displayed dynamically, i.e. only the functions entered and available in the vehicle database, including those of a function decoder linked to the vehicle, are visible. You can see the meaning of the respective function when you hover over the fields with the mouse as "quick info" highlighted in yellow.

If a function decoder has been linked to the vehicle in the vehicle database, the yellow display area with the digital address (here 701) indicates this. The functions of the function decoder are displayed at the top in the row of function symbols of the vehicle. The quick info characterises the symbols of the function decoder with the character string "FD"".
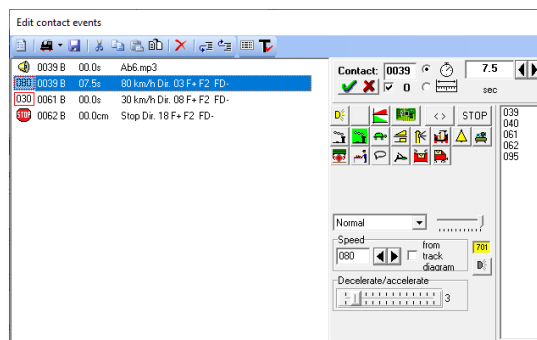
Fig. 9.20   The address and the functions of a linked function decoder are displayed.

9.4.11   Application of the waiting time in seconds

With you can delay the execution of the relevant profile line. You can set this time here in seconds (sec) and milliseconds (msec) using the arrow keys. We have already described the entry of a wait time in section 9.4.8 applied.

Here are two examples to illustrate how this function can be used to enable a wide range of operating activities in the simplest possible way.

You want to play a sound at the same contact when a train departs (e.g. "Attention! On track 6...!"). The train should only depart when the sound has finished playing. The sound here in the example has a duration of approx. 5 seconds. In the second line, the departure time is delayed by 7.5 seconds. This time starts counting when the first line is processed, i.e. when the sound file starts playing.
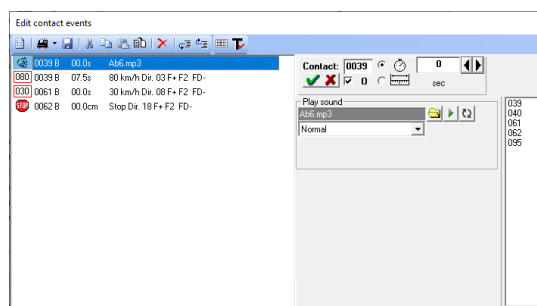
Fig. 9.21   The train departs after the sound is played.

At this point, the example of the zigzag manoeuvring movement from section 9.4.8 once again. Here too, several delays were configured so that, for example, the points could be set, or the train could be turned safely after a temporary standstill.

It is important that the reversing command is only given after a waiting time of at least 2 seconds (after the locomotive has come to a standstill) and not while the locomotive is travelling, otherwise the locomotive would not come to a slow stop but would stop abruptly.
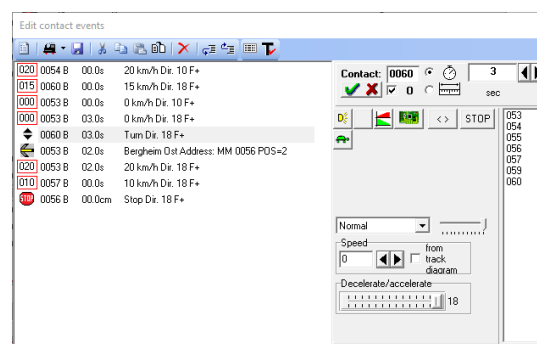
Fig. 9.22   The profile for zigzag manoeuvring drive

Waiting times entered in the profiles **at the start contact** are ignored for passing vehicles or trains in the route sequences.

The waiting times entered are only considered if the vehicle or train has stopped before the next route is set.

9.4.12 Application of the delay in centimetres

In many cases, the waiting time in seconds cannot always achieve the desired result. This is always the case if an action (contact event) is not to be triggered directly when a feedback contact is reached, but with a delay, for vehicles or trains travelling at different speeds. You can also specify this delay in centimetres so that this action always takes place 10 cm after a feedback contact is triggered, for example, regardless of the speed.

The deceleration is entered in centimetres with a decimal place for the millimetres (cm,mm).

In the example of the zigzag shunting movement, such a delay by distance could be used, for example, to bring the train to a stop before the turning process only after it has left the

turnout area (cf. Fig. 9.22). This situation would be particularly useful if you have only installed one feedback contact in the reversing track.

> However, specifying the deceleration in centimetres only makes sense for actions of a moving vehicle or train.
>
> If you enter a delay in cm at the start-contact, the vehicle, or train will **never** be able to set off.

As an alternative to entering a numerical value, a counter from the track image can also be dragged and dropped into the field at this point. The respective value of this counter indicates the delay in millimetres.

9.4.13 Evaluation "extended position options".

In profiles, the position of a train on a feedback contact can also be analysed. If the "Delay by centimetres" setting is selected, an additional symbol 🚂 🚃 "**Extended position options**" is displayed.

The "Train position in distance" option can be used to specify that the locomotive or train should stop at the entered distance with a defined point (e.g. after the first locomotive), in the same way as the "Intelligent stopping point" in the routes. The definable points of a train refer to:
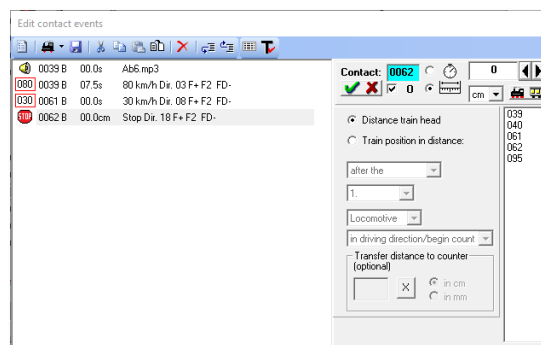
Fig. 9.23   The dialogue for the 'extended position options'

- 🚂 Position (before/after)
- 🚂 Number (1st to 50th)
- 🚂 Type (locomotive/wagon/vehicle)
- 🚂 Direction of travel (in or against)

Example for occupied:

A train consists of locomotive (20cm) + wagon (30cm) + wagon (30cm)

If contact is specified, occupied means + 40 cm after the 1st locomotive in the direction of travel:

The train travels 40 cm + 20 cm = 60 cm, so that the coupling after the 1st locomotive is exactly at 40 cm after the start of contact.

Example for free:

A train consists of locomotive (20cm) + wagon (30cm) + wagon (30cm)

Contact free + 100 cm after the 1st locomotive in the direction of travel:

Train head moves over the contact end 100 cm + 20 cm = 120 cm, so that the coupling after the 1st locomotive is exactly at 100 cm after the contact end.

A counter from the track image can be dragged and dropped into the selection list field for the number.

9.4.14 Delay factor in the profiles

The acceleration and braking acceleration data in the vehicle database is only entered as an absolute value for vehicle-related profiles, while the data in the basic profiles or in the train profiles is always a relative value (with +/-) to the data in the vehicle database.

Use the slider to set the desired deceleration factor (plus=green or minus=red). This allows you to set this value very precisely, which can then be different for each vehicle or train due to relativity. This set value then applies to both acceleration and deceleration.

A small example will illustrate this:

Fig. 9.24   The deceleration/acceleration is relative to the value in the vehicle database.

- 🚂 The value 10 is entered in the vehicle database when braking.

- 🚂 Here in the basic profile with the locomotive ID0 a value of -05,

then the value of 05 is used when breaking the vehicles or trains on this route with the basic or train profile. The same applies analogously to the acceleration of the vehicle or train.

9.5 Types of contact events

In total there are 28 different types of contact events (actions) that you can assign here. These actions essentially correspond to the actions that you have already familiarised yourself with in the chapter 7 on the routes editor as follow-up actions.

9.5.1 Contact event "Speed and function command".

This includes include all commands for changing speed, reversing direction, and executing special functions via the function icons.

The options for this category have been covered in detail in the examples in the previous sections and will therefore not be discussed again here.
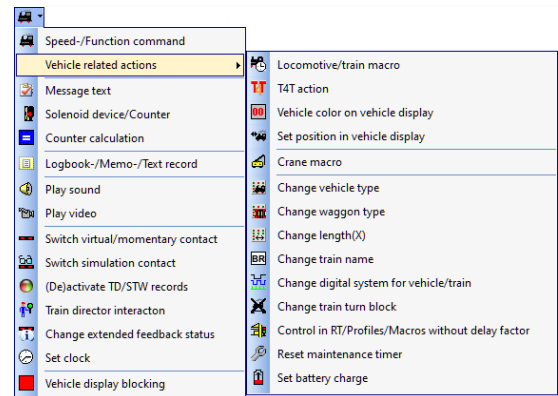
Fig. 9.25   The menu of the various contact events

9.5.2 Vehicle-related contact events

The contact events described below are summarised in the menu under the term "vehicle-related actions" (cf. Fig. 9.25).

9.5.2.1 Contact event "Execute vehicle/train macro".

With execute vehicle/train macro contact event, a vehicle or train macro can be started from a profile. A vehicle or train macro is structured similarly to a profile. However, a macro is independent of a route. We will go into the functionality of vehicle/train macros in more detail below.

Select the macro to be executed by clicking on the **'Select macro'** button and selecting the desired macro from the list displayed. The list only contains macros that are valid for the vehicle(s) or train(s).
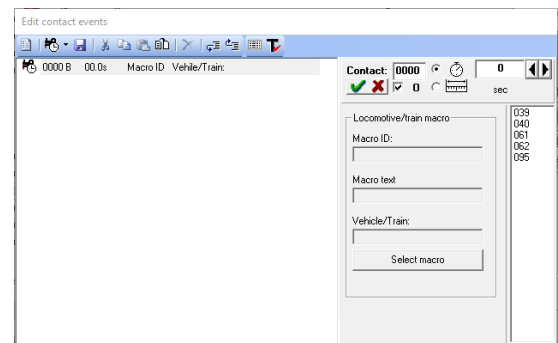
Fig. 9.26   The "Execute vehicle/train macro" contact event.

9.5.2.2 Contact event "Execute T4T circuit".

With a "T4T switching" contact event allows you to address the clutches of the manufacturer T4T via a contact event entry in a profile.

The input here in the dialogue window is made via selection lists. You can use the position of a vehicle in the train set to decide which vehicle the function command should be sent to. You have already assigned the individual T4T functions to the vehicles in the vehicle database. In the two lower list fields, you can select the corresponding functions and define whether they should be switched on or off.

Setting a waiting time after vehicle selection increases functional reliability. A value of 1000 msec is stored here as standard.

Please also refer to the manufacturer's operating instructions for information on the special features of the T4T couplings.
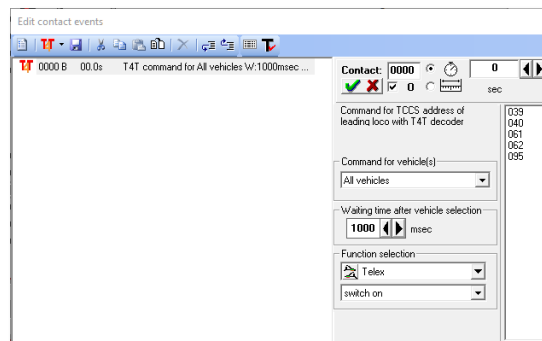
Fig. 9.27 The setting options for the "T4T circuit" event category

9.5.2.3 Contact event "Change vehicle colour on vehicle display"

The vehicle numbers or train names can take on different colours. The colours have the following meanings:

	black	Vehicle/train is registered on vehicle display
	green	Vehicle/train is in active motion (route or route sequence)
	red	Vehicle/train interlock for contact-related automatic operation
	blue	Vehicle/train is blocked for time-based automatic operation
	violet	Vehicle/train is locked in any automatic operation

You can use the contact event to change the current colour of the vehicle on a defined vehicle display to black, red, blue, or violet. The configuration dialogue also provides for the activation or deactivation of the vehicle or train on the specified VHD at this point.
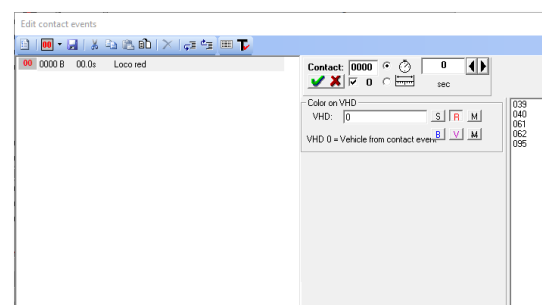
Fig. 9.28 Change the contact event vehicle colour to vehicle display.

9.5.2.4 Contact event "Set position in vehicle display".

With this contact event, the position value of the vehicle is set on an **intelligent vehicle display (iVHD).** The position value to be set is in centimetres or millimetres in relation to the following reference points:

🚃 Distance to the beginning of the iVHD

🚃 Distance to the end of the iVHD

The position can also be set to the value "unknown". The selection is made via a list, the distance value, and the contact number of the iVHD must be entered numerically.
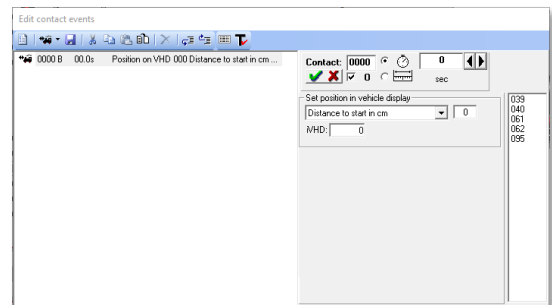
Fig. 9.29   The "Set position on iVHD" contact event.

9.5.2.5 Contact event "Execute crane macro".

To integrate previously recorded crane macros, add an event in this category to your profile sequence. The tab contains two selection lists with which you can enter the crane in question and the previously recorded macro for the selected crane.
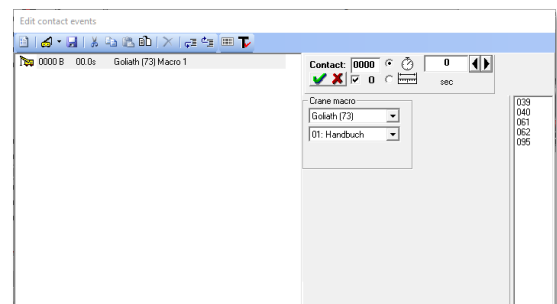
Fig. 9.30   The "Execute crane macro" contact event.

9.5.2.6 Contact event "Change vehicle, wagon, length (X) type"

These contact events change the matrix setting of the vehicle or train in the respective matrix column (vehicle, wagon, length(X)).

You can make this matrix change in the following situations, for example:

🚃 in the event of a temporary change of vehicle type (shunting locomotive to goods train)

🚃 in the event of a locomotive change with a change of wagon type (goods train to passenger train)

🚃 when changing the train length (length(X)) (adding or removing wagons)
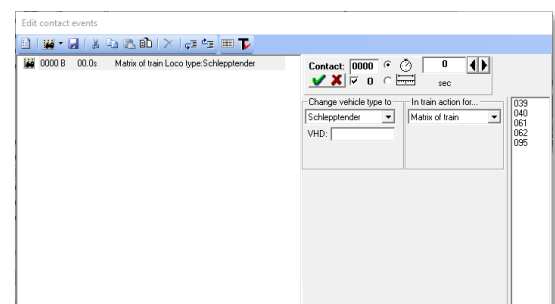
Fig. 9.31   A contact event to change the matrix setting.

Use the selection list to select the new matrix type and enter the contact number of the VHD on which the vehicle or train to be changed is entered in the VHD field.

The contact events for changing the matrix column Wagon type or Length(X) correspond to the procedure shown here.

9.5.2.7 Contact event "Change train name"

The contact event causes the train name on a vehicle display to be adjusted. You can enter the name of the train here or accept the name of the leading vehicle for the train from the selection list.

Enter the contact number of the vehicle display as a numerical value as usual. If you have entered a "0" (default value) here, the contact event applies to the train travelling the route and thus executing the profile.
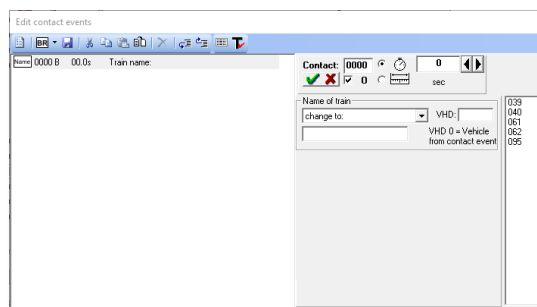
Fig. 9.32   The "Change train name" contact event

9.5.2.8 Contact event "Change digital system for vehicle/train".

The contact event "Change digital system" causes the vehicle or train to be transferred to another digital system that is connected to your model railway layout and is active in **Win-Digipet.**
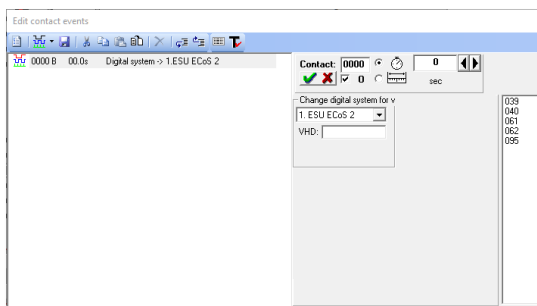
Fig. 9.33   The "Change digital system" contact event.

When changing the digital system, please be sure to observe the "electrical" preconditions for the simultaneous use of two digital systems to control the vehicles.

The digital system is entered in this dialogue via a selection list; the vehicle display is entered numerically as usual.

9.5.2.9 Contact event "Change turn block for train".

This contact event allows you to activate or deactivate blocking turns for a train. You can set up turn restrictions in the train composition, for example.

The action is again selected via a list, the contact number of the VHD is entered numerically as usual. If you have entered a "0" (default value) here, the contact event applies to the train travelling the route and thus executing the profile.
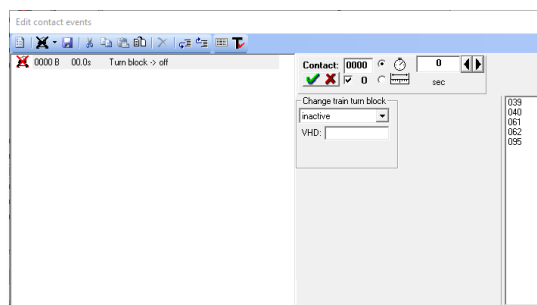
Fig. 9.34   The "Change turn blockings" contact event.

9.5.2.10   Contact event "Control in routes/profile/macro without delay"

This contact event allows you to activate or deactivate the deceleration during acceleration or braking for a vehicle or train in a route, profile, or macro. This is not about the function of vehicle decoders, but about the decelerations set in the **Win-Digipet** vehicle database.

The setting options in the dialogue window correspond to the functions already explained.
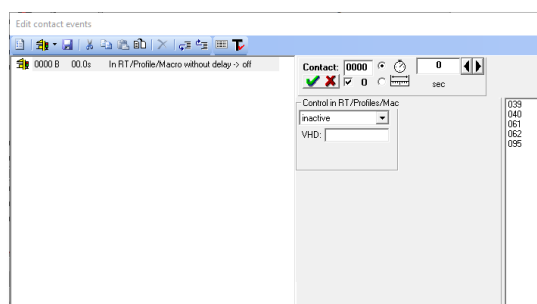
Fig. 9.35   (De-)activating the "Delay" contact event.

9.5.2.11   Contact event "Reset maintenance timer" (expert mode)

The contact event "Reset maintenance timer" resets the counter for the maintenance time in the vehicle database of a vehicle at a specific VHD.

The contact number of the VHD is entered numerically as usual. If you have entered a "0" (default value) here, the contact event applies to the vehicle travelling the route and thus executing the profile.

This function is only available after activating the expert mode in the profile editor.
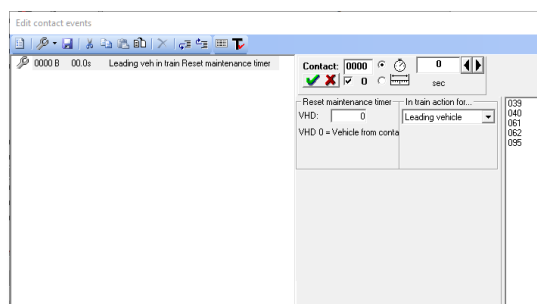
Fig. 9.36   The "Reset maintenance time" contact event.

9.5.2.12 Contact event "Set battery charge" (expert mode)

With this contact event you can set the battery charge level of a vehicle. This function is primarily intended for road-going vehicles, which generally require a battery for power supply.

Enter the battery charge level in per cent using the arrow keys or the keypad. The contact number of the VHD is entered numerically as usual. If you have entered a "0" (default value) here, the contact event applies to the vehicle travelling the route and thus executing the profile. This function is only available after activating the expert mode in the profile editor.
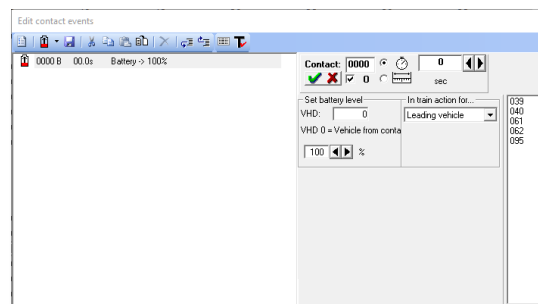
Fig. 9.37   The "Set battery charge" contact event.

9.5.3 Contact event "Message text"

With a "Message text" contact event, you have the option of interrupting a profile flow and only resuming it after confirmation by clicking in a checkbox.

The dialogue also contains a wizard for advanced text input. With the symbol 🪄 *'Extended text input'* takes you to a dialogue that offers you further options for your message texts. For example, you can create customised message texts by using variables. The available variables are:

Fig. 9.38   The " message text" contact event

- 🚅 Text
- 🚅 Counter value
- 🚅 Vehicle address on vehicle display
- 🚅 Train length on vehicle display
- 🚅 Train name on vehicle display
- 🚅 Number of vehicles on vehicle display
- 🚅 Time of day

The individual variables can be linked with each other so that a message is generated from the contact event in the profile that is customised to
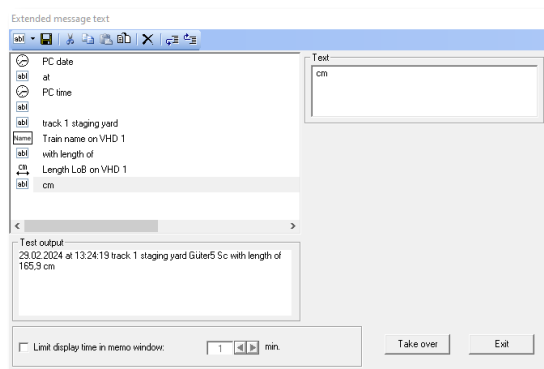
Fig. 9.39   The editor for extended message text input

the situation. The following example illustrates this. Here, fixed texts have been added to various variables so that they result in a complete sentence. The Text output field shows you the result. If everything is to your satisfaction, confirm your entries with the *'Apply'* button.

9.5.4 Contact event "Switching solenoid device/counter".

With a "solenoid device/counter" contact event can be used to influence all symbols for solenoid items or counters. Such items can be signals, turnouts, uncoupling tracks, switches/buttons, and counters, regardless of whether they are present on the model railway layout or only virtually in the track diagram.

You handle this function in the same way as the follow-up actions in the routes editor (see section 7.9). The counter function also works in the same way as in the routes editor.

Fig. 9.40   The contact event "Solenoid device/counter" circuit"

In the rectangular window under "Solenoid device", drag and drop a solenoid item from your track diagram and select the desired position of the solenoid item by clicking (several times) on the symbol. In operation with **Win-Digipet,** these solenoid device circuits are then displayed correctly on the screen with the given position.

Proceed in the same way with a counter symbol and, after dragging in the symbol, select whether the counter should be "+1", "-1" or a value you specify between "0" and "9999". Here too, the procedure is the same as in the routes editor for the "Solenoid device/counter" follow-up switching.

9.5.5 Contact event "Counter calculation" (expert mode)

You can use the "Counter calculation" contact event to set values from various queries and operations for the counters in the track diagram. To do this, as usual, drag the required counters into the fields provided and select the operation to be performed from the selection list.

The individual operations are:
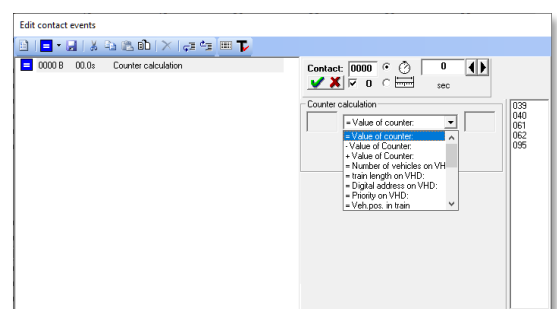
Fig. 9.41   The "Counter calculation" contact event

- 🚅 **Counter is equal to value of counter**
  The value of another counter from the track diagram is adopted for the counter entered.

- 🚅 **Subtract the value of a second counter**
  The value of another counter is subtracted from the value of the counter entered.

- 🚅 **Add the value of a second counter**
  The value of another counter is added to the value of the counter entered.

- 🚅 **Equal to number of vehicles on vehicle display**
  The value of the counter entered is set to the number of vehicles on a specific vehicle display.

- **Train length on vehicle display**
  The value of the entered counter is set to the value of the train length on a specific vehicle display.

- **Digital address on vehicle display**
  The value of the entered counter is set to the value of the digital address of a vehicle on a specific vehicle display.

- **Priority on vehicle display**
  The value of the counter entered is set to the priority level of the vehicle or train on a specific vehicle display. The priority levels are assigned in the **Win-Digipet** system settings.

- **Vehicle position in the train**
  The value of the counter entered is set to the position of a vehicle in the train. The criterion for this is the series designation of the vehicle. Enter the model designation in the corresponding field by holding down the left mouse button and dragging the vehicle image from the vehicle control or the vehicle bar into the field. You can still select the position count from the start or end of the train.

- **Train positioning in the vehicle display**
  The value of the counter entered shows the exact distance of the vehicle or train to the start or end of the vehicle display in centimetres or millimetres.

- **Battery level on vehicle display**
  The value of the entered counter is set to the charge level of the battery of a (road-related) vehicle on a specific vehicle display.

- **Random value**
  The counter entered is set to a random value. A value range between 0 and 9999 with an increment of 1 to 500 can be set for this.

- **Change colour(s)**
  You can change the display colour of the entered counter.

- **Current central clock hour**
  The value of the entered counter is set to the hour value of the central clock of **Win-Digipet.**

- **Current central clock minute**
  The value of the entered counter is set to the minute value of the central clock of **Win-Digipet.**

- **Current central clock second**
  The value of the entered counter is set to the seconds value of the **Win-Digipet** central clock.

- **Current central clock day**
  The value of the entered counter is set to the daily value of the central clock of **Win-Digipet.** The following values apply for the daily value: Mon=00, Tue=01, Wed=02, Thu=03, Fri=04, Sat=05, Sun=06

🚋 **Dispatcher status**
The value of the entered counter is set to the status value of a dispatcher. For example, you can use this display to determine the number of trains on a single-track line managed by a dispatcher entry.

9.5.6   Contact event "Logbook/memo/text entry record" (expert mode)

The contact event logbook/memo/text entry offers the option of generating or displaying information texts or similar at various points in the programme.
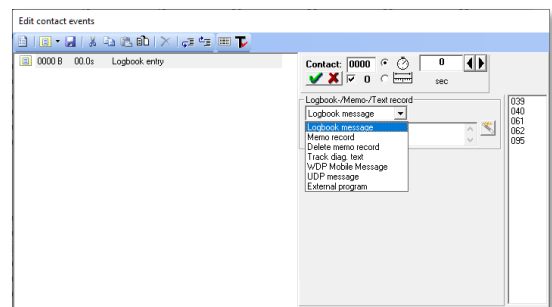
Fig. 9.42   The "Logbook/Memo/Text record" contact event

🚋 **Logbook message**
On the one hand, you can enter freely definable texts in the **Win-Digipet** logbook here. The logbook is **Win-Digipet's** operating log and runs in the background. It records all events from the start to the end of the programme. You can generate a message in the operating log using the contact event here.

🚋 **Memo entry**
A memo entry creates a "virtual sticky note" with the text entered here on your screen. The texts entered can be supplemented with additional variables, for example by displaying counter values, vehicle addresses or train names on vehicle displays on the "sticky notes". The variables are used with the help of the "Editor for extended message text". You can access this editor via the symbol 🖉. The editor for extended message texts has already been explained above under the contact event "Message text" (see section 9.5.3).

🚋 **Delete memo entry**
You can also delete a memo entry with this contact event function.

🚋 **Change text in track layout**
The text entered here is displayed in the track layout instead of an existing text. You determine the selection by dragging the start of the text from the track diagram into the coordinates field. You can assign various attributes (e.g. bold or italics) to the texts using the "Editor for extended message text". It is also possible to change the colour of the text here.

🚋 **Win-Digipet Mobile message**
You can use this follow-up circuit to send a message text to the **Win-Digipet** Mobile app on your smartphone. A message can be sent to all or only certain connected clients.

🚋 **UDP message**
A text (code) is sent over the network via the UDP protocol to a client defined via

the IP address. In addition to the IP address, you must specify the UDP port of the external programme on the client.

🚂 **External programme**
With the help of this contact event, you have the option of starting an external (executable) programme on your computer and transferring the entered text to it as a parameter. In addition to the text, you must also enter the correct file path to the executable file.

9.5.7 "Play sound" and "play video" contact events.

With a "Play sound" contact event can be used to select and play files from the **Win-Digipet** subdirectory \SOUND and the following subdirectories. These files can be in wav or mp3 format.

Click on the file that you want to play on this contact. The name of the selected file appears in the top line field.

Below the sound selection field, there is another list field in which you can select which speaker of your optional **2.1**, **5.1** or **7.1** sound system should be used to play the sound.
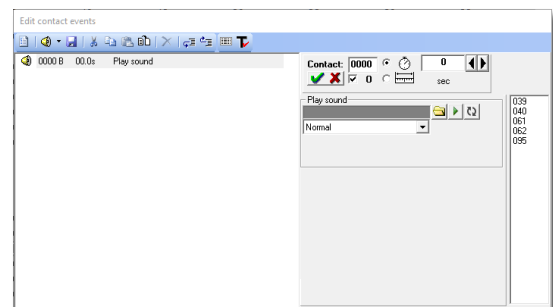
Fig. 9.43   The "Play sound" contact event.

With the button ▶ *'Play'* you can test the sound output of the file. The button ↻ *'Repeat'* causes a sound file to be played several times in succession. The function is designed so that pressing the button once triggers a permanent repeat process. If you press the button a second time, an input window appears in which you can limit the number of desired repetitions.

Files in wav format must be in mono. If the selected sound file is a stereo file, you will receive a message asking you to convert the file to the required format.

After clicking on *'Yes'*, the file is converted, and you can save the sound file under a new name that is already suggested to you.

With a "Play video" contact event can be used to select and play files from the **Win-Digipet** subdirectory \VIDEO. These files must be in avi format.

Click on the file that you want to play on this contact. The name of the selected file appears in the top line field.

You can test the playback of an avi file using the ▶ button on the right-hand side of the dialogue. A small window opens in which you can view the video file.
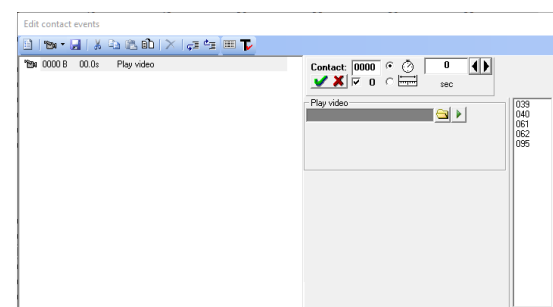
Fig. 9.44   The "Play video" contact event.

9.5.8   Contact event "Switch virtual contact/momentary contact".

The "Switch virtual contact/momentary contact" contact event is used to switch a feedback contact that is not physically present on or off or to switch off a momentary contact that has been switched on by a vehicle, for example. Please also refer to the section 5.7.5.2 in the "Track diagram editor" chapter of this manual, where we have already covered the topic of "Setting up momentary contacts".

Fig. 9.45   The contact event "Switch virtual contact/momentary contact".

Virtual contacts are contacts that do not exist in the feedback system. They may also not be assigned to a feedback system. Virtual contacts are defined in the programme section "Virtual contacts & pulse generators" (see section 16.18).

As soon as you enter the contact event "Switch virtual contact/momentary contact" in the profile, the switching of a momentary contact is suggested as standard, and the necessary fields are displayed on the tab (cf. Fig. 9.45).

Enter the number of the momentary contact that you want to switch on or off with the sequential circuit in the "C-No.:" field. The switching selection is made via the list field to the right of the contact number.

The switching of the momentary contact can also optionally be made dependent on a vehicle or train entry on the corresponding vehicle display. To do this, use the corresponding entry from the list field at the bottom of the "Switch momentary contact" block.

As soon as you enter a contact number on the tab that is assigned to a virtual feedback contact, the labelling of the block changes to "Switch virtual contact" However, the setting options for a virtual feedback contact remain the same as for a momentary contact.

9.5.9   Contact event "Switch simulation contact"

The "Switch simulation contact" contact event is intended for switching contacts during the running simulation that are not processed by the running route but are necessary for error-free, simulated operation. The setting options in the dialogue window correspond to those described under the "Switch momentary contact" contact event (see section 9.5.8) are described. The contact event can of course only be used when the simulation is switched on.
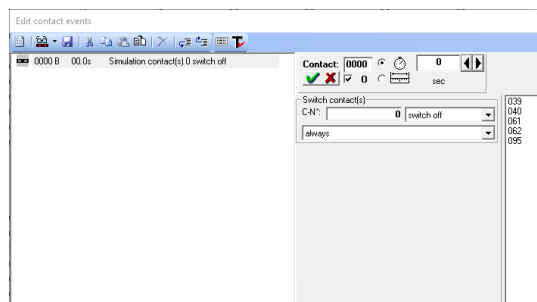
Fig. 9.46   The "Switch on simulation contact" contact event

9.5.10 Contact event "(De-)activate TD/dispatcher entries" (expert mode)

The contact event allows you to deactivate or (re-)activate entries in the train director or dispatcher programme sections. To do this, select the programme section (train director or dispatcher), the numbered entry and the action to be performed in the list fields. If you have not created any entries in the programme sections mentioned, nothing will be offered to you in the selection list.
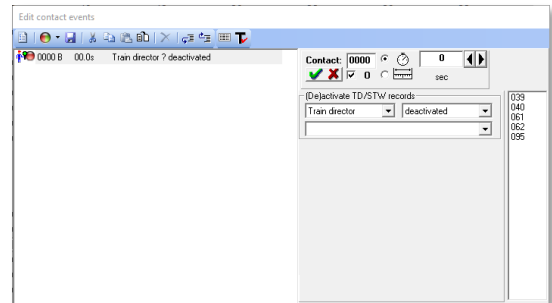
Fig. 9.47 The contact event "(de-)activate train director/dispatcher entries".

9.5.11 Contact event "Train director interaction" (expert mode)

The contact event "Train director interaction" allows you to influence an entry in the train director hidden yard control (TD HYC). As an action, you can force the exit from a vehicle display defined here. Select an entry for an TD HYC from the selection list and specify which vehicle display should be next in line for exit.

If you have not created an entry for an TD HYC in your project, you will not be offered anything in the selection list.
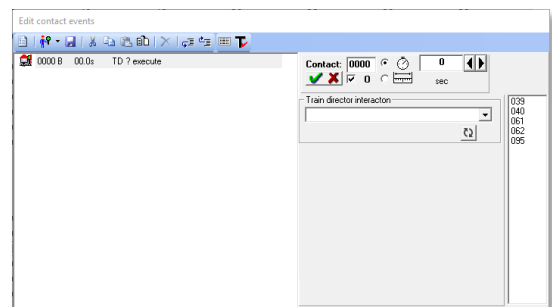
Fig. 9.48 The contact event "train director interaction"

9.5.12 Contact event "Change extended feedback status" (expert mode)

The "Change extended feedback status" contact event relates to so-called "frozen" feedback contacts. With these contacts, the last status is "frozen" in **Win-Digipet** if the track is temporarily not supplied with track voltage, for example in the case of a train lift.

You can use this contact event circuit to "freeze" or "thaw (end freeze)" the relevant contacts.
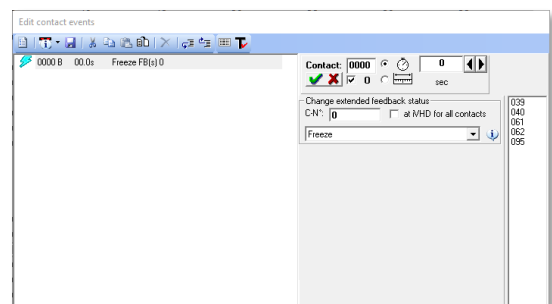
Fig. 9.49 The "Change extended feedback status" contact event.

Please note that this function can only be carried out when the feedback system is active.

9.5.13 Contact event "Set clock" (expert mode)

This contact event allows you to carry out various manipulations of the times in **Win-Digipet.**

In detail, these concerns

- the change in the central clock time
- the adjustment of the time factor of the central clock
- Changing the time in a tour automatic
- the adjustment of the time factor in a tour automatic
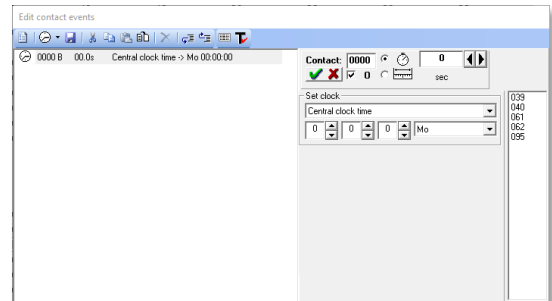
Fig. 9.50   The "Set clock" contact event.

Select the desired action using a selection list and set the required time values for hours, minutes and seconds or the day of the week using the arrow keys or by entering them using the keyboard.

Use the same procedure for the values when adjusting the time factors.

9.5.14 "Blocking vehicle display" contact event (expert mode)

You can use this contact event to initiate or cancel various blocks on vehicle displays. Vehicle displays can be assigned a destination or passage block. The blocks can also be direction dependent.

Vehicle displays that are blocked against passage are shown in red and marked with an "X". Vehicle displays with a destination block are marked in red with a "Z".
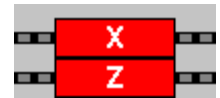
We encounter the blocking of vehicle displays even more frequently in this documentation.

Select the required actions and directions for the defined vehicle display as usual using the list fields.

Activate the "Also with train entry" option if you want a block to take place even if the vehicle display in question has a vehicle or train entry.
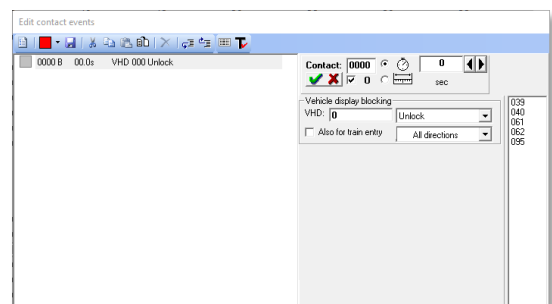
Fig. 9.51   The "Blocking vehicle display" contact event

9.5.15 Conditional contact events

In the expert mode of the profile editor, you have the option of defining conditions for the execution of individual contact event lines. We will also encounter this feature later in the tour automatic editor.
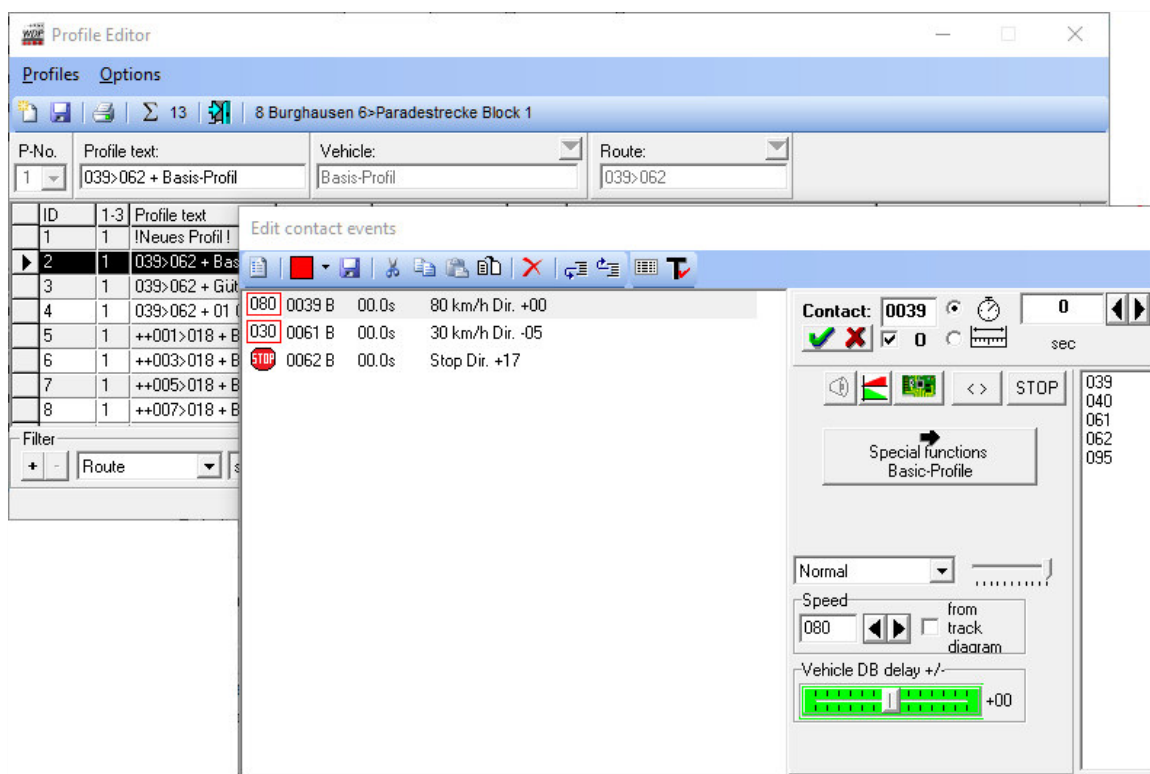
Fig. 9.52   The contact event should be provided with a condition.

Open the conditions window using the button ✔ ✖ below the field for entering contacts. You will be familiar with the subsequent dialogue for entering conditions from the route sequence editor or the dispatcher. The possible conditions are largely identical, provided they make sense at this point. Only the conditions for passage within route sequences are only available here when assigning conditions to contact events. As soon as you have defined one or more conditions, the button is highlighted in yellow.

A condition is also displayed in detail in the contact event list for the contact event. As soon as you have created a condition tree, *"Condition complex""* is written out in the contact event, as the complete tree structure cannot be displayed in one line.

When the contact events for the associated route are processed, processing continues as before. However, the final execution of the command is made dependent on the condition. If the condition specification is not fulfilled, the profile line is treated as if it did not contain a command.

That means:

  1st line: Contact "x" Command "a" after 10 cm

  2nd line: Contact "x" command "b" after 10 cm

If the condition of the first line does not apply, the second line is still only executed after 10+10=20 cm and not after 10 cm.

There is a special feature when executing macros in profiles. If a macro consists of several lines, then a condition in a single macro line has the same effect as described above. However, if the actual macro command calls in the profile contains a condition, then all macro lines are immediately deleted from the memory and ignored as soon as the macro is executed.

The following table lists all the conditions available in **Win-Digipet** and in which parts of the programme they are available. The individual conditions are described in chapter 13 of this manual, as many conditions have the same functionality in the individual programme sections. These conditions can then be linked with various switching tasks and other actions.

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
…on vehicle display							
Vehicle on VHD	●	●	🔴	🔴	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	●		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Train name on VHD	⚫	⚫	🔴	🔴	⚫	⚫	⚫
Special function on VHD	⚫	⚫	🔴	🔴	⚫		⚫
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of wagon types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of length (X) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of priorities on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle with colour	⚫	⚫	🔴	🔴	🔴		⚫
Vehicle position in train	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction		⚫			⚫		

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Vehicle with maintenance/oper. hours/battery	●	●	●	●	●		●
Route/Route-Sequence/Macro/Vehicle/Train active	●	●	●	●	●		●
Train director state	●	●	●	●	●		●
Turntable/transfer table/train storage status	●	●	●	●	●		●
Tour automatic status	●	●	●	●	●		●
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

9.6 Test profile flow

All profiles entered in the "Profile database" can be tested immediately. To do this, select the profile to be tested in the "Edit contact events" window and set the vehicle or train to the start position of the selected route.

If you click on the ![icon] icon in the toolbar of the "*Edit contact events*" window, the window switches to "*Test contact events*" mode.

The individual contact event lines of the profile are now marked with a square, which is ticked when the profile line is processed.

A digital clock with the start time of this route appears in the lower part of the window. Next to it, the time factor 1 is displayed, which you cannot change, as the profile departure time is recorded and entered in real time. If you later export the profile to a timetable of the tour automatic editor, this time is converted and entered according to the time factor there.
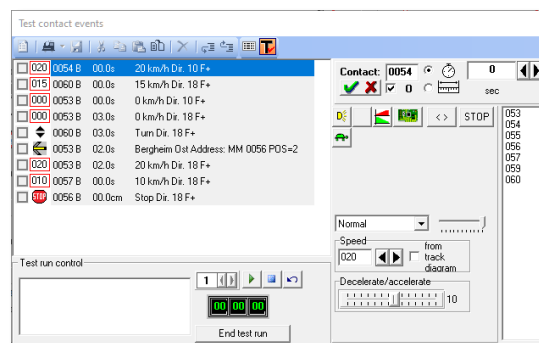
Fig. 9.53   The profile sequence can be tested in "Test mode".

Now click on the symbol ![start] '*Start'*. The digital clock starts to run, the switching conditions are checked, the route is set, and the contact events are ticked as soon as they have been triggered and processed by the vehicle or train. Once the destination contact has been reached and the release condition has been fulfilled, the digital clock stops.

> If you receive the message "*Vehicle not on start contact*" in the test run control area, then the corresponding vehicle is not the correct one on the start contact or is not present on the start contact.
>
> Now drag the correct vehicle from the vehicle bar or from a vehicle control onto the start contact and execute the test function again. If all conditions are met, the route is executed.

If for some reason you have not entered a release condition in your route - this would be an error - the clock will not start at all when you click on '*Start'*; the release - destination contact reached - will then not take place at all.

You can also run the test drive with the simulation, but then you should not regard the arrival time as the correct time and record the actual arrival time at the system again under real conditions.

You should then also activate the "*Always display FB numbers*" switch (see section 9.7) before the test run.

If you have made a mistake in a profile line, you can recognise this by the fact that not all contact events are hidden (processed) in the left-hand section of the window. You can then make the necessary corrections immediately.

You can use the switch ▣ **'Stop'** to stop the vehicle under test immediately in the event of a fault.

Click the **'End test run'** button to exit the test procedure and the determined profile run-off time is now automatically entered in the "*Time*" column of the profile editor.

9.6.1   Move locomotive/train back to start.

After the test run, you want to move the locomotive or train back to the start contact of the tested route.

> ⚠ This function is reserved for rail-related vehicles such as locomotives or trains, as road vehicles currently available on the market cannot change direction.

Win-Digipet offers you the following options here.

In the "Test contact events" window, click on the ↺ icon. The "*Drive locomotive/train back to start*" dialogue is then displayed.

In this dialogue, you can drive the locomotive back to the start contact manually. The locomotive is automatically turned after pressing the **'Return train by hand'** button.

The locomotive or train can also be automatically driven back to the start contact. For this press the **'Return train automatically'** button There are two options to choose between using the radio buttons.

With the first option, the locomotive travels beyond the start contact, then turns and travels

Fig. 9.54   The locomotive can be driven back to the starting point of the test run.

slowly back to the start contact, while the second option causes the locomotive to stop immediately on the start contact and turns immediately.

In the simulation, this function simply sets the locomotive number back to the start train number field.

> ⚠ Please note that no switching of solenoid devices is carried out with this function. Please make sure that the track is clear, as the contacts are not monitored during the automatic return journey. This means that you must not have sent any vehicles on this route in the meantime.
>
> The function is used solely for the return journey of the vehicle that has tested the profile sequence to the start contact of the route.

9.6.2 Warnings for incorrect entries in the contact events

Also in the profile editor, entries in the contact events that do not belong to the route are highlighted in yellow.

In this example, a sound is to be played at the feedback contact 0127, which does not belong to the route. Without a correction, this profile will not run properly from, as it cannot be guaranteed that contact 127 is occupied. You should also check whether this contact, which does not belong to the route, has also been entered on the "Start/brake/destination" tab. If this is the case, the route must be corrected.
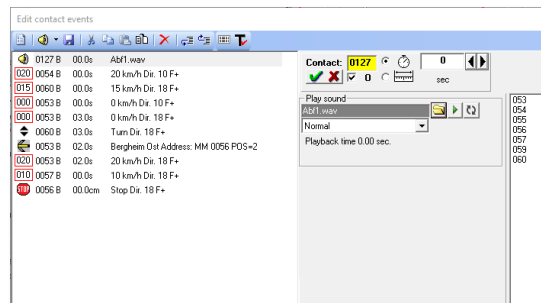
Fig. 9.55 An event has been assigned to a contact that does not belong to the route.

A contact with a light blue background means that the contact entered is part of an intelligent vehicle display. This means that all drive commands are ignored, as braking and stopping on the intelligent vehicle display are controlled by **Win-Digipet**. Function commands are not affected by this, they are executed. However, make sure that the contact entered is also reached due to the selected stop position.

You should leave the contact marked in light blue in the profile. If you convert the iVHD back to a normal VHD at some point or select the stop position "Stop at contact", the entry marked here is required for stopping.

9.7 Various options

You can access additional functions via the <Options> menu in the profile editor.

🚂 **Always display FB numbers**
Tick this checkbox to display the numbers of the feedback contacts in the entire track diagram **every time** you start the profile editor.

> If you have activated this function and want to test the profile sequence with the simulation, the feedback contacts on which there are vehicle displays with entered vehicle numbers are not illuminated in red. You will not be able to click on any track sections with the mouse to report them as occupied for the simulation.
>
> Therefore, always switch this function off in the profile editor before you want to test the profile sequence with the simulation.

🚂 **Show different sorting routines**
You can select five different sorting routines here. The selected one is ticked. With the last two, sorting is first by vehicle and then by route or first by route and then by vehicle.
You can also influence the sorting by clicking on the respective column header (ID, 1-3, profile text, vehicle, or route) in the profile list. Each time you click on a header, the sorting sequence changes (descending or ascending).
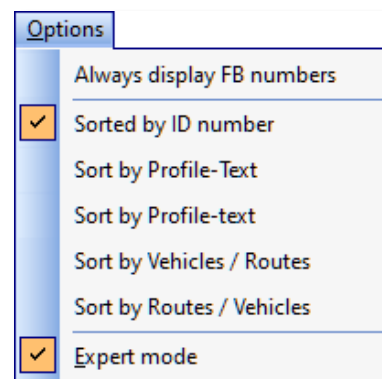
Fig. 9.56   The options menu of the profile editor

9.7.1   Expert mode

The profile editor, like other parts of the **Win-Digipet** programme, contains a so-called expert mode. You can activate it in the <Options> menu of the profile editor (see Fig. 9.56).

> Please activate the expert mode only after you have familiarised yourself thoroughly with how **Win-Digipet** works.
>
> Trouble-free use of the functions in expert mode requires in-depth knowledge of the interaction between the various parts of the programme.

Once expert mode has been activated, additional contact events are available in the profile editor.

9.8   Search for or select created profiles.

Created profiles can be conveniently selected and displayed in the profile editor for modification, additions, etc.

Win-Digipet offers three options for this:

- 🚂 Selection via the filter functions and text input
- 🚂 Selection via the start/destination function and
- 🚂 Selection via the start/destination function in combination with vehicle or train and route.

> If the first line "! New profile !" is marked but not yet filled in, the start/destination function does not work. This line should therefore be used for a profile.

9.8.1   Filter function in the profile list

With The filter function at the bottom of the profile editor allows you to quickly find a specific profile or group of profiles within the profile list. In Fig. 9.57 for example, all profiles whose profile text begins with the character string "039" are found after clicking on the funnel symbol 🟦 and displayed in the now "filtered" profile list.

You can refine the "Filter" in the left-hand selection window using the criteria in the centre selection window and enter the desired search text in the right-hand input field.
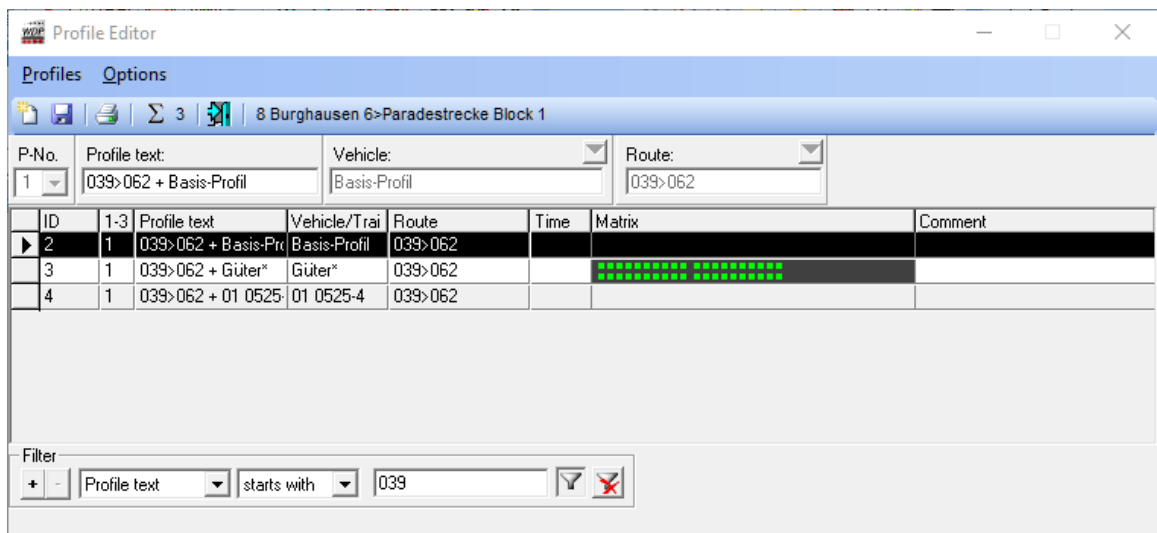
Fig. 9.57   A "filtered" profile list.

You can also subdivide the search result more finely by adding further filter criteria. To do this, select the [+] symbol. Conversely, added filters can be removed again using the [-] symbol.

The following entries are available in the filter selection:

- Profile ID
- Profile 1-3
- Profile text
- Vehicle
- Vehicle ID
- Rute
- Route ID

The possible criteria for the filters are.

- Starts with
- Contains
- Ends with
- Is equal to (=)
- All

Once you have made your selection and input, click on the [icon] icon to activate the filter function. All profiles that fulfil one of the search criteria appear in the list window and the first route of the profile of the selection found is also highlighted in yellow in the track diagram.

You can reset a "filtered" list using the [icon] icon. After clicking on this symbol, the complete list is displayed again in the profile editor.

You can find a profile for a specific route within the track diagram even **more quickly** using the start/destination function. With the profile editor open, click with the <u>middle mouse button on </u>the start **vehicle display** of the route you are looking for in the track diagram and then click again with the <u>middle mouse button </u>on the **destination vehicle display**. All profiles with the selected start and destination points are then listed in the profile list.

9.9 Copy profile to new data record.

If you want to If you want to change the profiles you have created, you can do this very conveniently using the menu command <Copy profile into new data record>.

To do this, click on the desired line in the profile editor to select it. After clicking with the <u>right mouse button</u>, a short menu becomes visible, and you can execute this command with the <u>left mouse button</u>.

💾	Save Profile	Alt+S
✕	Delete marked Profile	Alt+ENTF
🗙	Delete filtered data	Alt+G
📖	Copy Profile into new data record	Alt+Ctrl+C
🗗	Profile-Copier	Alt+C

Fig. 9.58   The profile line shortcut menu

In a subsequent window, you must select the desired profile number between 1 and 3.

Click on *'OK'* to create the profile. It is displayed at the beginning or end of the list according to your selected sorting direction.

If the profile already exists, a confirmation prompt will appear, which you can answer with **'Yes'** or **'No'**. As a rule, you should answer **'No'** here to check the existing profile first. However, if it is no longer required in the form created, repeat the steps described above and then confirm with **'Yes'** to create an identical profile to which you can then add a sound, for example.

9.9.1   Copy contacts events to another data record.

The contact events of an existing profile can also be copied and used in other profiles.

To do this, select the existing profile. After selecting the line(s) in the "Edit contact events" window, click the <u>right mouse button </u> and a short menu with these commands will be available. To copy the selected line in the contact events, click on the <Copy line> menu command so that the data is in the computer's cache. You can copy just one line or several lines; the lines to be copied must be selected.

	New contact event	▶
✂	Cut	Ctrl+X
📋	Copy line	Ctrl+C
📋	Insert	Ctrl+V
📖	Duplicate	Ctrl+D
✕	Delete event(s)	Alt+ENTF
⬇	Move event(s) down	Alt+U
⬆	Move event(s) up	Alt+O

Fig. 9.59   The   short   menu   "contact events"

Now select the desired profile line and the line in the contact events before which the data is to be inserted. Use the menu command <Insert> to insert the data from the computer's clipboard and the previously selected line will move down.

9.10 Profile copier

If you have created a profile for a vehicle and route, you can easily copy the created profile to other vehicles.

To do this, select the relevant profile, <u>right-click,</u> and the menu command <Profile-Copier> appears, as shown in Fig. 9.60 can be seen.

After clicking on this menu command, another dialogue appears in the profile editor (cf. Fig. 9.61), in which you can now make the corresponding settings.
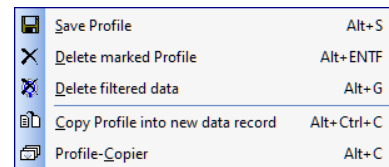
Fig. 9.60   The profile line shortcut menu

The other vehicles to which the selected profile can be transferred are listed in the small window. Tick the desired vehicles here.
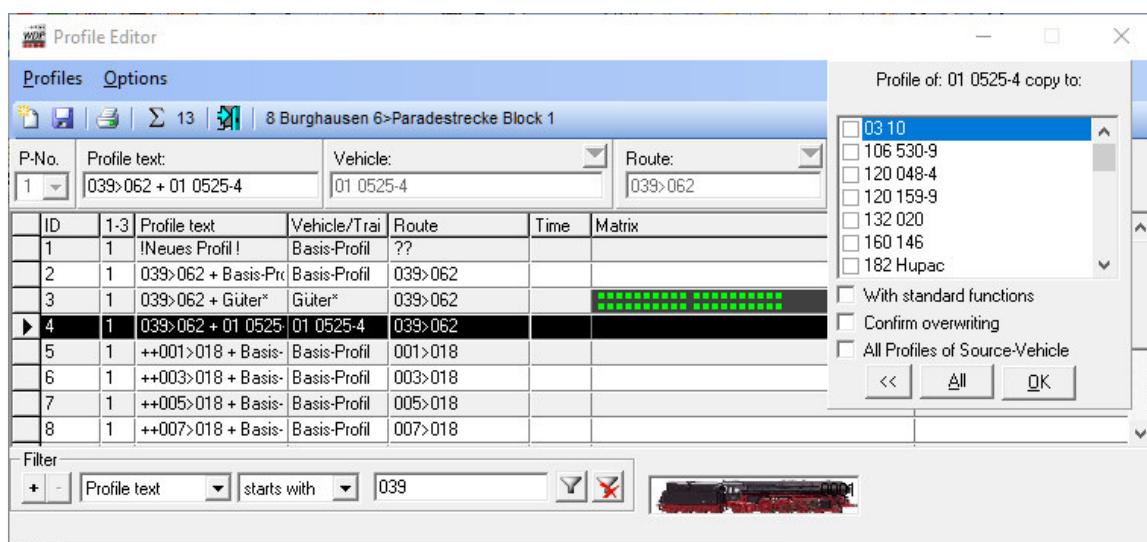
Fig. 9.61   The profile copier

If "*With standard functions*" is ticked, the selected profile is transferred from the vehicle database with the set standard functions ("Profile standard" option).

You should always tick "*Confirm overwriting*" if you no longer know exactly whether a profile already exists for this vehicle, and you do not want to overwrite it.

If you want to transfer the created profile to all vehicles, click on the *'All'* button. Only vehicles that are authorised to drive on the route regarding their matrix setting are considered.

If you want to cancel the copying of the profile, click on the left-hand button <u>«</u> and you will return to the profile editor.

Once you have made all the settings, click on the *'OK'* button and the profile created will be transferred to the selected vehicles.

> If you want to copy profiles, always pay attention to the selected profile number in the "*P-No.*" selection field, as this will be copied to the new profile.
>
> These copied profiles also receive the two characters "++" in front of the profile text.

9.10.1 Profile copier for basic profiles

Of course, you can also transfer the created basic profiles to any other vehicle using the profile copier. The information and notes in the previous section also apply here.

The contact events then contain the absolute values for acceleration and deceleration again, as this is a vehicle-specific profile after the copying process. The special functions available in the target vehicle are also copied from the basic profile to the vehicle-specific profile and switched on or off accordingly in the contact events.

9.10.2 Automatically create all profiles of the source vehicle

If you have created profiles for a vehicle, you can transfer all the profiles created for this vehicle to any number of vehicles in one go.

To do this, select any profile line of the desired vehicle in the profile editor, right-click, and the menu command <Profile copier> appears.

After clicking on this menu command, a small window appears with the other vehicles to which the selected profile can be transferred.

To transfer all profiles of the selected vehicle to the vehicles selected above, you must tick "*All profiles of the source vehicle*" and after clicking on the '*OK*' button, the programme will automatically generate the profiles.

9.11 Delete profiles.

To **Win-Digipet** offers you two options for deleting profiles.

🚂 **Individual deletion**
To do this, select the profile to be deleted, <u>right-click </u>and then click on the menu command <Delete marked profile>.

🚂 **Selected deletion**
To do this, select the desired selection of profiles at the bottom of the profile editor under Filter and then click on the 🔽 icon.
The profile selection is displayed in the "Database".
If you want to delete the displayed profile selection, right-click and then click on the menu command <Delete filtered data>.

The filtered profiles are deleted from the "profile database".

> If you have selected "ALL" for the filter, all profiles will be displayed. However, deletion is then **not** possible. The menu command cannot be selected for security reasons.

9.12 Print profiles

For this click on the 🖨 icon in the toolbar. After a query, the profiles are prepared for printing and displayed on the screen.

The screen displays are self-explanatory. You can choose between the two options "*complete*" or "only headers" to select what is to be printed.
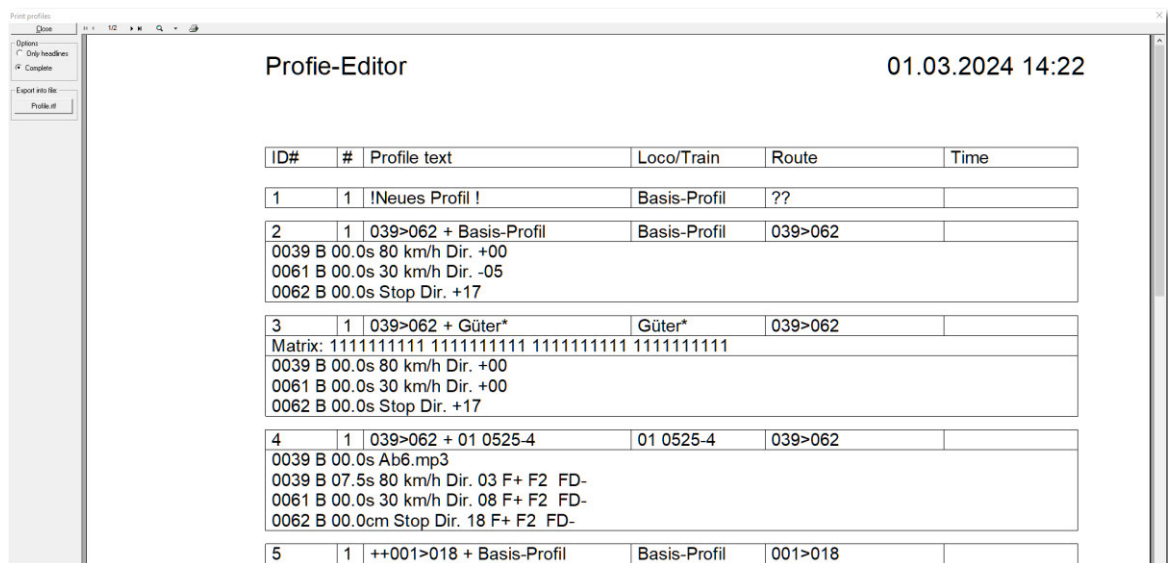
Fig. 9.62   The print output of the profile editor

It is also possible to export to the "Profile.rtf" file on your hard drive. You can process this file with any standard word processing programme that supports the RTF format.

9.13 Exit profile editor.

To do this click on the ⧉ icon in the profile editor toolbar.

After a possible confirmation prompt to save the changed data in the editor, you will return to the main **Win-Digipet** programme.

9.14 Vehicle/train macros

The vehicle/train macros are structured very similarly to the profiles. The main difference is that they are independent of routes and therefore do not contain any information on feedback contacts. This means that they run after the start exclusively according to time or distance delays.

The icon for starting the vehicle/train macro editor can be found in the "Editors" toolbar of the main programme directly next to the profile editor icon.

After clicking on the 🕐 icon, the vehicle/train macro editor appears with two windows:

- 🚂 the Macro editor
- 🚂 the Edit macro steps window
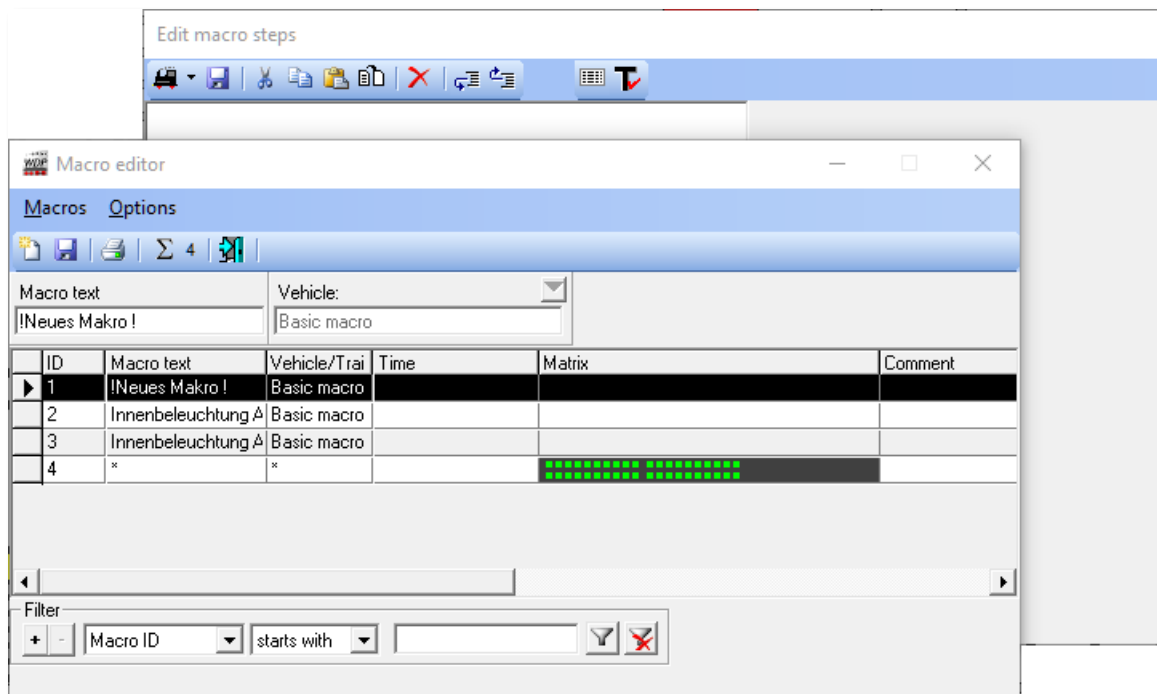
Fig. 9.63   The two windows of the vehicle/train macro editor

This is where the proximity to the profiles and the profile editor becomes clear. The recorded macros are displayed in list form in the Macro Editor window. However, unlike the Profile Editor, the Routes column does not exist here, as the macros, as already mentioned, have no reference to the routes.

In the Edit macro steps window, the contents of the respective macro are displayed with clear texts and symbols. This display helps you to be able to retrace the entries later.

The vehicle/train macro editor also works while driving.

9.14.1 Create a new macro.

To create a new macro, click on the icon 📄 "Record new macro" in the toolbar of the vehicle/train macro editor and enter a name for the new macro that is as relevant as possible in the Macro text field.

In the Vehicle field, use the arrow to access a selection list of all your vehicles that are set to "Layout" in the vehicle database, with their model designation listed.

As with profiles, there are also three types of macros:

- **Vehicle-specific macros**
  the settings of the macro steps apply to a specific vehicle.

- **Basic macros**
  the settings of the macro steps apply to all vehicles.

- **Train macros**
  the settings of the macro steps apply to moves that meet the set criteria.
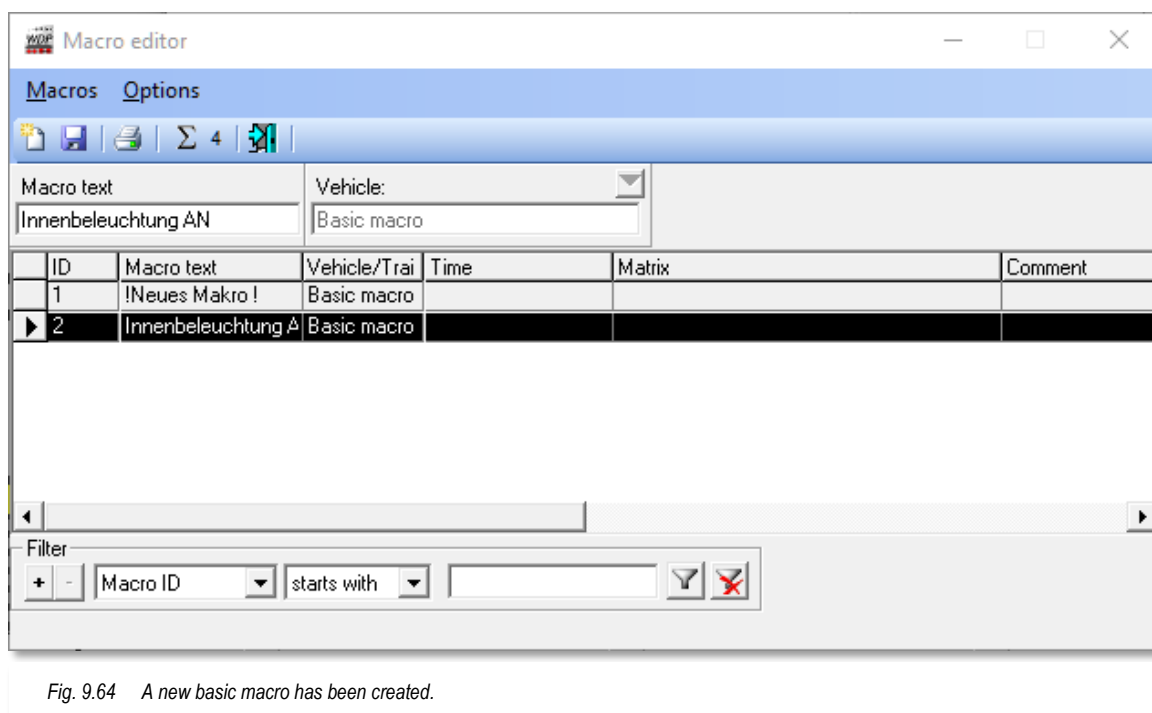
Fig. 9.64   A new basic macro has been created.

The Fig. 9.64 shows a newly created macro that is valid for all vehicles.

The name (macro text) selected here is "Interior lighting ON" (Innenbeleuchtung AN in German language). The planned function for this macro is to switch on the interior lighting of the train after a delay of two seconds. It should not matter which of the three function symbols in the vehicle database has been selected for the interior lighting.
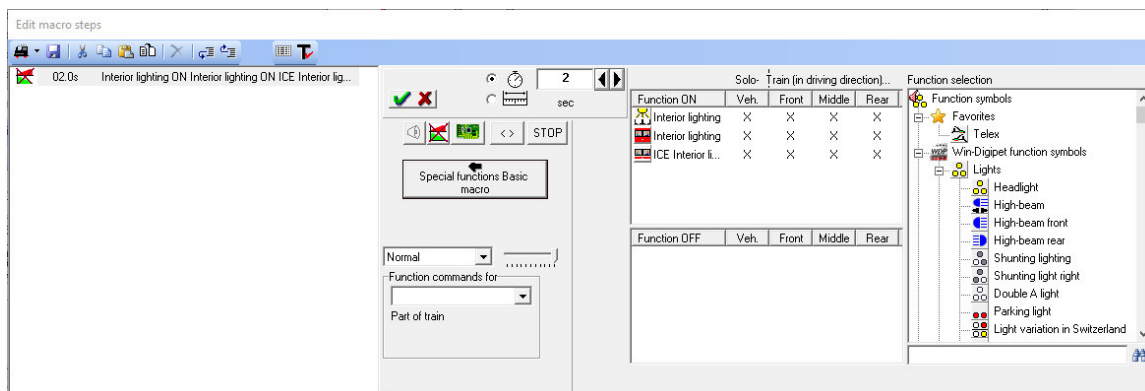
Fig. 9.65   The switching of the interior lighting for several function symbols has been recorded.

The example shows an inserted macro step. Macro steps are inserted in the same way as profiles (see section 9.4) via the button or via the corresponding command <New step> of a short menu, which you can access by <u>right-clicking</u> on an existing entry. You are already familiar with this button from editing profiles. Only the name here is "New macro step", as there are no contact events here.

The macro steps are also summarised in a menu, just like the contact events in the profiles. You can access the different types using the small arrow on the button . The following graphic shows the categories in detail:

We have provided a detailed explanation of how the types work in section 9.5 and will therefore not be repeated here. Some of the macro steps are only accessible in the expert mode of the macro editor.

As this example is a basic macro, you can access the selection of functions via the **'Special functions basic macro'** button. Three function icons for the interior lighting were selected from the list for this macro and dragged and dropped into the *"Function ON"* field.

With this configuration, this macro now switches the interior lighting function regardless of which of the three symbols you have used.

Fig. 9.66   The types of macro steps

Admittedly, this is certainly a very simple example, but it shows the basic functionality of the vehicle/train macros.

9.14.2 Conditional macro steps

In the same way as with contact events in the profile editor, macro steps can also be set depending on conditions. The procedure and the possible conditions are like those in the profile editor and were described above in section 9.5.15 above.

9.14.3 Calling up a vehicle/train macro

Win-Digipet offers you four different options for executing vehicle/train macros.

- 🚃 **Vehicle control (large)**

  In the large vehicle controls, you will find the icon ▶. Clicking on this icon opens a list with all recorded vehicle/train macros that are valid for the selected vehicle (vehicle-specific & basic macros). However, only one macro can be executed at a time.

- 🚃 **Call within a profile**

  You can also execute a vehicle/train macro from a contact event in a profile. To do this, select a contact event from the vehicle/train macro category and use the selection list to define which macro is to be executed.

  Of course, macros that are assigned to the vehicle function keys can also be integrated into an event line.

  Unlike crane macros, vehicle macros run in the profile. The profile is only executed after the macro has ended.

  The sequence of the vehicle/train macros can be tracked via the tour event inspector (F7) in the **Win-Digipet** main programme.

- 🚃 **Calling up as an action or switching in the dispatcher or tour automatic editor**

  You can also execute a vehicle/train macro as a "switching action" in the "dispatcher" programme section or in the "tour automatic editor" of **Win-Digipet.**

- 🚃 **Function symbol with assigned F key**

  You can also execute a macro if you assign it to a free function key of a vehicle with an assigned symbol. To do this, open the "Vehicle editor"" via the vehicle control and configure a new function on the "Vehicle decoder" tab.

  From the selection list for the function, select "Vehicle/train macro" and then use the list of macros that appears to decide which macro should be played via the selected F-button. An on/off macro can also be defined here. In principle, two macros with opposing functions (e.g. interior lighting ON/OFF) are configured on one function key here, as illustrated by the following graphic.
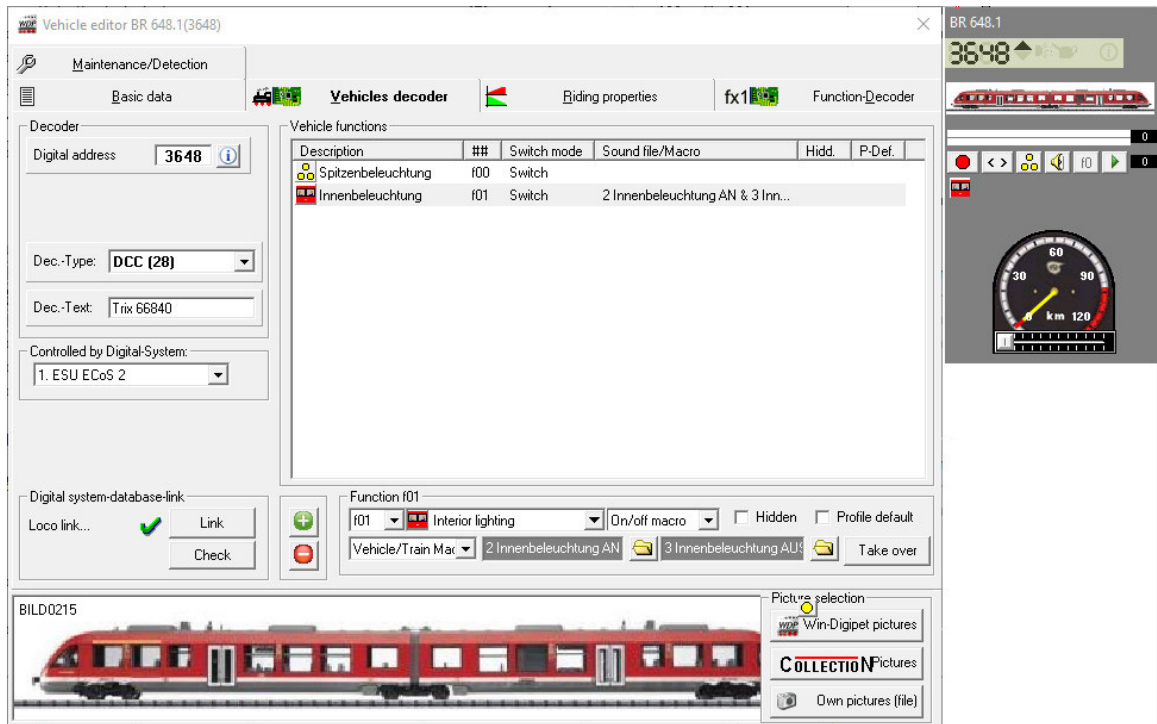
Fig. 9.67   The assignment of vehicle/train macros to the vehicle functions

Version 2021
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Chapter 10

10.   THE TOUR-AUTOMATIC SYSTEM

10.1 General information

The tour-automatic driving system enables automatic operation on your model railway layout, which can run according to a fixed schedule or depending on the situation on the model railway layout. We differentiate in the automatic driving system between driving...

- 🚂 after arrival, where everything is never one hundred per cent repeatable and
- 🚂 after departure, where you set a precise time for each journey, and everything runs according to these time specifications and can be repeated at any time.

The tour-automatic journey can be operated only after arrival or only after departure or in a mixture of both, whereby the mixture of both operating modes is the most varied variant.

The tour-automatic should also run largely independently of the vehicle or train used, so that it is very easy to replace the locomotive on a train, for example. Stop the locomotive, remove it from the layout, place a new locomotive on the layout, drag the train number onto the vehicle display and you can continue.

You can integrate all created routes with profiles and route sequences into your tour-automatic. You do not have to do without the sound effects either; all functional models (e.g. cranes) can also be controlled in automatic mode.

To enable **Win-Digipet** to recognise which points on your model railway have just been reached by vehicles or trains, use feedback contacts via feedback modules. Routes begin at a **start contact** and end at a **destination contact**; you make the corresponding entries in the routes editor.

In the **Win-Digipet** tour-automatic editor, you create your vehicle or train movements on the screen in table form. A table line means a vehicle/train movement via a route defined with a start and destination contact and this train movement begins at a time that you specify. This driveway can be a route or a route sequence.

The **Win-Digipet** automatic travelling system is controlled via request contacts. A request contact is a feedback contact - a contact line - which you specify to set recorded routes or train movements as soon as a vehicle or train passes this contact. You also have the option of defining various conditions for the execution of the individual table line. These conditions can be dependent on variable states of your system.

In the **Win-Digipet** tour-automatic system, you can also use two random generators to make operation on the model railway layout very varied.

10.2 Planning and organisation of trips

You should think about the entries for your tour-automatic system before you start creating it and write them down briefly. This also depends on the setting and release conditions of the routes that you want to assign to the individual request contacts.

As soon as you have entered the data, you will immediately see how the individual line is handled in the list of the tour-automatic editor.

In the tour-automatic editor, the lines are controlled with the following symbols on the system:

- the red clock symbol 🔴 by arrival with occupation of a request contact

- the green clock symbol 🟢 after departure with a time limit

- the red clock symbol with a yellow border 🟡 with a waiting time entered

- the arrow symbol 🔄 after departure with time limit and repetitions

- the green/red symbol 🚦 for solenoid device switching without movements

10.3 Recording in the tour-automatic editor

Click in the "Editors" toolbar of the main programme on the ![icon] icon to start the tour-automatic editor. As long as you have not yet created an automatic journey, you will now see an empty list window. If you have already created a tour-automatic journey, the last file you edited will be opened automatically.
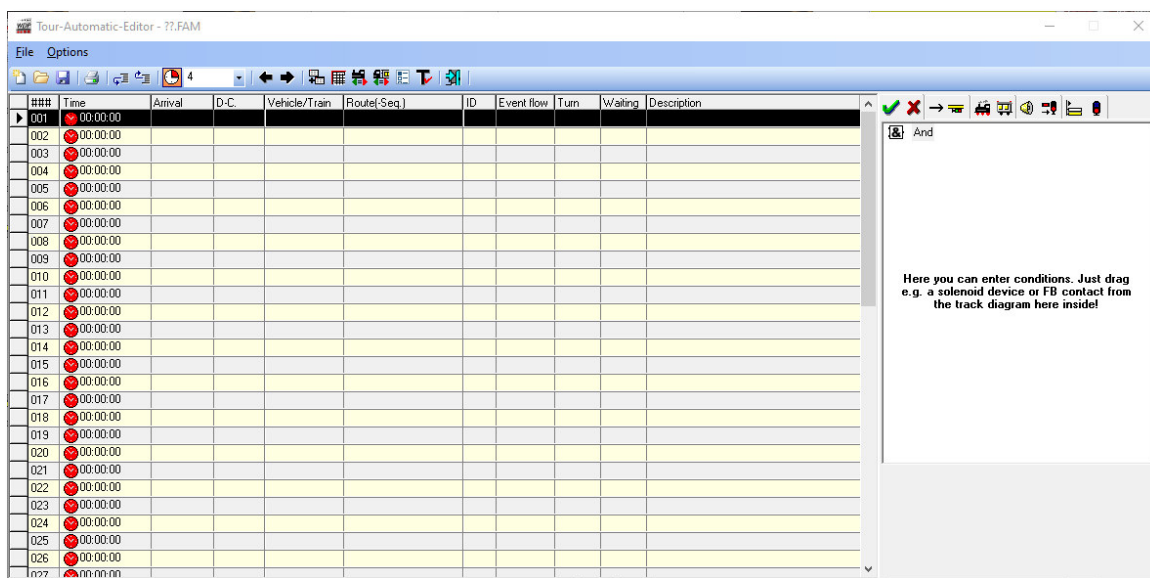
Fig. 10.1   A "new" automatic journey should be created in the tour-automatic editor

The list window is located on the left-hand side of the tour-automatic editor, while five tabs for entering the relevant data are located on the right-hand side.
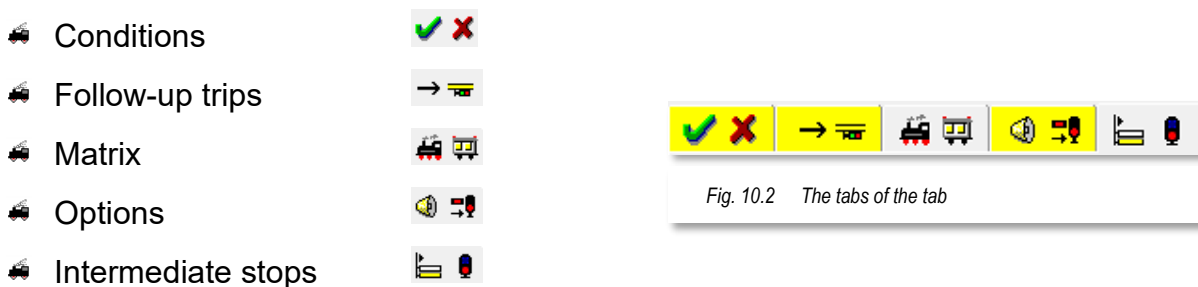
🚂 Conditions	✔ ✖	
🚂 Follow-up trips	→ 🚃	
🚂 Matrix	🚂 🚃	
🚂 Options	🔊 🚦	Fig. 10.2 The tabs of the tab
🚂 Intermediate stops	⊫ 🚦	

As soon as entries have been made on one of the tabs, the tab for this tab is highlighted in yellow as soon as another tab is displayed in the foreground. The tabs of the tab displayed in each case is still shown in grey.

If you do not (temporarily) need to display the tabs in the tour-automatic editor, you can hide them using the two arrow symbols ← → (←) or, conversely, show them again (→).

Immediately after opening an empty list window in the tour-automatic editor, you should give the new tour-automatic journey a file name. You can create as many files as you like; these are saved in your project directory with the file extension .fam.

If you have used a previous version of **Win-Digipet 2021,** your old train journey automation files with the extension .zfa will be automatically converted to the new .fam format.

You will find a tour-automatic file with the name "Rundfahrt.zfa" in your project directory after installing **Win-Digipet 2021** under the name "Rundfahrt.fam".

To save the file, click on the 🖫 icon in the toolbar of the tour-automatic editor and enter a name that is as relevant as possible. This file name can be up to 25 characters long. After clicking on the **'OK'** button, the file is saved, and the assigned name appears in the title bar of the tour-automatic editor.

10.4 The columns of the tour-automatic editor

The list window contains a total of eleven columns for your entries, the "ID" column is for information purposes only, you cannot make any entries here. Some columns can be hidden via the <Options> menu <Column selection> from, so you may not always be able to see all columns.

These are the columns in detail:

- Vehicle/train
- Duration/arrival time
- Demand contact
- Turn command
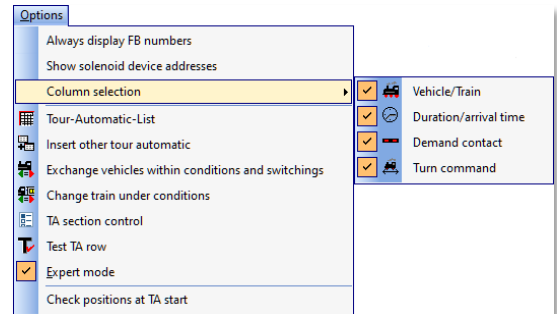
Fig. 10.3   Some columns of the tour-automatic editor can be hidden

Fig. 10.4   1 column headers of the tour-automatic editor

In the 1st column "###" you can see the line number; a maximum of 1999 lines are possible here. As soon as you click on any line, it is highlighted in black.

Enter the corresponding data in the list window, although there are **no** list windows for selecting routes or route sequences in the tour-automatic editor. The routes or route sequences are entered in the table using the start/destination function.

10.5 The "Time" column

After click in the "*Time"* column and on the small arrow to open the window shown below.

Here you can make further time-related settings for the execution of the entered route/route sequence.
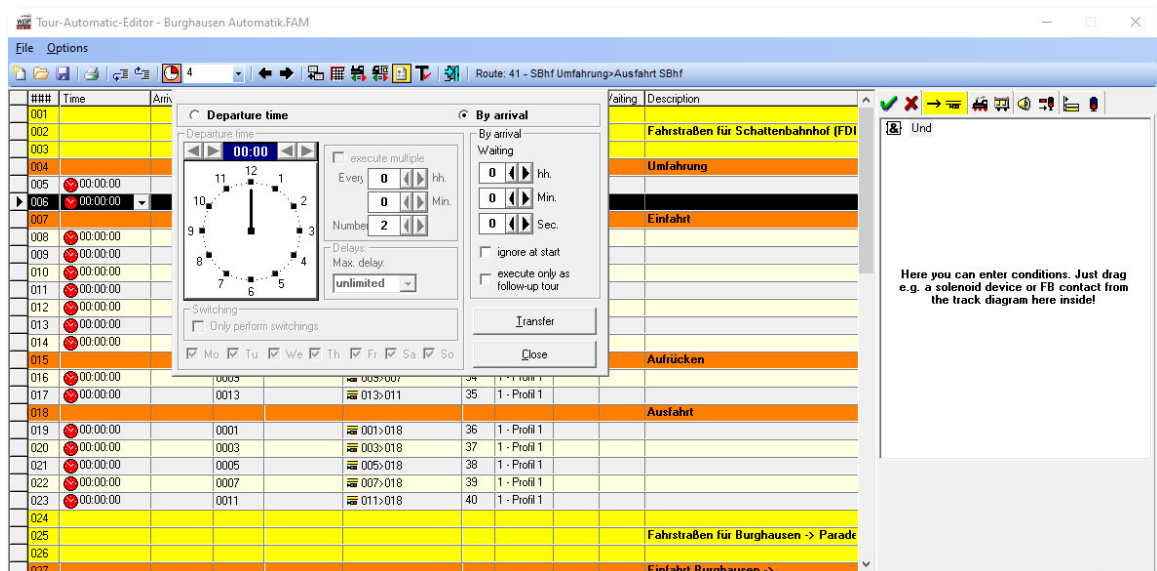
Fig. 10.5   All entered routes/route sequences are set to the "By arrival" type by default (red clock)

By default, the radio button in the upper part of the dialogue window is set to "*By arrival"* (see section 10.2). Entries with this setting are executed if the request contact is occupied (busy) and the other control conditions in the route and in the line of the tour-automatic editor are fulfilled.

However, if you set the radio button to "*Departure time"*, the line is executed if the request contact is busy, the other control conditions in the route and in the line of the tour-automatic editor are fulfilled and the set departure time is reached or (in the case of delays) exceeded.

Click on the **'Transfer'** button to transfer your entries to the "*Time"* column and close the window.

10.6 The "Time" column - Route(-Seq.) by arrival

This is the default setting if you want to enter the data in the tour-automatic editor. Here, the red symbol ⏱ with the time 00:00:00 is always preset in the second column "*Time*" in an empty line.
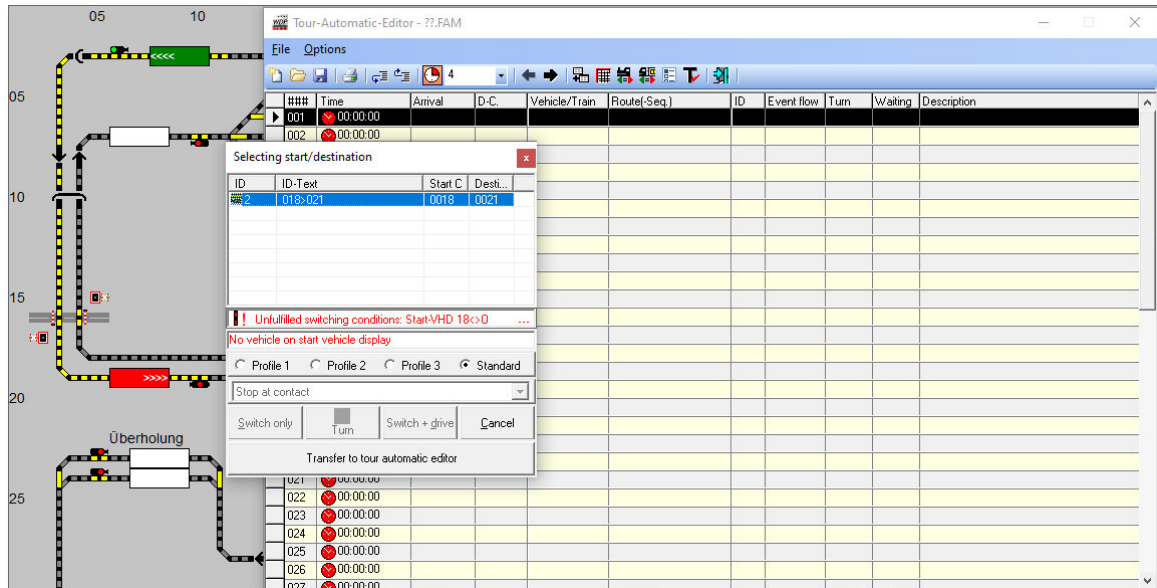
Fig. 10.6   A route has been selected with the start/destination function and can now be inserted into the automatic routes editor

Now select the line in the list in which you want to enter a route or route sequence. If the line is to be executed immediately and without further specifications after the arrival of the vehicle or train at the request contact and after fulfilment of the positioning conditions, there is no need to click in the "*Time*" column to make further settings there.

Now use the start/destination function to select the desired route or route sequence. In this example (see Fig. 10.6), a route is to be inserted.

Click with the middle mouse button on the start and destination vehicle display of the desired route in the track diagram. You can ignore any warning messages in the start/destination selection at this point, as you do not want to run the selected route now.

The routes found are displayed in the "Start/destination selection" that then appears. If you select the desired route by clicking on its line, it will be highlighted in yellow in the track diagram. By clicking on the *'Transfer to tour-automatic editor'* button, the selected route is immediately entered in the highlighted empty line and the "Selecting start/destination" dialogue is closed again.
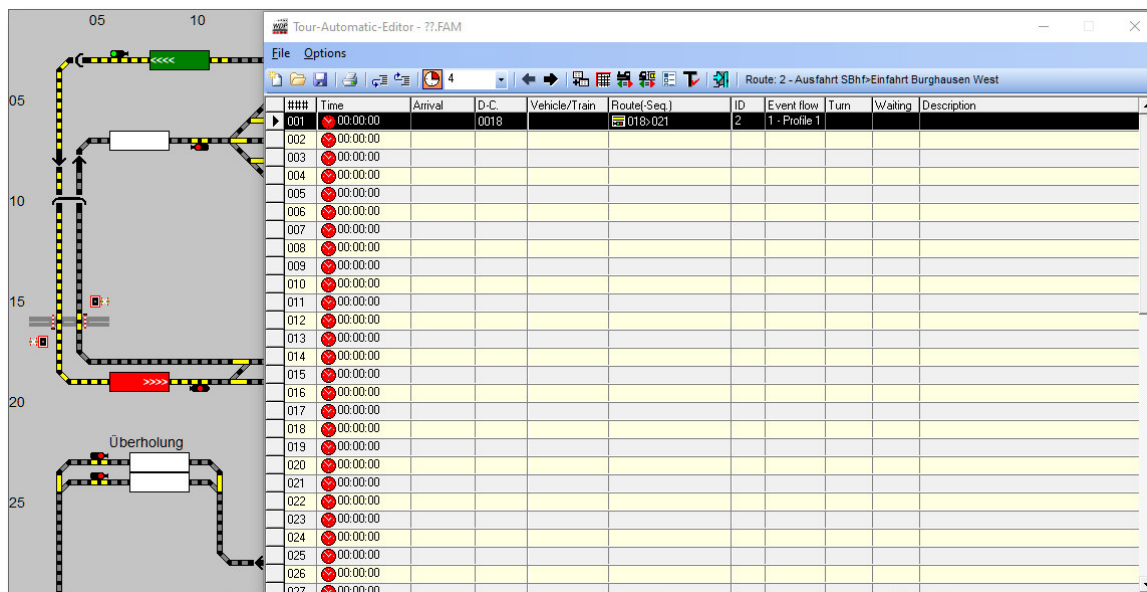
Fig. 10.7   The route previously selected with the start/destination function has been entered in the automatic routes editor

The preset for profiles you selected in the system settings on the "Program settings – General" tab (here '1 - Profile1') is automatically entered in the "Event flow" column.

With this setting, the entry in the line is already complete if you do not want or need to enter any additional specifications. In the other sections of this chapter, however, you will find many more options for conditions that can make the process on the model railway layout quite lively and varied.

> You must select a new line for the next entry yourself. Lines are not changed automatically in the tour-automatic editor.
>
> When entering the routes or route sequences, make sure that the "*Follow up*" tab is **not** active, otherwise the data will be entered or overwritten there.

10.6.1   Enter additional routes or route sequences

For entries in the other lines of the tour-automatic editor, it is completely irrelevant whether these are routes or route sequences. You can therefore immediately define an automatic journey with the routes you have created and can create and integrate route sequences later.

A round trip from the staging yard via Burghausen and back, consisting only of routes, could look as shown in the following diagram.

Fig. 10.8   A round trip consisting of individual routes has been entered in the tour-automatic editor

During this round trip, the train will stop again and again briefly until the route for the next line is set and only then will it continue its journey.

A round trip for the same route could also be entered with a route sequence, as shown here in the following illustration.

Fig. 10.9   A similar round trip was entered here with only one route sequence

In this example, the vehicle or train runs through in one go, stops briefly in staging yard A at feedback contact 005 until the route sequence can be set again and starts the round trip again.

In the "*Route(-Seq)"* column, the...

A registered route 005>018 is marked with a route symbol in front of the ID text

A registered route sequence []005>005 marked with a symbol for a route sequence in front of the ID text

10.6.2 Waiting time after arrival

In in this dialogue window, you specify the desired waiting time after arrival in hours/minutes/seconds. In the example shown, the entry "2 minutes" means that the new round trip can only start after this time (model railway time).

This is useful, for example, after the arrival of a train at the platform to allow the little "passengers" to get on and off in peace before the train continues its journey.

The waiting time is set accordingly using the six arrow buttons. In the tour-automatic editor, these

Fig. 10.10   The waiting time "by arrival"

lines are labelled with the red clock symbol with a yellow border to distinguish them 🕐 00:02:00 and the respective waiting time is shown in hh:mm:ss.

You can optionally specify,

🚂 that the entered waiting time is ignored after the start of the automatic journey.

🚂 That the line is only set as a follow-up tour and any waiting time set is ignored. Entries with this option are specially labelled in the "Time" column ↗ 00:02:00.

The definition of time means "By arrival":

🚂 When starting the tour-automatic travel mode, the train stands on this contact or

🚂 During operation, the train has just arrived at this contact and could set off again.

In both cases, the set time starts to run and delays the departure of the train by the set value.

The set time value must be divided by the model railway factor to obtain the real time. For example, the 5 minutes set here with a model railway factor value of 4 result in a real time of 1 minute and 15 seconds.

The factor can be set individually for each tour-automatic. The value is saved in the file and can be adjusted again during the automatic process.

10.7 The "Time" column - journey after departure time

In in the following line, the vehicle or train should depart at a specific time. To do this, click in the "*Time"* column of the desired line in the list field of the tour-automatic editor.

After clicking on the down arrow in the "*Time"* column, the clock appears, and the radio button is set to "*By arrival"*. To enter a departure time, you must switch the radio button to "*Departure time"* with the <u>left mouse button</u>. Only now can you set the departure time of the route sequence via the clock. You can set the time using the four different arrows (hours on the left and minutes on the right). You can set the hours even more quickly by clicking the <u>right mouse button </u>and the minutes with the left mouse button if you click directly on the time in the clock.
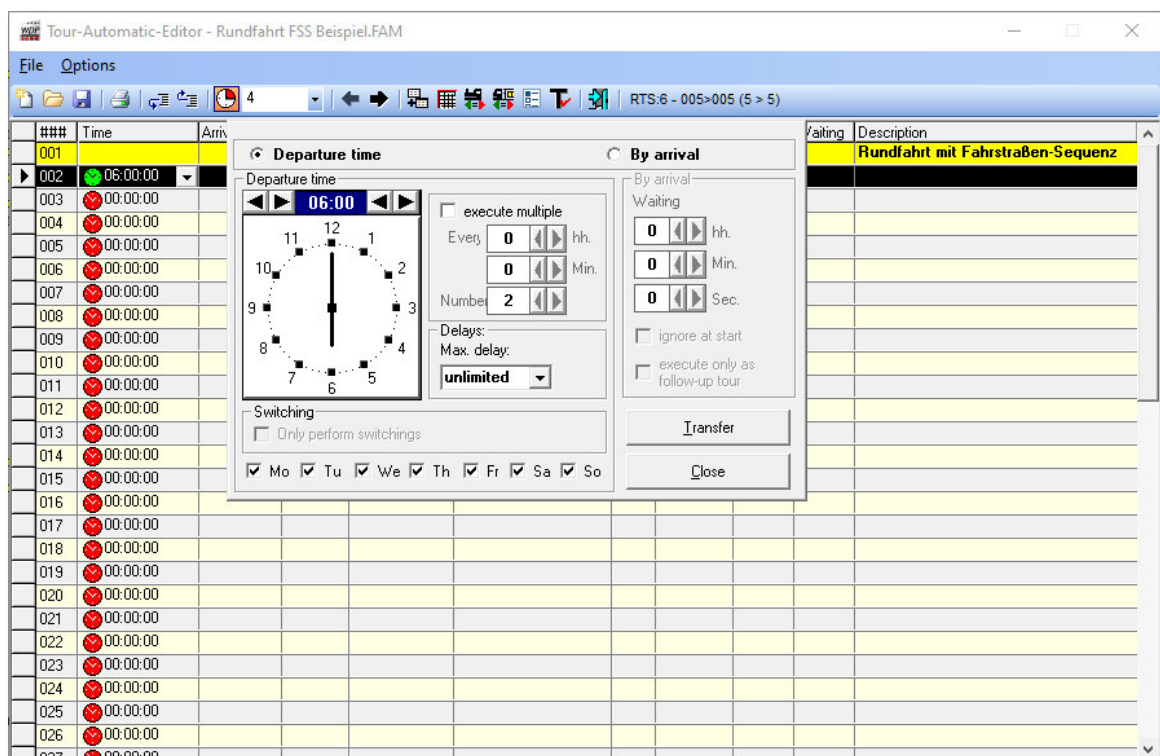
Fig. 10.11   A fixed departure time should be defined for the entered route or route sequence

Repetitions, waiting time, maximum delay and days of the week can also be defined at this point, but more on this later in this chapter.

After setting the desired time, click on the **'*Transfer'*** button.

Fig. 10.12   The departure time was set to 06:00:00 for this line

The small window closes and in the "*Time*" column you can see the green symbol 🟢 next to the departure time (in this example 06:00:00).

10.7.1   Departure time according to time and weekdays

As a rule weekdays are usually ticked here in the *"Departure time"* dialogue box (see Fig. 10.11) and you only need to enter the departure time.

If you want to realise a different sequence on the layout on each "model railway day", you can also set the corresponding days of the week here. And if you wish, the sequence on the model railway layout can run with the actual time of day.

It probably doesn't need to be mentioned that this means a lot of work for you when creating such automations.

10.7.2   Repetitions (carry out journeys several times)

Also Repeating the same processes on the model railway layout is possible at any time. For example, you can set up a reversing train operation on a branch line and have it repeated x times after a time set here.

The repetitions depend on the departure time also set and, in this example, would start at 06:00 and be repeated every hour. With the value set here for the total number of journeys, this journey would be carried out 23 times.

The smallest value when the "Execute multiple" option is ticked is 2, as 1 does not mean multiple execution. When setting the repetitions, the

Fig. 10.13   The registered journey is repeated every hour

combination with the weekdays is also possible at any time, whereby each new day begins with the first journey followed by the repeat journeys.

If you have ticked the "Execute multiple" box, the arrow symbol 🔄 for the repeat mode is also displayed in the "*Time*" column.

10.7.3 Delays

In the *"Delays"* field, you can select from 1 min. to 180 min. The default setting in this selection list is "*Unlimited*".

This setting is also always to be understood in combination with the other entries under the departure time.

10.7.4 Information on departure times, repeats and delays

> ⚠️ Repeats are only carried out as long as the repeat journey can be started before 0:00 (i.e. no later than 11:59 pm), i.e. before the start of the next day.

One example:

You have entered 20:15 in the "*Time*" column and every 30 minutes and a number of 10 repeats in the "Execute multiple" *column.*

This journey is started for the last time at 23:45 because the next journey would not start until 0:15, i.e. the next day. However, this is not executed by **Win-Digipet** due to the change of day.

However, this does not apply to **delays**. For example, if a journey is scheduled to start at 11.45 pm but the train is 20 minutes late, the journey will start if you have entered a delay of 16 minutes or more.

10.7.5 Solenoid device switching without vehicle movements

In the tour-automatic editor, you can record solenoid device circuits that are to be executed after a certain time, independently of vehicle movements.

Some examples of the many possibilities for controlling a started automatic journey:

- 🚂 Solenoid circuits for virtual switches before the start of the actual tour-automatic
- 🚂 Solenoid circuits for real solenoid items (switching decoder for carousel, windmill, water wheel, lighting etc.) time-controlled according to time

To enter the data, click on the down arrow in the "*Time*" column in the tour-automatic editor and set the radio button to "*Departure time*". After entering the desired time, tick the "*Only perform switching*" box. If you also enter repetitions, the solenoid device switching operations entered will be switched at the specified times.
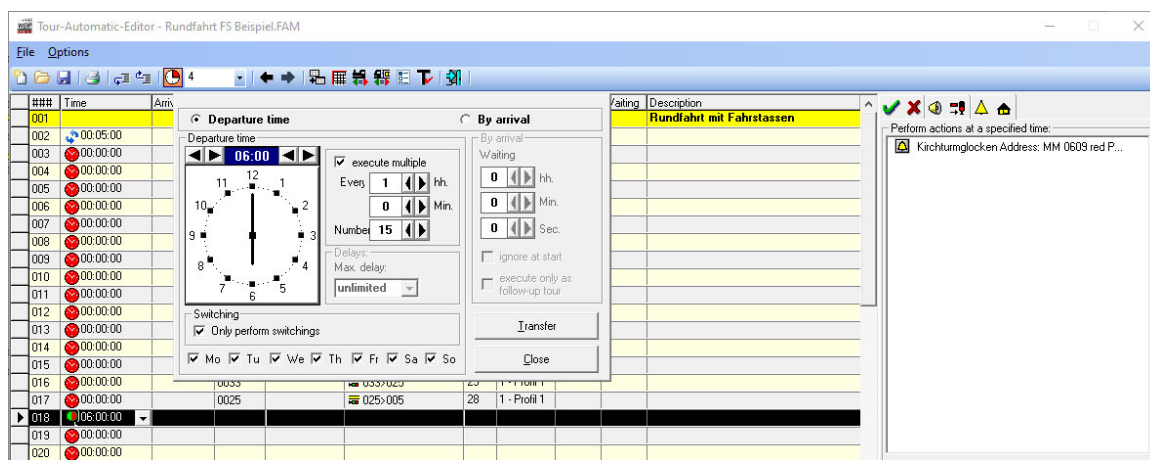
Fig. 10.14   Instead of a route/route sequence, a solenoid device circuit is executed here

After clicking on the **'Transfer'** button, the tabs on the right-hand side of the editor change. A "Solenoid switching" tab ⚠ 🏠 is now displayed. Now hold down the left mouse button and drag the solenoid symbols to be switched from the track diagram into the "Perform action …" field on the tab and release them there (drag & drop).
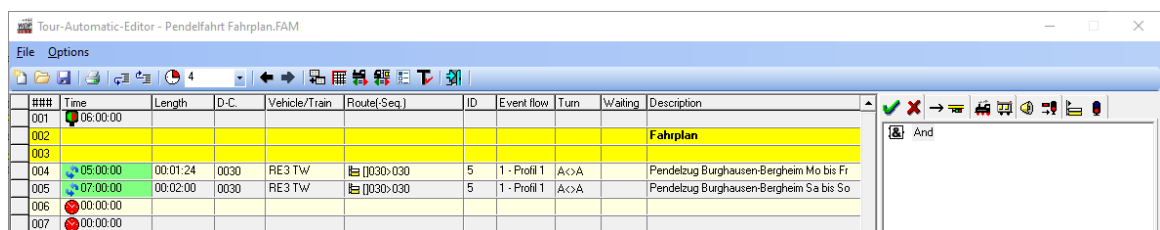
The Fig. 10.14 shows a virtual switch that is to play a sound for church bells in the demo project. The switching takes place here from 06:00 every hour with a number of 15, i.e. the last time at 21:00. Delete existing entries by right-clicking on the entry and selecting **'Delete'** from the short menu.

10.8 The "Length/Arrival" column

With the definition of fixed departure times, a timetable can be created in the tour-automatic editor.

In the previous sections, you have learnt how to enter fixed departure times in **Win-Digipet**. Each route/route sequence requires a certain amount of time to be processed. This is very important for a timetable in that the subsequent journeys also have fixed departure times and therefore there is a fixed dependency between the individual journeys.

In the following example, which you will also find in the demo project, you can see a small timetable that includes a shuttle journey.

Fig. 10.15   Mapping a timetable in the tour-automatic editor

Line 4 (cf. Fig. 10.15) marks the starting point of the timetable. The departure time here is 05:00:00 for the first run, but you can already see from the arrows ⟳ that repetitions have been configured for this route sequence. The "Length/Arrival" column contains a value of 01:24 minutes for this line. This time is required to process the route sequence 030>030 entered here.

You can enter this time manually here or simply try it out using the "Test TA row" function. With this function, which you can access via the ⬛ icon in the toolbar of the tour-automatic editor, the processing time is entered automatically.

> ⚠ The processing time in the "Length/Arrival" column is the real time, not the model railway time.
>
> Executing the "Test TA row" function only makes limited sense in the simulation mode of **Win-Digipet**, as no real times can be determined here.

The same route sequence 030>030 is entered again in line 5. The difference is that the journeys on Saturdays and Sundays do not start until 07:00 and should only be executed every 2 hours.

In the graphic you can see that the departure times for both lines are shown in "green". The meaning of the green display is that the two journeys do not conflict with each other in terms of time. If one of the journeys in the timetable is displayed in "red", this means that the journey displayed in this way is in conflict with the previous journey and cannot be completed on time.

> For the time entries in the "Time" column, you must think in model railway time. The so-called model railway factor is used to convert the real time into model railway time.

The Model railway factor can be set in the toolbar of the tour-automatic editor using the selection list [4 ▼]. The value set here will also be used later when the tour-automatic is executed. In the example here, a value of 4 is set for the model railway factor. This means that 60 minutes of model railway time corresponds to 15 minutes of real time.

> For the model railway factor, you should select a value that is easy to calculate and with which you can also set up entire daily routines without having to spend 24 hours on your model railway layout.

If the entry in the "Time" column is too small (short) in relation to the model railway factor, it will be displayed in "red" [05:00:00].

10.8.1 Switching the length/arrival time column

The "Length" column can be toggled using the 🕐 icon in the toolbar of the tour-automatic editor. This changes the name of the column (length/arrival) as well as the format of the entries.

Fig. 10.16   The "Length" column is displayed here in "Arrival" mode

In "Arrival" mode, the calculated arrival time is displayed. The set model railway factor is also taken into account.

Following the example from the previous section, the calculated arrival time 05:05:36 is now displayed in line 4.

10.9 The "Demand contact (D.-C.)" column

In column "D.-C."[29], **Win-Digipet** automatically enters the number of the start contact of the entered route/route sequence.

If you want to change this contact, click in the column and then on the down arrow. The input window shown opens and the corresponding request contact number can be entered there.

You can enter the demand contact number using the keyboard or drag it from the track image into the corresponding field by holding down the left mouse button (drag & drop).
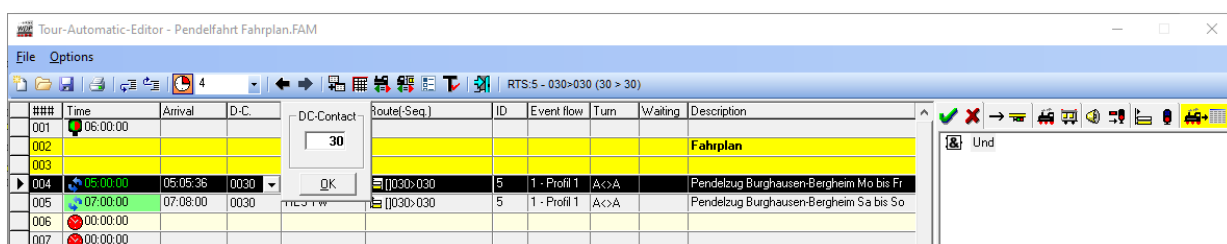
Fig. 10.17   The demand contact of the registered journey can be changed

The demand contact number can be before the start contact of the route sequence/route or any other contact number if you want to create a dependency to another train here.

Click on the '***OK***' button to accept the new entry and enter it in the "D.-C." column. The changed contact number is displayed in **bold** and marked with a small asterisk to recognise a change.

> The small asterisk can only be removed if you re-enter the route/route sequence or another route/route sequence with the start/destination function in the line using the '***Copy for editor***' button.
>
> This is the only way to overwrite the number in the "D.-C." column and remove the small asterisk.

---

[29] D-C. stands for demand contact

10.10 The "Vehicle/Train" column

In this column can be used to enter vehicles/trains for which the route/route sequence entered in the row is valid. This column is particularly interesting for a timetable mapped in the tour-automatic system, as the vehicles are linked to specific positions and sequences.

Fig. 10.18   The registered journey is intended for the multiple unit "RE3TW"

You have two options for entering a vehicle in the "Vehicle/Train" column. The first option is to drag the vehicle image with the <u>right mouse button</u> from the vehicle control or the vehicle bar into the desired cell using drag & drop. You are already familiar with this technique from the parts of the **Win-Digipet** programme covered so far in this manual.

In the second option, click with the <u>left mouse button</u> in the cell in which the vehicle is to be entered. A small downward arrow appears in the cell, which you click on. You will then be offered a list of all vehicles from which you can select the desired vehicle by double-clicking.

If you drag a train into the Vehicle/Train column instead of a vehicle, the programme will ask you whether you want to enter the train or the locomotive or road vehicle pulling it.

Fig. 10.19   2 vehicle selection window

10.11 The "Event flow" column

The "*Event flow*" column automatically displays the selection of profiles in the system settings on the "Program settings – General" tab (see section 3.7). Your preselection has been entered automatically.

If you want to change this "Event flow", click in the column and then on the down arrow.
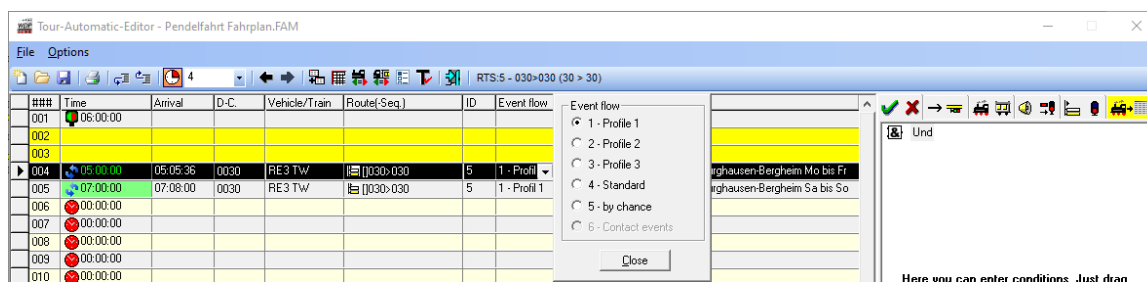
Fig. 10.20   The entered route/route sequence is executed according to the event flow selected here

The input window shown opens and you can set the desired sequence using the radio button.

When selecting profile 1-3, the line is executed after the respective profile. If you have selected profile 1 here, for example, but such a profile does not exist for the route, the route is processed according to the standard sequence from the specifications in the routes editor.

If you have selected profile 1 and there is only one profile 2 for the route, the route will also be processed according to the standard sequence.

The "by chance" selection runs the Profile or Standard route.

Click on the '***Close***' button to accept and enter the new entry in the "*Event flow*" column.

10.11.1   Procedure following contact events

The selection of the "Contact events" option is available in lines with entered routes. When you select this option, the *"Edit contact events"* dialogue box opens, which you already know from the "Profile editor" of **Win-Digipet**.

You add the desired contact events in the same way as in the profile editor. The same contact event categories are also available here.

This allows you to define your own sequence for the entered route according to contact events without having to create a profile.

10.12 The "Turn" column

Do you want your locomotive, multiple units, or push-pull train to travel in the other direction?

No problem: simply enter a command to turn in the line with the corresponding journey.
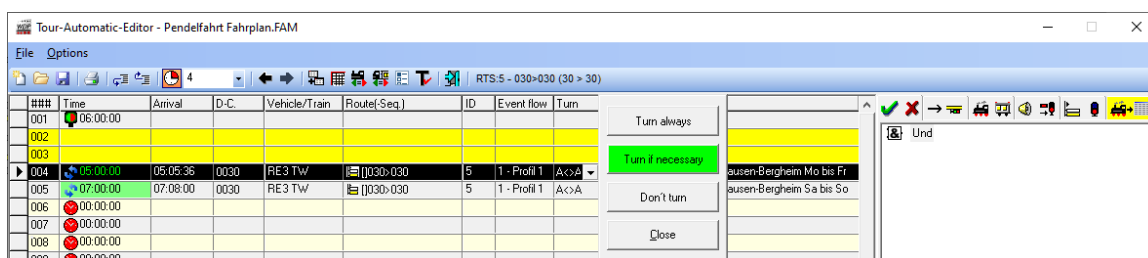
Fig. 10.21   The assorted options for "Turning" in the tour-automatic editor

Click in the column and then on the down arrow. The window shown appears in which you can select various options.

- **Turn always**
  The train is always turned when the route/route sequence is set by the tour-automatic function. The entry is displayed in the column with the character string **"#<>#".**

- **Turn if necessary**
  The train is only turned if the direction of travel for the route set is incorrect. The direction information of the train is analysed here. The entry is displayed in the column with the character string **"A<>A".**

- **Do not turn**
  Removes an existing entry in the "Turn" column

After clicking on the desired button, the command is entered in the column and the window is closed.

When the turn menu is called up again, any existing entry is marked with a green button.

You can exit the input window without making any changes by clicking the **'*Close*'** button.

10.13 The "Waiting" column

In column, you can enter a waiting time **before** the vehicle or train departs. If you enter a waiting time here, the route/route sequence will be set, but the vehicle or train will not start its journey until the entered time has elapsed. The time value in this column is entered in real time, the model railway factor has no influence here.
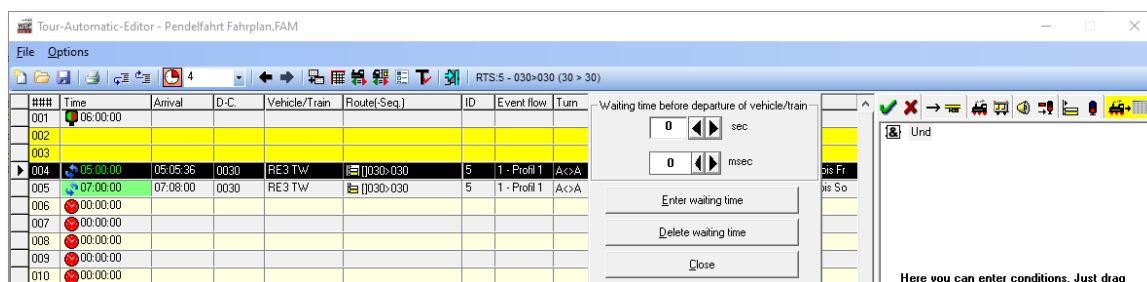
Fig. 10.22   The entered waiting time delays the departure of the vehicle or train after the route has been set

Click in the column and then on the down arrow. The window shown appears and you can use the arrows to enter the desired waiting time in sec and msec. Here you can select values up to 999 sec and 900 msec.

Click on the '*Enter waiting time*' button to enter the command in the column and close the window.

You can remove a wait time command (entered by mistake) in a line by clicking on the '*Delete waiting time*' button.

Exit the input window **without** making **any** changes by clicking the '*Close*' button.

> Do not confuse this waiting time with the "Waiting time after arrival" (see section 10.6.2).
>
> With the waiting time here in the "Wait" column, the route is set, and the train only starts moving after the set time has elapsed. This waiting time can be used if, for example, the first turnout with a servo motor is set very slowly.
>
> A long waiting time in this column may hinder smooth operation, as other vehicles or trains may not cross the set route.

10.14 The "Description" column

If you want If you want to enter a text in the "*Description*" column for documentation purposes in a line of the tour-automatic editor **filled** with a route or route sequence, click in the "*Description*" column. A downward arrow appears there and after clicking on it, a narrow input field opens in the top left-hand corner for entering the desired text. This text can be up to 100 characters long.
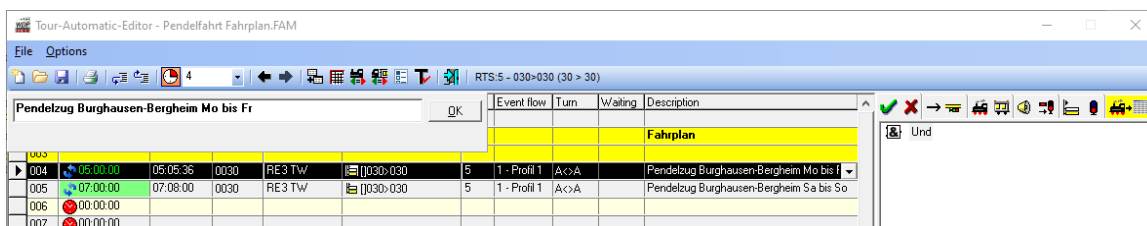
Fig. 10.23   The description of an entry is used for documentation purposes

After clicking on the '**OK**' button, the text entered is displayed in the "*Description*" column.

> You should at least use the option of describing an entry in the tour-automatic editor for all lines with any **special features.**

10.14.1   Insert headings/comments

For a To get a better overview of the created automatic journeys, you can insert a text in **empty** lines in the "*Description*" column.
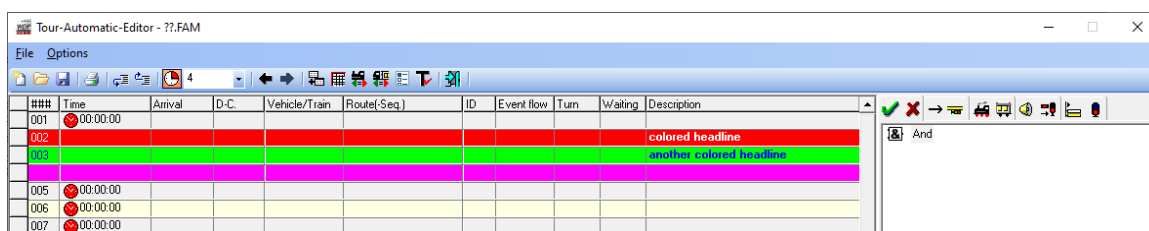
Fig. 10.24   Some examples of design options for lines with headings

You can change the colour of the heading yourself with the left mouse button (background colour) or right mouse button (font colour). After clicking, the Windows colours open and you can select any colour.

> However, the row is only highlighted in colour if there is **only** an entry in the "*Description*" column. **All** other columns **must** be **empty.**

10.15 The "Conditions" tab

On the tab "Conditions ✔ ✘" on the right-hand side of the tour-automatic editor, you can link the execution of the entered route/route sequence to various conditions.
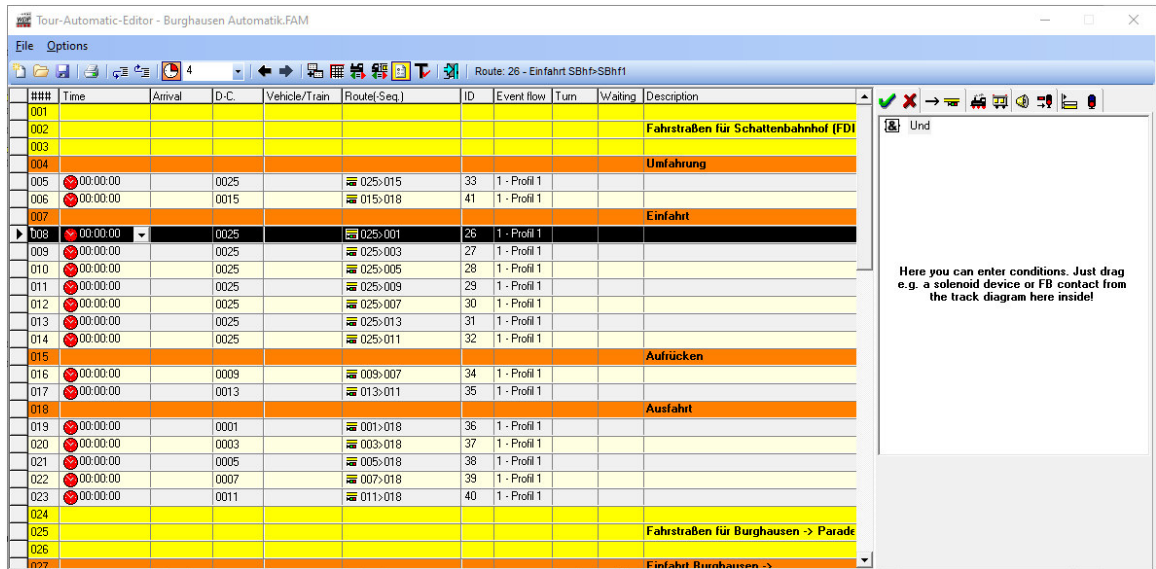
Fig. 10.25   No conditions have yet been set for the selected row

This tab has no function at the beginning and is only labelled with the "*And*" folder and a corresponding note. The folder represents the top "tip" of a condition tree. This means that the inserted conditions are displayed in a tree structure, as you know it from Windows Explorer.

This tree is then processed from bottom to top, i.e. the conditions in the folder must be fulfilled for the higher-level folder to change to the "fulfilled" status.

A folder basically represents the linking function for the conditions arranged below it. The simplest link is the "AND", i.e. <u>all</u> conditions under this "AND" must be fulfilled before the folder changes to the status "fulfilled" (TRUE). In addition to the "AND" folder type, there are also the "OR" and "NOT" folder types in the condition trees.

<u>Right-click</u> on the "*AND*" folder to open a short menu with the various commands. If you then hover over the <New condition> menu command with the mouse, a further window appears with the commands listed in the Fig. 10.26 in expert and normal mode respectively.

The picture already gives you an idea of the many possibilities for controlling the model railway layout that **Win-Digipet** makes available to you.
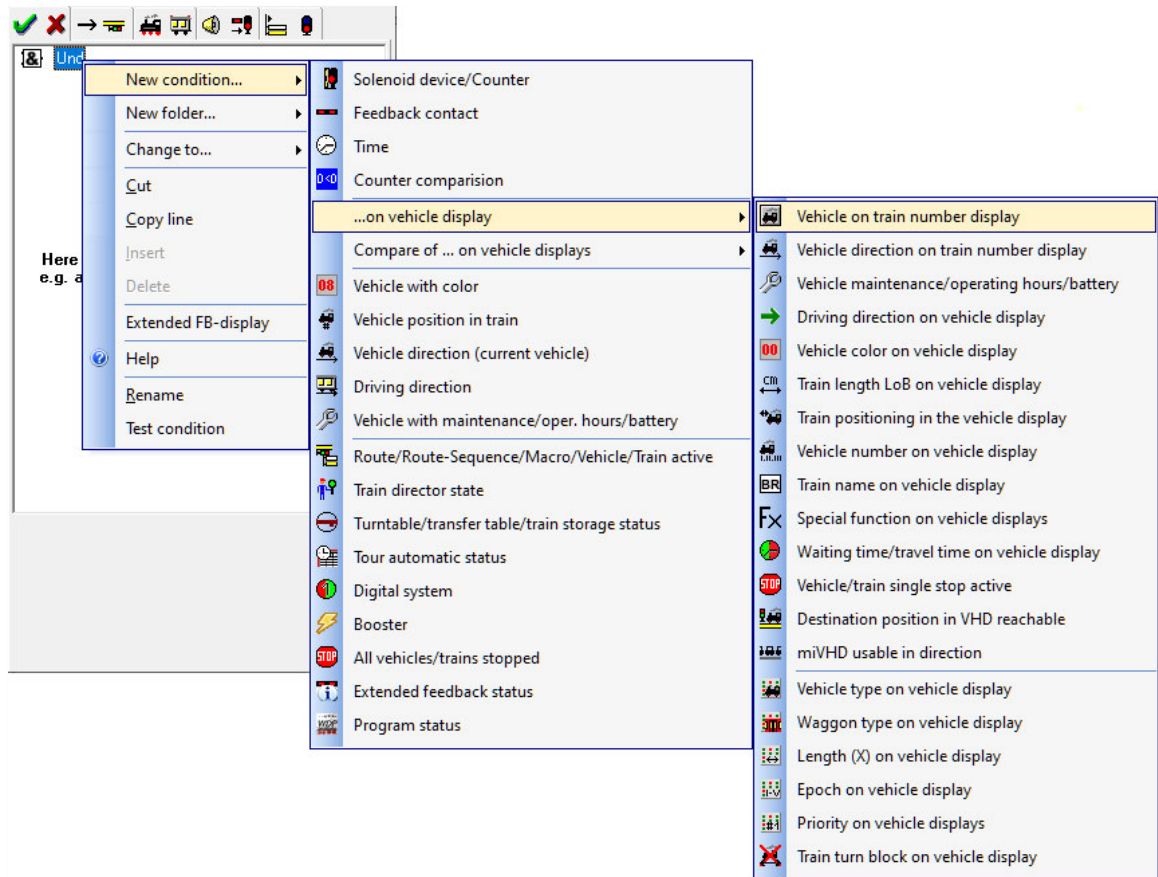
Fig. 10.26   The structured short menu with the possible conditions (expert mode)

Detailed explanations of the meaning of the individual conditions can be found in the chapter 13 on "Conditions and circuits" of this documentation. As the conditions and switching actions can be set in a similar way in most editors, the description has been summarised in this chapter.

We have created a table below. This shows which types of conditions are available in the various **Win-Digipet** editors.

Some of the conditions are only active in the editors in so-called expert mode. Certainly, the levels from "beginner" to "expert" cannot be precisely determined, but the features reserved for expert mode are sophisticated functions that require in-depth knowledge of **Win-Digipet**.

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴

…on vehicle display							
Vehicle on VHD	●	●	🔴	🔴	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train name on VHD	●	●	🔴	●	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴

Compare of… on VHDs

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of wagon types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of length (X) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of priorities on VHDs	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Vehicle with colour	⚫	⚫	🔴	🔴	🔴		⚫
Vehicle position in train	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction		⚫			⚫		
Vehicle with maintenance/oper. hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Route/Route-Sequence/Macro/Vehicle/Train active	🔴	🔴	🔴	🔴	🔴		🔴
Train director state	🔴	🔴	🔴	🔴	🔴		🔴
Turntable/transfer table/train storage status	🔴	🔴	🔴	🔴	🔴		🔴
Tour automatic status	🔴	🔴	🔴	🔴	🔴		🔴
Digital system	🔴	🔴	🔴	🔴	🔴		🔴
Booster	🔴	🔴	🔴	🔴	🔴		🔴
All vehicles/trains stopped	🔴	🔴	🔴	🔴	🔴		🔴
Extended feedback status	🔴	🔴	🔴	🔴	🔴		🔴
Program status	🔴	🔴	🔴	🔴	🔴		🔴

🔴 - This condition is only available in the expert mode of the respective editor

10.16 The "Follow up" tab

On the tab, you can enter additional (up to 20) routes or route sequences **that follow the** route/route sequence → ⬒ .

> ⚠️ The emphasis here is on the word "**subsequent**", i.e. the start contact of the subsequent journey **must** always be the destination contact of the route or route sequence entered in the list on the left.

The subsequent movements are handled in the same way as the sequence of routes in the route sequences, i.e. the vehicle or train is not brought to a stop before a signal if the following block is free and the next route can be set.

For this reason, subsequent journeys are suitable for entering a station with several tracks, for example. The route or route sequence ends at the station's entry signal and the train enters the station with the entered subsequent trips without stopping at the entry signal if at least one track in the station is free and the route for the entry is entered on the "Follow up" tab.

The check as to whether a subsequent movement is set is carried out at the test contact of the currently executed route. If the subsequent journey cannot be made, the vehicle or train stops at the end of the current route/route sequence. In this case, the train is highlighted in red in the route sequence inspector and a message such as "Destination occupied by ..." is displayed.

However, the train number in the vehicle display remains green, as the vehicle or train is still in an active route sequence. It will continue its journey as soon as the route ahead becomes free.

If the route is not completed within the "Waiting time for route sequences/sequential and connecting journeys" defined in the system settings (see section 3.13), the marking in the tour event inspector changes to "Waiting time expired" and the route sequence must be manually set to active again after the route has become free again.

In extreme cases, depending on your individual circumstances, automatic operation may even come to a standstill.

10.16.1 Enter "Follow up" (subsequent) routes/route sequences

On the tab "Follow up → ☷ ", enter the subsequent journeys using the familiar start/finish function and *'Transfer to tour-automatic editor'*. You can ignore any red messages in the start/destination dialogue at this point. Both routes and route sequences can be defined here as subsequent journeys.

The route in the following example starts at the block signal after the staging yard and ends at the entry signal of Burghausen station. From there, the three subsequent routes go either to track 6, track 5 or track 4 of the station.

Fig. 10.27   Three routes were assigned to the entered route as subsequent routes

The sequence of the entries can be used to influence the selection of the subsequent journey. If the radio button is set to "*Sequential",* the subsequent journeys entered are checked from top to bottom to see if they can be set. If you set the radio button to "All r*andom"*, the subsequent journeys are checked in random order to see if they can be set.

If a route/route sequence (subsequent journey) could be set, the other entries are ignored. The subsequent journeys in our example are checked in the order in which they are entered; this is intended to ensure that track 6 is always occupied first if possible.

> If you have entered the subsequent journeys but still want to make changes in the list of the tour-automatic editor, always switch back **immediately** to the "Conditions" tab or any other tab so that the data is not entered on the "Follow up" tab, for example.

10.16.2 Enter connecting journeys

On the tab "Follow up → 🚃 " you can also enter so-called connecting journeys.

But what are connecting journeys?

A connecting journey is a route or route sequence entered in the left-hand part of the editor in the "*Route (-Seq)*" column, to which a "pointer" is set in the "Follow up" tab. The entry of a connecting journey is therefore basically nothing more than a reference to another line in the tour-automatic editor. The route or route sequence entered as a connecting journey can also contain subsequent or connecting journeys entered on the "Follow up" tab, just like all other lines.

In earlier versions of **Win-Digipet,** a line in the automatic system was only ever started if a vehicle or train was entered on the associated vehicle display, this had occupied the start contact and was no longer in an active route sequence, i.e. had stopped.

The entry of a connecting journey now has the following effect:

A line in the tour-automatic is executed. As soon as the testing contact of the last route to be processed is reached, **Win-Digipet** checks whether there is a connecting route to another line of the tour-automatic in this line. If so, an attempt is made to set the route/route sequence in this line immediately.

If this is successful, the vehicle or train will continue its journey in this line without stopping. It is therefore possible to connect any lines in the tour-automatic. As long as the route is free, the vehicle or train will continue its journey without stopping.

The check as to whether a connecting journey is set is carried out at the testing contact in exactly the same way as for subsequent journeys. If it is not possible to set the connecting journey, the vehicle or train stops at the end of the current route. In this case, the train is also deleted from the tour-event inspector and the vehicle number in the vehicle display changes from green to black. The train can now resume normal processing of the tour-automatic lines as soon as the route becomes free.

And when do connecting journeys make sense?

Connecting journeys are always useful if your vehicles or trains can and should travel across the model railway layout without stopping. A vehicle/train always comes to a standstill at the end of a subsequent journey, whereas a connecting journey can always continue if further connecting journeys follow. You can therefore also use the connecting journeys to generate round trips which - provided the track is clear - run without stopping.

> In contrast to the subsequent movements, the set conditions and the specifications of the matrix can be checked in the connecting journeys movements, as a subsequent movement corresponds to the normal execution of a line in the tour-automatic movement. Furthermore, it is also possible to carry out switching of solenoid devices or counters.
>
> You can only use the convenient connecting journeys if you have switched on "Expert mode" in the <Options> <Expert mode> menu in the tour-automatic editor.

But how do I enter the connecting journeys?

You have two options for entering the connecting journey, the first of which is the most convenient and will be described here.

Mark the line in which a connecting journey is to be entered and select the "Follow up" tab. Then hold down the <u>left mouse button</u> and drag the selected line over the desired line on the "Follow up" tab and release the mouse button. ("drag & drop").
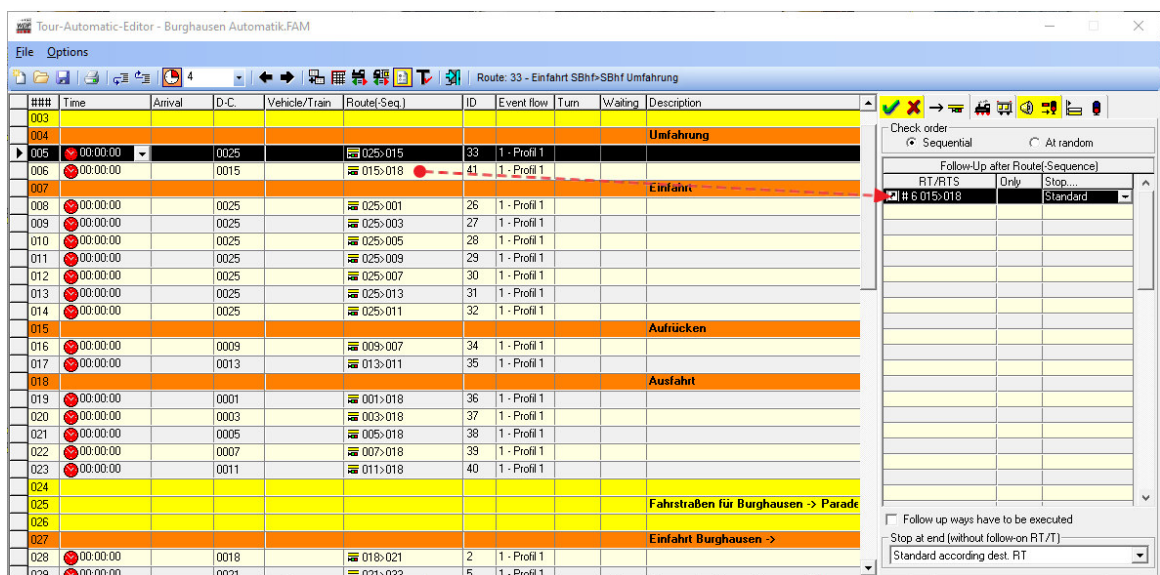
Fig. 10.28   The entry of a connecting journey on the "Follow up" tab

In the second option for entering the additional connecting journey, click on the second empty line in the subsequent journeys tab so that it is highlighted.

After clicking with the right mouse button, select the command <Follow up way(s) in row...> in the short menu that appears with the left mouse button.

The "Selection of follow up way for …" dialogue is then displayed. We will encounter this dialogue again later in this chapter; it is a search function in the tour-automatic editor.

The main criterion for the connecting journey to be entered is already entered in the dialogue field: the start contact. As already explained, this must be identical to the destination contact of the route/route sequence for which the connecting journey to be entered applies. In our example, it is the start contact 015. With this start contact, there is only one route (015>018) in the table, which is entered in line 006 (see Fig. 10.28).

If several routes or route sequences with the same start contact are available for selection in an automatic journey, you can tick or untick the desired entries. The selected entries are entered in the "Follow up" tab using the **'Take over'** button.
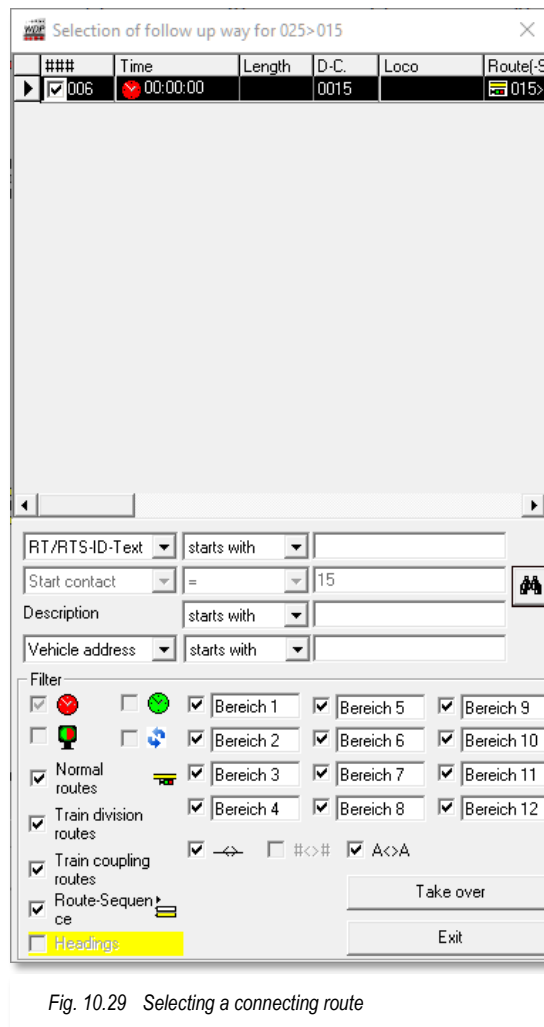
Fig. 10.29   Selecting a connecting route

Important!

Connecting journeys may only be of the "by arrival" type (red clock) and must not contain a turn command!

10.16.3 Change, add to or delete entries for subsequent or connecting journeys

On the "Follow-up →🚃 " tab, you can also restrict the entries for follow-up and connecting journeys to one vehicle. To do this, hold down the left mouse button and drag drop the vehicle from the vehicle bar, the vehicle monitor or an open vehicle control into the "O*nly"* column of the corresponding row.

Based on this entry, the route is only requested if the selected vehicle is on the start vehicle display of the route. You can also delete an entered vehicle in the line. To do this, right-click in the field and select the delete command from the sub-menu.

For registered connecting journeys, it is possible to select specific vehicles or trains via the conditions, as these are evaluated for registered connecting journeys. These conditions can be customised in much greater detail than limiting the registered journey to just one vehicle.

The "Stop ..." column on the tab defines the stop position on an intelligent vehicle display (iVHD) for the selected follow up or connecting journey. Here you can select the various stopping positions from a selection list.
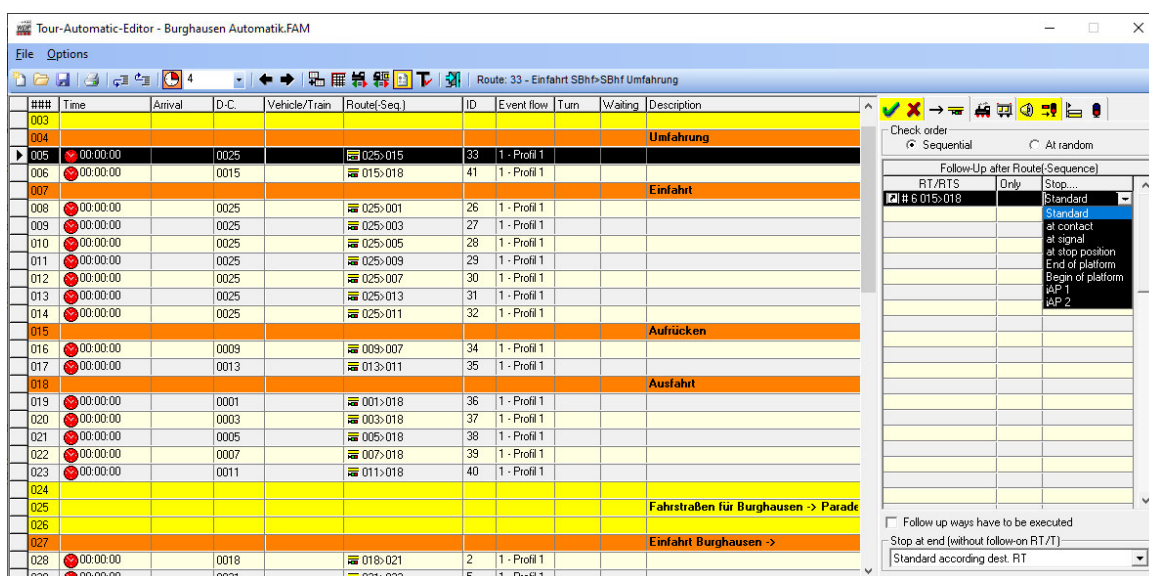
Fig. 10.30   The selection list defines the stop position on an iVHD for the selected follow up or connecting journey

If you make changes to the rows of your tour-automatic after defining connecting journeys (e.g. adding or moving), the connecting journeys entered are automatically adjusted to the changed reference rows.

Deleted lines are displayed as errors and are also identified as errors by the check routine in the main programme.

The "Standard" selection causes the vehicle or train to stop at the position set in the routes editor in the event of an intelligent vehicle display.

At the bottom of the tab, you will find the same selection list of the various stop positions again. Here you can select the stop position for the journey in the automatic journey list if it is not executed as a connecting journey.
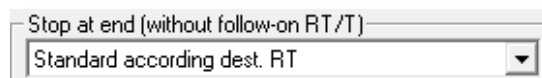
For the model shown in Fig. 10.30**Fehler! Verweisquelle konnte nicht gefunden werden.**, this would mean that you must specify the position at which the train should stop in the lower selection list for line 6 (reference line) on the "Follow up" tab. The stop position selected here applies in the event that route 015>018 is not executed as a connecting journey (e.g. tour-automatic line 005).

10.16.4   Make connecting journeys mandatory

The advantage of advantage of connecting journeys over following journeys is that as soon as no connecting journeys can be set at the end of the tour-automatic line, the line is terminated. However, it has been shown that there may be situations in which the vehicle or train should not leave the specified route (chain of connecting journeys) (e.g. other trains also start or there are other destinations)

The option *"Follow up ways have to be executed"* (cf. Fig. 10.30) is intended to prevent exactly this. If the tick is set and the vehicle comes to a stop at the end of the actual automatic journey line, the line remains in the tour event inspector until a connecting journey can be set.

This option is only displayed if only connecting journeys are entered on the "Follow up" tab. If no entries are made in the list or at least one subsequent journey is entered, the tick is not displayed as the train is predetermined by the characteristics of the subsequent journeys (wait until the subsequent journey can be made).

10.16.5   Editing the subsequent or connecting journey list

Individual You can delete individual lines completely or insert new lines. To do this, select the desired line on the "Follow up" tab by clicking the left mouse button and then click the right mouse button. A short menu opens with the possible commands. The commands are self-explanatory, but some commands are described below.

The <Delete cell content> command deletes all entries in the row, but not the row itself.

The <Delete route(s)/tours> command deletes the entered route or route sequence, but not the entered vehicle.

If, on the other hand, you want to delete the entire line, you must select the <Delete line(s)> command.

	Follow up way(s) in row...	
✂	Cut	Ctrl+X
📋	Copy line	Ctrl+C
📋	Insert	Ctrl+V
	Paste cut line(s)	Alt+Ctrl+V
⊠	Delete cell content	Ctrl+ENTF
	Insert empty line(s)	Alt+EINFG
	Delete line(s)	Alt+ENTF
✖	Delete routes/tours	Alt+F
✖	Delete vehicle(s)	Alt+L
	Move line(s) towards bottom	Alt+U
	Move line(s) towards top	Alt+O
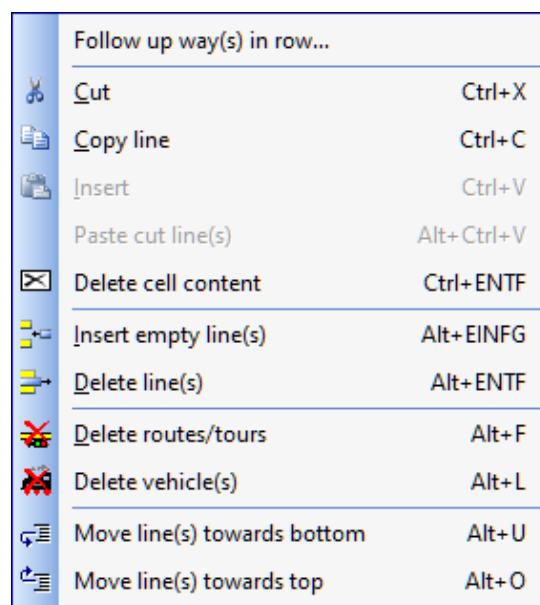
Fig. 10.31   The short menu of the "Follow up" tab

You can delete an entered vehicle with the command <Delete vehicle(s)>, but the entered route/route sequence or connecting journey remains entered in the marked line.

If you want to change the processing sequence of the individual lines, use the radio button to choose between "*Sequential*" and "All random" or use the commands <Move line(s) towards bottom> or <Move line(s) towards up> to move the lines carried accordingly.

However, you can also select several lines on this tab and then execute the above commands. To do this, select the first line with the <u>left mouse button</u> and then select the last desired line with the <Shift>-key and <u>left mouse button</u> combination. All lines are highlighted in colour and can be deleted, moved, cut, copied, pasted, etc.

10.17 The "Matrix" tab

On the tab "Matrix 🚂🚃", you can define the various conditions for executing the entered route or route sequence. However, you should note that there are now two with this matrix.

- 🚂 The route matrix in the routes editor

- 🚂 the matrix in the tour-automatic according to the following sections, whereby this matrix is the higher-value matrix here.

When making entries on this tab, you should always keep an eye on the entries on the "Matrix" tab in the created route.
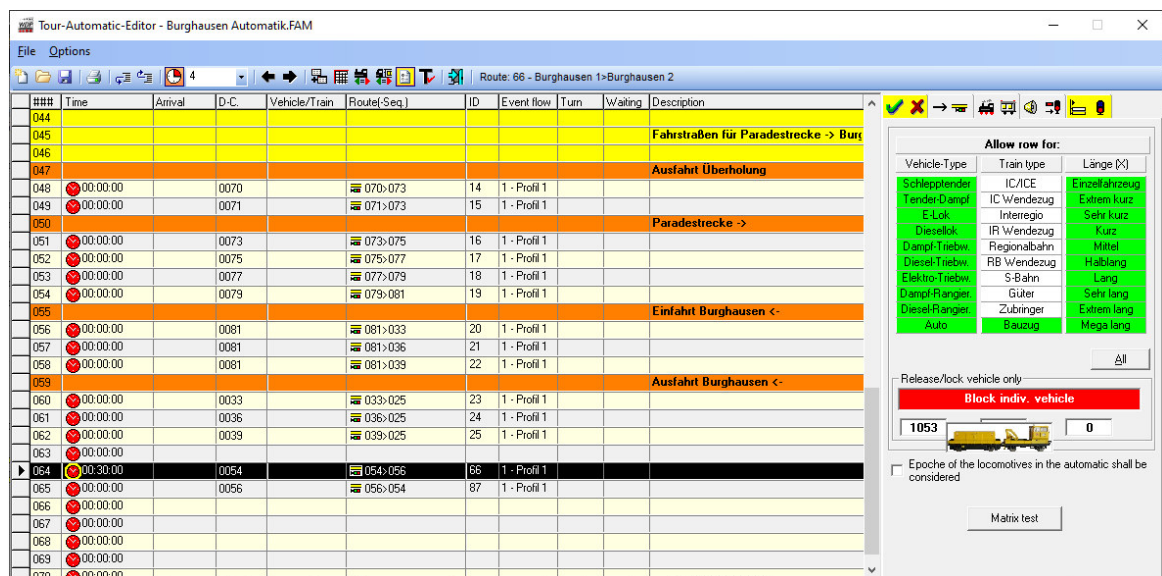
Fig. 10.32   The entries on the "Matrix" tab exclude a vehicle

In this example, **only** construction trains should run with the entries on the tab, e.g. with the entered route. The vehicle with the digital address 1053 should be explicitly **excluded** from using the route.

You do not need to worry about the other settings in the route matrix. These would, for example, prevent an electric locomotive from travelling on the route without overhead lines with the selected settings if the route is blocked for electric locomotives. These route conditions should be entered in the route.

Only in special operating situations should you make entries here, e.g. for the length(X), or check whether you are better off with the real lengths in the conditions.

The red button is also important here. This **must be set** to "Bl*ock individual vehicle*".

If you only want to **block a** route/route sequence for one or up to three vehicles, you must click on the *'All'* button so that all fields are highlighted in green.

Green means that the entries (vehicle/train type and length(X)) are enabled for the route/route sequence entered.

However, if you only want to **enable** the route/route sequence for one or up to three vehicles, the green "Allow *vehicle only"* button must be visible.

Enter the vehicle numbers in the fields. This can again be done by using the keyboard or via "drag & drop". If you move the mouse over a text field, a picture of the vehicle entered will be displayed.
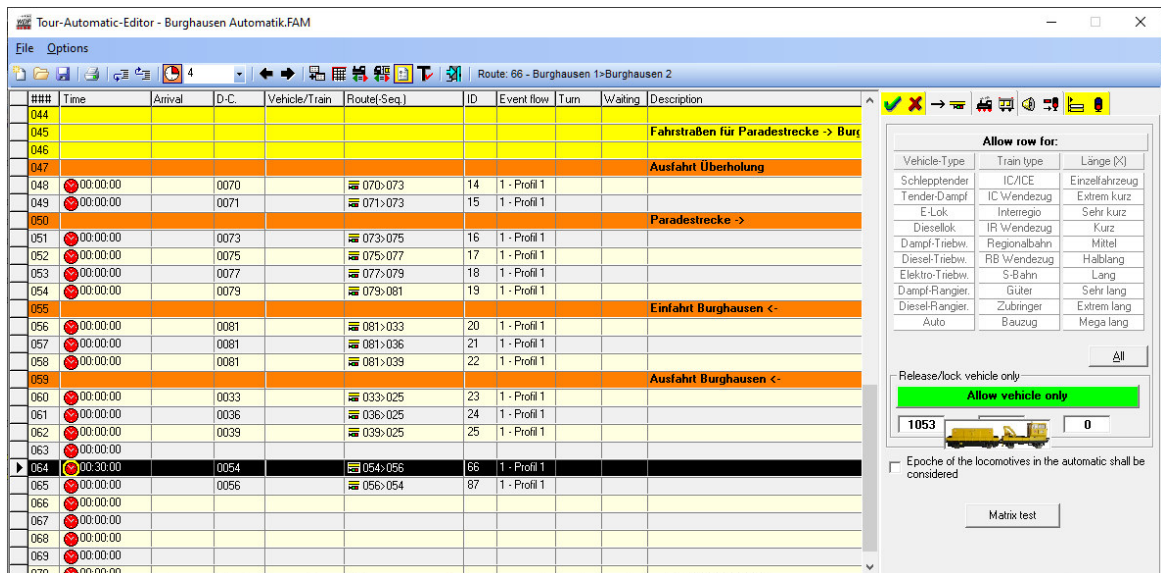
Fig. 10.33   The entries on the "Matrix" tab only allow a specific vehicle here

In this example, the route entered is **only** valid for vehicle 1053 and no other vehicle will be able to execute this route within the tour-automatic. The moment you set the "Allow vehicle only" button, the matrix settings with the vehicle/train types and the length(X) cannot be selected.

The requirements for a matrix check are:

🚂 that you have set the general switch for this check function in the system settings under "Routes"

🚂 that up to 10 descriptions for vehicle/train type, length(X) and epochs are entered in the system settings

🚂 that you have assigned a vehicle/train type, length(X) and epoch(s) to each vehicle in the vehicle database

that a vehicle/train with the respective digital address is entered or present in the vehicle display of the start contact of this route during execution.

If the details for the matrix check have been entered, you can check these details very quickly. To do this, click on the **'Matrix test'** button at the bottom right and the table known from the routes editor opens immediately and shows all vehicles that are allowed to travel on the route or route sequence entered.

If you tick the box "*Epoch of the locomotives in the automatic shall be considered*", these will also be taken into account when executing the tour-automatic. You must tick this box in all lines for which the epochs are to be taken into account.

In **this** matrix test ("upper matrix"), only the matrix details entered here are displayed, but not the matrix details from the routes editor.

10.18 The "Options" tab

On the "Options" tab ![icon] you can make various entries that can influence the operation on the model railway layout quite differently. This applies in particular to the colour of the vehicle number or train name in the vehicle display.

Here is a reminder of the effect the colour of the vehicle number has on the sequence control with **Win-Digipet.**

Is the colour of the entry in the vehicle display...

- ⊶ "BLACK" ![182 Hupac 184] the vehicle or train can travel in automatic mode.

- ⊶ "GREEN" ![182 Hupac 184] then the vehicle or train is travelling.

- ⊶ "RED" ![182 Hupac 184] the vehicle or train will no longer continue in the tour-automatic mode if lines with the red clock symbol ![red clock] (for "by arrival") are entered. The vehicle or train is blocked for contact-related automatic operation.

- ⊶ "BLUE" ![182 Hupac 184] then the vehicle or train will no longer continue its journey in the tour-automatic mode for entered lines with a "departure time" and the green clock symbol ![green clock] (for "departure time") or the arrow symbol ![arrow] (for repetitions) The vehicle or train is blocked for time-based automatic operation.

- ⊶ "VIOLET" ![182 Hupac 184] the vehicle or train will no longer continue in tour-automatic driving mode. The vehicle or train is blocked for any automatic operation.

In addition, the so-called "tour-automatic sections" (see section 10.18.1) of a tour-automatic are defined on this tab and it is also decided in which section the selected line may be executed.

10.18.1 Define automatic sections

In **Win-Digipet,** you can define up to 12 automatic sections on the "Options 🔊 ➡️ " tab of the tour-automatic editor.
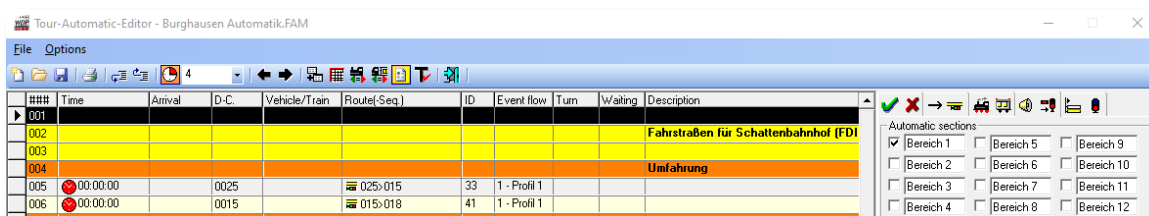
Fig. 10.34 The list entries can be assigned to different automatic sections

You can adapt the names of the automatic sections in the fields to your requirements so that you can immediately recognise the responsibility of the respective automatic section.

You can define the automatic sections yourself and assign the entered routes or route sequences to the different sections. In the automatic example shown here, all routes/train movements are assigned to section 1[30] (standard). In the demo project, for example, it would be conceivable to define an automatic section for the railway depot. All routes and train movements in the depot area would then have to be assigned to this automatic section.

You can assign other list entries to other sections so that you can later switch the sections on and off before starting the tour-automatic system or during operation and only the routes or route sequences defined for the active sections are executed.

Each individual line in the list can also be assigned to several tour-automatic sections.

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[30] Bereich means section, area in German language

10.18.2 Switching tour-automatic sections via solenoid devices

The defined tour-automatic sections can also be activated or deactivated via solenoid devices in the track diagram. To be able to use this function of the programme, you need a solenoid item with a virtual address in your track diagram for each automatic area that you want to switch.

You can access the configuration dialogue for this function via the ![icon] icon in the toolbar of the tour-automatic editor.

The names you have assigned are assigned to the areas in the dialogue. You must now drag and drop the solenoid items into the corresponding fields and click to define the desired position. It is advisable to assign a name to the solenoid devices to prevent any confusion.
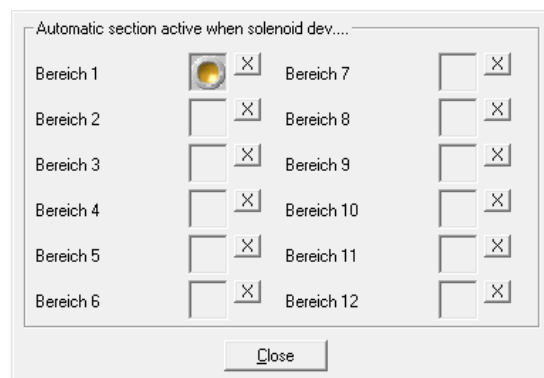
Fig. 10.35   This solenoid article switches an automatic section

10.18.3 Waiting time for route sequences, subsequent/connecting journeys

The waiting time for the execution of route sequences, subsequent or connecting journeys can be individually adjusted for each entry in the list in addition to the general values in the system settings or the tour-automatic journeys.

The sequence can be activated or deactivated using the list boxes on the "Options" tab. You

Fig. 10.36   The waiting time before driveways expire

can also vary the time defined in the system settings (default 300 seconds). To do this, select the "Customised" entry from the Time selection list and enter the desired time value in seconds.

10.18.4   Actions and switchings in the tour-automatic editor

The actions and switchings in the tour-automatic editor work in exactly the same way as the follow-up switchings (follow-up actions) in the routes editor. We will also encounter many of the circuits again later in the chapter on the dispatcher. In principle, the circuits are called up at the beginning, at the end or when a defined feedback contact is triggered.

The example in the graphic (cf. Fig. 10.37) shows two entries. In the first line, the number or name of the vehicle or train at the end of the route or route sequence is set to the colour "black" (see section 10.18).

In addition, the circuit has been assigned the condition "if lap counter equals 0". You can recognise the presence of a condition by the yellow button.

Fig. 10.37   Two switching actions

The second switching action changes the train name at the start of the route or route sequence. In the example, the train name is set to "ICE 1090".
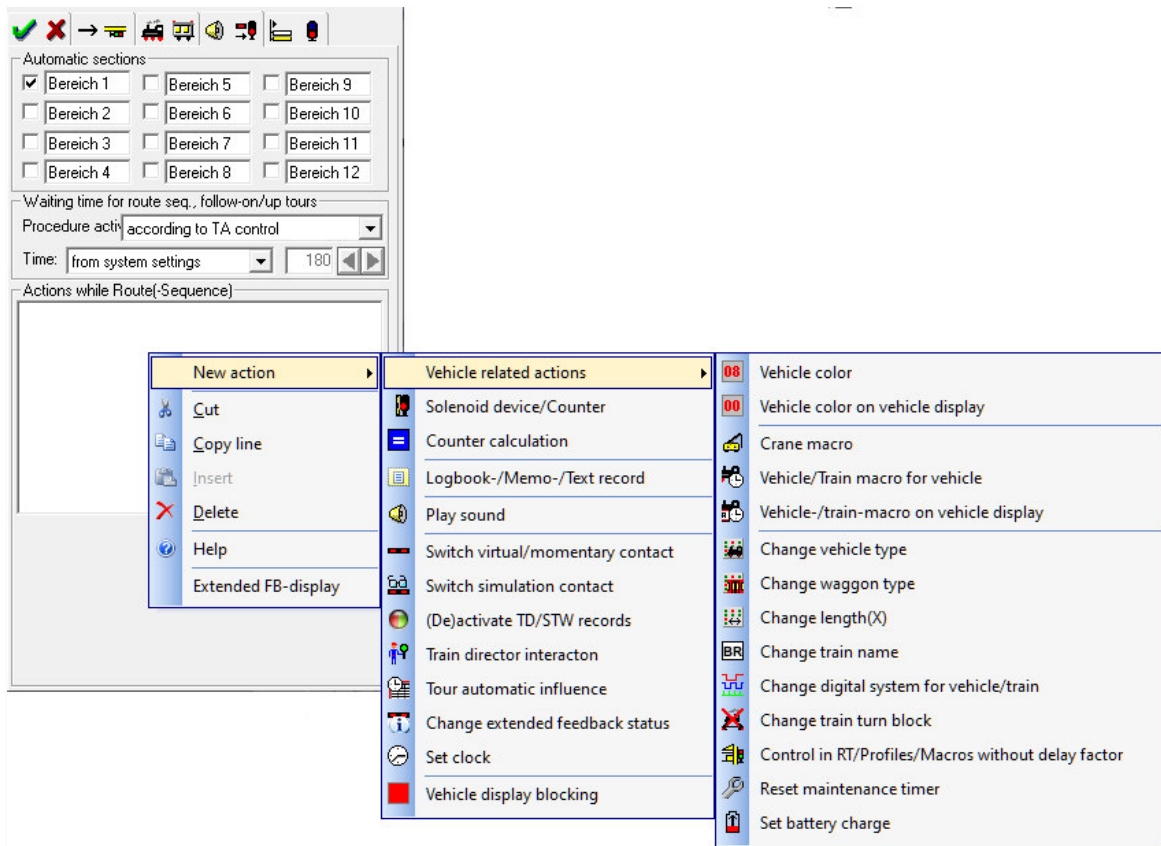
Fig. 10.38   The "Actions" short menu on the "Options" tab

In the *"Actions while route (-seq)"* field, <u>right-click</u> to open a short menu with which you can configure further actions that are applied when the route or route sequence is executed in the respective line.

The possible switching actions are summarised in the following table. In the columns of the table, you can compare which switching actions are available to you in the various programme parts of **Win-Digipet.** Please note that the switching actions marked in red are only displayed in the expert mode of the respective editor. A detailed description of the individual actions can be found in the chapter 13 "Conditions and circuits" of this documentation .

	Routes	Tour-Automatic	Dispatcher
Vehicle-related actions			
Vehicle colour		●	●
Vehicle colour on vehicle display		●	●
Crane macro		●	●
Vehicle/train macro for vehicle		●	●
Vehicle/train macro on vehicle display		●	●
Change vehicle type	●	●	●
Change wagon type	●	●	●
Change length (X)	●	●	●
Change train name	●	●	●
Change digital system for vehicle/train	●	●	●
Change train turn block		●	●
Control in route/profile/macro without delay factor	●	●	●
Reset maintenance timer	●	●	●
Set battery charge	●	●	●
Set direction of travel			●
Stop/start vehicle			●
Set position in vehicle display			●

	Routes	Tour-Automatic	Dispatcher
Solenoid device/counter	●	●	●
Counter calculation	●	●	●
Logbook/memo/text record	●	●	●
Play sound		●	●
Switching the booster on/off			●
Switch virtual/momentary contact	●	●	●
Switch simulation contact	●	●	●

	Routes	Tour-Automatic	Dispatcher
Emergency stop			●
(De)activate TD/dispatcher entries	●	●	●
Tour-automatic influence	●	●	●
Change extended feedback status	●	●	
Set clock	●	●	●
Vehicle display blocking	●	●	●

● - Function is only available in expert mode

10.19 The Intermediate stops tab

The fifth tab 🔲 🚦 deals with the possible intermediate stops of an entered route or route sequence with their connecting journeys. These should normally be processed one after the other without interruption.
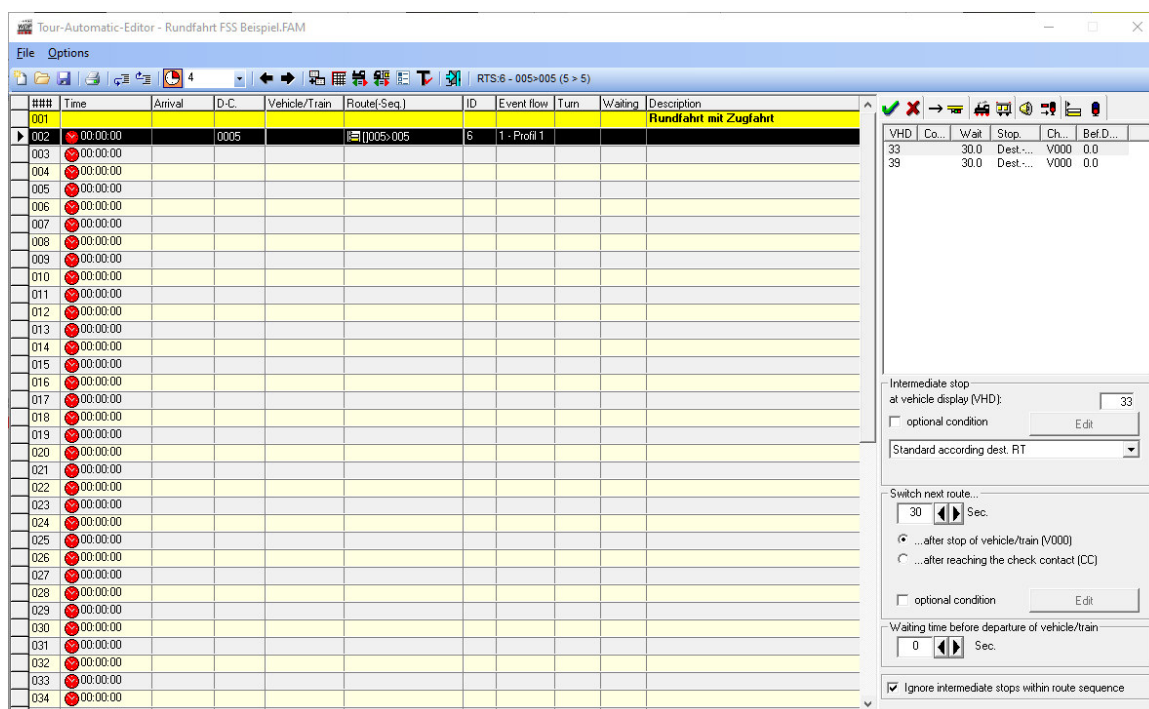
Fig. 10.39   The marked route sequence contains two intermediate stops

In some situations, however, it may be desirable to allow the train to stop briefly at a station, for example, and to resume the interrupted journey after a short waiting time.

In the example here, a round trip is inserted as a route sequence (from SBhf Gleis3 to SBhf Gleis3). This route sequence runs twice through Burghausen station, once each on tracks 4 and 6.

The train should now stop at Burghausen station for 30 seconds at a time, regardless of which track it uses.

You can add a new intermediate stop by right-clicking in the large field on the tab. A short menu will then appear from which you can select the *"New intermediate stop"* entry with the left mouse button.

In the tab shown in Fig. 10.39 you can recognise two entries. These entries specify at which feedback contact the train journey is to be interrupted. The contacts entered here must also represent a vehicle display. In this example, these are the feedback contacts 33 and 39, the vehicle displays for
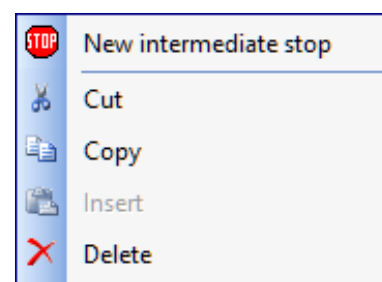
Fig. 10.40   The intermediate stops short menu

tracks 4 and 6. Enter the contact numbers in the text field (VHD) as usual using the keyboard or by dragging a track symbol with the contact number.

You can also use the various stopping points for intermediate stops if this is an intelligent vehicle display.

Furthermore, additional conditions can also be linked to an intermediate stop, which only execute the intermediate stop if the defined boundary parameters are fulfilled.

These can be, for example, virtual switches in a certain position or that a certain train is on the neighbouring track. The complete condition tree (see chapter 13) is also available here for the conditions.

The condition tree can be found in several parts of the **Win-Digipet** programme. Here in the tour-automatic editor on the "Conditions" tab, in the routes editor and the route sequence editor and then again later in the dispatcher and the train director. The conditions are largely the same in all parts of the programme, only the purpose differs in the various editors. The condition tree can be extended, if necessary, by activating the expert mode in the <Options> menu of the tour-automatic editor.

Enter the desired duration of the planned intermediate stop in the *"Switch next route"* area. You can select whether the time counting starts when the vehicle or train stops (speed = 0 km/h) or when it reaches the testing contact of the (previous) route.

Here too, you can link the setting of the next route to conditions. For example, you have stopped a freight train with an intermediate stop to allow a following passenger train to overtake. Now you could use the condition again to check whether the passenger train has already passed or is still behind the freight train.

The intermediate stops are marked with the colour "blue" in the tour-event inspector (see section 8.10).

Another setting option is the "Waiting time before departure…". This time starts after the time set above has elapsed. The route is set, but the train does not run until after the waiting time entered. This waiting time will later be marked in the colour "orange" in the tour-event inspector.

At the at the bottom of the tab is the option *"Ignore intermediate stops within route sequence"*. You can tick this box in lines with entered route sequences in which intermediate stops have already been entered. You can ignore these if you want to set other intermediate stops or no intermediate stops for the relevant route sequence in the tour-automatic journey.

10.20 The "Timetable display" tab

The "Timetable display" tab ![icon] is only displayed if a departure time has been entered in the line. In addition, a "Timetable display" entry must have been created in the train director section of the programme. In the train director entry, you define the vehicle displays that belong to Burghausen station, for example.
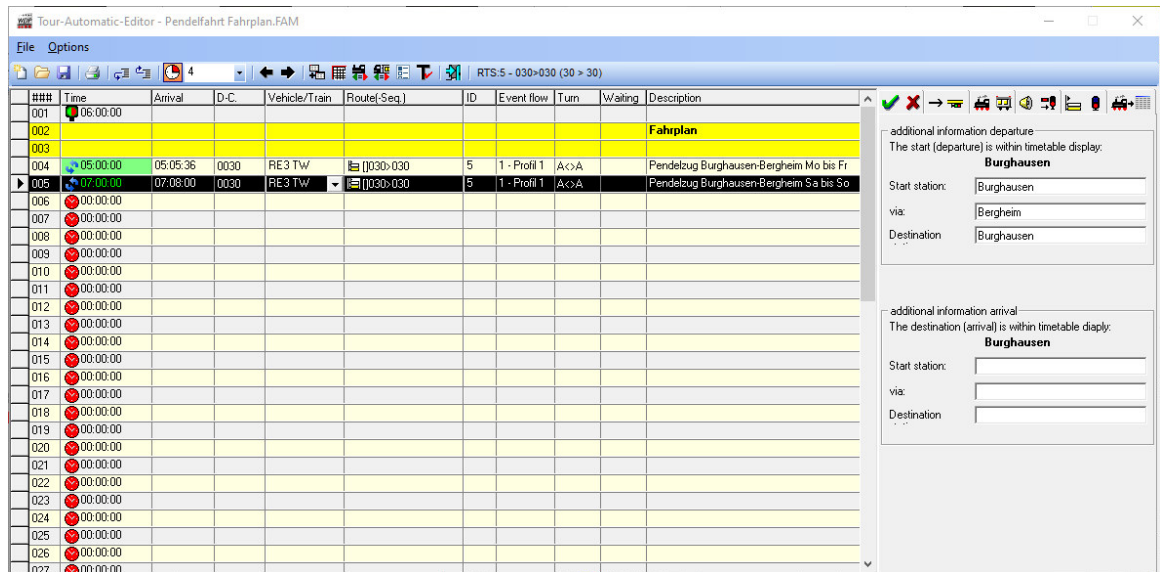
Fig. 10.41   The Timetable display tab

On the tab here in the tour-automatic editor, enter the departure and arrival information for the journey entered. In the example of the Fig. 10.41 the journey entered starts at Burghausen station, track 1, and also ends there. You could enter Bergheim station as an intermediate station. The timetable display boards are entered separately for departure and arrival.

10.21 Edit tour-automatic journeys

10.21.1 Insert, delete, and copy lines

To insert a new line or delete an existing line, click on the corresponding line in the list. The line is highlighted in black, then right-click and the short menu with the commands shown appears. Left click on the command to insert a new line or delete the highlighted line.
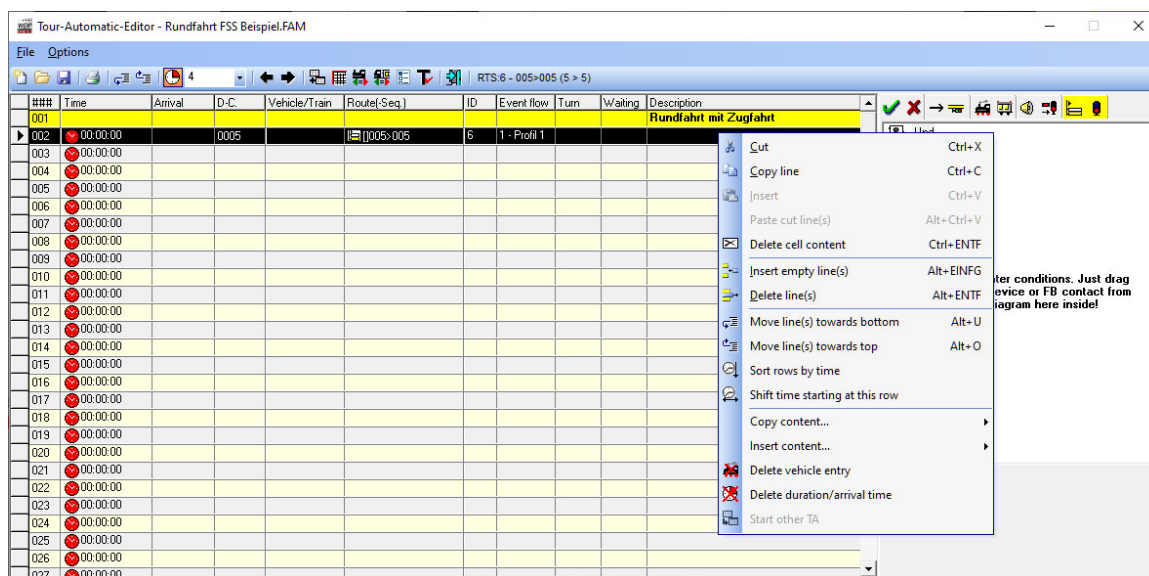
Fig. 10.42   The short menu offers various editing functions

However, you can also cut or copy an existing line and paste it elsewhere.

If you want to select several lines, click on the **first desired line** with the left mouse button and then, holding down the <Shift>-key, click on the **last desired line** in the list with the left mouse button. The entire area is then selected. If several lines are selected, the right-hand part of the window with the other tabs is temporarily hidden.

The commands <Paste copied line(s)> or <Insert cut line(s)> can only be executed if you have previously copied or cut a line. Copied or cut lines are inserted after the insertion line has been selected and the previously selected line is moved down.

However, this does not apply to the <Insert> command, as any existing line content of the selected line is overwritten.

With the last two commands <Copy content...> and <Insert content...> you can place the matrix or the automatic areas that you have entered in a row in the computer's temporary memory after selecting the row and the corresponding command and then paste them into one or more selected rows.

10.21.2 Warnings when inserting lines

As described in the previous section, you can select, cut, or copy parts of laboriously created lines in the tour-automatic editor and then paste them elsewhere.

When inserting lines, e.g. by <copy> and <paste>, a warning message is displayed, and the action is cancelled if the maximum permitted number of 1999 lines is exceeded. No data is lost as a result.

The same also applies to the routes/route sequences on the "Follow up" tab if, for example, the 60th line is "coned out" by the <Insert line> command.

10.21.3 Move list entries in the tour-automatic editor

The list entries in the tour-automatic editor can be moved up or down using the two buttons 🔳🔳 in the editor toolbar.

Select the row that you would like to move down, for example, and click on the left of the two buttons. The row is moved to the desired position with the corresponding number of clicks. When moving upwards, proceed in the same way with the button to the right.

If you want to move several rows at once, proceed as described in section 10.21.1 and move the selected area again using one of the two buttons.

> When moving selected lines out of the editor window area, the selected lines are no longer visible.
>
> You must then use the right-hand scroll bar to move the view so that the rows are visible again. The editor window is not automatically adjusted here.

If you have selected several lines and want to move them up or down, the action will not be executed if the beginning or end of the 1999 lines of the tour-automatic editor is reached.

However, if you only move **one** line up or down, the line to be moved is always displayed at the **top** (exception: on the last window view up to 1999).

> **By the way!**
> You can easily jump to the beginning or end of your (extensive) journey list in the tour-automatic editor using the "Pos1" or "End" keys.

10.22 Handling tour-automatic files

10.22.1 Save tour-automatic file

After entering all data, and also in between, you should save the file. This will prevent any loss of data. To do this, click on the icon 🖫 in the toolbar of the tour-automatic editor.

If you have not yet assigned a name to your tour-automatic file, you must do so now at the latest.

10.22.2 Open tour-automatic file

When the tour-automatic editor is started, the **last edited** file is always opened automatically.

If you want to open another tour-automatic file (.FAM file), you can access this in the toolbar of the tour-automatic editor by clicking on the icon 📂.

The "Open file" window is displayed, and you can select the desired tour-automatic file from your project directory. After marking the file name and clicking on *'OK',* the selected .FAM file appears in the window of the tour-automatic editor.

In the "Open file" dialogue window, you can remove a file from the hard drive after marking it by clicking on the **"Delete"** button after a further confirmation prompt. However, this could also be the previously loaded .FAM file that you still have on your screen. You should therefore be careful when using this delete function.

10.22.3 Rename tour-automatic file

You can rename a .FAM file opened in the tour-automatic editor with/without changes. Click on the menu command <File><Save as...> and assign a new name to the file.

10.22.4 Create new tour-automatic file

When call up the tour-automatic editor via the 🖾 icon in the "Editors" toolbar of the main programme, the last .FAM file opened is always loaded.

To create a completely new .FAM file, click on the icon 🗋 in the toolbar of the tour-automatic editor. If you have already made changes to the previously edited file, you will be prompted to answer, *'Yes'* or *'No'.*

After the query, an empty .FAM file is displayed in the tour-automatic editor. The title line now also reads "Tour-automatic editor - ??.FAM" and you should change this file name **immediately** before you start making any entries. To do this, click on the 🖫 icon in the toolbar of the tour-automatic editor and enter a name for the new file.

10.22.5 Insert tour-automatic file

If you have already created several tour-automatic files (.FAM files), you can select one and insert it into the .FAM file that is currently being edited. To do this, click on the "*Insert other tour-automatic*" icon 🔡 in the toolbar of the tour-automatic editor.

A dialogue window "Insert tour-automatic" opens, in which you now select the desired file and click on the '*OK*' button to insert it.

The data is inserted at the end of the file and is immediately available. You should save the new file under a new name if necessary.
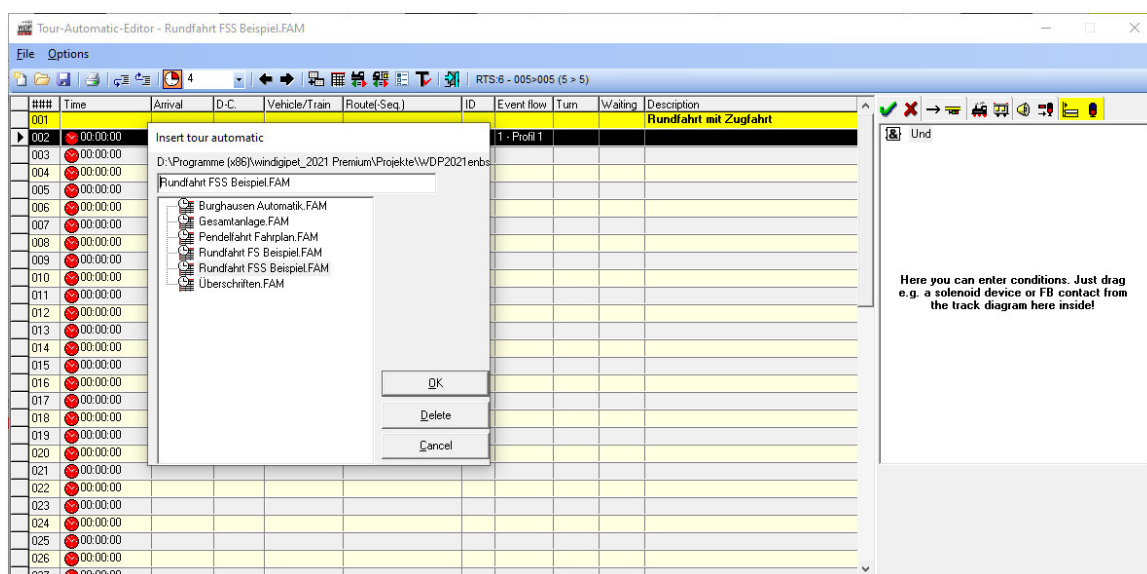
Fig. 10.43   Another .FAM file is to be inserted into the currently edited file

10.22.6 Print tour-automatic file

You can also can also print out the **displayed** tour-automatic. Click on the 🖨 icon in the toolbar of the tour-automatic editor to open the "Print tour-automatic..." window.

Here you can select the display of conditions, matrix, options, subsequent journeys, descriptions, intermediate stops and contact events by ticking the checkboxes.

Output to a file with the name "FAM-Editor.rtf" is also possible if you click on the button labelled in this way. You can then edit the generated file in the so-called "Rich Text Format" with all common word processing programmes that support this format.

Fig. 10.44   The printout of a tour-automatic file

You must have saved the .FAM file before printing so that all entries can also be taken into account when printing.

10.23 Tour-automatic list

The tour-automatic list with its filter functions is used to find lines with the entered search criteria very quickly. The list is displayed after clicking on the ▦ icon in the toolbar of the tour-automatic editor.

This tour-automatic list shows all the lines entered that match the criteria in the lower part of the window.

To work quickly with this list, you should arrange the two windows on the screen so that they do not overlap.

You can use this filter selection to select the desired data. To do this, tick or untick the relevant filters and only the desired data will be displayed in the list immediately.

In the tour-automatic editor window, the line selected in the automatic journey list is also always displayed; it may have been moved upwards and is also highlighted (selected).

You can use the other search functions in the fields above the filter to select even more specific entries in the tour-automatic editor.

You can carry out the search by clicking on the button with the binoculars 🔍, as you are already familiar with from other parts of the **Win-Digipet** programme.

You can either save the filtered lines to a new file or delete them using two buttons.

To save the new file, the familiar "*Save file as...*" dialogue opens. This dialogue asks you to enter a name for the new file. If you enter a file name already used for a file at this point, you will be asked whether you want to overwrite the existing file.

Fig. 10.45 The tour-automatic list can be filtered according to individual criteria

A similar confirmation prompt is displayed when you click on the **"Delete filtered rows"** button. In this case, you must explicitly confirm or cancel the deletion process again.

10.23.1 Edit in the editor using the tour-automatic list

If you want to edit a line marked in the tour-automatic list, simply click in the tour-automatic editor. As the selections in both windows match, you can also immediately click on a desired tab and view and possibly change the data entered.

After making any changes, you can switch back and forth between the two windows at any time.

Please note that a selection in the tour-automatic list results in a change to the selection in the tour-automatic editor.

However, if you click on a different line in the tour-automatic editor, this will **not** result in a change in the tour-automatic list.

If you have made a change in the tour-automatic editor, you do not have to save it immediately. When you close the tour-automatic editor, you can confirm the changes with **'Yes'** or discard them with '**No'** when prompted by **Win-Digipet.** Nevertheless, we recommend that you save your changes at regular intervals.

The tour-automatic list is also closed either by clicking on the close icon in the window or by closing the tour-automatic editor.

10.24 Sequence of entries in the tour-automatic editor and the effects

Fig. 10.46   The order of the entries does not necessarily have to correspond to the sequence of system operation

Via the order of the entries in the tour-automatic editor, you can influence the subsequent operation on the system with the tour-automatic function.

One example:

In the "Route*(-Seq)"* column, you have the entries in the order shown in Fig. 10.46. Your aim is for the operation to run in this sequence on your system. In practice, however, this will not necessarily be the case, as **Win-Digipet** creates another invisible list from this list within the programme.

The route 018>021 entered here in the highlighted line (28) ends at feedback contact 021. However, contact 021 is the start contact for several routes in the following lines. You can verify this by filtering on contact 021 as the demand contact in the tour-automatic list. The results list will display exactly the four lines (029-032) that you can recognise in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Win-Digipet has created a similar list, invisible to you, for each start contact from your automatic journey file.

Fig. 10.47   A filtered tour-automatic list

If the train now comes to the start contact 021 or to the testing contact of the current route, **Win-Digipet** checks the first entry (here 021>033) in this list. If the entry in this line can be executed, the route or route sequence is executed and the other entries (021>036, 021>039 and 021>029) are no longer considered.

In this way, it may well happen that your other entries are never executed. And this game is repeated for all other start contacts (request contacts) of your automatic journeys.

So, when you enter the rows, always make sure that the setting conditions are different for all rows so that each row entered can "get its turn" according to your wishes.

You can easily influence this using the entries on the "Conditions", "Matrix" or "Options" tab. Virtual switches or counters are ideal for creating different control conditions.

10.25 Various options

Via menu in the tour-automatic editor, you have access to additional functions.

🚂 **Always display FB numbers**
Tick this checkbox to display the numbers of the feedback contacts in the entire track diagram **every time you** start the tour-automatic editor.

🚂 **Show solenoid device addresses**
This button can be used to display all recorded solenoid device addresses. If you do not wish to use these functions, uncheck this menu command again or this menu command will be unchecked when you open the tour-automatic editor again.
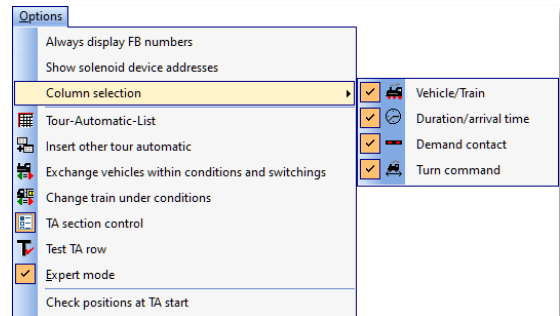
Fig. 10.48   The Options menu in the tour-automatic editor

10.25.1   Exchange vehicles under the conditions and circuits

If you have assigned individual vehicle addresses to many routes or route sequences, it can be very tedious to carry out a general vehicle change. If you want to carry out a swap, select a line with the vehicle to be swapped and click on the 🔁 icon in the toolbar of the automatic routes editor. Alternatively, you can also use the corresponding command from the <Options> menu.
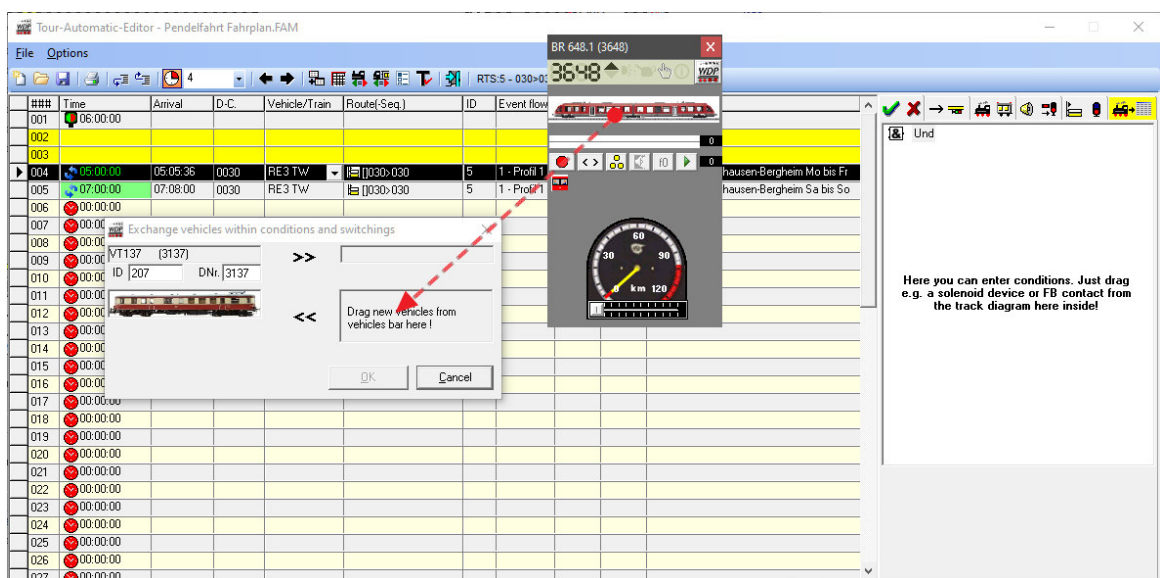
Fig. 10.49   The VT137 multiple units is to be replaced by the BR 648.1 multiple unit

In the following dialogue window, the vehicle intended for replacement is entered on the left-hand side. Drag & drop the new vehicle from the vehicle control, the vehicle bar or the vehicle monitor into the right-hand field, which is still empty (cf. Fig. 10.49).

If you have dragged the "old" and the "new" vehicle into the fields ("drag & drop"), the tour-automatic editor runs through all the existing entries in the list after clicking on "*OK'* and swaps the selected vehicles for each other.

> The command can only be executed if you have selected a line with a fixed vehicle or train definition (entry in the Vehicle/Train column). Otherwise, the dialogue window will not open.

The <Change trains under conditions> command from the <Options> menu of the tour-automatic editor offers you the same functionality. The difference is that you can change trains from the "Train composition" with each other.

10.25.2 Column selection

Some columns that you may not need can be hidden via the <Options> <Column selection> menu, so that you may not be able to see all columns.

These are the columns in detail:

- 🚂 Vehicle/train
- 🚂 Duration/arrival time
- 🚂 Demand contact
- 🚂 Turn command
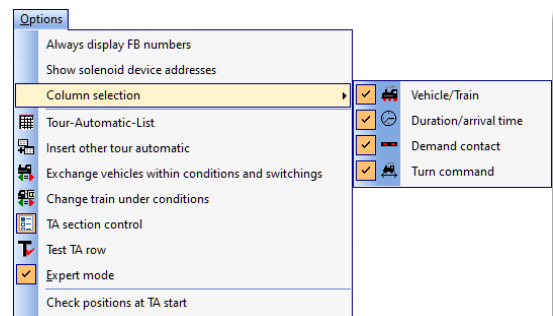
Fig. 10.50   The column selection menu

10.25.3 Expert mode

As most other editors, advanced functions are available to you in "Expert mode". In the tour-automatic editor, this mainly concerns the extended actions and condition trees.

10.25.4   Check positions at the start of tour-automatic driving

The <Options> menu also offers the selection <Check positions at TA start>. This means that positions can be checked at the start when automatic journeys are executed:

- 🚂 the start contacts (start positions)
- 🚂 the vehicle directions

In the event of an error, a window indicates the error status, and you have the opportunity to correct the cause. If you select a line with an error display in the dialogue window, the vehicle display with the expected vehicle position is illuminated in "yellow".

If everything is all right, click on the *'Continue'* button and prepare to start the tour-automatic journey. This process is covered later in this chapter.
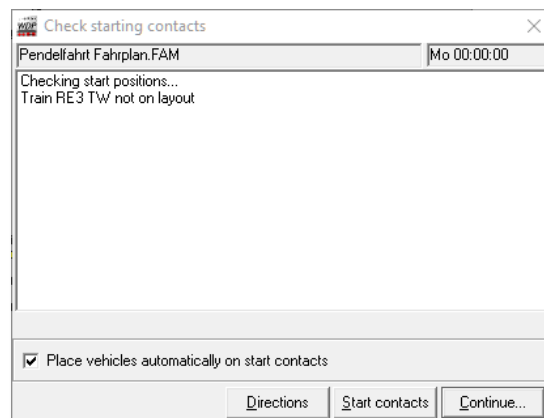
Fig. 10.51   The RE3TW is not on the system

10.26 Handling files from older versions of Win-Digipet

10.26.1 Load timetable file

Since version of **Win-Digipet** 2015, the automatic timetable function known from previous versions no longer exists. The functionalities have been integrated into the tour-automatic editor.

However, you do not have to destroy the timetable files you have created with great effort. They can be converted into an up to date .FAM file.

To do this, select the command <File><Open timetable file> from the menu of the tour-automatic editor.

In the following dialogue, select the desired timetable file (.FPL) and confirm your selection with the **'OK'** button.

The file is entered with all locomotives, departure times and contact events in the tabular display of the tour-automatic editor.

You can then give the file a new file name if necessary and save it. The file extension for the .FAM file with your "old" timetable will then be ".FAM" from now on.

You can then edit this file in the same way as any other tour-automatic file or integrate it into other tour-automatic files.

10.26.2 Convert "Demand Contact (DC)" automatic to tour-automatic

Since version **Win-Digipet 2012,** automatic mode with demand contacts (DC) is no longer available.

However, you can convert your old DC file into a .FAM file using the command in the tour-automatic editor <File><Conversion DC to TA>.

After selecting this command, the dialogue "DC to Tour-Automatic Converter" opens in a new window. Here you can select your DC file using the top button.

After clicking on this button, another window opens in which you must now select the desired DC file and confirm by clicking on the **'OK'** button. The file name is displayed in the previously empty field below the **'Select DC file'** button.

Once the file name has been entered, click on the **'Convert DC file to TA file'** button. If the file already exists, you will receive a confirmation prompt which you should answer accordingly. After this conversion, you can load the newly created automatic journey file and continue editing it in the tour-automatic editor.

10.27 Practical tips for operation with the tour-automatic system

When you should observe the following instructions when configuring automatic driving mode:

- As a rule, the start contact of the route or route sequence will also be the request contact of a list entry in the automatic route.

- It can be useful to use a virtual switch, e.g. in an exit route of a staging yard. This switch is set to "green", for example, by the incoming train in the neighbouring track. The exit is then controlled depending on this switch position and the departing train switches this virtual switch back to "red".

- You can also use the "*Waiting time after arrival"* function in the tour-automatic editor so that the "passengers" have time to board and alight at the platform.

- By entering the number of routes or route sequences, you can achieve very nice effects, especially on a branch line in push-pull operation.

- The profiles you have created can also be used in the tour-automatic editor if you set the corresponding radio button in the field under "Event flow". These profiles are useful, for example, if you want a platform announcement to sound after the route has been set for passenger trains on the platform before the train departs. As an alternative to the profiles, you can also use the "Contact events" sequence variant to display such requests.

- You can use the matrix or the conditions in the tour-automatic editor to control the operation of the various train types, such as freight, regional and ICE/IC trains, on the model railway layout.

- The matrix in the tour-automatic editor represents the "upper matrix" and does not override the route matrix, but merely supplements it.

Finally, the following note!

Start with a simple tour-automatic system and then gradually expand it. This will help you learn everything faster and easier to understand than starting with a complicated tour-automatic system with all the bells and whistles and then despairing because it just won't work.

10.28 Exit the tour-automatic editor

To do this click on the [icon] icon in the toolbar.

After a possible confirmation prompt to save the changed data in the editor, you will return to the main **Win-Digipet** programme.

10.29 The start of a tour-automatic journey

After Having familiarised yourself with all the options for creating a .FAM file in the previous sections of this chapter, this section will focus on starting and running an existing tour-automatic journey.

To start a tour-automatic journey, close the tour-automatic editor if necessary after you have saved everything again and click on the ![icon] icon in the "Operation" toolbar of the main programme of **Win-Digipet**. As an alternative to the icon, you can also call up the corresponding menu item <Operation><Tour-automatic> from the menu bar of the main programme.

This opens the *"Open TA file"* dialogue window in which the existing .FAM files in your project folder are listed. If you have already opened a .FAM file, the most recently executed file is highlighted and entered in the opening line at the top of the window.

Click on the desired line and confirm with the **'OK'** button to open the selected file.
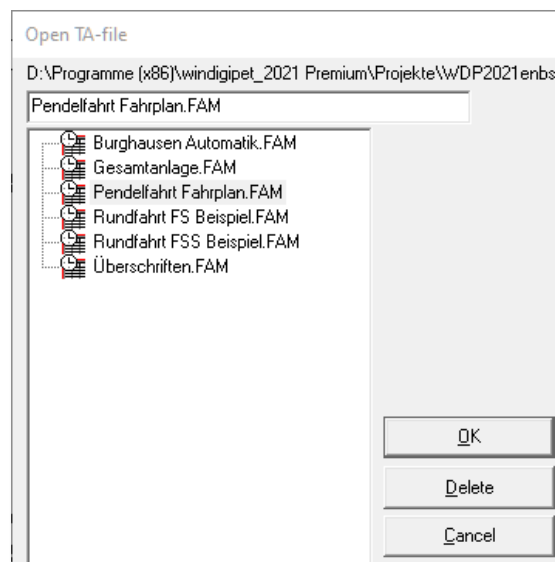
Fig. 10.52   The dialogue for opening a .FAM file

As an additional option, you also have the possibility to delete (no longer required) .FAM files in this dialogue. After clicking on the **'Delete'** button and a confirmation prompt, the files are permanently removed from your project folder.

It goes without saying that you should handle the delete command with a certain amount of care.

It is possible to reactivate deleted files from an existing data backup, but this involves effort and uncertainty as to whether the restored file is up to date.

10.29.1 Departure times of a tour-automatic journey

After you have selected a file in the "Open TA file" dialogue, the program displays another window. In this window, you specify the departure time for the tour-automatic to be executed.

You can choose one of the following options:

Fig. 10.53   Setting the departure time for the FAM

- 🚂 **Last saved time**
  The time starts to run at the point in time at which the automatic journey was stopped during the last execution

- 🚂 **Begin of week: Mon 00:00:00**

- 🚂 **Central clock time**

- 🚂 **First departure time within tour-schedule**
  The first departure time (line with green clock) is adopted as the start time of the tour-automatic. If all lines in the tour-automatic are of the type "by arrival", then Mo 00:00:00 is assumed as the start time here

- 🚂 **Individual start time**
  The departure start time can be freely set here in the window

- 🚂 **Row**
  The departure time of a specific line is adopted as the start time
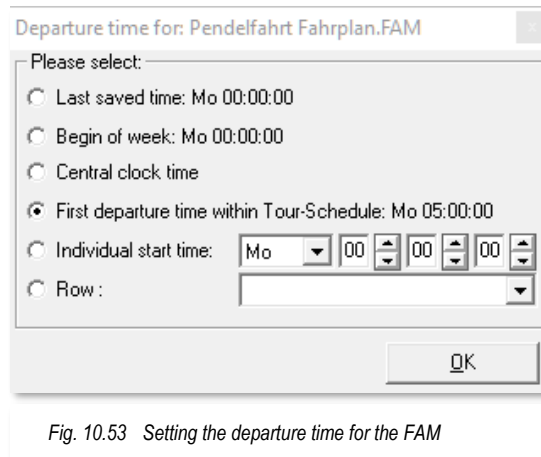
The departure time of the automatic journey is only of interest if your tour-automatic file contains lines with a defined departure time.

> Please note that you cannot influence the waiting times after arrival by changing the start time.
>
> Lines with a wait time after arrival are only executed after the defined wait time has expired, or you have explicitly cancelled this wait time in the tour-automatic editor at the start (see section 10.6.2.)

After selecting the desired departure time, click the *'OK'* button.

If you have activated the *"Check positions at TA start"* option in the tour-automatic editor (see section 10.25.4), this check is now carried out and you must correct the check result if necessary and confirm with the *'Continue'* button.

10.29.2 The command centre of the tour-automatic system

Without the check option, you will be taken to the command centre of the automatic journeys. Your selected tour-automatic journey file is loaded (see the title bar of the dialogue window) and is in the waiting position, so to speak, i.e. is inactive.
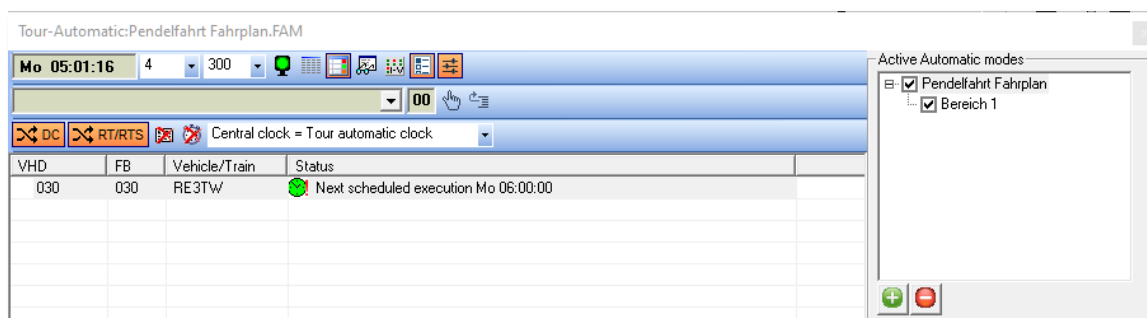
Fig. 10.54   The command centre of the automatic driving system

You can recognise this status by the "red" 🔴 symbol in the command window. You can recognise an active automatic driving mode by the "green" 🟢 symbol (cf. Fig. 10.54).

The top line of the command centre contains a few more settings, the meaning of which we still need to look at here.

The time of the tour-automatic journey is shown on the left. After starting, it shows the value you have selected as the departure time. You can use the small pen on the time display to change the time at any time when the tour-automatic is stopped.

While the tour-automatic movement is running, the time runs with the model railway factor, i.e. the clock runs faster than the real time by the set factor. In this example, this factor is set to the value 4. This means that one hour of model railway time elapses within 15 minutes of real time. It can also be set to a value between 1 and 360 via a selection list during tour-automatic operation.

The query time (time interval for querying the entered demand contacts) is displayed in the centre field. You can set a value between 100 msec and 1000 msec here.

The other symbols in the top row 🔴 ▦ ▤ ▥ ▦ ▦ ⇄ mean from left to right:

🔴 **Start/stop of the tour-automatic journeys**
(🟢 =active, 🔴 =inactive, 🟡 =stopped, buffer lines still pending)

▦ **Show timetable display**
The display of one or more timetable boards is only of interest in conjunction with a timetable. In addition to the settings in the automatic timetable editor, the train director configuration of "Timetable displays (FPA)" is necessary.

Show automatic inspector

The automatic inspector shows a status list of all journeys pending execution with the respective vehicles or trains. (cf. Fig. 10.54). You can use this list to recognise why, for example, a vehicle or train cannot set off. If there are several entries in the "Status" field, these are displayed as a tool tip when you move the mouse over them.

Show tour inspector log

The tour inspector log records all messages about the start and end of journeys in a tour-automatic. Error statuses are also displayed here. The tour inspector log is available to you as long as the tour-automatic is not closed. You can save the log and process it further with a text editor if necessary. Functions for filtering entries are also provided.
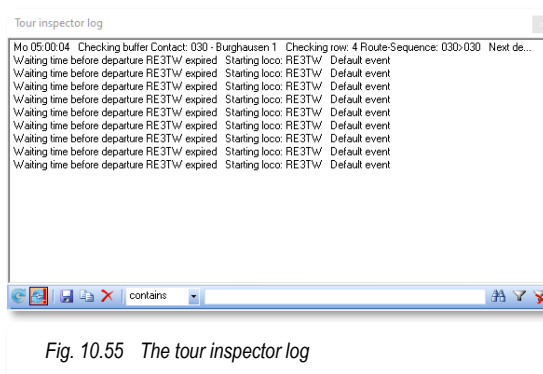
Fig. 10.55   The tour inspector log

Epoch

This can be used during a running automatic journey to specify that only vehicles of certain eras or criteria in the fourth matrix column may travel.

Areas

This symbol can be used to show or hide the right-hand part of the automatic driving dialogue window. The loaded automatic system(s) and their defined areas can be found here in a tree structure. Individual areas, as well as additionally loaded automations, can be specifically activated or deactivated during operation.

Setup/options

Some functions for the sequence control of an automatic journey are hidden here.

The "DC" button activates the random generator for the contact request. If this is active, the contacts are queried at random and not in ascending order of numbering.

The RT/RTS button activates a random generator for querying routes or route sequences. If, for example, several routes in an automatic journey have the same request contact, it would never be possible to determine a fixed sequence when checking the entries if the random generator is switched on.

The symbol "with profiles" 📳 determines whether an automatic journey is

executed with or without profiles for the entered routes or route sequences.

> The "*with profiles*" 🖼 switch must be set if you also want to run with profiles in tour-automatic mode. If this option is not activated, the trains will run according to the respective route settings. An exception to this are the lines that are provided with the "Contact events" flow in the tour-automatic.

The option "With route sequence/follow-up timeout" 🖼 is used if the automatic journeys are to be started with or without the waiting time (timeout) from the system settings. If the box is ticked, an affected route sequence or connecting journey is handled as follows...

🚂 In an automatic journey **without activating** the *"With route sequence/follow-up timeout"* 🖼, the...

- the route sequence/connecting journey is stopped

- the route sequence/connecting journey in the tour event inspector is only marked red

- the vehicle number or train name remains "GREEN"

- there is no warning by means of a message or sound

🚂 In an automatic journey **with activation of** the *"With route sequence/follow-up timeout"* 🖼 **without an** alternative route with a **new** route/train journey by automatic journey, the...

- the route sequence/connecting journey is stopped

- the vehicle number or train name is changed from "GREEN" to "BLACK"

- the train journey is marked with a red hourglass in the tour event inspector

- a warning is issued by means of a message and sound, unless switched off

- You must remove the obstacle for the stopped journey, mark the journey in the tour event inspector and start it again

- or you must continue the train by manually setting a route or route sequence, whereby the journey is automatically deleted in the tour event inspector.

🚂 In an automatic journey **with activation of** the *"With route sequence/follow-up timeout"* 🚫 **with** alternative route with **new** route/train journey by tour-automatic journey, the...

- the route sequence/connecting journey is stopped

- the vehicle number or train name is changed from "GREEN" to "BLACK"

- the journey is marked with a red hourglass in the tour event inspector

- A warning is issued by means of a message and sound, unless switched off

- the journey initially remains in the tour event inspector and is automatically deleted as soon as the tour-automatic journey has set the new route.

Finally, the setup/options offers several options for synchronising the times in an automatic journey. You can synchronise the tour-automatic clock with the central clock of **Win-Digipet** or with the system clock of your computer. However, you also have the option of not synchronising the tour-automatic with one of these options.

The middle row of symbols in the command centre of the automatic driving system contains the so-called buffer

`Mo 11:00:00: RE3 TW FSS:030>030` ▾ `01` ✋ ⮌.

This buffer is used to temporarily store time-related journeys that cannot be executed at the specified time (e.g. destination of the route occupied). The buffered journeys are displayed with the departure time, train name and description of the journey. The small field in the centre shows the number of journeys in the buffer.

The journeys remain in the buffer until the maximum delay time is reached or they are manually deleted from the buffer here.

In the **Win-Digipet** system settings, you can also specify how many journeys are temporarily stored in the buffer before the automatic journeys are stopped (see section 3.13.6).

10.29.3   Load additional tour-automatic journeys
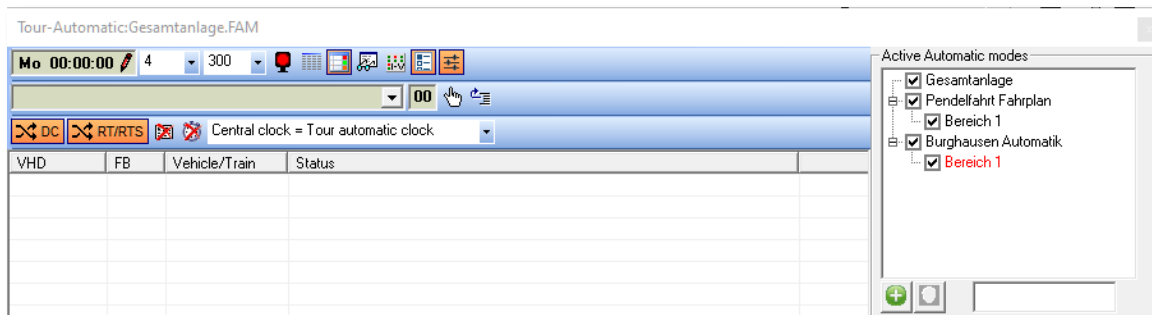
Fig. 10.56   In addition to the initially started tour-automatic (complete system), two automatic modes have also been started

In the Fig. 10.56 you can load and execute additional automatic modes.

A total of up to five tour-automatic journeys can be activated here at the same time. In the example here, two additional tour-automatic journeys with the names "Shuttle journey timetable" and "Burghausen automatic" are to be loaded in addition to the already loaded tour-automatic "Complete system".

To do this, click on the icon 🟢. In the *"Open TA file"* dialogue, select the desired file and click on the **'OK'** button.

The additionally loaded tour-automatic modes are displayed in a tree structure under the first tour-automatic function called up. All automatic areas of the second tour-automatic are also displayed here. In the example of the Fig. 10.56 you can recognise one of the areas marked in red. This is due to the activated switching this section by a solenoid device in the tour-automatic.

You can activate or deactivate the automatic areas and the complete automatic functions by ticking the boxes in front of the entries. Sections marked in "red" here can only being activated or deactivated by the assigned solenoid items.

With five loaded automatic movements, each with 12 automatic sections, you have a maximum of 60 sections available with which you can depict all conceivable scenarios on your model railway layout.

You can also remove an additionally loaded automatic journey using the symbol 🔴 . Please note that the tour-automatic file loaded **first** cannot be removed with this symbol.

> The above settings are saved alongside the last start time in the <name_fam.dat> file in your project directory when the automatic journeys are ended and are automatically available again the next time the system is started.
>
> You should not delete this file, as the names you have assigned to the twelve automatic areas are also saved in it.

10.30 End automatic journeys

The tour-automatic movement is ended by first setting the current tour-automatic to inactive in the command centre ![red icon]. If there are still routes or route sequences in the buffer, the display is first shown in yellow ![yellow icon].

Allow all vehicles or trains that are still travelling to complete their routes or route sequences before closing the command centre via the close icon ![close icon] in the tour-automatic command centre window.

Version 2021
Premium Edition

Chapter 11

11. THE TRAIN DIRECTOR[31]

11.1 General information

> **Please note!**
>
> Comprehensive documentation on the "Train director" programme section is available in the download area of www.windigipet.de under the title "The train director in Win-Digipet 2021.0" (German version). It contains many examples with demo projects that show the extensive possibilities of the train director. Their description is beyond the scope of this manual.
>
> Some parts of this documentation have been used with kind permission for this manual.

The train director (TD) is an extended control option of **Win-Digipet 2021**. The train director monitors defined system sections in the form of vehicle displays and controls the traffic in these system sections. It makes it much easier to control vehicle and train movements.

When developing the train director, particular emphasis was placed on easy comprehensibility, so that it can also be used efficiently by newcomers to **Win-Digipet** after a short familiarisation period.

The train director basically works according to eight different scenarios or train director types with different operational tasks, whereby most types already reveal their area of operation here.

The different train director types are:

- 🚂 Single rail track (SRT)
- 🚂 Train density measurement (TDM)
- 🚂 Driving activity (DA)
- 🚂 Pass by control (PBC)
- 🚂 Hidden yard control (HYC)
- 🚂 Priority control (PC)
- 🚂 Expert measurement (EXPERT)
- 🚂 Timetable display (TTD)

A train director entry is assigned one of the aforementioned train director types and defines which vehicle displays are to be monitored. It is not relevant whether the selected vehicle displays are configured as "normal", "intelligent" or "multi-intelligent" vehicle displays. Exceptions apply here for some train director types, which are shown in the respective sections. The selected vehicle displays are assigned to a train director as a group in the train directors dialogue and the train director evaluates whether a route can be executed based on the set parameters when a route is called.

The train director is called up via the icon ![icon] from the "Editors" toolbar of the main programme. As an alternative to the icon, you can find a corresponding command in the <File><Train director> menu.

After being called up, the train director appears in an empty window. As is usual in other parts of the programme, right-click in the train director window and a short menu will appear.

All settings relating to the train director can be made in this short menu. To create a train director entry, select "*Create new TD record*" from the short menu and specify the desired train director type in the extended menu.

You will be familiar with the remaining menu items in a similar form from the other parts of the programme or they are largely self-explanatory.

You can (temporarily) deactivate or activate created FDL entries. To do this, use the two menu items at the top or, alternatively, you can click on an entry with the middle mouse button. This has the same effect, i.e. the entry is activated (green) or deactivated (red).

Similar to the tour-automatic editor or the dispatcher, you can insert headings between the individual TD entries. This allows you to keep an overview of your entries. To create a (sub)heading within the TD list, use the "Create new heading" menu item.
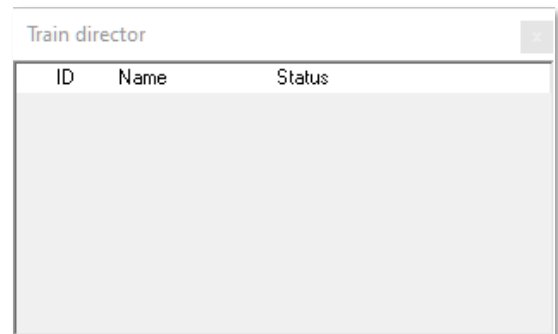
Fig. 11.1   The „empty" TD dialogue
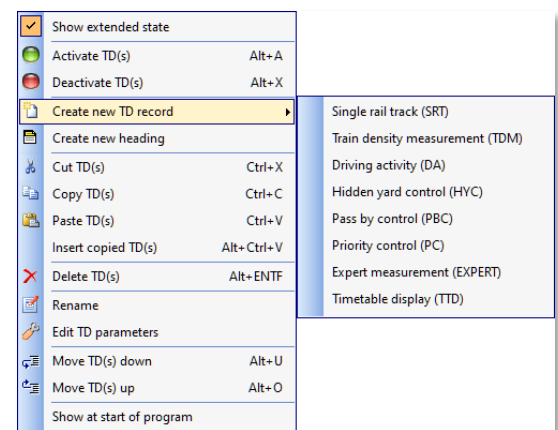
Fig. 11.2   The configuration menu of the train director

11.2 The train director type "Single rail track (SRT)"

As the name suggests, this train director can easily monitor a single-track section of track on your model railway layout. It is designed to prevent two trains from blocking each other on such a track. In previous versions of **Win-Digipet**, such tasks could be solved more or less elaborately with direction arrows and condition queries.

The following graphic shows such a situation using the WDP2021 demo project. The track diagram only allows a very limited number of vehicles or trains to travel in one direction on the marked vehicle displays. If vehicles were to enter the area in both directions at the same time, this would inevitably lead to a situation in which two drivers "look each other in the eye".
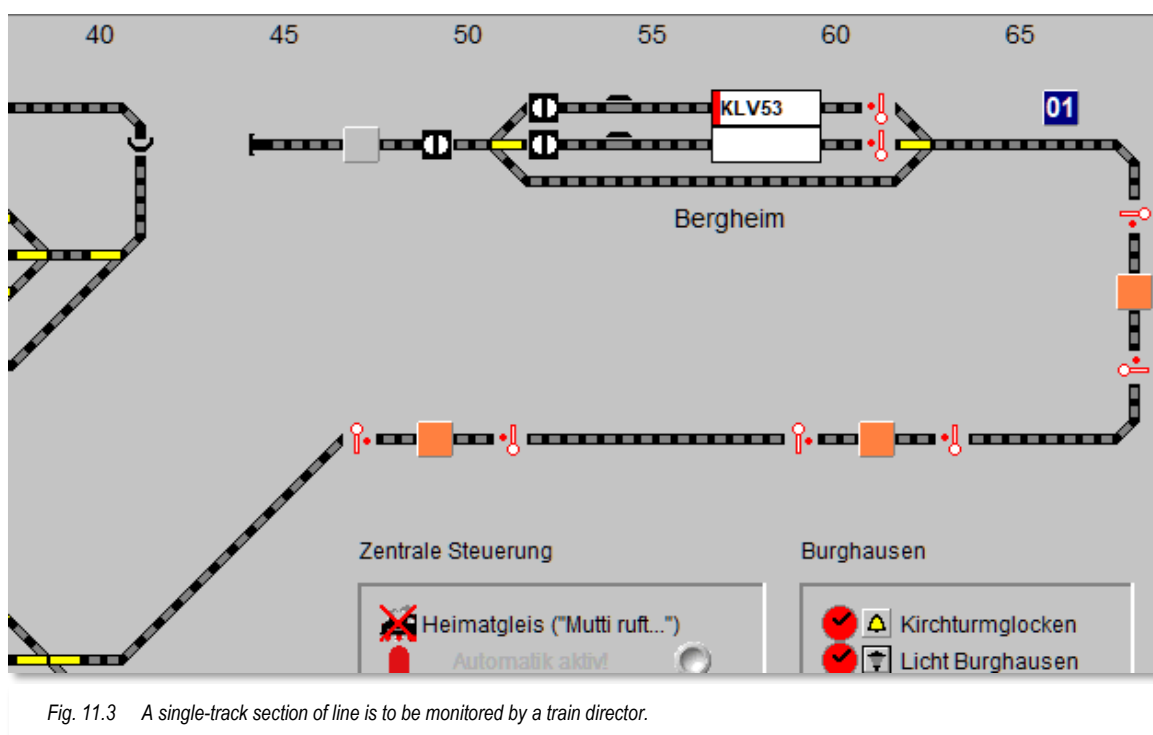
Fig. 11.3   A single-track section of line is to be monitored by a train director.

Furthermore, only two vehicles or trains could run in the direction of Bergheim, as the capacity of platform tracks would be reached with this number.

In the train director's dialogue box, the entry for the TD SRT then looks as shown in Fig. 11.4.

The left-hand side of the window contains a list of all the train director records created in the project. Each of these entries has a specific task to fulfil. For example, if you have several single-track lines on your model layout, there will be a separate SRT train director record for each of these lines. The same applies to the implementation of several staging yards.

It is therefore advisable to give the individual entries names that are as relevant as possible. You can assign these names in the "Name" column.

In the first column of the list, you can see whether the TD entry is active (green) or deactivated (red). You will also find this type of display in the interlocking attendant or booster management programme sections. You can switch the TD on or off via the short menu or by clicking on the switch symbol with the <u>middle mouse button.</u>

The "Status" column shows a series of numbers and arrow symbols. They show the number of moves in this TD entry. A number is shown in the green field if the maximum permitted number of trains has not yet been reached and in the red field if this number has been reached. The number represents the number of vehicles or trains within the defined vehicle displays; these are recorded in the middle part of the dialogue.
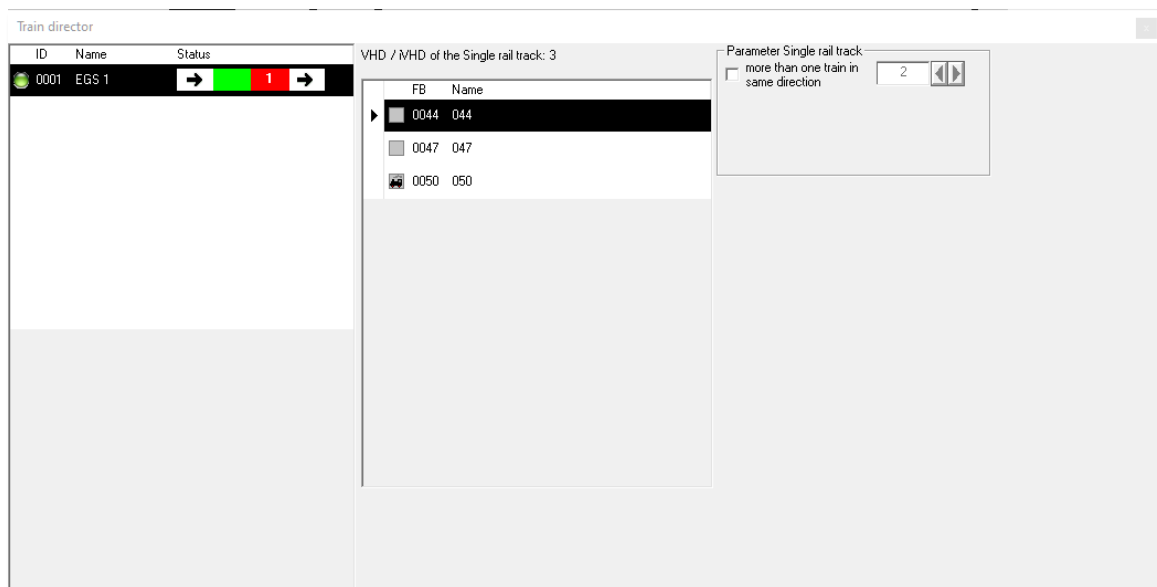
Fig. 11.4   The configuration dialogue for the "single-track line (SRT)" train director

All vehicle displays that belong to the single-track section are entered here. Simply drag and drop the vehicle displays from the track diagram into the list. The order does not matter.

In the right-hand part of the dialogue, you can also specify how many trains may travel in one direction. Make sure that your station at the end of the single-track line has sufficient capacity to accommodate the trains. In this example, we will leave it at one train (don't accept more than one train in same direction).

You can see from the illustration that the VHD 0050 is labelled with a small locomotive symbol. This symbolises that a vehicle is registered in the VHD. This explains the "red 1" status message, which indicates that a vehicle or train is already travelling in the single-track section and that the maximum number of vehicles or trains has been reached.

That's actually all the configuration tasks that need to be completed in advance; the train director can now monitor the entire section of track and only allow one train in one direction or the other at a time.

It is very important that your routes are equipped with direction information. This is essential for the smooth functioning of the train director.

At this point, we would also like to point out once again that the vehicle displays should not be entered in diagonal routes. The connection of the vehicle displays to the neighbouring symbols should always be aligned horizontally (east-west) or vertically (north-south).

This information on track layout design is becoming increasingly important in view of functions such as the train director.

11.3 Train director "Train density measurement (TDM)"

The train director train density measurement (TDM) determines the number of all vehicles or trains on a selectable section of the layout and can regulate the entry and exit of the area in conjunction with the minimum/maximum occupancy. The TD TDM can be used to limit the number of trains in a section of the system, for example to prevent blockages. However, it is also possible to prevent too many trains from leaving the area or the area even running empty.

The following diagram illustrates such a situation using the WDP2021 demo project.
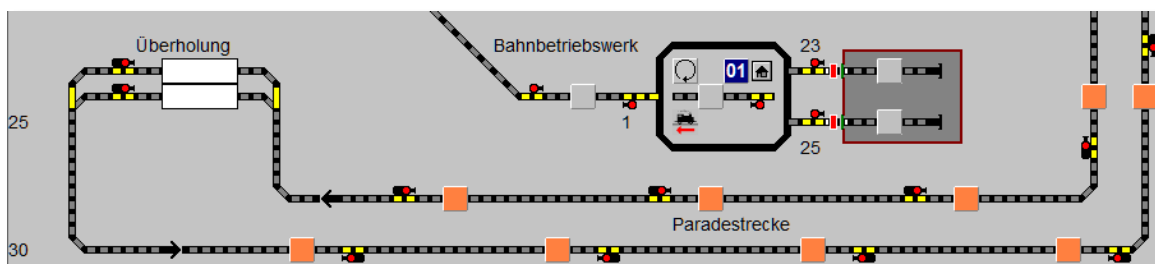
Fig. 11.6   The train density is to be regulated for the area of the parade route

Fig. 11.5   The "Train density measurement (TDM)" train director

All vehicle displays of the area to be monitored are also entered in the middle part of the configuration dialogue for the train density measurement train director. Here too, the order of the entries is irrelevant.

The minimum and maximum occupancy of the defined vehicle displays are entered in the right-hand section. The minimum number must be at least "1" less than the maximum number of occupied vehicle displays.

In the example, there does not necessarily have to be one vehicle or train travelling on the parade route, nor may more than two vehicles or trains use the parade route.

Instead of numerical values, you can also drag and drop counters from the track diagram into the value fields. In this way, you can vary the train density if necessary and even make it dynamic in automatic mode. For example, a dispatcher record could ensure that there is less traffic at night than during the day.

The status display in the highlighted line again shows the number of trains. In this example, a vehicle or train is entered on the vehicle display 0064. As neither the minimum number nor the maximum number has been reached with an entry, a "green 1" is shown in the centre field of the status display.

- The number of moves is displayed in the red field on the left as soon as the minimum number is reached or not reached.

- The centre "green" field shows the number of moves if the value is between the minimum and maximum number.

- The right-hand "red" field shows the number of moves as soon as the maximum value has been reached or even exceeded.

Another option offered by the configuration dialogue at this point is to set the train density depending on the matrix of vehicles or trains. For example, one TD entry could only allow a certain number of vehicles from the various passenger train categories, while another entry only allows freight trains. A third TD entry could then regulate the total number of vehicles or trains in the defined area. In this way, several TD entries could also be responsible for the same area of vehicle displays.

11.4 Train director "Driving activity (DA)"

With The train director "driving activity (DA)" can be used to influence the number of trains that are active in a route or route sequence in a defined area. Active here means that these are "moving" vehicles or vehicles that are making an intermediate stop within a route sequence or have come to a standstill because the next route is still occupied.

As soon as the set maximum value is reached, no further routes or route sequences are started in the monitored vehicle displays. You also have the option of deciding whether this also affects journeys that leave or enter the area.

If, for example, a large number of vehicles or trains are active in an area, a vehicle or train from outside the area may not be able to enter the monitored area. The option now allows the train to enter despite the maximum number of active trains. Once the train has entered, the number of active trains is regulated again by the train director during further operation.
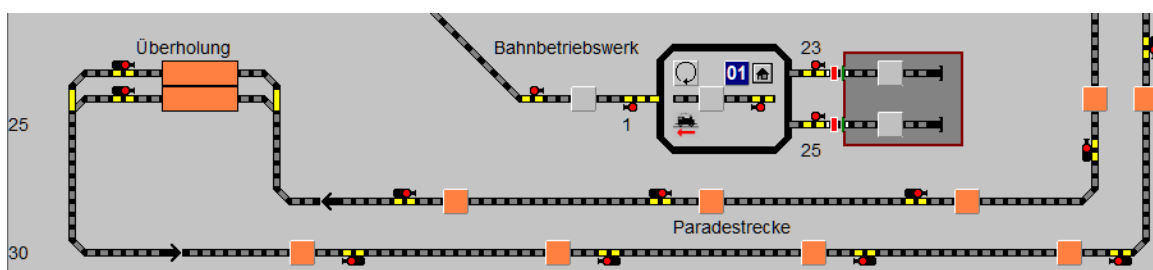
Fig. 11.8   The driving activity on the marked vehicle displays should be monitored

Fig. 11.7   The parameter window of the train director "driving activity"

Similar to the other train director types, the number of active trains is shown in the status display. In "green" if the maximum permitted number has not yet been reached and in "red" as soon as the maximum number has been reached. The example in Fig. 11.7 shows an occupancy of VHD 0064 but a green "0" in the status message. This means that the vehicle entered in the VHD is currently not travelling.

It is conceivable, for example, that you could use the train director to monitor train operations in the visible section or even on the entire model railway layout.

11.5 Train director "Pass by control (PBC)"

With The "Pass by control" train director can be used to allow vehicles or trains with a higher priority to pass those with a lower priority. For example, an IC/ICE train can overtake a freight train at a defined passing point.

The priority of a train depends on the categorisation in the second matrix column "Train types" and the priority assigned to it in the system settings (see section 3.14) of **Win-Digipet**.

The track diagram here shows a passing place on the parade line. The two vehicle displays labelled "Passing" are intended to guarantee this possibility.
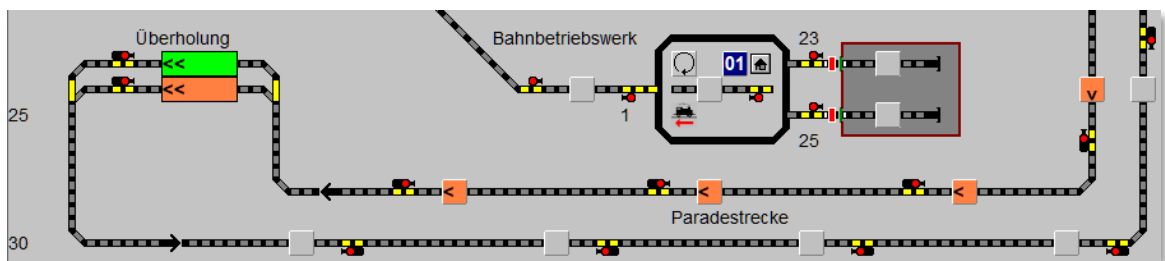
Fig. 11.9   The monitored vehicle displays for the train director "Pass by control"

The other vehicle displays on the parade route represent the area that the train director monitors for the approach of higher-priority trains. The lower-priority train is stopped at the passing point as soon as a train with a higher priority follows.

All vehicle displays that are to be used as alternative points are entered in the first column (#1) of the list. The second column of the vehicle displays (>1) contains all the VHD's that are located in front of the passing loop and on which the priority of the trains is to be evaluated. If a train is located on an VHD of the alternative location, the train director

Fig. 11.10   The parameters of the "Pass by control" train director

evaluates the trains on the vehicle displays of the marked blocks. If there is a train with a higher priority, the train waits in the passing loop until it has passed.

To place the vehicle displays in the columns, right-click in the VHD list area and select "*Change position in track*" from the short menu. The short menu can be used to mark one or more drive though tracks in an overtaking point; other tracks are then passing sidings.

If a faster train is now following a train as it enters the overtaking point, it will attempt to enter an alternative track. If none are free or if all tracks are mistakenly marked as drive through tracks, the train will still enter a passing track.

If no faster train is following a train as it enters the overtaking point, it will attempt to enter a passing track. If none is free or if all tracks are mistakenly marked as passing sidings or the

	Change position in track	
☐	Drive threw track	
🚂	Change driving direction	
✂	Cut vehicle display(s)	Ctrl+X
📋	Copy vehicle display(s)	Ctrl+C
📋	Paste vehicle display(s)	Ctrl+V
	Insert copied vehicle display(s)	Alt+Ctrl+V
⇥	Delete vehicle display(s)	Alt+ENTF
⇲	Move vehicle display(s) down	Alt+U
⇱	Move vehicle display up	Alt+O

Fig. 11.11   Short menu for the VHD's in the TD PBC

data is still from a previous version of **Win-Digipet** and therefore no passing sidings have been marked, the train will still run into a passing siding.

If you want to set up overtaking control for two directions, you must set up one PBC train director for each direction. In the "Dir" column, it is then also necessary to specify the direction of travel for each individual vehicle display. The direction of travel is also selected via the short menu mentioned above with the entry *"Change direction of travel"*.

> ⚠️ A tip:
> You can change the direction more quickly by clicking with the middle mouse button in the "Dir" column of the respective row.

The last parameter you can specify in the dialogue box shown here is how long a train should wait to allow trains with a higher priority to pass. This can be used to ensure that a train with a low priority has to wait a very long time if trains with a higher priority are constantly following. If this option is activated, the train will start from the waiting position after the entered time has elapsed. The time entered here is measured in real time and not in model railway time.

The status display differs from the FDL types discussed so far in that no red or green fields indicate the status here. Instead, it is displayed as soon as a train is in the waiting position or there is no overtaking situation.

🚂🚃 **Güter5 Sc**   The status display shows that a train (name: Güter5 Sc) with low priority has to wait.
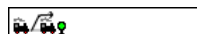
🚂🚃   or it is allowed to run because no train with higher priority is following.

11.6 Train director "Hidden yard control (HYC)"

With the shadow station control train director allows you to control a complete shadow station. In contrast to the other TD types, the use of an automatic movement system is **mandatory** here. The TD HYC settings allow different types of tracks for a staging yard:

- Sidings can be used in one or two directions
- Stub tracks
- Several sidings in a row can be used in one or two directions
- Bypass track
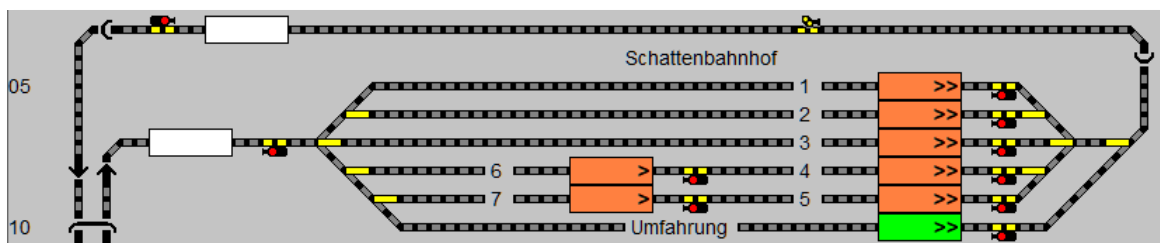
Fig. 11.12   The shadow station for control by the train director "Hidden yard control"

Due to the complexity of the TD HYC, it is necessary to comply with certain preconditions in various parts of the programme:

- Only intelligent vehicle displays (iVHD) may be used. All length specifications for the feedback contacts must be entered and the target matrix option must be activated in the properties for the intelligent vehicle display.
- All vehicles and their respective lengths must be entered in the vehicle database.
- In the train composition, the trains must be put together according to the prototype on the layout and the train matrix must be defined. If no train composition is used, the train length (locomotive and carriages) must be specified in the vehicle database for the locomotive.
- No restrictions on the matrix or train lengths may be entered in the routes to and within the staging yard.
- No restrictions on the matrix or train lengths may be entered in the tour-automatic function.
- All train movements that are to take place in the staging yard must be entered in the automatic timetable using routes. In the case of intelligent vehicle displays located one behind the other, routes from the entry point to all intelligent vehicle displays on the track must be available in the automatic timetable. This also applies to the routes between the consecutive intelligent vehicle displays.
- As soon as you want to set up a staging yard for two directions, you must create one FDL-SB for each direction.
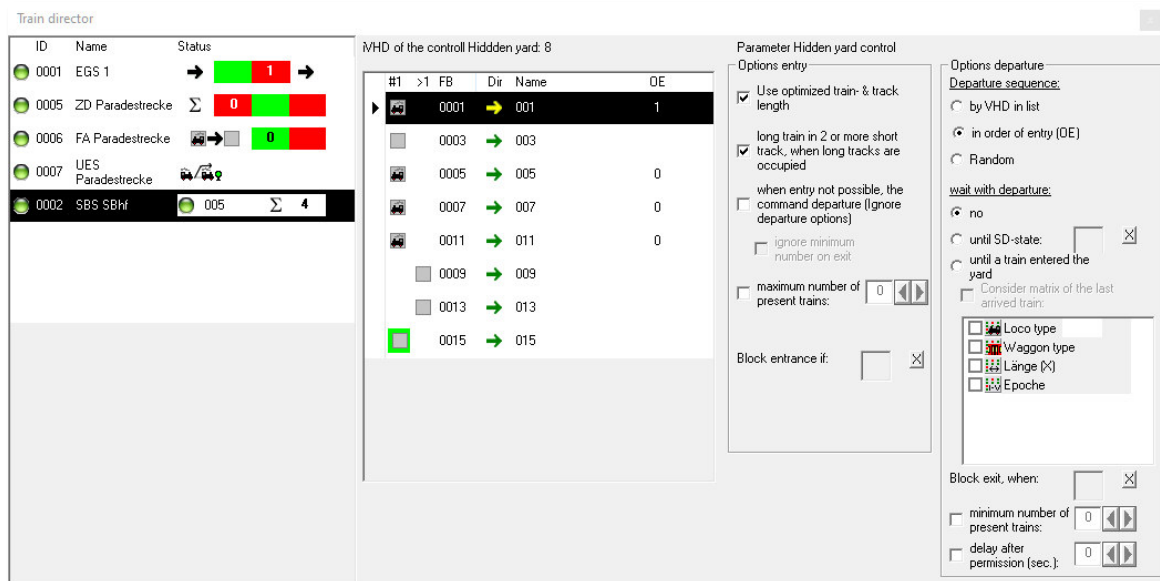
Fig. 11.14   The parameters of the train director "hidden yard control"

For the two tracks with two consecutive positions, the rear train vehicle displays are moved to column >1. To do this, right-click again to open the familiar short menu.

You can also select a bypass track for the staging yard from the short menu; it will be marked with a green frame in the list of vehicle displays.

Mark any stub tracks with the corresponding entry from the short menu. The selection can be recognised by a blue frame around the vehicle display(s) in the list. It is not necessary to specify the direction in the "Dir" column for stub tracks. This is automatically displayed with a blue cross.
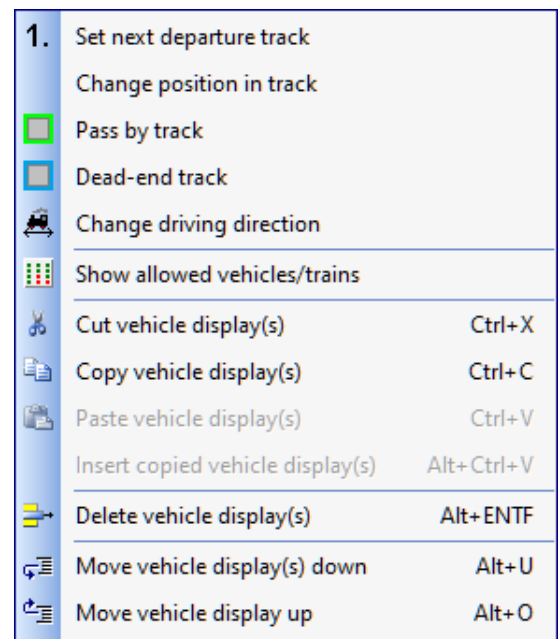
Fig. 11.13   The short menu for the TD HYC

The status display can show the following meanings:
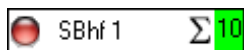
🔴 SBhf 1 Σ 10	red dot on the left→ Exit closed
🟢 SBhf 1 Σ 10	Green dot on the left→ Exit permitted
🟠 SBhf 6 Σ 7	yellow dot on the left→ Exit is permitted as soon as the minimum number of trains is exceeded,
🟢! SBhf 1 Σ 10	Red exclamation mark after the dot→ Exit is instructed by the incoming train
🟢 SBhf 1 Σ 10	Number on the right→ Number of trains in the SBhf
🟠 SBhf 6 Σ 7	Red field on the right→ the number of trains is equal to or lower than the minimum train allocation
🟢 SBhf 1 Σ 10	Green field on the right→ the number of trains is greater than the minimum train occupancy
🟢 SBhf 1 Σ 10	Text in the centre→ Name of the IZNF from which you may exit next
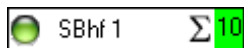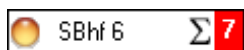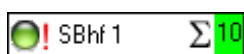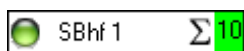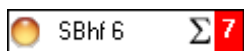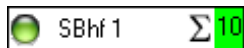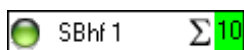
The right-hand part of the parameter window contains the options for controlling the staging yard. These are divided into an exit and an entry section.

The options for entering a hidden yard are:

🚂 **Use optimised train and track lengths**
The destination matrix of the individual iVHDs is used to find the shortest free track for a train waiting to enter. Long tracks are thus kept free for long trains. The length data from the iVHD and the train composition are used for this function. Please remember not to enter any lengths or matrix restrictions for the routes.

🚂 **Long trains in two or more short track, if long tracks are occupied**
Several iVHDs in a row are added together so that the track length is sufficient for a long train. The long train then blocks the vehicle displays at the rear positions. As soon as a long train is entered on the front iVHD, the rear iVHDs are blocked, even if there is no feedback from the wagons. The blocking is symbolised by a wagon symbol in the iVHD as long as the train director's window is open.

🚂 **If entry is not possible, then command departure (ignore departure options)**
If no suitable free track is found for the train at the entrance and it is not possible to bypass the hidden yard, a train can be instructed to leave the hidden yard, even if the departure options are not yet fulfilled. Only the minimum train occupancy is taken into account.
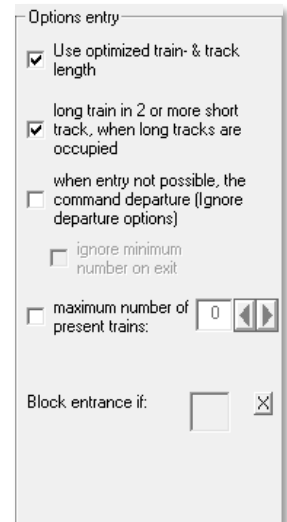
Fig. 11.15 Entry options for TD HYC

> If this option is used and a train indicates an exit, the bypass track is ignored, and the train waits at the entrance until a track has been cleared.
>
> If the train is not allowed to enter any of the tracks due to incorrect length or matrix, no exit is instructed. In this case, the optional bypass is used.

🚂 **Maximum number of trains present**
Here you specify the maximum number of trains that may be in the staging yard. Normally, this will be the number of all stabling options in the staging yard without the bypass track.

🚂 **Block entry if**
Trains can be prevented from entering despite the availability of entry options with the aid of a 2-aspect solenoid item from your track diagram. A bypass track is not affected by the entry block.

The options for exiting a staging yard are

🚂 **Departure sequence – by iVHD in list**
The entered intelligent vehicle displays are processed in the order from top to bottom. Free iVHDs and the bypass track are not taken into account.

🚂 **Departure sequence - in order of entry (OE)**
The order of exit is determined by the "OE" column. The entry with the smallest number may leave first, as this train has been in the staging yard the longest. When the train leaves, all other numbers are automatically reduced by "1".

🚂 **Departure sequence - random**
The exit from the staging yard is random.

🚂 **Wait with departure - no**
Trains leave the hidden yard until the minimum number of available trains is reached. This option is useful if the trains are all parked in the hidden yard at the end of operation. This allows trains to enter the station unhindered at the start of operation.

🚂 **Wait with departure - until a train entered the yard**
Here the train waits with the exit until another train enters the hidden yard and the minimum number of trains is exceeded. This variant is intended for when the trains remain where they are on the layout at the end of operation. At the start of operation, a train only leaves when another train arrives. This option can be combined with a matrix check, in which case the matrix is taken into account in addition to the departure sequence.

Fig. 11.16   Exit options for TD HYC

🚂 **Block exit – when solenoid device position**
The exit of a train is dependent on the position of a solenoid item. A counter can also be used here, which allows the set number of trains to exit.

🚂 **Block exit if - minimum number of trains present**
Minimum number of trains in the staging yard.

11.7 Train director "Timetable display (TTD)"

The train director "timetable display" itself does not provide any functions for train movements. It is only used to create station track areas and to assign names to the station and its timetable indicators. All other settings are made within the tour-automatic editor. These timetable boards can then be displayed in the tour-automatic timetable during the execution of a timetable.

In the TD-TTD, all vehicle displays of a station are entered, which are then to be displayed on the timetable board. The only option here is to assign a name to the station in the configuration dialogue.
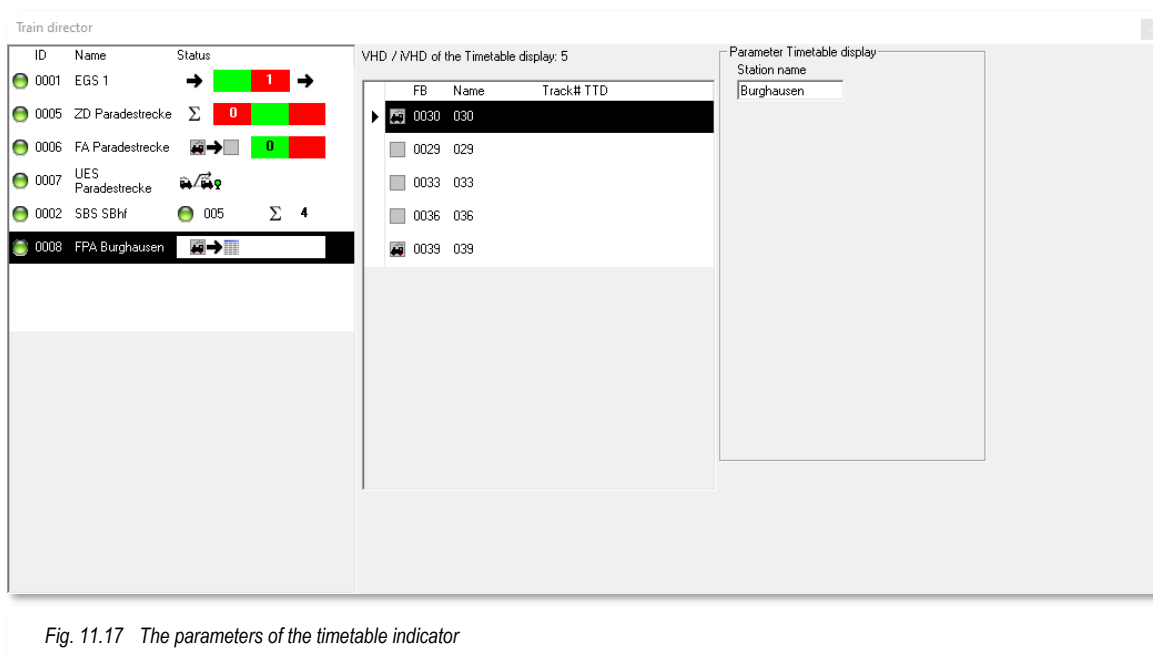
Fig. 11.17   The parameters of the timetable indicator

11.8 Train director "Priority control (PC)"

The "Priority control (PC)" train director can give priority to a train on one vehicle display over another train with the same destination on another vehicle display.

The task of the TD PC is similar to the TD PBC (see section 11.5). However, they differ in that the trains with higher priority have right of way in the TD PBC and in the TD PC the train that is on a specific VHD has right of way.
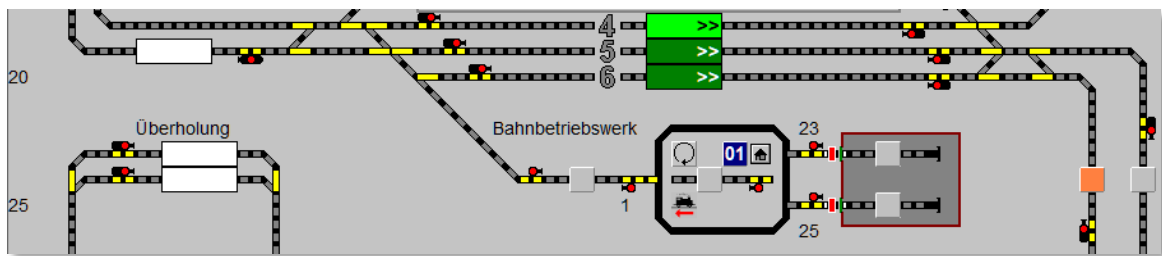
Fig. 11.18   Priority control should be realised for several station tracks to a common destination

The diagram shows that the exit for station tracks 4-6 leads to a common destination, the start of the parade route. Track 4 is mainly used by passenger trains, while tracks 5 and 6 are generally used by freight trains. Track 4 has now been set up as a prioritised track in the TD PC. You can recognise this in the illustration by the light green coloured vehicle display.

All three vehicle displays in the station are listed in the "Start" column and VHD 0033 has been prioritised via the "Start priority" entry in the context menu.

Fig. 11.19   The parameters of the train director "priority control"

VHD 0062 has also been transferred to the "Destination" column via the context menu (Start←→Destination).

If you want to set up priority control for two directions, you must set up a train director "priority control" for each direction. In the "Dir" column, it is then also necessary to specify the direction of travel for each individual vehicle display with the exception of the destination VHD. The direction of travel is also selected again via the short menu mentioned above with the *"Change driving direction"* entry.

	Start<->Dest.	
☐	Start priority	
🚋	Change driving direction	
✂	Cut vehicle display(s)	Ctrl+X
📋	Copy vehicle display(s)	Ctrl+C
📋	Paste vehicle display(s)	Ctrl+V
	Insert copied vehicle display(s)	Alt+Ctrl+V
⇥	Delete vehicle display(s)	Alt+ENTF
⇲	Move vehicle display(s) down	Alt+U
⇱	Move vehicle display up	Alt+O
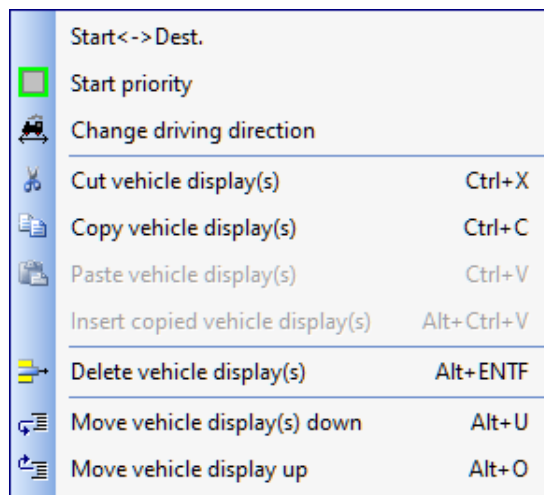
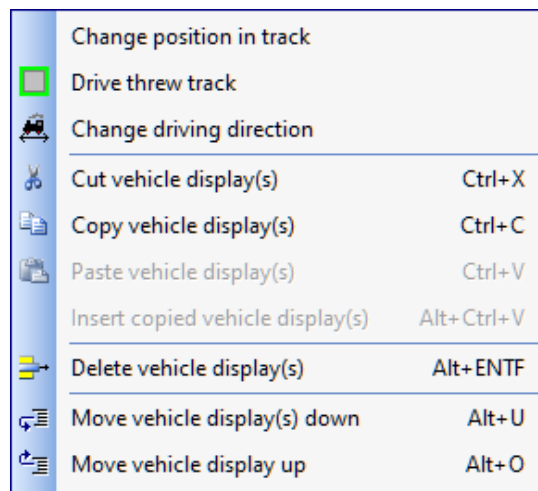*Fig. 11.20   The short menu for the TD PC*

A tip:
You can change the direction more quickly by clicking with the middle mouse button in the "Dir" column of the respective row.

The last parameter you can specify in the dialogue box shown here is how long the waiting time of a train that is on a subordinate FAZ should be. If this option is activated, the train will start from the waiting position after the entered time has elapsed. The time entered here is measured in real time and not in model railway time.

The status display normally shows that no train has to wait to give priority to another train.

If a train has to wait, the train name is displayed in the status and the signal is shown in red. If several trains have to wait, three dots (...) appear after the train name. As usual in **Win-Digipet**, all waiting trains are then listed in the tooltip.
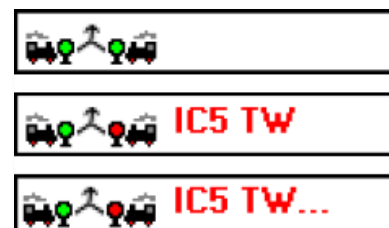
11.9 Train director "Expert measurement (EXPERT)"

The train director "expert measurement (TD EXPERT)" is, as the name suggests, something for experts. It differs from the previously known train director types in that it does not have a specific task. It is left to the user to set it a task. At its core, this train director is all about counting.

The dispatcher, for example, analyses the results and transfers them to counters in the track diagram, which in turn can be used as control elements for the execution of routes or route sequences in a tour-automatic route system.

The TD EXPERT can be configured so that it only provides information that can be analysed in condition queries. However, it is also possible to block routes. This section explains the extensive setting options.

As with the other dispatchers, the editing window is divided into three areas.
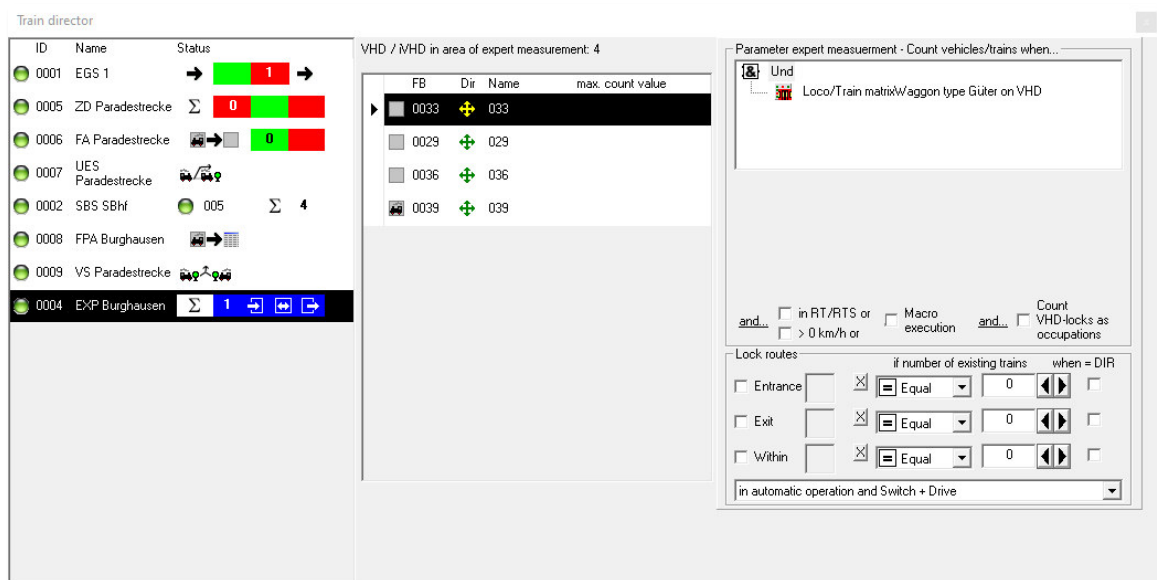
Fig. 11.21   The parameter window of the train director "expert measurement"

The left third shows the list of all the dispatchers created for your project. As an example, we have created a train director entry here that is to count the number of freight trains in the Burghausen station area. The centre area contains the vehicle displays of the train director to be monitored. At least two vehicle displays must be entered. Based on the Fig. 11.21 you can see that the "Dir" column contains a direction symbol for all directions of travel as standard. This means that, as a rule, all directions of travel are analysed. However, the evaluation of the direction of travel can be restricted by making changes, but it must always be regarded as the first condition for counting.

The upper right-hand section of the dialogue window provides further conditions under which the train (or vehicle) in the area should trigger the count. From the condition tree, which can also be found in other parts of the **Win-Digipet** programme, only conditions that are limited to the vehicle displays are available here. The reason for this is that the train director can only analyse vehicle displays. In our example, the count should take place if the wagon type "Goods" is configured in the vehicle or train matrix for the vehicle or train entered on the VHD. In a train, the matrix check can be focussed on the entire train (train matrix) or also in detail on individual vehicles in the train formation (e.g. the leading locomotive). To do this, select the required setting using the selection list.
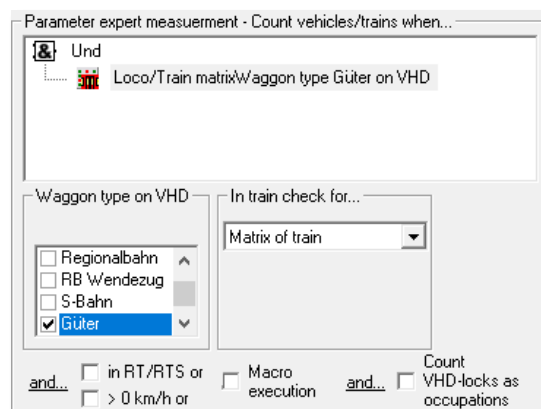
Fig. 11.22 Conditions for the "TD EXPERT"

11.9.1 Conditions in the train director "expert measurement"

The following table the following table you can see which conditions are applicable in the TD-EXPERT.

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴
...on vehicle display							
Vehicle on VHD	●	●	🔴	●	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train name on VHD	●	●	🔴	🔴	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of wagon types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of length (X) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Compare of priorities on VHDs	●	●	●	●	●		●
Vehicle with colour	●	●	●	●	●		●
Vehicle position in train	●	●	●	●	●		●
Driving direction		●			●		
Vehicle with maintenance/oper. hours/battery	●	●	●	●	●		●
Route/Route-Sequence/Macro/Vehicle/Train active	●	●	●	●	●		●
Train director state	●	●	●	●	●		●
Turntable/transfer table/train storage status	●	●	●	●	●		●
Tour automatic status	●	●	●	●	●		●
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

Further restrictions, which can be seen as an AND link to the settings made above, can be found in several checkboxes. For example, there is the option

- Only trigger the count if the vehicle is in an active route or route sequence or if a macro is being executed.
- Trigger the count even if the VHD is blocked. In this case, no train would be entered on the vehicle display.

The lower area offers options for blocking routes. These can be blocked for the defined vehicle displays if they enter or leave the defined area or are located within the area. The blocking can be set depending on solenoid devices or counters or also on a number of occupied vehicle displays in the defined area. The blocking can also be set to be direction dependent.
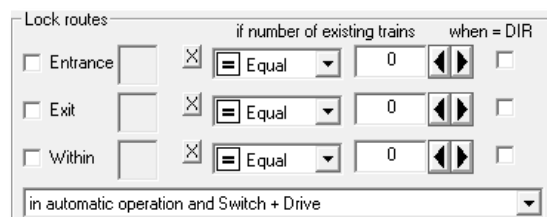
Fig. 11.23   Blocking routes in TD EXPERT

You can also decide whether a possible blocking of routes should only be applied in tour-automatic mode, only in "switch and drive (start/destination)" or in both operating modes.

In contrast to the displays of the other FDL types, the status display of the TD EXPERT is blue. This visualisation symbolically brings the TD EXPERT closer to the counters in **Win-Digipet,** which are also blue.

The display shows the number of vehicles or trains that are in the area of our TD EXPERT and match the set search criteria. The quantity display is followed by three icons that symbolise the entry into the area, the journey within the area and the exit from the area. These can be displayed in the colour red or green depending on the evaluation. Red means blocking and green the release of a route.

11.10 Summary of the installation and utilisation of the train director.

- 🚆 VHD / iVHD that are to be grouped together can be dragged and dropped into the list field. It is not absolutely necessary to adhere to an order, but it increases clarity.

- 🚆 Each VHD may only appear once per TD entry.

- 🚆 In the TD HYC, an iVHD used may only be present once in all TD HYC. The exception is when there are two TD HYC for a staging yard with double-sided access.

- 🚆 In edit mode, all the TD's VHDs are highlighted in orange in the track diagram. If you hold down the left mouse button on an individual TD in the list field, it is displayed with a red border in the track diagram for checking purposes.

- 🚆 The TD's are always ready for use after activation (green dot in the first column), even when 'Switch & drive'. The TD HYC is an exception. It is only active during the execution of a tour-automatic train movement. A red dot means 'the TD entry is deactivated'.

- 🚆 VHD, iVHD and MiVHD can be used. The TD HYC is again an exception here. Only iVHD may be used there! This is due to the optimal utilisation of all options (track lengths, matrix).

- 🚆 Depending on the TD type, further graphical information may appear in the extended status display (column 1/2):

  - 🚆 VHD free (all TD)

  - 🚆 VHD occupied with vehicle or train (all TD)

  - 🚆 End of a train in front, superimposed on the VHD (TD HYC)

  - 🚆 In a previous VHD there is a vehicle or train travelling in the opposite direction (TD HYC)

  - 🚆 VHD track blocked (all TD)

  - 🚆 VHD Target blocked (all TD)

  - 🚆 VHD only feedback contact occupied (all TD)

  - 🚆 The entries with the green border are for the case that the track is a bypass track (TD HYC / green for "may always run").

  - 🚆 Train coupling and train separation routes are only taken into account in the TD DA. All other TD's ignore these special routes.

  - 🚆 The TD HYC occupies a special position among all TD's. It has considerably more adjustable options and combines several TD types. Some settings in the vehicle database, the tour-automatic journeys, the intelligent vehicle displays, the routes and the train composition must also be taken into account.

  - 🚆 Matrix restrictions only in the target matrix of the iVHD
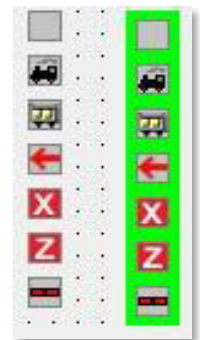
- 🚂   exact track lengths in the iVHD

- 🚂   Exact vehicle lengths in the vehicle database

- 🚂   No train length limit in routes and tour-automatic journeys

- 🚂   In some TD's there is an additional column 'Dir' (Direction). If this is visible, a corresponding entry is mandatory.

- 🚂   In TD HYC and TD PBC there are 2 columns ('#1' and '>1') for VHD. These are necessary for tracks/blocks where a train has to look back to see what is behind it.

- 🚂   In all TD's in which a number of moves can be entered, it is possible to use a counter symbol (drag & drop).

- 🚂   An TD does not set routes or train movements independently but blocks the execution of these within an automatic system. When 'Switch & Drive', it displays an error message if its specifications are not met.

Version 2021
Premium Edition

Chapter 12

12. THE DISPATCHER

12.1 General information

The dispatcher is a powerful, innovative programme component in **Win-Digipet**.

The dispatcher is a database in which you can make a large number of entries. The database is activated when **Win-Digipet** is started, provided the corresponding option is set. It is then immediately available, regardless of whether tour-automatic journeys are active.

The basic function of the dispatcher is to monitor specifications for states or conditions on your model railway layout and to switch solenoid items or carry out other switching actions if the requirements are met.

The results of the circuits can then be used in a tour-automatic system, for example, to start vehicles or trains depending on conditions.

Win-Digipet runs through the complete database of the dispatcher in a cycle of approx. 500 msec. The set conditions are checked, and the corresponding switching actions are executed.

This statement alone gives you an idea of the dimensions of the dispatcher's job. But don't worry, with the examples on the following pages you can familiarise yourself with the working methods of the dispatcher.

You can use the dispatcher to perform a wide variety of control tasks.

These can be, for example

- Control of a railway crossing
- Opening/closing shed doors
- Switching the distant signals on the mast of a main signal
- Switching the booster on or off
- Blocking of vehicle displays
- Sound triggers at predefined times (e.g. church bells)
- And much more...

12.2 Activate/deactivate the dispatcher globally

The dispatcher can be activated or deactivated in the main programme in the <Operation> menu. To do this, delete a tick next to <Dispatcher activated> and the option changes to the entry <Dispatcher not activated>.

The dispatcher is activated by default.

Operation
Tour-Automatic...
Turntables/transfer tables ▶
Emergency stop
Stop/Restart all vehicles
Simulation ON   Ctrl+S
Monitor trains without Routes
Wifi-connection for mobile
Joystick info and configuration
Vehicle activate/de-activate/delete
Switch all vehicle sounds off
Execute basic position
Execute current positions
Switch active route again
Update all vehicle functions
Solenoid devices function test
Deactivate vehicle sound in profiles/events
Abort sound file playback
Deactivate playback of sound files
✓ Dispatcher activated

Fig. 12.1   The general activation of the dispatcher

If you deactivate the dispatcher here, **all the** dispatcher entered are inactive.

However, if you only want to deactivate one or more data records, you must do this in the in the dispatcher itself and set the green switch to red (see section 12.7.8).

12.3 Open the dispatcher

Open the dispatcher by clicking on the 🔺 icon in the "Editors" toolbar of the main **Win-Digipet** programme. Alternatively, you can also find the corresponding command in the menu bar under <File><Dispatcher>.

Before open the dispatcher, please ensure that the option in the <Operation><dispatcher activated> menu is set.

When opening the dispatcher for the first time and entering the first data record <File><New dispatcher record>, the dialogue shown below is displayed. This dialogue is divided into three vertically arranged areas: data records, conditions and switching actions.
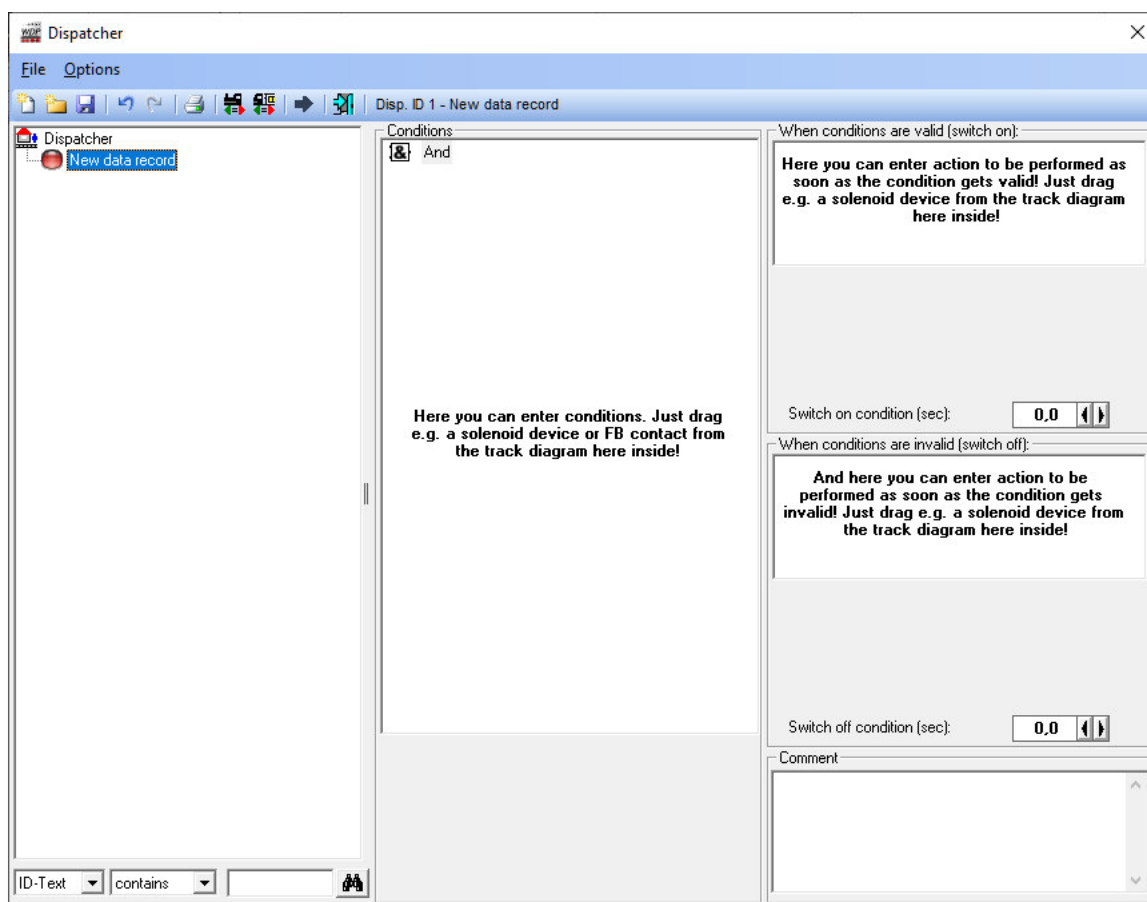
Fig. 12.2   The empty dialogue window of the dispatcher

The conditions are entered in the corresponding windows in a tree structure using the familiar "drag & drop" method. The solenoid items to be switched are also dragged into the corresponding fields in this way, as is usual throughout the programme.

12.4 Set up new dispatcher entry

The graphic shown above (cf. Fig. 12.2) shows the entire database of the dispatcher.

To set up a new data record, click on the ⬜ icon in the window toolbar. An empty data record is then added to the left-hand side of the dialogue window. The database and its data records are displayed in a tree view. This representation offers you the option of summarising the individual data records in thematic groups and thus maintaining maximum clarity. A newly created data record is added to the end of the data record list or in the selected folder.
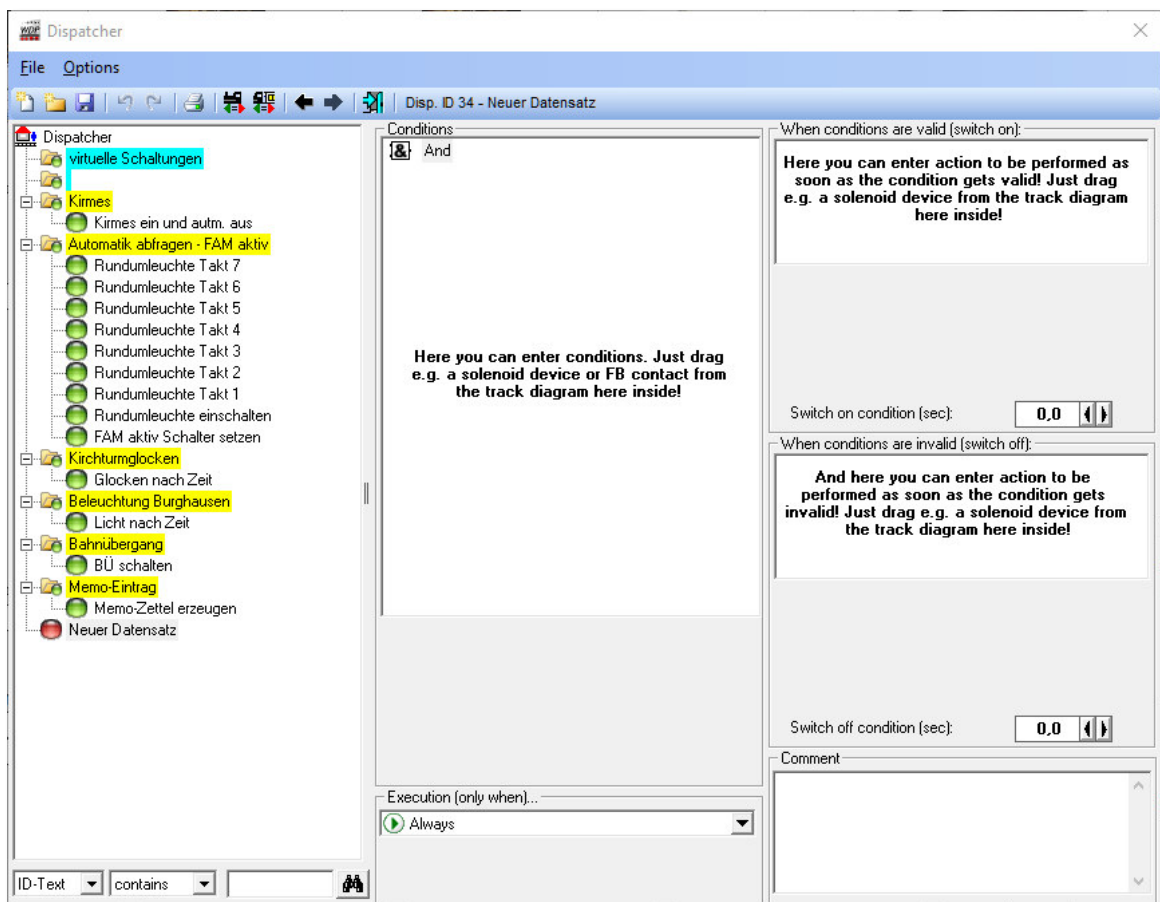
Fig. 12.3   A new data record has been inserted at the end of the list

Based on the Fig. 12.3 you can recognise such a folder structure. A new data record has also been created at the bottom of the main level.

A additional comment function is provided in the right-hand column of the dialogue window. Here you can enter a comment text on the function of the dispatcher data record for each of your data records. We recommend that you use this comment function, as this description will make any subsequent troubleshooting much easier.

12.4.1 Group folder in the dispatcher

In order to maintain clarity, you should give each new dispatcher a short name or descriptive text. In this way, the function can still be recognised later.

You also have the option of using entries in the dispatcher's tree as so-called group folders. This function allows you to group the entries under these group folders by topic, for example. A similar procedure is used in the tour-automatic editor, for example. The display in Fig. 12.4 shows some examples of this.
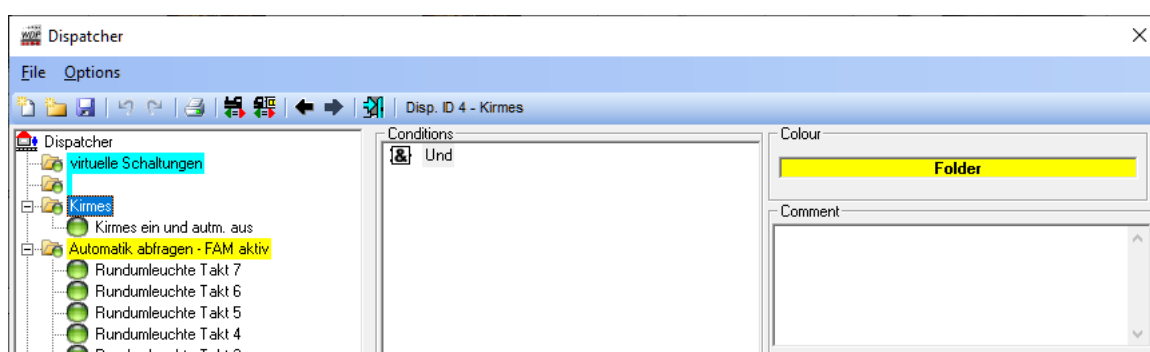
Fig. 12.4   The group folders can be individually coloured

To create a heading, <u>right-click </u>in the left-hand field with the tree structure and select from the short menu (see Fig. 12.5) and select the <Create new folder> entry.

Using the <u>left mouse button </u>for the background colour or the <u>right mouse button </u>for the text colour, you can click on the headings in the *"Folder"* field (cf. Fig. 12.4) to change the colour of the headings.

To save the data, click on the 💾 icon in the dispatcher's toolbar.
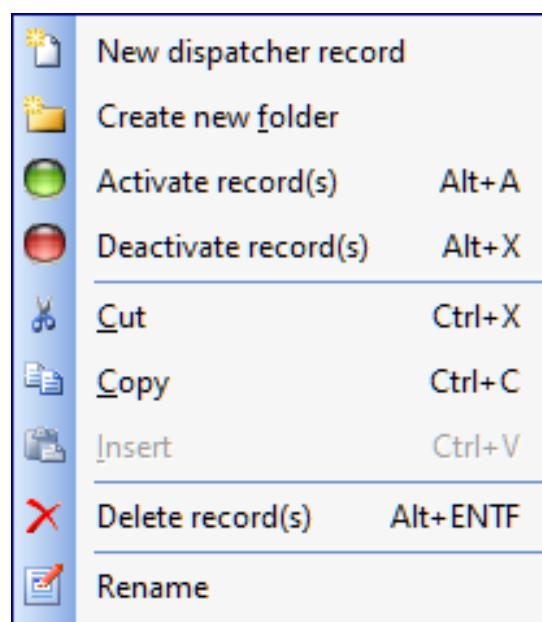
Fig. 12.5   The dispatcher data records short menu

12.5 Conditions and links in the dispatcher

The principal function of the dispatcher is as follows:

As mentioned at the beginning of this chapter, the dispatcher always runs in the background. This means that it is independent of any tour-automatic system. It monitors the entire track layout and registers any changes due to moving vehicles or trains or switching of solenoid devices, to name just two examples.

The conditions are now defined in the individual data records of the dispatcher and the switching actions to be executed when the defined conditions are met are also specified. You have already learnt how to work with conditions in the chapter on tour-automatic journeys.
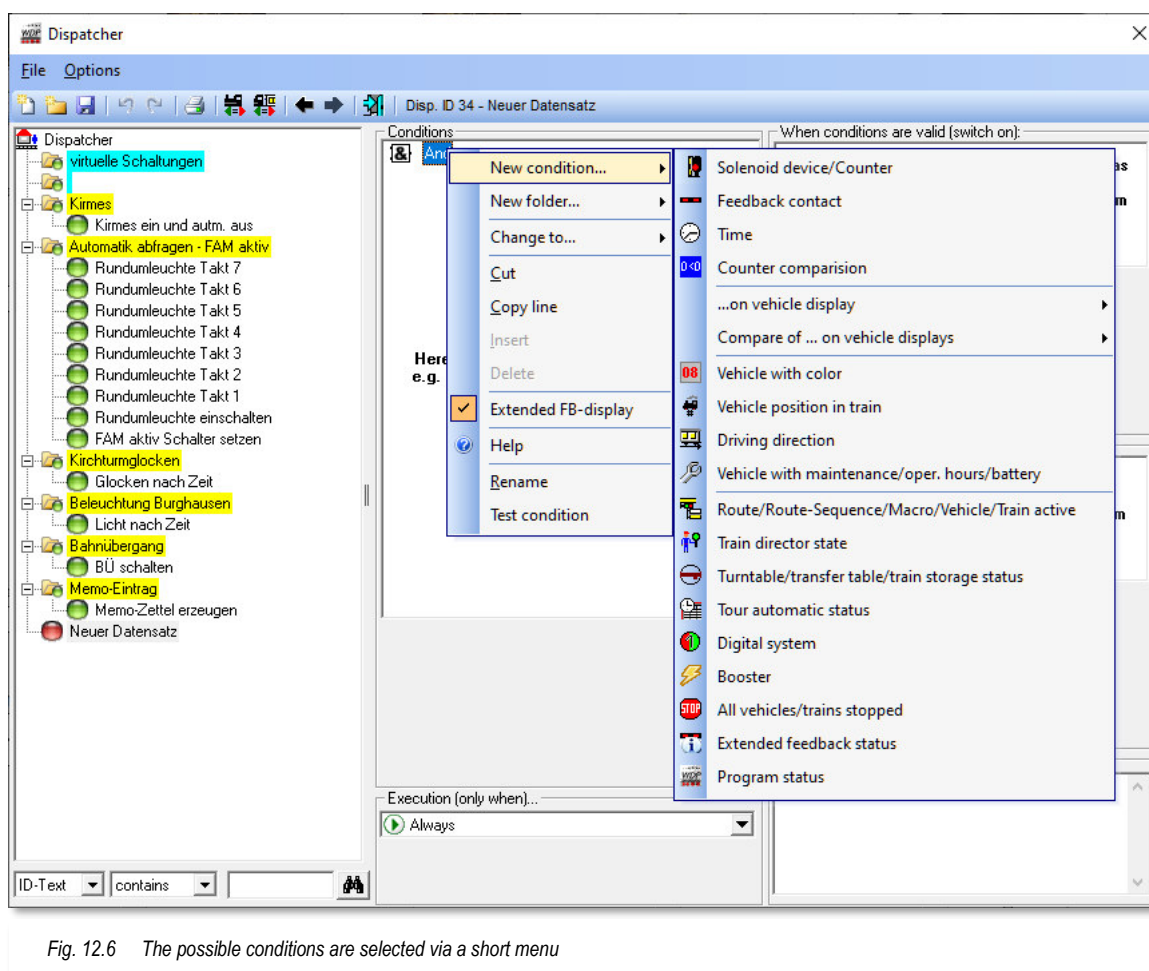
Fig. 12.6   The possible conditions are selected via a short menu

You have already worked with the conditions in the tour-automatic editor or in the route or profile editor. The aim there was to execute routes or profile lines if the defined conditions for the respective line were fulfilled.

This is exactly the same principle here in the dispatcher, except that no routes or profile lines are executed here, but the switching actions mentioned above are carried out.

In the middle part of the dialogue window, you will find the input field for the conditions. Initially, only an "And" is entered here. <u>Right-clicking </u>on this "And" opens a short menu from which you can now select <New condition><...> (cf. Fig. 12.6).

It is also possible to add conditions to group folders (e.g. funfair). These then affect the entire group of data records under the folder.

Many of the condition types in this menu were already available to you in the other editors (e.g. tour-automatic editor). In principle, however, only the conditions that make sense in the respective programme section can be used in the various editors. An example of this is the train director "expert measurement", which can only evaluate conditions in connection with vehicle displays.

All conditions are listed in the following table with the programme sections in which they are used. A detailed description of all conditions can be found in the chapter 13 and will therefore not be discussed again here.

The link types for the individual conditions, as well as the logic behind them, are also identical to those in the other editors .

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴
...on vehicle display							
Vehicle on VHD	●	●	🔴	🔴	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Train name on VHD	●	●	🔴	🔴	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of wagon types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of length (X) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of priorities on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle with colour	●	●	🔴	🔴	🔴		●
Vehicle position in train	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction		●			●		

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Vehicle with maintenance/oper. hours/battery	●	●	●	●	●		●
Route/Route-Sequence/Macro/Vehicle/Train active	●	●	●	●	●		●
Train director state	●	●	●	●	●		●
Turntable/transfer table/train storage status	●	●	●	●	●		●
Tour automatic status	●	●	●	●	●		●
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

12.5.1 Switch on expert mode

Some of the conditions, links and actions are only available to you after activating expert mode in the dispatcher.

You can switch on the so-called expert mode via the <Options> <Expert mode> menu.

At this point, we would like to point out once again that the functions in expert mode require in-depth knowledge of **Win-Digipet.** Only activate expert mode once you have developed a certain routine in using the control programme.

12.6 Switchings in the dispatcher

The right-hand part of the dialogue window for the dispatcher contains the switching actions to be carried out if the conditions are met.

The switching actions can be, for example, the switching of solenoid items or counters, the execution of crane macros or the switching of boosters or other actions. We have also encountered these circuits and actions in the tour-automatic editor and, to a limited extent, in the follow-up circuits in the routes editor.

The dispatcher cannot call up any train movements; this is the task of the tour-automatic system. An exception to this is the calling of vehicle/train macros or the stopping or restarting of vehicles or trains.
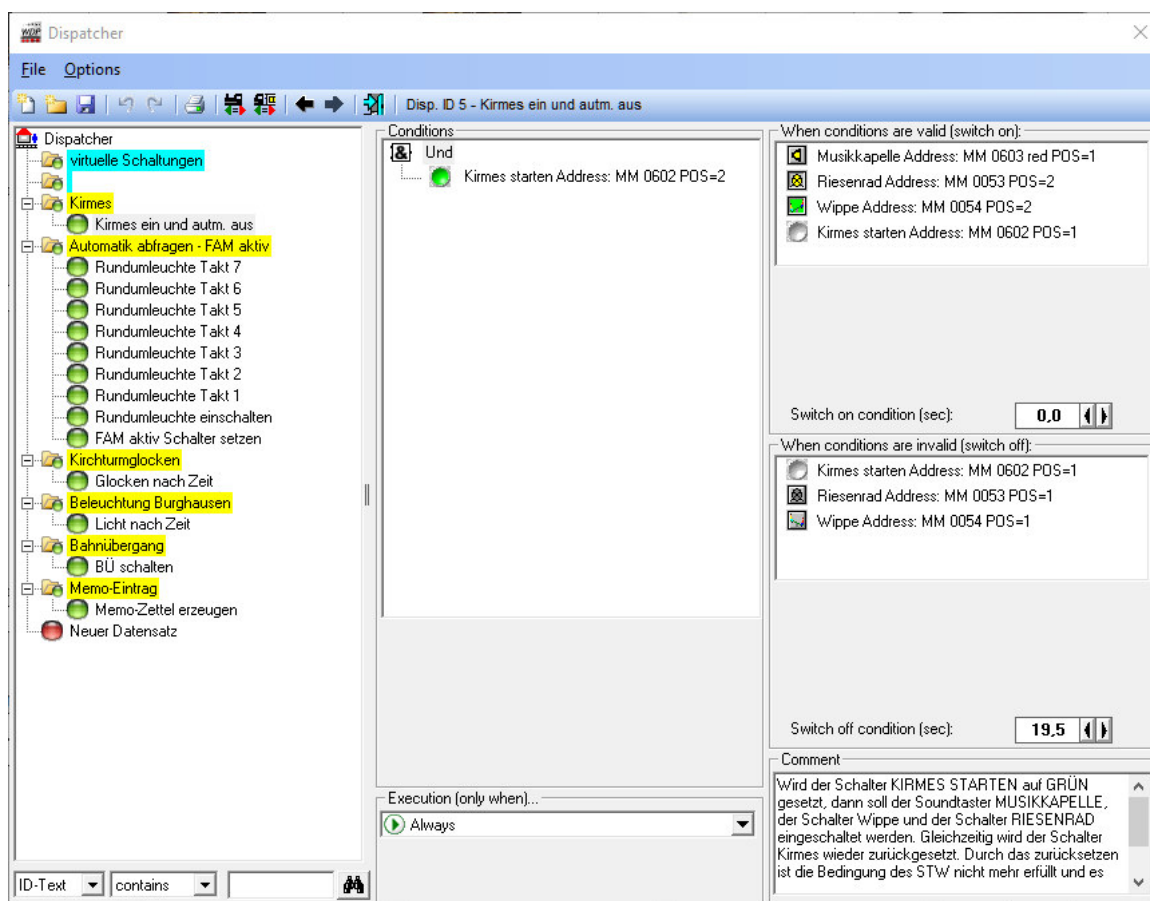
Fig. 12.7   Various switching actions "at the funfair"

In the upper field is used to store the circuits and actions that are to be switched on if the conditions are met. In the middle field is used to define the circuits that are to be switched on again after the conditions no longer apply. The example (cf. Fig. 12.7) shows various

switching actions that are executed as soon as the condition "Solenoid item 'Start funfair'[32] green" is fulfilled. Here, three further solenoid items are switched on at this moment and the fourth switching action is to switch the 'Start funfair' solenoid item off again.

As soon as the 'Start funfair' solenoid item is switched off again, the switching actions in the lower field come into play. These switch off the Ferris wheel and the seesaw with a delay of 19.5 seconds. It is not necessary to switch off the band here as the solenoid device is a push-button that switches off automatically.

However, there are also plenty of examples where a switch-off function is not necessarily required. Examples include counter circuits in which the displayed value should always increase.

Up to 30 switching operations can be switched on and off per dispatcher data record. Both switching types can be assigned a delay of between 0.5 seconds and 300 seconds, in steps of 0.5 seconds. The delays are set using the arrow buttons. However, these delays apply to all switching operations entered in the fields.

> In the case of delays, please note that the triggering condition must also be present for the duration of the delay. For example, if you have set a busy feedback contact as a condition for switching with a 5-second delay, this contact must also be busy for the 5-second period.

---

[32] „Kirmes" means funfair in German language

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12.6.1 Other switching types and actions

In addition to the switching of solenoid devices or counters, other types of action can be integrated into the two fields. The following diagram and table provide an overview. A detailed description of all possible switching actions can be found in the chapter 13. You can access the submenu for the actions by right-clicking in the switch-on or switch-off field and selecting <New action><...>.
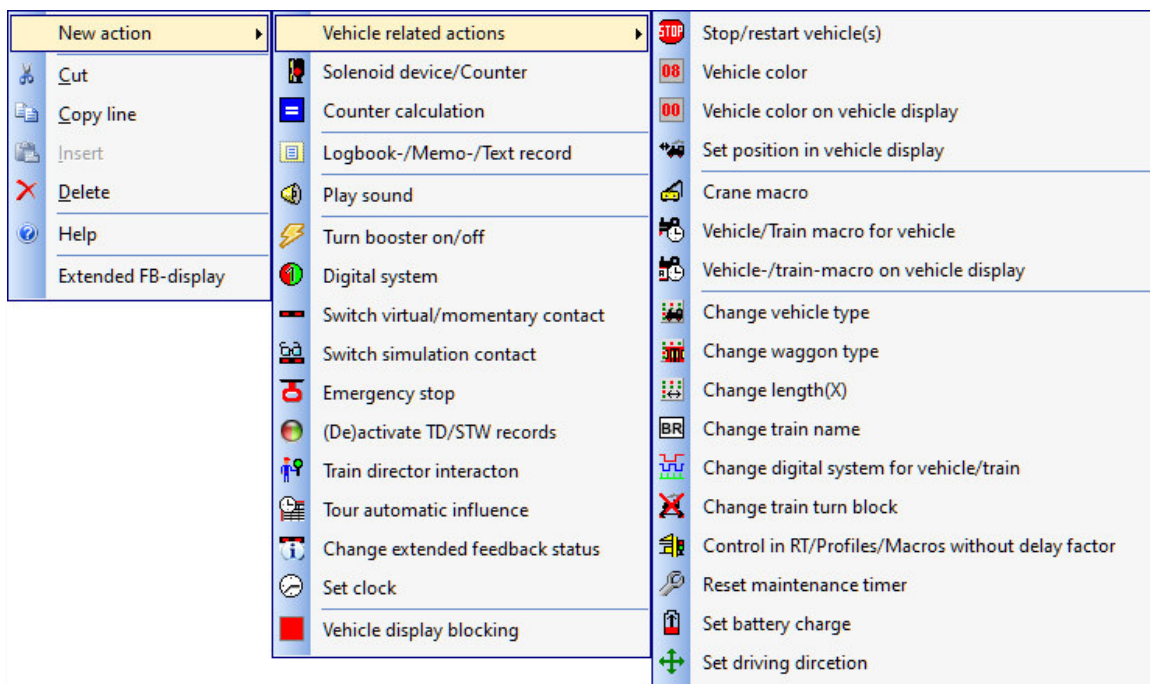
Fig. 12.8   The short menu with the possible switching actions of the dispatcher

The Table of all possible switching actions in the individual programme sections of **Win-Digipet**:

	Routes	Tour-Automatic	Dispatcher
Vehicle-related actions			
Vehicle colour		●	●
Vehicle colour on vehicle display		●	●
Crane macro		●	●
Vehicle/train macro for vehicle		●	●
Vehicle/train macro on vehicle display		●	●
Change vehicle type	●	●	●
Change wagon type	●	●	●
Change length (X)	●	●	●
Change train name	●	●	●
Change digital system for vehicle/train	●	●	●
Change train turn block		●	●
Control in route/profile/macro without delay factor	●	●	●
Reset maintenance timer	●	●	●
Set battery charge	●	●	●
Set direction of travel			●
Stop/start vehicle			●
Set position in vehicle display			●
Solenoid device/counter	●	●	●
Counter calculation	●	●	●
Logbook/memo/text record	●	●	●
Play sound		●	●
Switching the booster on/off			●

	Routes	Tour-Automatic	Dispatcher
Switch virtual/momentary contact	●	●	●
Switch simulation contact	●	●	●
Emergency stop			🔴
(De)activate TD/dispatcher entries	🔴	🔴	🔴
Tour-automatic influence	🔴	🔴	🔴
Change extended feedback status	🔴	🔴	
Set clock	🔴	🔴	🔴
Vehicle display blocking	🔴	🔴	🔴

🔴 - Function is only available in expert mode

12.6.2 Special executions

As special versions, switching actions can be executed for certain programme situations. The defined switching actions are executed for the "special" situations listed below

- 🚂 At programme start or end
- 🚂 When entering to or returning from the track diagram editor
- 🚂 When opening or exiting the window for calibrating vehicles or after selecting the measurement method
- 🚂 When opening or exiting the decoder programming window
- 🚂 At the start or end of decoder programming on the programming or main track
- 🚂 In the event of a connection failure or a stop or go switching of a digital system

The situations mentioned are, so to speak, the set conditions, but they can be supplemented by additional conditions.

You must activate the special executions in the <Options> menu of the dispatcher. After activation, a list window for selecting the specified programme situations is displayed in the lower part of the conditions area (see Fig. 12.7).

12.7 Editing aids in the dispatcher

For insert/edit/delete etc. editing aids are available to you when you right-click in a line. A short menu opens with the various commands.

All entries for feedback contacts, solenoid items and counters can be dragged directly into the large condition window with the left mouse button, as in the automatic journey editor.

You can use the mouse to specify the position at which the new entry should be made.

Here in the image, the symbol is inserted between the first and second feedback contact. The dashed line is always decisive.

Conditions that are no longer required can also be deleted directly after marking with the "<Del>" key on the PC keyboard and do not necessarily have to use the menu command of the short menu.
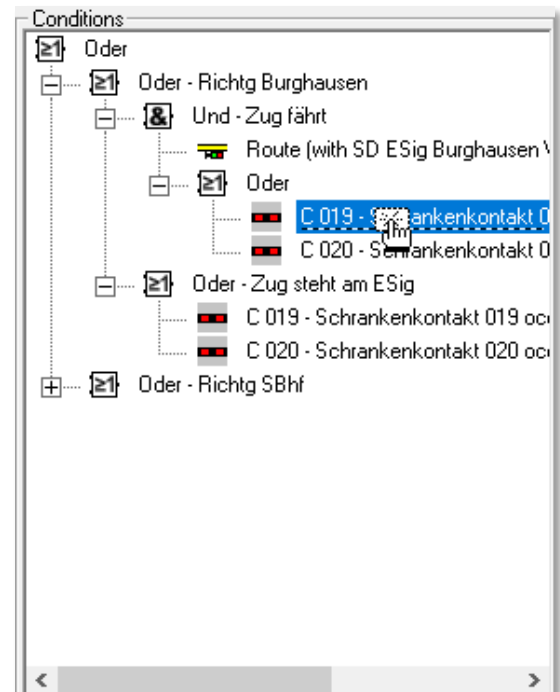
Fig. 12.9   Insert conditions

12.7.1 Move entries

The entries in the dispatcher can be easily moved using the mouse. To do this, select the entry with the left mouse button and, keeping the mouse button pressed, drag it to the desired position and release the mouse button. Pay attention to the small, **dashed line**, which indicates the new position.

12.7.2 Edit entries

The entries in the dispatcher can be cut, copied, pasted and/or deleted using the commands in the short menu after selecting them and clicking the right mouse button.

You can access a similarly designed short menu in the condition and circuit fields by right-clicking in one of the fields. You can edit the entries according to the procedure shown here.
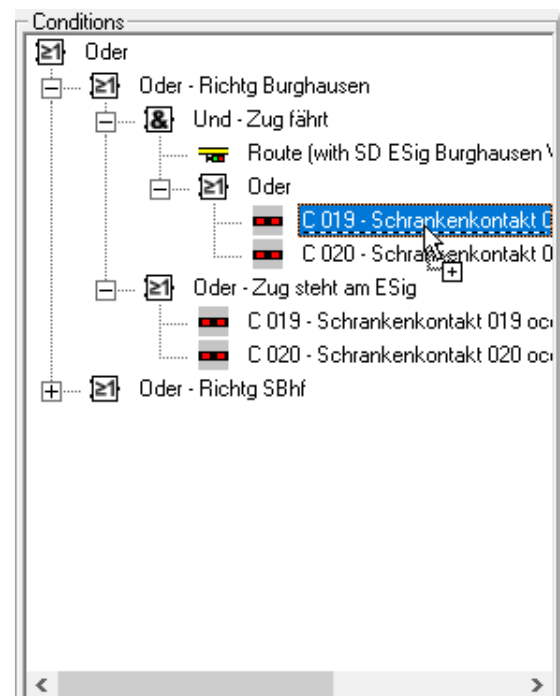
Fig. 12.10   Move entries

> When selecting and cutting/copying/pasting/deleting, always pay attention to the folder that you have selected, because everything in this tree below it is taken into the computer's temporary memory and cut, copied, pasted, or deleted, depending on the command issued.

12.7.3 Rename condition link

For this function, select the shortcut, <u>right-click</u> and then left-click on the <Rename> command. The folder function (And, Or, Not, Minimum, Maximum or Equal) is retained, supplemented by a hyphen, after which you can enter the desired text, as shown in the following image.
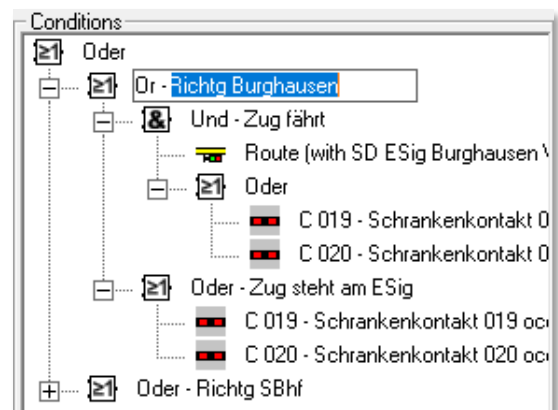
Fig. 12.11 Rename a link

12.7.4 Change logical linking of conditions

When creating a dispatcher data record, a folder with the link "*And*" is displayed by default. However, this can be changed to a folder with the "*Or*" link at any time.
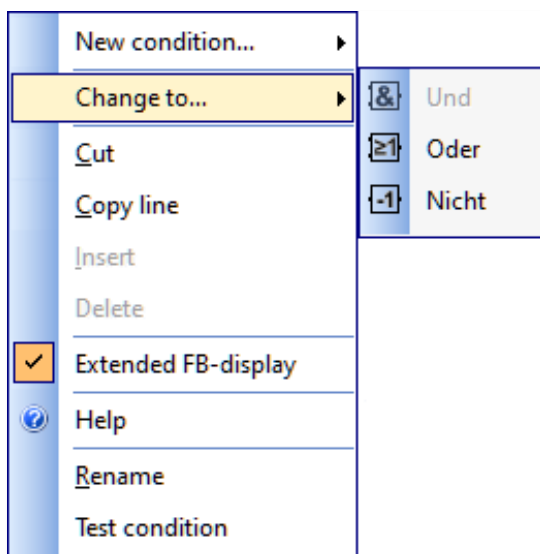
Fig. 12.12 Changing a logical link
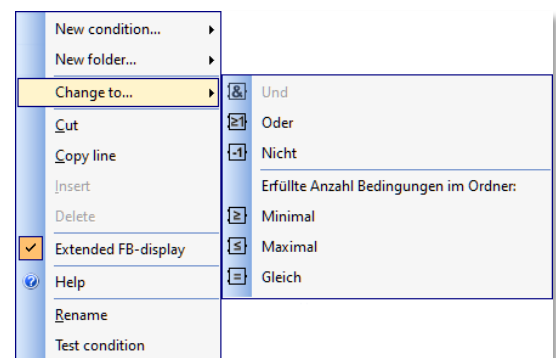
Fig. 12.13 Changing a logical link (expert mode)

To do this, select the relevant folder, right-click and then click on the <Change to ...><Or> command highlighted in the image.

The in Fig. 12.13 are only offered after activating the expert mode (see section 12.5.1).

12.7.5 Test conditions in the dispatcher

You can test all conditions immediately by right-clicking in the conditions area and selecting the <Test condition> command. You are already familiar with this function from the tour-automatic editor.

By clicking on this command, **Win-Digipet** immediately checks whether the set conditions are met or not. The result is displayed with green ticks or red crosses and the test function remains active until you switch to another line.

Fig. 12.14 Testing conditions

12.7.6 Extended FB-display

As soon as you have entered a feedback contact in a condition or action of the dispatcher, it is displayed with its contact number and the assigned name if this option is activated. You assign the name of a feedback contact in the "Feedback contact properties" dialogue box in the **Win-Digipet** track diagram.

12.7.7 Copy and paste data records

Created dispatcher entries can be copied and pasted anywhere as new data records and then adapted accordingly. To do this, select the dispatcher(s) to be copied, right-click and select the <Copy> command.

After clicking with the left mouse button on the <Copy> command, mark the desired position in the tree with the left mouse button.

After marking, right-click again and select the active command <Insert>. The copied data record is pasted **over** the selected item.

Fig. 12.15 Copy, paste, move etc. the data records in the dispatcher.

12.7.8 Activate/deactivate data records

As explained at the beginning of this chapter, the dispatcher works in the background during the entire programme sequence. However, you may want to (temporarily) deactivate or reactivate individual data records of the dispatcher. For this purpose, the short menu shown in Fig. 12.15 is called up.

After clicking with the <u>right mouse button,</u> select the <Activate record(s)> or <Deactivate record(s)> command from the short menu. Active dispatcher data records are signalled in the list with a stylised green 🟢 LED, while deactivated data records are signalled with a red 🔴 LED.

Activation or deactivation is even quicker with a click of the <u>middle mouse button</u> on the red or green LED symbol to the left of the list entry.

> Newly created data records in the dispatcher are always deactivated and must be explicitly set to active after completion

12.8 Examples of dispatcher

12.8.1 Switch railway crossing

We want to take up the example at this point and create a dispatcher for the level crossing. Before you make any entries, you should consider how the level crossing is to be switched. The following boundary conditions should apply to the switching of the level crossing in our example:

- 🚂 switch when a route or route sequence is set to the Burghausen West entry signal or staging yard A.

- 🚂 However, the barrier should only be closed when a feedback contact in front of or behind the level crossing is occupied.
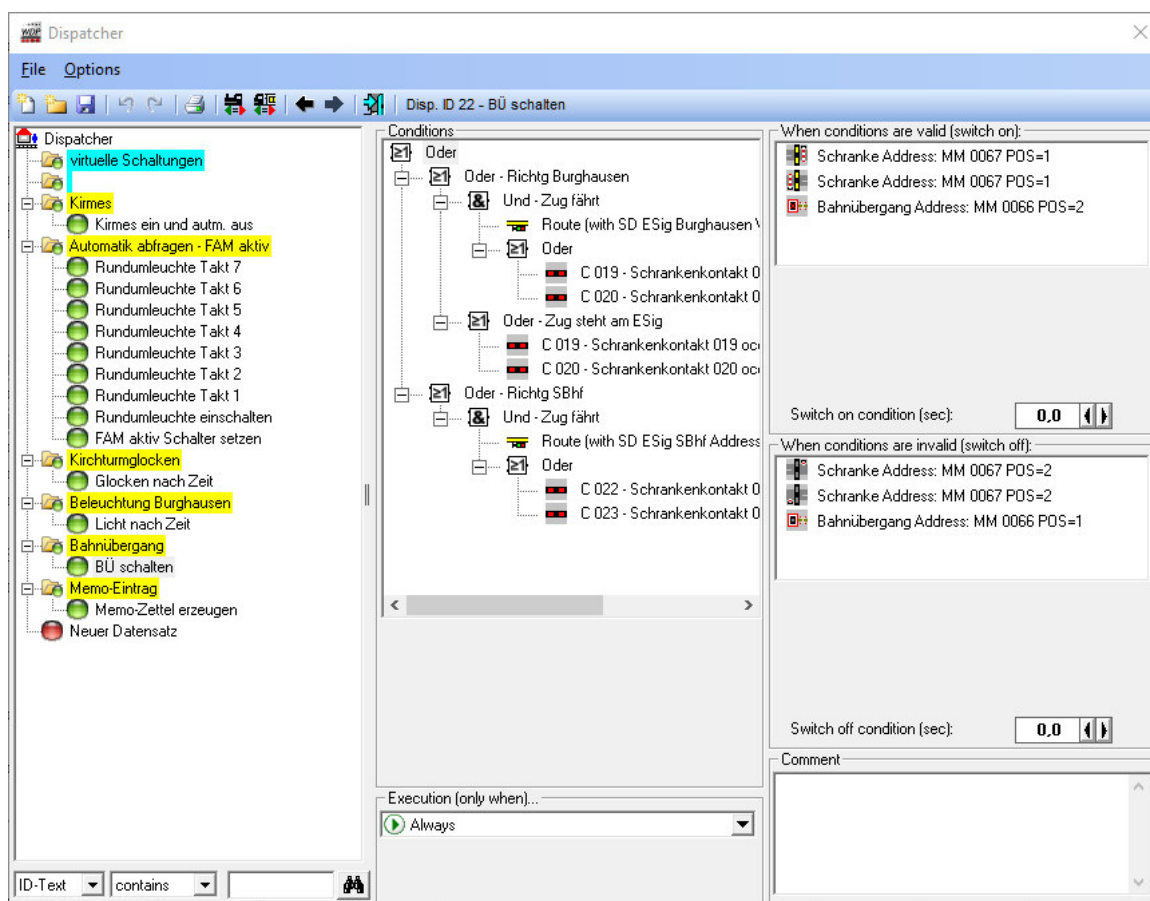
Fig. 12.16   A dispatcher data record controls the level crossing

The solution shown here includes a dispatcher. The dispatcher shown in Fig. 12.16 controls the flashing light and the barrier. The entry "Switch level crossing[33]" has been arranged under a group heading "Level crossing". No further conditions are set in the group folder in this example.

In the conditions, you will recognise a mixture of "AND" and "OR" links. At the top of the list is an OR link, which is used to monitor both directions of the level crossing.

The first branch deals with the conditions in the direction of Burghausen station. It has been defined here that as soon as a route in which the Burghausen entry signal has been recorded is active "AND" one of the two feedback contacts (before or after the level crossing) is occupied, the barriers close and the flashing light comes on.

However, there may be a situation where a train has to stop before the entry signal and the carriages still reach back to the level crossing. In this case, the above conditions would no longer apply, as the route is cancelled when the train number field at the entry signal is reached. The second part of the top section, in which the occupancy signal of the two contacts is analysed, then applies here. Incidentally, it is assumed here that the wagons trigger a feedback signal.

For the staging yard direction, it is sufficient for us to adapt the top part of the Burghausen direction to the routes and feedback contacts for the direction. The second part is not necessary at this point, as the entry signal to the staging yard is far enough away from the level crossing.

You can also see the names of the folders and the display of the names for the feedback contacts in the graphic.

The switching performed when the condition in this signal box guard is fulfilled concerns the flashing light and the barrier. Both are switched on simultaneously here.

The circuit when the dispatcher switches off again affects the flashing light and the barrier. These circuits are executed as soon as the conditions no longer apply. If necessary, a small switch-off delay can be used here to counteract any "shaky" feedback signals.

> The level crossing circuit shown here eliminates the need to record the solenoid items (barriers and flashing lights) in the routes and to enter a follow-up switching. In order to prevent automatic recording of the solenoid devices, you could insert jump labels at the level crossing.

> Important notes on the symbols!
>
> It is up to you which symbols you use here, as **all** symbols drawn in the track diagram initially fulfil no function.

---

[33] "Bahnübergang (BÜ) schalten" in German language

They are only used for visual representation, as they only gain a function when they are used in the respective editors (route, profile, and automatic routes editors) or, as here, in the dispatcher.

12.8.2 Time controls with the dispatcher

With you can realise almost all time-controlled functions. The following image shows the entries for the regular switching of lighting. The function is ready for use with just a few clicks and text entries.
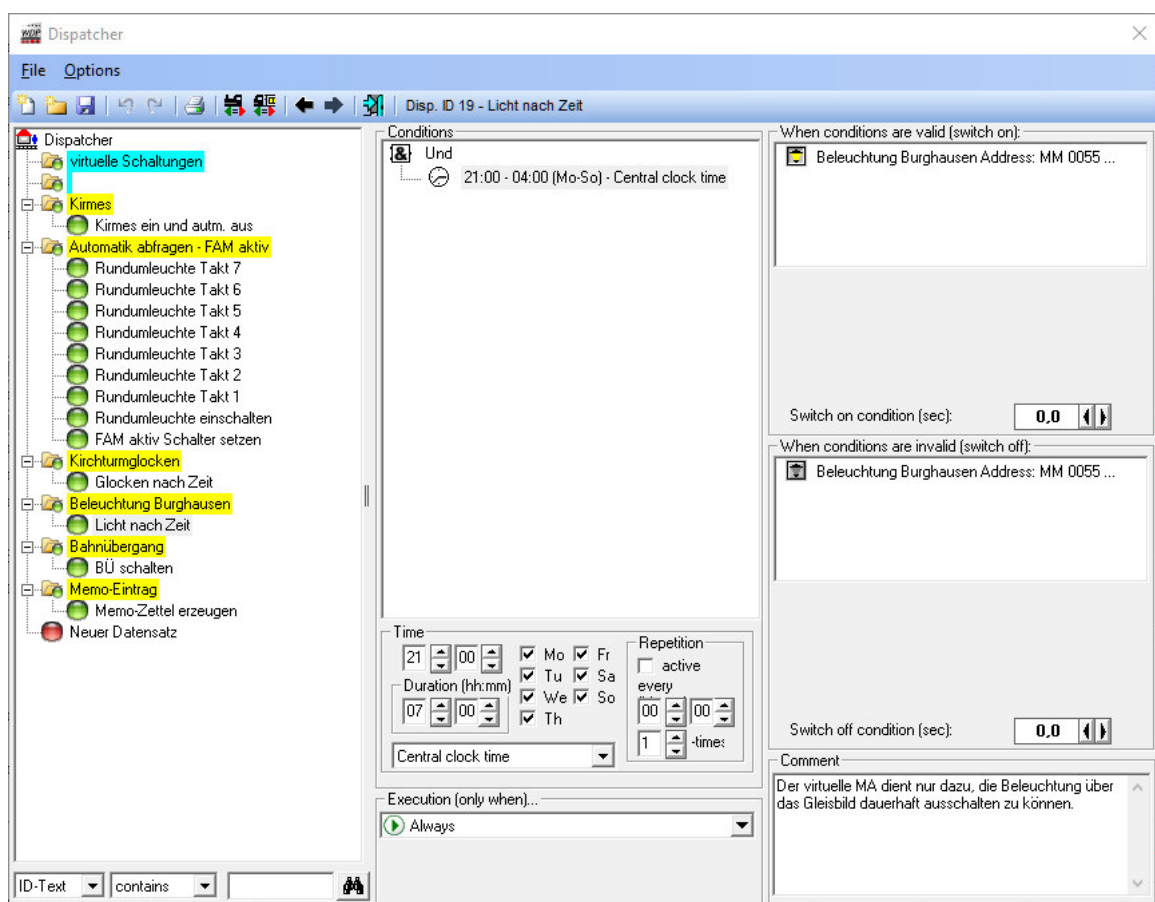
Fig. 12.17   A dispatcher data record with a switching by time

To do this, <u>right-click</u> on the "*And*" folder and then on the <New condition><Time> command, set the time settings according to the image, drag & drop the lighting symbol from the track image into the two circuit fields and save; the dispatcher entry is ready.

The time settings configured here indicate that the lighting is switched on for seven hours every day at 21:00. The time of the central clock is specified here as the reference time.

In the case of time control with the dispatcher, you can specify whether the time is to be taken from the central clock or the current tour-automatic journey.

In this case, the switch for switching this timer circuit on or off is assigned to the "Burghausen lighting" group folder. This would give you the option of placing further data records with lighting circuits in the group and switching all circuits via a solenoid device.

> If you have set the radio button here to "Tour-automatic (TA) time", the entered time controls are only triggered when a tour-automatic journey is **started.** Therefore, always note which time is to be used to control the dispatcher.

12.8.3 Dispatcher for funfair, music band etc.

With you can realise almost anything with the dispatcher and therefore another example from the demo project "WDP2021" is shown here.
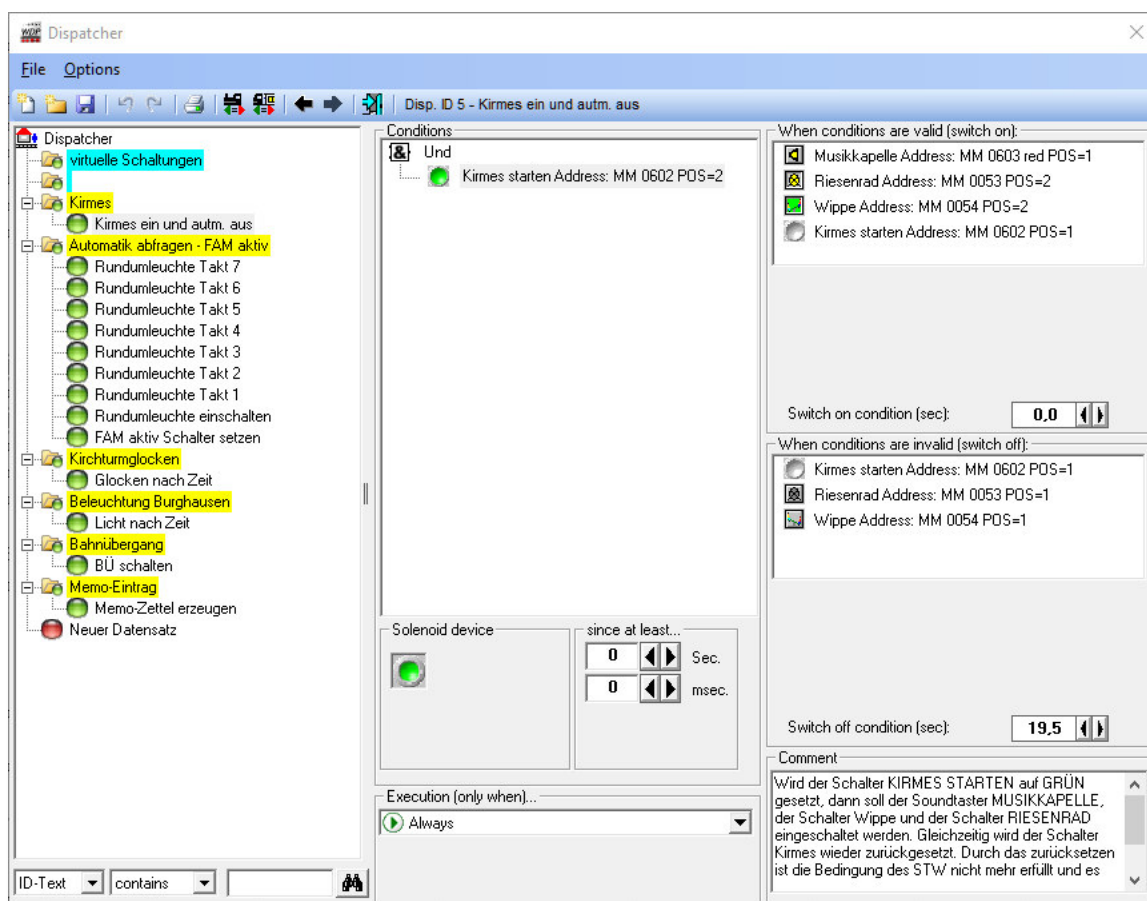
Fig. 12.18   A dispatcher data set for various circuits and automatic switch-off of a funfair

This dispatcher data set is intended to control a funfair on your model railway layout. As an example, two solenoid items for swings and a Ferris wheel as well as a switch for

"proper" beer tent music are integrated here. The "Start funfair" switch must be in the "green" position for the circuit to operate.

The band, the Ferris wheel and the swing will then immediately start working. At the same time, the "Start funfair" switch is deactivated again.

This immediate switch-off also switches off the two function models. Without a delay, this switch-off would be after about 500 msec. The delay of 19.5 seconds entered here therefore means that the two function models only switch off after around 20 seconds.

You do not need a switch-off for the music band as the solenoid device is a sound button. A sound file has been assigned to this sound button in the track diagram editor, which is played in full when the button is started. The length of the sound stored here is also approx. 20 seconds, which creates the effect that all switching operations end at approximately the same time.

12.8.4 Dispatcher for indication of active automatic travel

Another example from the demo project can possibly be used on a display system. Visual signalling is to be achieved by means of a coloured text and an active rotating beacon. The
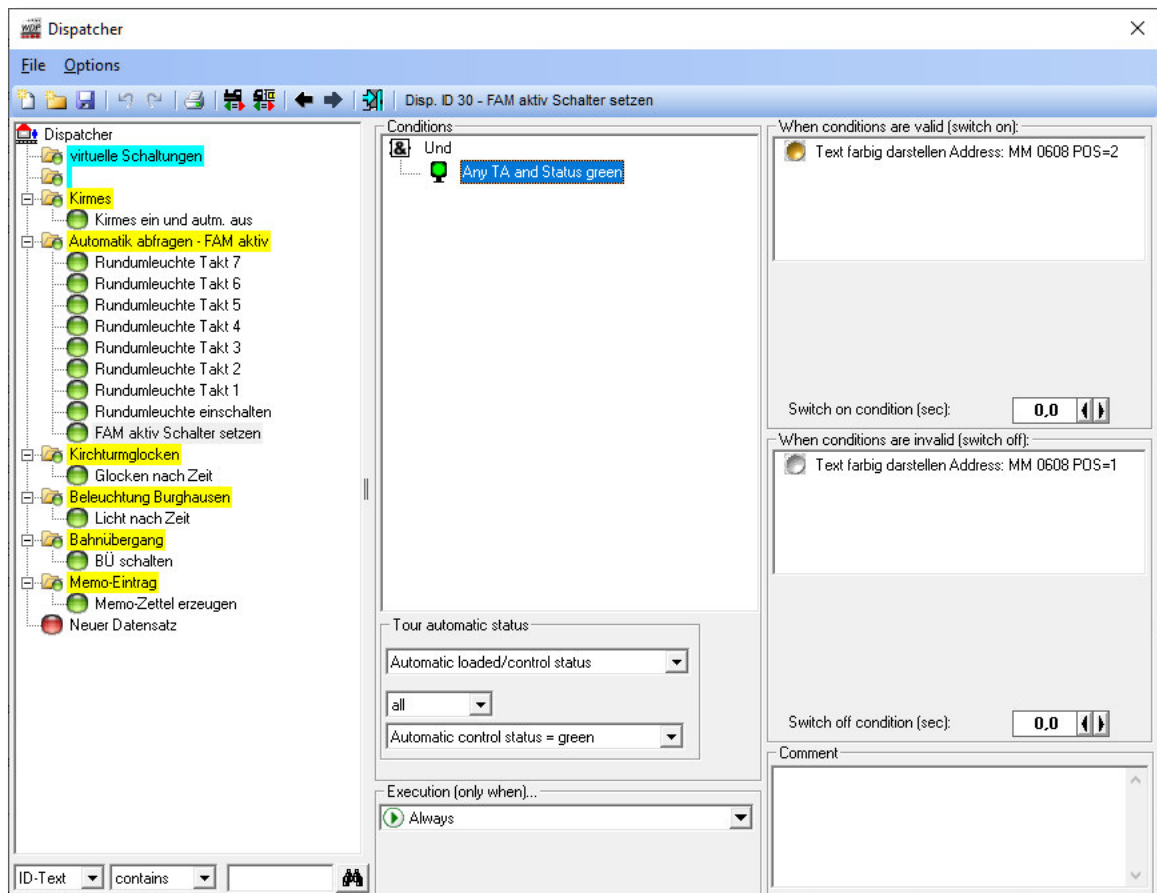
Fig. 12.19   This dispatcher data record switches a virtual solenoid item when the automatic travelling system is active.

signalling should start when any automatic movement is started and continue until the automatic movement is deactivated.

Step 1:

In this example, eight data records are required in the signal box attendant to map this functionality. The data set shown in Fig. 12.19 contains the condition "Any TA active". This condition is fulfilled if a tour-automatic movement has been loaded and set to "green" in the tour-automatic command centre. As soon as the condition is fulfilled, a virtual, two-aspect switch is activated with the "Set TA active switch" data record. These switches have the property of being able to switch virtual feedback contacts. This option has been activated for our switch in the track diagram editor.

You can recognise the words "Automatic active!" in the track diagram. This is displayed in grey in idle mode. You will no doubt remember the function in the track diagram editor to display a text in a different colour as soon as a specific feedback contact is active (occupied). You can utilise this function here by binding exactly the contact to the text that is switched by the two-position solenoid device used. In this way, you or the dispatcher can use the switch to change the colour of the text to red.

Step 2:

In the second step, the rotating beacon is activated. This rotating beacon is also a solenoid device, but with eight different position options. Switching every 500 msec (dispatcher's rotation times) creates the visual impression of an animated rotating beacon.
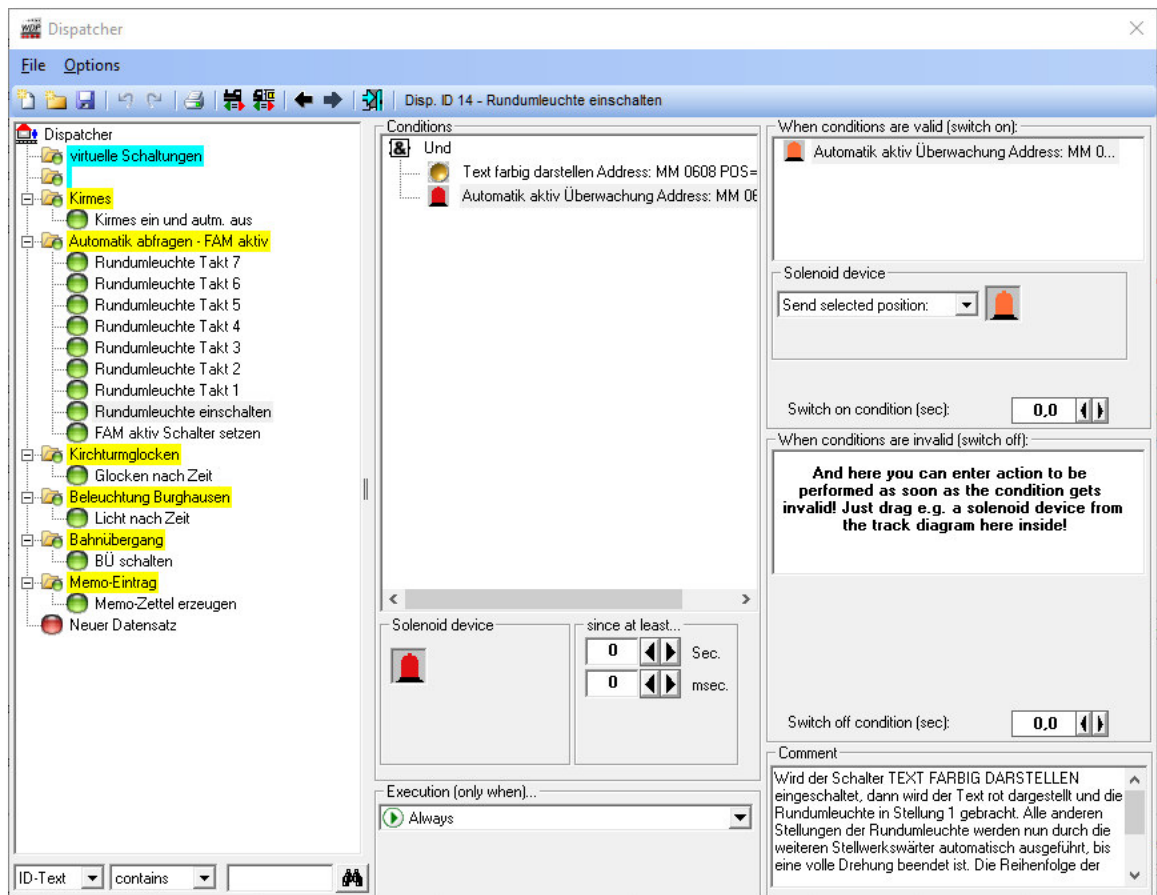
Fig. 12.20   The dispatcher data set switches on a rotating beacon

There are two entries in the conditions here with an AND link. Firstly, the above-mentioned switch is checked again for its active position; the second entry checks whether the rotating beacon is in its basic position. If both conditions are met, the lamp is switched one switching position (cycle) further. As a result of this cycle switching, the input conditions of this dispatcher are no longer fulfilled.

Step 3:

The condition of this step is the query of the position of the rotating beacon. This was set by the "Switch on rotating beacon" data record to the exact position that is checked here as a condition in the "Rotating beacon cycle 1" data record.
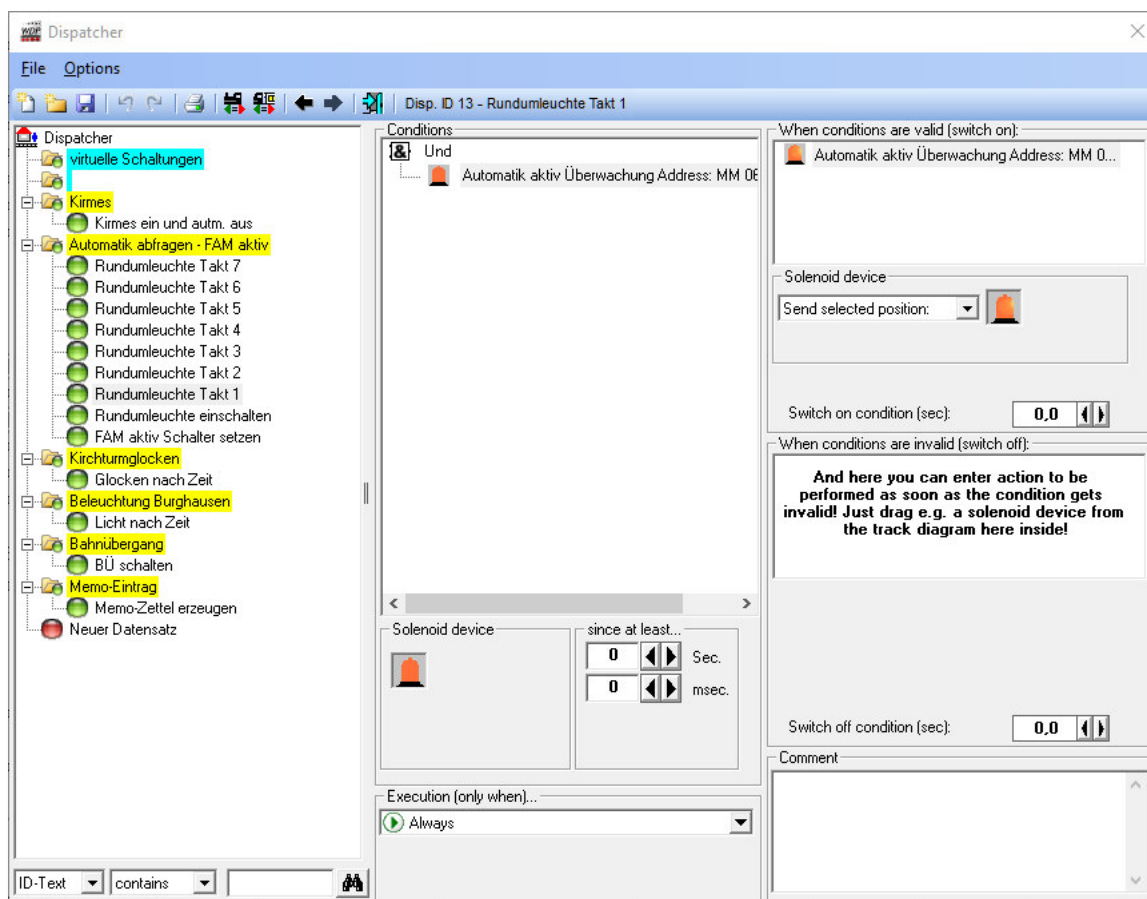
Fig. 12.21   The rotating beacon is switched by the dispatcher's pulse

If the condition is met, the light is switched one step further again. This process is now repeated for all 8 switching states of the light until it has returned to the home position, and it is checked again whether the switch activated at the beginning and therefore the automatic mode is still active. As an aside, it should be noted that the rotating beacon always returns to its home position, as this is the only place where the switch for querying the automatic mode is queried in the conditions.

You will certainly have noticed that the individual dispatcher for the rotating beacon are arranged in reverse order. The reason for this is that the dispatcher works from top to bottom and therefore there is always the 500 msec between the switching operations that the dispatcher needs to check all entries.

12.8.5 Other controls with the dispatcher

With you can also combine all functions with the dispatcher. For example, you could switch the lighting of houses and/or streets in the following dependencies:

- 🚂 occupied feedback contacts

- 🚂 switched solenoid devices or counters

- 🚂 Time settings (from, to, how long, repetitions, etc.)

- 🚂 Colour of a specific vehicle or (black, red, blue)

- 🚂 Switch-on and/or switch-off delays

The circuits will not be described again here, as they can be used in the same way here in the dispatcher, as described in the chapter 13 "Conditions and circuits".

Version 2021
Premium Edition

Chapter 13

13.   CONDITIONS AND CIRCUITS

13.1 General on the conditions

In some **Win-Digipet** editors it is possible to use conditions. This means that the execution of rides, switching actions or ride properties is linked to the fulfilment of set requirements. The purpose and the number of conditions are different in the editors. In principle, however, only the conditions that make sense in the respective part of the programme can be applied in the various editors. An example of this is the train director Expert measurement, which can only evaluate conditions in connection with vehicle displays.
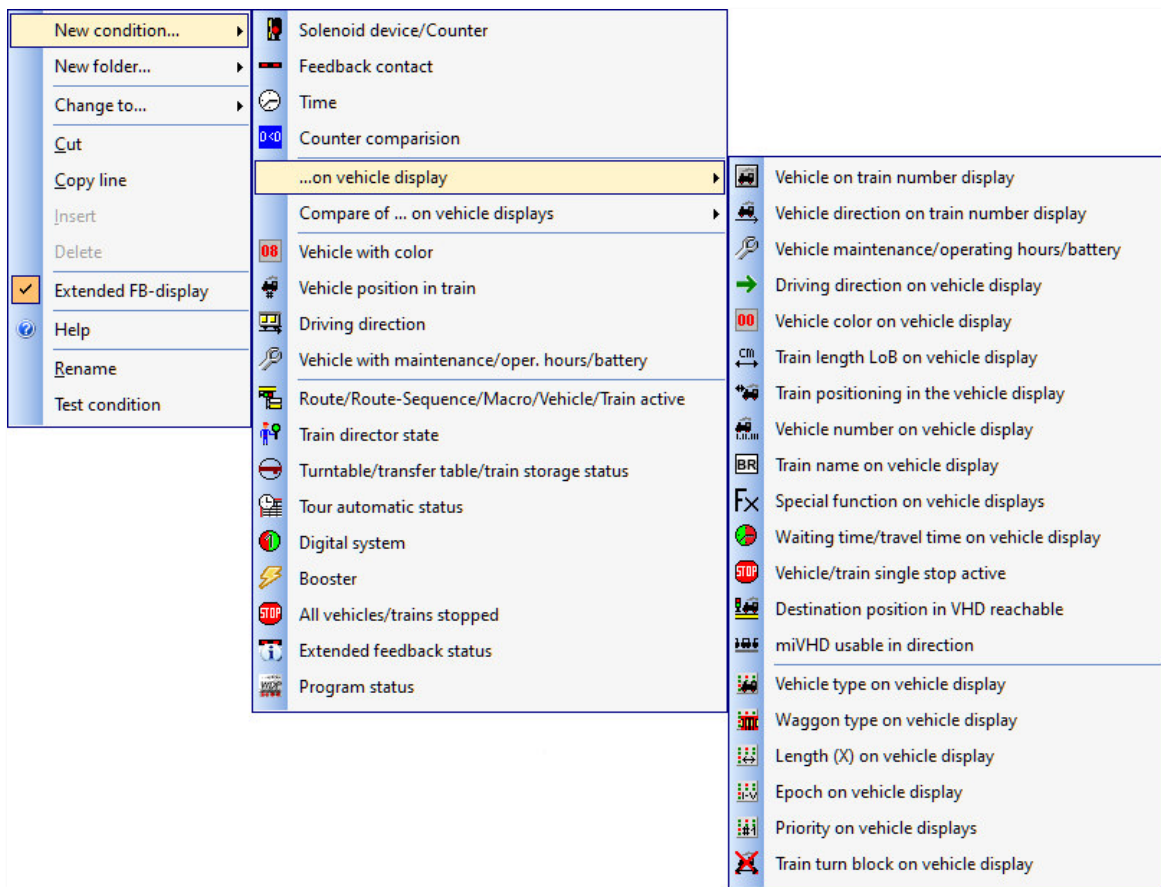
Fig. 13.1   The short menu with the various conditions (example shows the dispatcher's menu)

The following sections contain detailed explanations of the meaning of the individual conditions. All conditions are listed in the following table with the programme sections in which they are used. The link types for the individual conditions and the logic behind them are also identical in the editors.

Some of the conditions are only available to you after activating expert mode in the respective editor. The levels from "beginner" to "professional" cannot be determined exactly, but the features reserved for expert mode are sophisticated functions that require in-depth knowledge of **Win-Digipet.** The Expert mode can be found in the editors:

- 🚂 Routes editor
- 🚂 Route sequence editor
- 🚂 Profile editor
- 🚂 Macro editor (vehicles)
- 🚂 Tour-Automatic editor
- 🚂 Dispatcher

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Solenoid devices/Counter	●	●	🔴	🔴	●		●
Feedback contact	●	●	🔴	🔴	●		●
Time of day	●	●	🔴	🔴	●		●
Counter comparison	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
…on vehicle display							
Vehicle on VHD	●	●	🔴	🔴	●	●	●
Vehicle direction on VHD	●	●	🔴	🔴	●		●
Vehicle maintenance/operating hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle colour on VHD	●	●	🔴	🔴	●	●	●
Train length (LoB) on VHD	●	●	🔴	🔴	●	●	●
Train positioning on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle number on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Train name on VHD	●	●	🔴	🔴	●	●	●
Special function on VHD	●	●	🔴	🔴	●		●
Waiting time/travel time on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle/train single stop active	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴
Waggon type on VHD	🔴	🔴	🔴	🔴	🔴	●	🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Length (X) on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Epoch on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Priority on VHD	🔴	🔴	🔴	🔴	🔴	⚫	🔴
Train turn block on VHD	🔴	🔴	🔴	🔴	🔴		🔴
Compare of… on VHDs							
Compare of locomotive directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of maintenance times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of driving directions on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of locomotive colours on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of train lengths (LoB) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle counts on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of waiting times on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of vehicle types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of wagon types on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of length (X) on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Compare of priorities on VHDs	🔴	🔴	🔴	🔴	🔴		🔴
Vehicle with colour	⚫	⚫	🔴	🔴	🔴		⚫
Vehicle position in train	🔴	🔴	🔴	🔴	🔴		🔴
Driving direction		⚫			⚫		
Vehicle with maintenance/oper. hours/battery	🔴	🔴	🔴	🔴	🔴		🔴
Route/Route-Sequence/Macro/Vehicle/Train active	🔴	🔴	🔴	🔴	🔴		🔴
Train director state	🔴	🔴	🔴	🔴	🔴		🔴
Turntable/transfer table/train storage status	🔴	🔴	🔴	🔴	🔴		🔴
Tour automatic status	🔴	🔴	🔴	🔴	🔴		🔴

	Routes	Route Sequences	Profiles	Vehicle macros	Tour automatic	Train director	Dispatcher
Digital system	●	●	●	●	●		●
Booster	●	●	●	●	●		●
All vehicles/trains stopped	●	●	●	●	●		●
Extended feedback status	●	●	●	●	●		●
Program status	●	●	●	●	●		●

● - This condition is only available in the expert mode of the respective editor

13.2 The conditions in the editors

The principle for entering conditions and definitions is the same in all editors. In this chapter, we use the dispatcher as an example. The dialogue view may differ slightly in some places compared to the dialogues in the other editors.

Once opened, the input field for the conditions generally appears as shown in Fig. 13.2 is shown.

Initially, only an "And" is entered at this point. Right-clicking on this "And" opens a short menu from which you can now select <New condition><...>.

After clicking on this menu item, the conditions menu opens (see Fig. 13.1). You can now select your desired conditions from this menu and link them together (logically) in the so-called "condition tree" in the dialogue window.

Fig. 13.2   The "Conditions" dialogue box

We will come back to the other options of the short menu in connection with the organisation and linking of conditions later in this chapter.

13.2.1   The condition "Solenoid device/counter"

Solenoid device

Here you can link the execution of the route/route sequence or switching action to the positions of solenoid items. These can be all real or virtual solenoid items (turnouts, signals, switches, buttons, etc.) from the **Win-Digipet** track diagram.

To do this, right-click on the "*And*" *folder* and then trigger the menu command <New condition> <Solenoid device/counter>. A signal symbol and the label "Solenoid device/*counter*" appear beyond the "*And*" *folder.*

As usual, you enter a solenoid item by "drag & drop" into the "*Solenoid* item" input field under the condition tree. To do this, click on the symbol in the track image with the left mouse button and, holding down the left mouse button, drag the solenoid device into the empty "Solenoid device*"* field and release the mouse button. You must then click with the left mouse button to set the desired position of the solenoid item. You are already familiar with this procedure from other editors such as the routes editor.

Another option is to enter the solenoid item very conveniently directly with the mouse button. To do this, left click on the item symbol in the track diagram and, holding down the left mouse button, drag the symbol under the folder (AND) into the conditions window and release the mouse button.

The solenoid item is displayed in the specified position (e.g. with the travel position for the signal). If this is not the required position, click with the left mouse button in the area of the entered solenoid item and correct the position of the solenoid item.

If you have assigned names to the solenoid devices drawn in your track diagram, as recommended in this documentation, you will now find them here. This example makes it clear how important it is to assign these names in the track diagram editor, as you can now immediately see what the task of the inserted solenoid item is and what condition it should now fulfil.
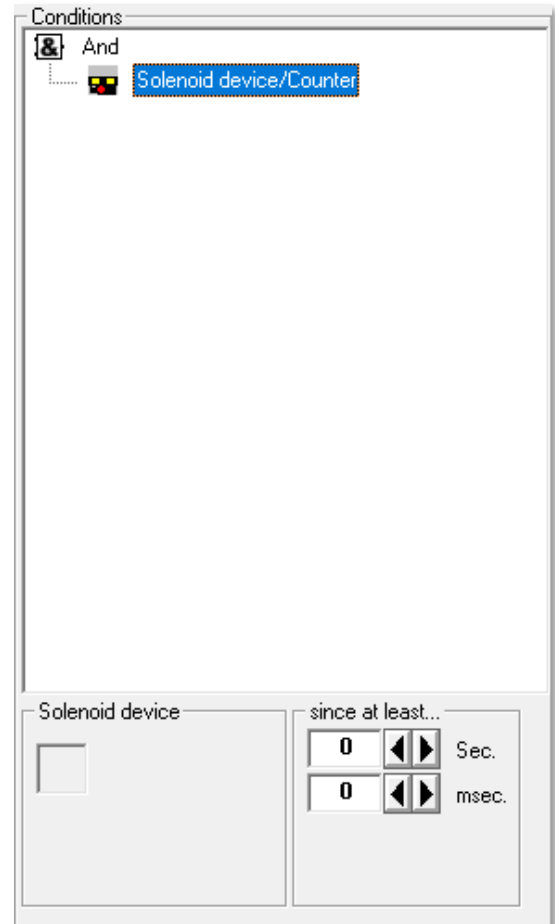
Fig. 13.3   The "Solenoid device/counter" condition

If you hover over the entered symbol with the mouse pointer, the corresponding symbol is also surrounded by a frame in the track diagram, and you can see immediately whether you have inserted the correct symbol.

Optionally, you can also set a time value in sec:msec in this dialogue. This time value specifies how long the entered solenoid item must have been in the specified position before the condition is fulfilled.

Counter

In the same way as the solenoid items, you can evaluate counter symbols here in the condition tree. There are various options for this. In the example, the condition should only be fulfilled if the counter has a value of less than 3.

To do this, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition><Solenoid device/counter>.

Now drag the counter symbol into the input field and then set the desired counter function.

After you have set the counter function to "*<00*" with the <u>left mouse button</u> in the lower right field "Solenoid device" (or with the <u>middle mouse button</u> in the area of the entered counter), click with the <u>right mouse button</u> in the lower field "Solenoid device" and a small dialogue window *"Set target value"* appears.

You can also open the *"Set target value"* window by pressing the <u><Shift>-key</u> and the <u>middle mouse button</u> in the area of the counter entry.

Set the value here using the keyboard or the two arrow buttons and accept the value with '*OK*'.

The target value set here can be greater than, less than or equal to the value of the counter. A counter cannot accept negative values, so less than "0" can never be "TRUE". The desired operation is selected by clicking on the counter symbol in the input field.

However, other counter applications and combinations are also possible here to control operation on the model railway layout. You will really appreciate this counter function after a short familiarisation phase.

Fig. 13.4   The target value is set
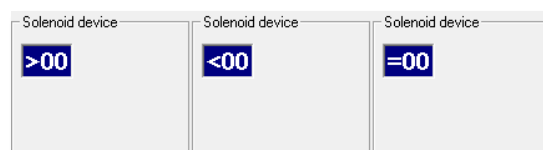
Fig. 13.5   1 different counter operations are possible (image montage)

13.2.2 The condition "Feedback contact"

This condition checks the occupancy status of the feedback contacts entered here.

To do this, <u>right-click on </u>the "*And"* folder and then trigger the menu command <New condition><Feedback contact>.

A track section and the designation "C *0* free" appear under the "*And"* folder. You can enter the number of the feedback contact using the keyboard or "drag & drop".

To do this, click on the track section or another symbol with a contact number with the <u>left mouse button</u> and, holding down the <u>left mouse button</u>, drag the contact number into the still empty "*Feedback contact"* field and release the mouse button.

The feedback contact can be free or occupied. By default, no tick is set and therefore an "F" (free) is also displayed. However, if you tick the box, a "O" (occupied) is displayed.

The designation in the upper part of the right-hand window immediately changes the designation from "C *0* free" to "C *xxx* free" or "C *xxx occupied"* according to your specification.

The one in the Fig. 13.6 belongs to a vehicle display (VHD). If this is an intelligent vehicle display (iVHD), you can include all contacts of the iVHD in the condition check by setting the option. In the example here, the condition is only "fulfilled" if the contact 054 is reported as "free".

Fig. 13.6   The "feedback contact" condition

13.2.3 The condition "Time"

With you can use this condition to define a dependency of the switching or movement action on a time.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition><Time>.

You can set the times by clicking on the small arrows; it is not possible to enter them using the keyboard.

In this example, the condition entered is only fulfilled in the period from 01:00 to 04:00 (01:00 plus 3 hours). This applies to all days of the week, as all checkboxes are ticked by default. If you want to restrict this to weekdays, simply deactivate the corresponding days.

You can also specify repetitions here if you tick the appropriate boxes and enter the interval and number of repetitions here in the dialogue.

Fig. 13.7   2 "Time" condition

The time used here is either the time of the started tour-automatic journey (TA time) or the time of the central clock. You can select the required time using the list button in the dialogue field.

When using the "Time" condition in a tour-automatic journey, it makes no sense to enter repetitions at this point if the ⤵ character for repetitions is activated in the line entered in the tour-automatic.

13.2.4 The "Counter comparison" condition (expert mode)

With this condition allows you to compare the values of two counters entered in the track diagram. Drag and drop the counters into the fields provided using the familiar method. You can use the following operands for the comparison:

Fig. 13.8   3 The "Counter comparison" condition

- 🚂 **Equal (=)**
  the 1st counter has the same value as the 2nd counter

- 🚂 **Greater (>)**
  the value of the 1st counter is greater than the value of the 2nd counter

- 🚂 **Smaller (<)**
  The value of the 1st counter is smaller than the value of the 2nd counter

- 🚂 **Greater than or equal to (La-equal (≥))**
  the value of the 1st counter is greater than or equal to the value of the 2nd counter

- 🚂 **Less than or equal to (Sm-equal (≤))**
  the value of the 1st counter is less than or equal to the value of the 2nd counter

- 🚂 **Unequal (≠)**
  the value of the 1st counter is not equal to the value of the 2nd counter

The example in Fig. 13.8 shows a counter comparison in which the yellow "Test counter 1" must have a greater value than the green counter "Test counter 2" in order to set the entered condition as fulfilled.

13.2.5 The "Vehicle on vehicle display (VHD)" condition

With this condition allows you to set the dependency on the position of a specific vehicle in a vehicle display (VHD).

To do this, right-click on the "*And"* folder and then trigger the menu command <New condition><…on vehicle display><Vehicle on VHD>.

You can enter the vehicle and contact number either using the keyboard or by "drag & drop" in the usual way.

This function can be used, for example, to ensure that the rail bus on a branch line only departs the platform when an ICE has also arrived at the platform.

The Fig. 13.9 shows that the KLV53 must be entered as the leading vehicle in the train in vehicle display 054 in order for the condition to become "TRUE". Alternatively, the option "as any vehicle in the train" could be used at this point. However, both options are only displayed if, for example, the KLV53 is listed as a train in the train composition.

You can also enter the digital address of a vehicle in the Vehicle field. A special feature here is the "0", which stands for "any vehicle".

Fig. 13.9   The "Vehicle on vehicle display" condition

Please note that the condition is already fulfilled as soon as the vehicle is entered on the vehicle display, although it may still be on its way to its destination. It may be necessary to use a second condition (e.g. route NOT active) to ensure that the vehicle or train has physically reached its destination.

The contact number entered must necessarily be a contact with a **vehicle display**.

A registered journey or switching action is executed if the vehicle or train number is in the vehicle display. The contact or one of the contacts of an iVHD does not have to be occupied. If an occupancy is also part of the condition, you must also insert it and link it to the condition Vehicle on VHD.

13.2.6 The condition "Vehicle direction on vehicle display"

The condition sets the dependency on the vehicle direction of a vehicle or train on a defined vehicle display.

Please note that the term "vehicle direction" **does not refer** to the direction of travel. It refers to the orientation of the vehicle on the specified vehicle display.

To do this, <u>right-click</u> on the "*And*" folder and then trigger the menu command
<New condition><on vehicle display><vehicle direction on VHD>.

With the radio button, you have the option of making the fulfilment of the condition dependent on the vehicle direction forwards or backwards.

Conceivable scenarios for the use of this condition are in push-pull operation or may be required when travelling on a transfer table or turntable.

Fig. 13.10   The condition "Vehicle direction on VHD"

13.2.7 The condition "Vehicle maintenance/operating hours/battery on vehicle display" (expert mode)

If you have tracks or roads on your model railway or car layout for maintenance work (oiling/cleaning vehicles, charging car batteries, etc.), you can also set conditions for this.

For example, a journey that leads to a service track could only be executed in an automatic journey system if an operating hours counter reaches a certain threshold value.

To do this, right-click on the "*And"* folder and then trigger the menu command <New condition><on vehicle display> <Vehicle maintenance/Operating hours/Battery>.

You can use the "Vehicle status…" selection list to refine the condition using the following options:
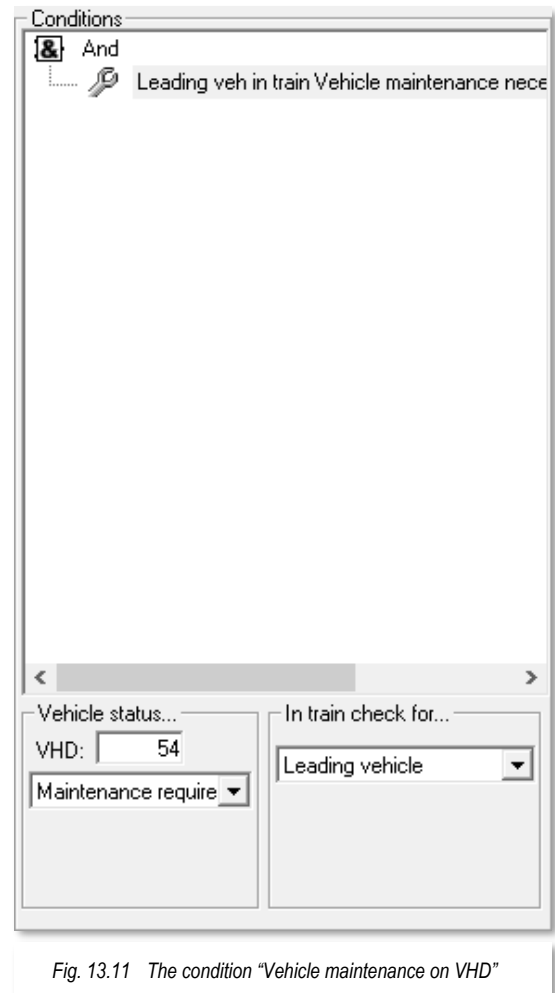
Fig. 13.11   The condition "Vehicle maintenance on VHD"

- 🚅 **Maintenance required**
  The time value "Maintenance interval" from the vehicle database or the vehicle properties must be exceeded.

- 🚅 **Maintenance not necessary**
  The time value "Maintenance interval" from the vehicle database or the vehicle properties must not have been reached.

- 🚅 **Hours of operation**
  The operating hours counter from the vehicle database or the vehicle properties
  must not be equal to, greater than, less than, equal to or less than a defined time value.

- 🚅 **Time until maintenance**
  The time value until the maintenance time from the vehicle database or the vehicle properties is reached must not be equal to, greater than, less than, equal to, less than or not equal to a defined time value.

- 🚅 **Remaining battery runtime (road-related vehicles)**
  The time value until the maximum battery life from the vehicle database or the vehicle properties is reached must not be equal to, greater than, less than, equal to, less than or not equal to a defined time value.

- 🚅 **Battery level (road vehicles)**
  The percentage value of the charge level of a battery must not be equal to, greater than, less than, equal to or less than a defined percentage value.

You can carry out the test for different vehicles in a platoon:

- 🚂 For the leading vehicle
- 🚂 For all vehicles, all locomotives, or all carriages in the train
- 🚂 For a single vehicle, a single locomotive, or a single wagon
- 🚂 For any vehicle

13.2.8 The condition "Driving direction on vehicle display" (expert mode)

With you can use this condition to set the execution of a movement or switching action depending on the direction of travel on a specific vehicle display.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition> <On vehicle display> <Driving direction on vehicle display>.

The radio button allows you to make the route/route sequence dependent on the direction of travel of the vehicle or train on the defined vehicle display.

The direction of travel is defined in this condition by selecting a compass direction. The contact number entered must necessarily be a contact with a **vehicle display.**

When using this condition, it is important to note that the term driving direction has a different meaning to the term vehicle direction. A vehicle or train can leave the station in a northerly direction, for example, regardless of whether it is travelling forwards or backwards.

The Fig. 13.12 shows for vehicle display 054 that the condition is only fulfilled if the vehicle or train is travelling in the "West" direction.
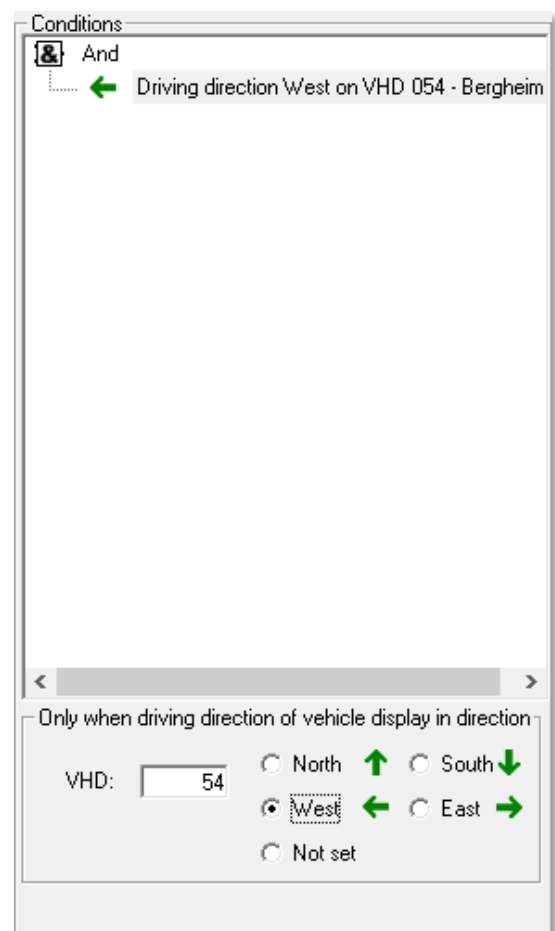
Fig. 13.12   The "Driving direction on VHD" condition

13.2.9 The condition "Vehicle colour on vehicle display"

With the condition sets the dependency of the execution of a trip or switching action on the colour of a vehicle or train number on a specific vehicle display.

To do this, <u>right-click</u> on the *"And"* folder and then trigger the menu command <New condition> <On vehicle display> <Vehicle colour on vehicle display>.

You can enter the VHD contact number using the keypad.

Use the five switches to set the colour of the vehicle number in a vehicle display. The switch shown pressed is decisive here.

- 🚂 Black - normal driving mode

- 🚂 Green - vehicle/train is in route sequence

- 🚂 Red - vehicle/train is blocked for contact related automatic operation

- 🚂 Blue - vehicle/train is blocked for time related automatic operation

- 🚂 Purple - vehicle/train is blocked for any automatic operation

- 🚂 Manual (M) - manual driving of the vehicle/train active

- 🚂 ~~Manual (M)~~ - manual driving of the vehicle/train inactive

In this example, the condition is fulfilled if the vehicle/train entered on vehicle display 054 - Bergheim 1 is set to vehicle colour "black".

Fig. 13.13   The condition "Vehicle colour on vehicle display"

13.2.10 The condition "Vehicle/Train length (LoB) on vehicle display"

This condition checks the vehicle or train length (LoB) on a defined vehicle display. For road vehicles, where there is usually no "length over buffer", use the length over the bumpers of the vehicle as the reference value.

To insert the condition, right-click on the *"And"* folder and then trigger the menu command <New condition> <On vehicle display> <Train length LoB on vehicle display>.

In the selection field, you can change the default setting from "≥ Minimum" to "≤ Maximum" or "≠ Unequal". enter the value for the tension length LoB using the keyboard. You can choose between the units centimetres (cm) or millimetres (mm) for the length specification.

The "VHD" field contains the number of the vehicle display.

The length check can be carried out either for an entire train or for individual train sections. Another selection list *"In train check for..." is* used to define the possible train sections.

Fig. 13.14 *"The vehicle/train length (LoB) condition on VHD"*

> 🚂 **Leading vehicle**
> The LoB of the leading vehicle

> 🚂 **Single vehicle, single locomotive, or single wagon**
> A vehicle, locomotive or individual wagon
> can be defined at a specific position depending on the direction of travel

> 🚂 **Any vehicle, locomotive or wagon**
> The condition is fulfilled as soon as at least one vehicle in the train has the registered LoB

> ⚠️ The contact number entered here **must** also be the feedback contact of a vehicle display.
>
> The condition is fulfilled if the train length LoB of the vehicle or train entered on this vehicle display corresponds to the definition in the selection lists and value fields.

13.2.11 The condition "Train positioning on vehicle display" (expert mode)

This condition determines the positioning of a vehicle or train on a specific vehicle display (iVHD) in relation to the two ends of the vehicle display.

To do this, <u>right-click</u> on the "*And*" folder and then trigger the menu command
<New condition><on vehicle display><Train positioning on VHD> menu command.

In the selection field, you can select the distance to the start or end of the iVHD. Enter the value for the distance in either centimetres or millimetres.

You can select the following logical functions - each in relation to the distance value entered:

🚂 **Equal (=)**
The distance on the iVHD is equal to the set value

🚂 **Greater (>)**
The distance on the iVHD is greater than the set value

🚂 **Smaller (<)**
The distance on the iVHD is smaller than the set value

🚂 **Greater than or equal to (≥)**
The distance on the iVHD is greater than or equal to the set value

🚂 **Less than or equal to (≤)**
The distance on the iVHD is less than or equal to the set value

🚂 **Unequal (≠)**
The distance on the iVHD is not equal to the set value

🚂 **Unknown**
The distance on the iVHD is unknown

Fig. 13.15   The condition "Train positioning on VHD"

The query of the condition is therefore: Is the distance to the right/left end of the vehicle display equal, greater, smaller, greater-equal, smaller-equal, unequal, or unknown compared to the entered value.

13.2.12 The condition "Number of vehicles on vehicle display" (expert mode)

You can also make the execution of a switching action or journey dependent on the number of vehicles on a vehicle display.

To do this, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition><On vehicle display><Number of vehicles on vehicle display>.

In the selection field, you can restrict the default setting of "all vehicles" to a number of locomotives or wagons; enter the value for the number using the arrow keys.

The following logical functions - each in relation to the entered value - can be used here:

🚂 **Equal (=)**
The number of vehicles on the iVHD is equal to the set value

🚂 **Greater (>)**
The number of vehicles on the iVHD is greater than the set value

🚂 **Smaller (<)**
The number of vehicles on the iVHD is smaller than the set value

🚂 **Greater than or equal to (≥)**
The number of vehicles on the iVHD is greater than or equal to the set value

🚂 **Less than or equal to (≤)**
The number of vehicles on the iVHD is less than or equal to the set value

🚂 **Unequal (≠)**
The number of vehicles on the iVHD is not equal to the set value

Fig. 13.16   The condition "Number of vehicles on VHD""

Enter the number of the vehicle display in the "*VHD"* field using the keypad.

> ⚠️🚂 With a multi-intelligent vehicle display (MiVHD), only the vehicles of the train in the first position are considered.

13.2.13 The condition "Train name on vehicle display"

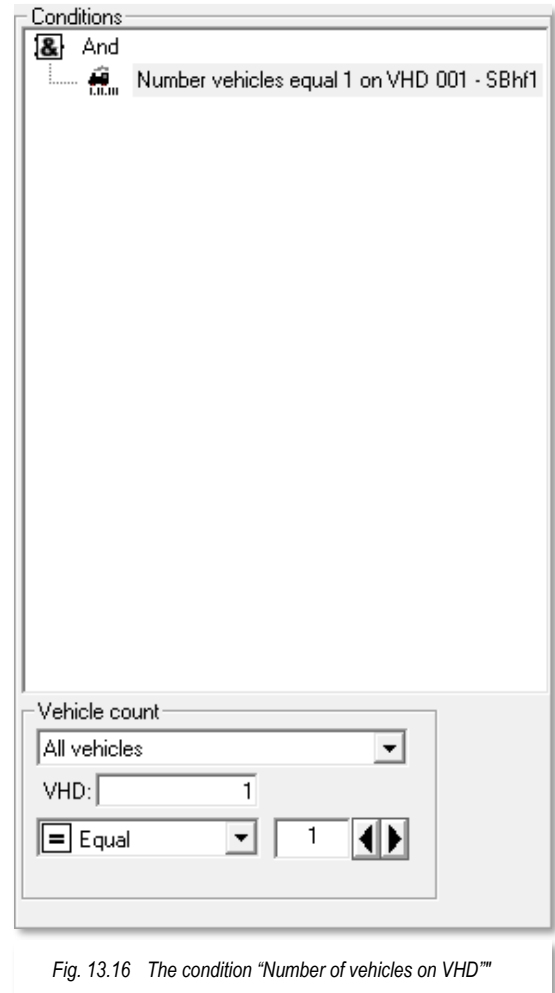The execution of a movement or switching action can also be made dependent on the name of the train on a feedback contact.

To do this, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition><On vehicle display><Train name on VHD>.

Enter the name of the train or part of the name in the text field provided. For a group of trains whose names always begin with the same character string (e.g. IC1234, IC9876, ICE1090), use the filter function offered in the selection list. You are already familiar with this from other parts of the **Win-Digipet** programme, such as the routes editor. Here you will also find the filters *"starts with"*, "*contains"*, "*ends with"* and *"is equal to"*.

The above-mentioned group would therefore be entered in the condition using the filter function "starts with" and the character string "IC".

The "Train name on vehicle display" condition offers you yet another function. You can apply this condition not only to the complete train name, but also to individual train sections. Another selection list *"In train check for..."* is used to define the possible train sections.

Fig. 13.17   The condition "Train name on vehicle display"

- 🚂 **Leading vehicle**
  The name of the leading vehicle

- 🚂 **Single vehicle, single locomotive, or single wagon**
  The name of a vehicle, locomotive or individual wagon can be defined at a specific position depending on the direction of travel

- 🚂 **Any vehicle, locomotive or wagon**
  The condition is fulfilled as soon as at least one vehicle in the train has the registered name

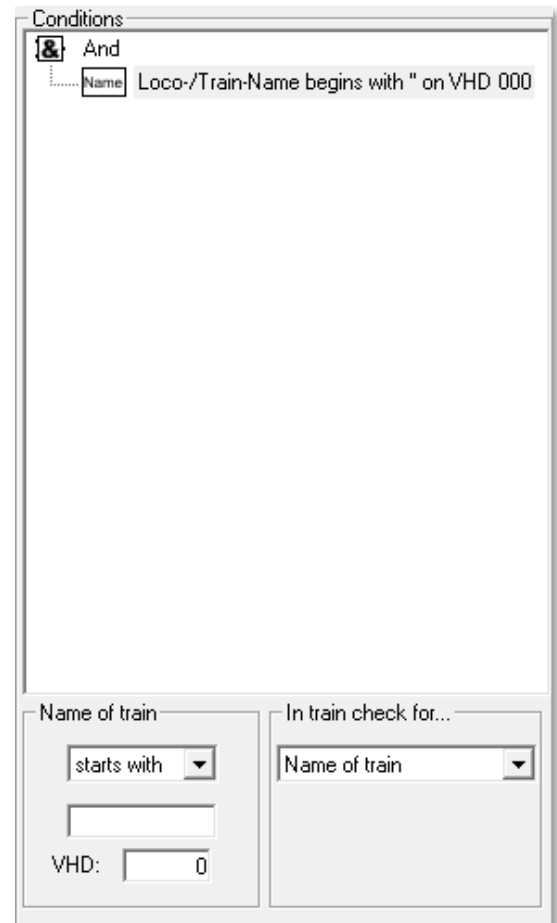The number of a vehicle display must also be entered for this condition.

13.2.14 The condition "Special functions on vehicle display"

The condition "Special functions on VHD" makes the execution of a journey or switching action dependent on a specific special function of a vehicle or train on a vehicle display. All vehicle functions that can be assigned to the vehicles in the vehicle database via the function symbols can be used as special functions here.

It does not matter which function button is used to trigger the vehicle function. What is important here is the assigned function symbol.

To select the condition, <u>right-click</u> on the "*And*" folder again and then trigger the menu command <New condition> <On vehicle display> <Special function on VHD>.

When you expand the function selection list, you will see the tree already familiar from the vehicle database with all selectable functions. If you have created your own function icons, you will also find them in the tree.

After selecting the special function, you can decide whether the condition is considered fulfilled when the special function is switched on or off. Furthermore, the query can also be adapted to the presence of the selected special function in the vehicle or train.

Fig. 13.18   The condition "Special function on VHD"

You can apply this condition not only to the entire train, but also to individual train sections. Another selection list *"In train check for..." is* used to define the possible train sections.

- 🚂 **Leading vehicle**
  The special function of the leading vehicle

- 🚂 **Single vehicle, single locomotive, or single wagon**
  A vehicle, locomotive or individual wagon can be defined at a specific position depending on the direction of travel

- 🚂 **Any vehicle, locomotive or wagon**
  The condition is fulfilled as soon as at least one vehicle in the train has the registered special function

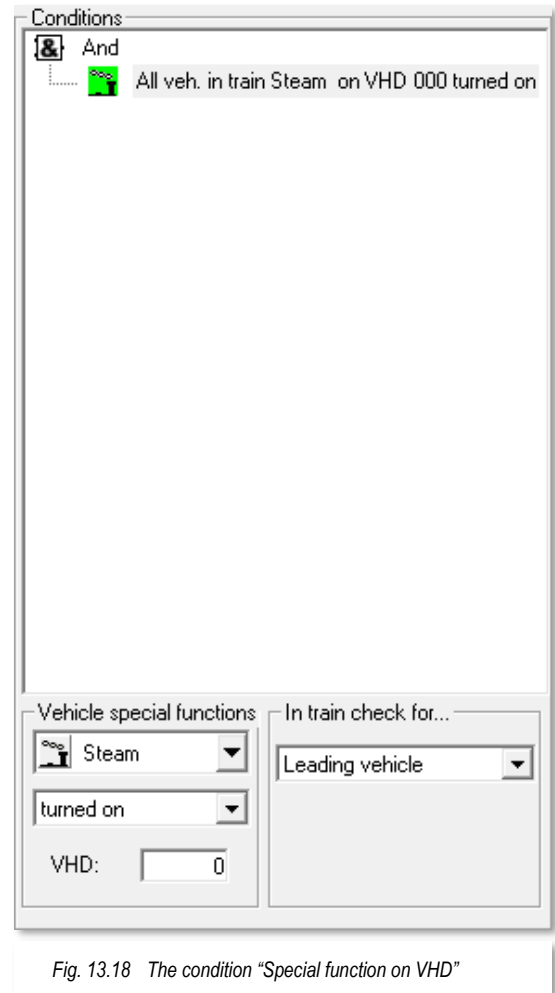The number of a vehicle display must also be entered for this condition.

13.2.15 The condition "Waiting time/travelling time on vehicle display" (expert mode)

You can also make the execution of a journey or switching action dependent on the waiting time of a vehicle or train on a vehicle display or the journey time to this vehicle display.

To do this, right-click on the "*And"* folder and then trigger the menu command <New condition> <On vehicle display> <Waiting time /Travel time on vehicle display>.

The selection list contains the entries:

- 🚂 Waiting time for vehicle display
- 🚂 Current travel time to vehicle display

In the fields at the bottom of the dialogue, use the arrow keys to enter the value for a waiting time in hh:mm:ss that is to be checked for the train in the defined train number field. You can then link the time value to the following operands:

- 🚂 **Equal to (=)**
  The waiting-/travelling time on/to the VHD is equal to the set time value

- 🚂 **Greater (>)**
  The waiting-/travelling time on/to the VHD is greater than the set time value

- 🚂 **Less (<)**
  The waiting-/travelling time of the vehicle on/to the VHD is less than the set time value

- 🚂 **Greater than or equal to (≥)**
  The waiting-/travelling time of the vehicle on/to the VHD is greater than or equal to the set time value

- 🚂 **Less than or equal to (≤)**
  The waiting-travelling time of the vehicle on/to the VHD is less than or equal to the set time value

- 🚂 **Unequal (≠)**
  The waiting-/travelling time of the vehicle on/to the VHD is not equal to the set time value

Fig. 13.19   The condition "Waiting time on VHD""

The time value entered here is always in real time; if necessary, the programme converts the waiting time using the model railway factor specified in the automatic mode.

13.2.16 The condition "Vehicle/train single stop active" (expert mode)

The condition "Vehicle/train single stop active" makes the execution of a journey or switching action dependent on whether there is a "single stop" for a vehicle or train on a specific vehicle display.

The stop of individual vehicles can be triggered, for example, via a switching action in or via the short menu in Vehicle Control.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition> <On vehicle display> <Vehicle/train single stop active>.

The tab only offers the option of defining the relevant vehicle display. For this reason, there is no pictorial representation here.

13.2.17 The matrix-related conditions at Vehicle display (expert mode)

You can also make the execution of a journey or switching action dependent on whether a vehicle or train with a specific matrix type is entered on a vehicle display. All four columns of the matrix can be used:

- Vehicle type
- Wagon type
- Length(X)
- Epoch

To select the condition, right-click on the "*And*" folder and then trigger one of the following menu commands:

- <New condition><on VHD><Vehicle type on VHD>
- <New condition><on VHD><Wagon type on VHD>
- <New condition><on VHD><Length (X) on VHD>
- <New condition><on VHD><Epoch on VHD>

Use a checklist to select the required entries and enter the number of the corresponding vehicle display.

Fig. 13.20 A condition with matrix reference on VHD

You can apply the matrix check not only to the entire train, but also to individual train sections. Another selection list *"In train check for..." is* used to define the possible train sections.

- 🚂 **Matrix of the train**
  The matrix of a train composition

- 🚂 **Leading vehicle**
  The matrix of the leading vehicle.

- 🚂 **Single vehicle, single locomotive or single wagon**
  The matrix of a vehicle, locomotive or individual wagon can be defined at a specific position depending on the direction of travel.

- 🚂 **Any vehicle, locomotive or wagon**
  The condition is fulfilled as soon as at least one vehicle in the train has the registered matrix type.

13.2.18 The "Priority on vehicle display" condition (expert mode)

You can also make the execution of a journey or switching action dependent on whether a vehicle or train with a definable priority is entered on a vehicle display

The priority values can be found on the Matrix tab in the system settings (see section 3.14) of **Win-Digipet**. The condition uses the operands listed below to query whether the priority value of the vehicle or train on the relevant vehicle display is <...> the value set here.

- 🚂 **Equal (=)**
  The priority of the vehicle on the VHD is equal to the set value.

- 🚂 **Greater (>)**
  The priority of the vehicle on the VHD is greater than the set value.

- 🚂 **Lower (<)**
  The priority of the vehicle on the VHD is lower than the set value.

- 🚂 **Greater than or equal to (≥)**
  The priority of the vehicle on the VHD is greater than or equal to the set value.

- 🚂 **Less than or equal to (≤)**
  The priority of the vehicle on the VHD is less than or equal to the set value.

- 🚂 **Unequal (≠)**
  The priority of the vehicle on the VHD is not equal to the set value.

Fig. 13.21   The condition "Priority on VHD"

13.2.19 The "Train turn block on vehicle display" condition (expert mode)

With This condition can be used to activate or deactivate a train turn block on a specific vehicle display.

You define the (automatic) turn prevention of a train in the train composition. However, this condition can also be used to prevent turns using routes, route sequences or automatic journeys.

To select the condition, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition> <On vehicle display> <Train turn block on VHD>. The tab only offers the option of selecting between active and inactive on a defined vehicle display. For this reason, no visualisation is provided here.

13.2.20 The comparison conditions on vehicle displays (expert mode)

The following sections deal with the so-called comparison conditions on vehicle displays.

The conditions are summarised in a menu group and compare the respective status of the defined condition and the set operation on two different vehicle displays.
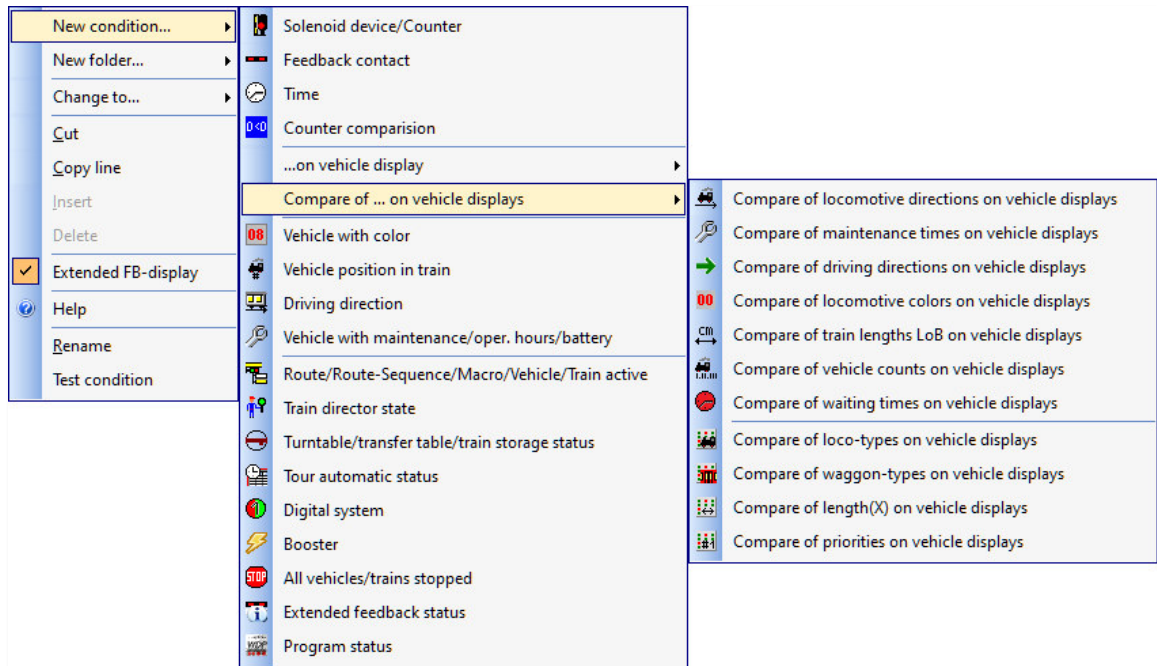

Fig. 13.22   The short menu for the comparison conditions on vehicle displays

13.2.21 The condition "Compare of vehicle driving directions on vehicle displays" (expert mode)

The "Compare of vehicle driving directions on vehicle displays" condition can be used to check the directions of the vehicles on two different vehicle displays for equality or inequality.

To select the condition, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition> <Compare of...on vehicle displays> <Compare of vehicle driving directions on VHD's>.

Enter the numbers of the vehicle displays to be compared in the fields provided and select the required operand from the selection list. The following operands are available:

🚋 **Equal (=)**
The vehicle driving direction of the vehicle on the vehicle display entered in the upper field is equal to the vehicle driving direction (forwards/backwards) of the vehicle on the vehicle display entered in the lower field.

🚋 **Not equal (≠)**
The vehicle driving direction of the vehicle on the vehicle display entered in the upper field is unequal to the vehicle driving direction (forwards/backwards) of the vehicle on the vehicle display entered in the lower field.
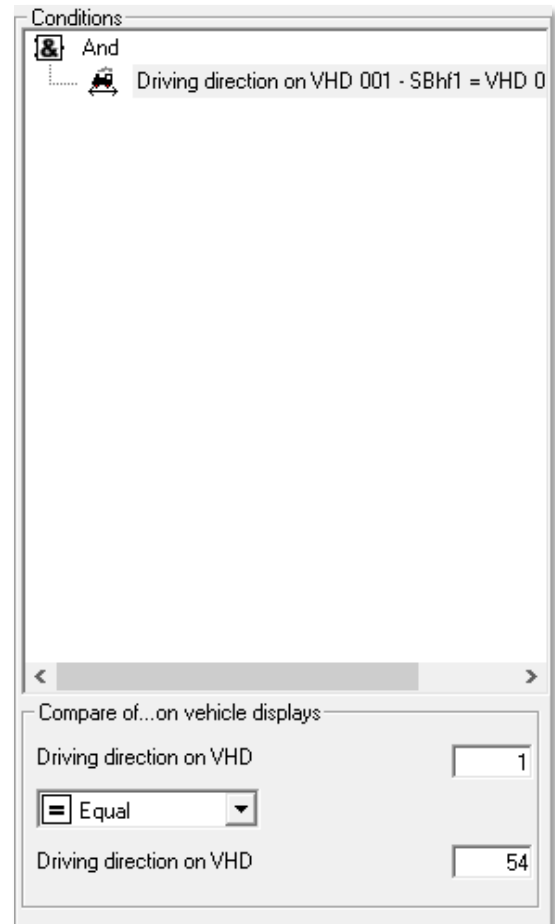

Fig. 13.23   The comparison of vehicle driving directions on two VHD's

In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is taken into account.

13.2.22 The condition "Compare of maintenance times on vehicle displays" (expert mode)

The condition "Compare of maintenance times on vehicle displays" checks various times (operating hours, maintenance time or battery runtime) on a defined vehicle display and sets the determined values in relation to a defined value via various operands.

You select the possible times from a list. This includes the following entries:

- 🚂 Operating hours on VHD

- 🚂 Time to maintenance on VHD

- 🚂 Remaining battery time on VHD

- 🚂 Battery level on VHD

All the times mentioned can be found in the vehicle database on the Maintenance tab and are counted there.

The already known operands are used again as operands:

- 🚂 **Equal to (=)**
  The defined current value for the vehicle on the first VHD is equal to the value on the second VHD.

- 🚂 **Greater (>)**
  The defined time value for the vehicle on the first VHD is greater than the value on the second VHD.

- 🚂 **Smaller (<)**
  The defined time value for the vehicle on the first VHD is smaller than the value on the second VHD.

- 🚂 **Greater than or equal to (≥)**
  The defined time value for the vehicle on the first VHD is greater than or equal to the value on the second VHD.

- 🚂 **Less than or equal to (≤)**
  The defined time value for the vehicle on the first VHD is less than or equal to the value on the second VHD.

- 🚂 **Unequal (≠)**
  The defined time value for the vehicle on the first VHD is not equal to the value on the second VHD.

Fig. 13.24   The comparison of maintenance times on VHD's

> In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is taken into account.

13.2.23 The condition "Compare of driving directions on vehicle displays" (expert mode)

With The condition "Compare of driving directions on vehicle displays" can be used to check the directions of the vehicles on two different vehicle displays for equality or inequality.

To select the condition, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition><Compare of...on vehicle displays> <Compare of driving directions on VHD>.

Enter the numbers of the vehicle displays to be compared in the fields provided and select the required operand from the selection list. The following operands are available:

🚂 **Equal (=)**
The direction of travel of the vehicle or train on the vehicle display entered in the upper field is equal to the direction of travel (forwards/backwards) of the vehicle or train on the vehicle display entered in the lower field.

🚂 **Unequal (≠)**
The direction of travel of the vehicle or train on the vehicle display entered in the upper field is unequal to the direction of travel (forwards/backwards) of the vehicle or train on the vehicle display entered in the lower field.

Fig. 13.25   The comparison of driving directions on VHD's

13.2.24 The condition "Compare of vehicle colours on vehicle displays" (expert mode)

With condition "Compare of vehicle colours on vehicle displays", the colours of the entries on two different vehicle displays can be checked to see whether they are the same or different.

To select the condition, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition><Compare of...on vehicle displays><Compare of vehicle colours on VHD>.

Enter the numbers of the vehicle displays to be compared in the fields provided and select the required operand from the selection list. The following operands are available:

🚂 **Equal (=)**
The colour of the vehicle or train on the vehicle display entered in the upper field is equal to colour of the vehicle or train on the vehicle display entered in the lower field.

🚂 **Not equal (≠)**
The colour of the vehicle or train on the vehicle display entered in the upper field is unequal colour of the vehicle or train on the vehicle display entered in the lower field.

Fig. 13.26   The comparison of vehicle colours on VHD's

In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is taken into account.

13.2.25 The condition "Compare of train lengths on vehicle displays" (expert mode)

With The condition "Compare of train lengths on vehicle displays" can be used to check the lengths of the vehicles or trains on two different vehicle displays for equality or inequality.

To select the condition, <u>right-click</u> on the *"And"* folder and then trigger the menu command <New condition><Compare of...on vehicle displays><Compare of train lengths on VHD>.

Enter the numbers of the vehicle displays to be compared in the fields provided and select the required operand from the selection list. The following operands are available:

Fig. 13.27   The comparison of train lengths on VHD's

- 🚂 **Equal (=)**
  The length of the trains on the VHD is equal.

- 🚂 **Greater (>)**
  The length of the train on the first VHD is greater than the length of the train on the second VHD.

- 🚂 **Smaller (<)**
  The length of the train on the first VHD is smaller than the length of the train on the second VHD.

- 🚂 **Greater than or equal to (≥)**
  The length of the train on the first VHD is greater than or equal to the length of the train on the second VHD.

- 🚂 **Less than or equal to (≤)**
  The length of the train on the first VHD is less than or equal to the length of the train on the second VHD.

- 🚂 **Unequal (≠)**
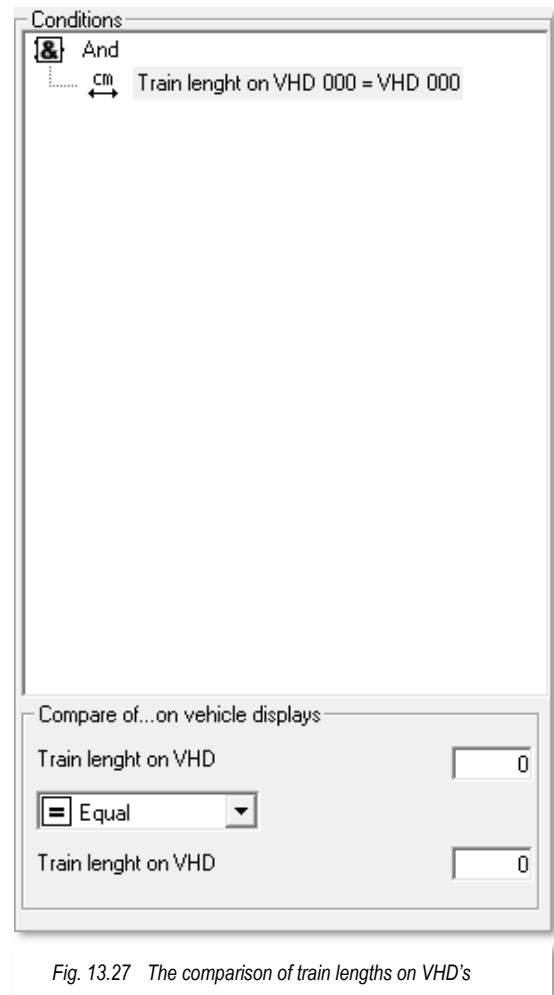 The length of the train on the first VHD is unequal to the length of the train on the second VHD.

⚠️ In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is considered.

13.2.26 The condition "Compare of vehicle counts on vehicle displays" (expert mode)

The condition "Compare of vehicle counts on vehicle displays" checks different counts of vehicles (total number, number of locomotives or number of wagons) on two defined vehicle displays and sets the values determined in relation to each other using various operators.

To select the condition, right-click on the "*And*" folder and then trigger the menu command <New condition><Compare of...on vehicle displays><Compare of vehicle counts on VHD>.

Select the count of vehicle types to be compared from a selection list and then set the required operator. The familiar operators are available again here:

  🚋 **Equal (=)**
The count of vehicles on the VHD is equal.

  🚋 **Larger (>)**
The count of vehicles on the first VHD is greater than the count of vehicles on the second VHD.

  🚋 **Smaller (<)**
The count of vehicles on the first VHD is smaller than the count of vehicles on the second VHD.

  🚋 **Greater-than** or **equal to (≥)**
The count of vehicles on the first VHD is greater than or equal to the count of vehicles on the second VHD.

  🚋 **Less than or equal to (≤)**
The count of vehicles on the first VHD is less than or equal to the count of vehicles on the second VHD.

  🚋 **Unequal (≠)**
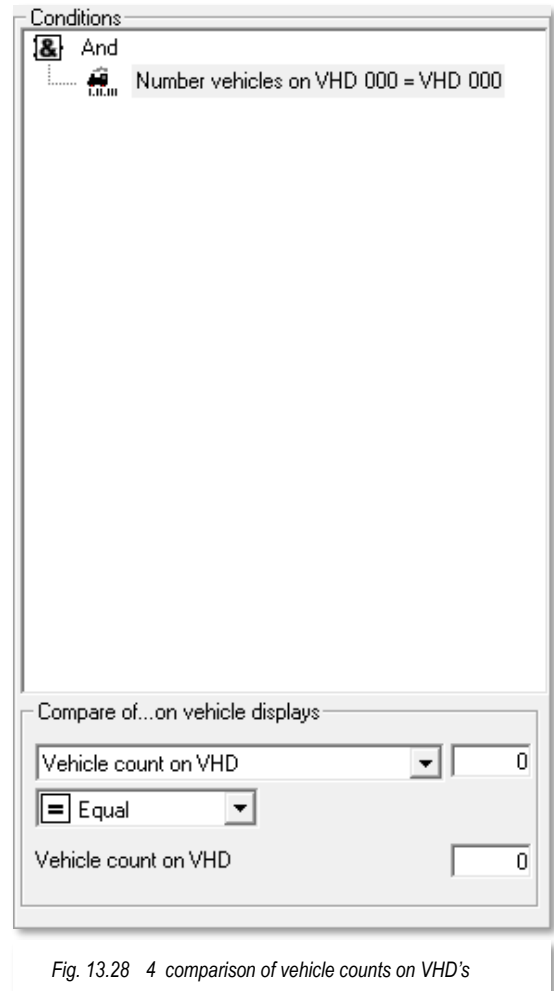The count of vehicles on the first VHD is not equal to the count of vehicles on the second VHD.

Fig. 13.28 4 comparison of vehicle counts on VHD's

> ⚠️ In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is included in the count.

13.2.27 The condition "Compare of waiting time on vehicle displays" (expert mode)

The condition "Compare of waiting time on vehicle displays" checks the remaining waiting time of vehicles or trains on two defined vehicle displays and sets the determined values in relation to each other using various operators.

To select the condition, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition><Compare of...on vehicle displays><Compare of waiting times on VHD>.

Enter the VHD's to be compared in the fields provided and then set the required operator. The familiar operators are available here again:

🚂 **Equal (=)**
The waiting time of the vehicle or train for the VHD is equal.

🚂 **Greater (>)**
The waiting time of the vehicle on the first VHD is greater than the waiting time of the vehicle on the second VHD.

🚂 **Smaller (<)**
The waiting time of the vehicle on the first VHD is shorter than the waiting time of the vehicle on the second VHD.

🚂 **Greater than or equal to (≥)**
The waiting time of the vehicle on the first VHD is greater than or equal to the waiting time of the vehicle on the second VHD.

🚂 **Less than or equal to (≤)**
The waiting time of the vehicle on the first VHD is less than or equal to the waiting time of the vehicle on the second VHD.

🚂 **Unequal (≠)**
The waiting time of the vehicle on the first VHD is unequal to the waiting time of the vehicle on the second VHD.

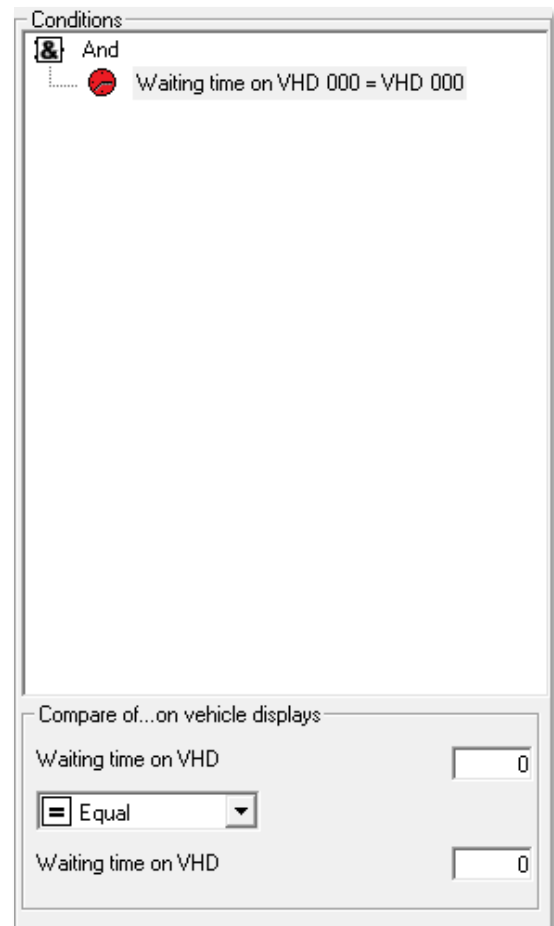*Fig. 13.29   The comparison of waiting times on VHD's*

⚠️ In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is included in the calculation.

13.2.28 The conditions "Compare of matrix settings on vehicle displays" (expert mode)

The conditions for comparing matrix settings on vehicle displays function checks the various settings of the matrix of vehicles or trains on two defined vehicle displays and sets the values determined in relation to each other using various operators. The queries for the following three matrix columns are offered for this purpose:

- Vehicle type
- Waggon type
- Length (X)

To select the condition, right-click on the "And" folder and then trigger one of the menu commands <New condition><Compare of...on vehicle displays><Compare of vehicle type/waggon type/length (X) on VHD>.

Enter the VHD to be compared in the fields provided and then set the required operator. The familiar operators are available again here:

- **Equal (=)**
  The selected matrix type of the vehicle or train on the VHD is equal.

- **Not equal (≠)**
  The selected matrix type on the first VHD is not equal to the selected matrix type of the vehicle on the second VHD.
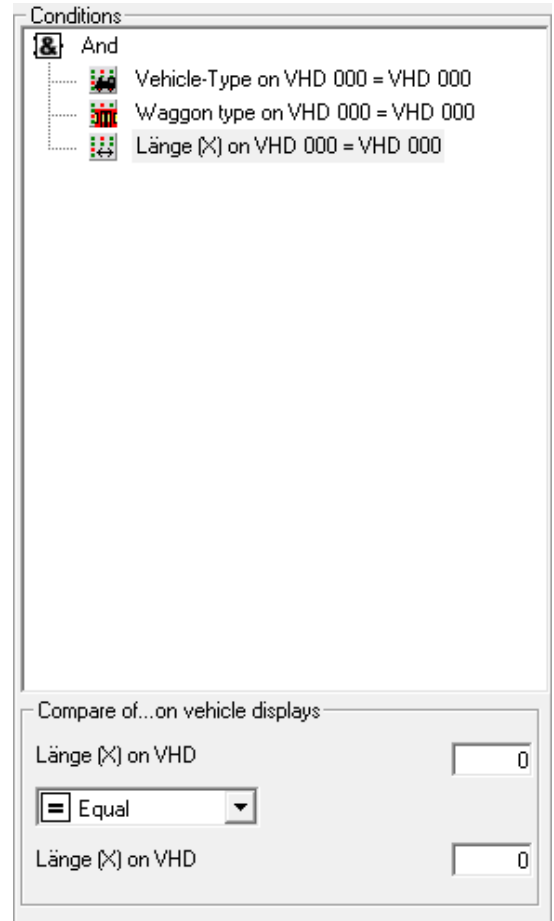

Fig. 13.30 The comparison of matrix types on VHD's

In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is taken into account.

13.2.29 The condition "Compare of priorities on vehicle displays" (expert mode)

The condition "Compare of priorities on vehicle displays" checks the priorities of vehicles or trains on two defined vehicle displays and sets the values determined in relation to each other using various operators.

The priority values can be found on the Matrix tab in the system settings (see section 3.14) of **Win-Digipet**.

To select the condition, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition><Compare of...on vehicle displays><Compare of priorities on VHD>.

Enter the VHD to be compared in the fields provided and then set the required operator. The familiar operators are available again here:

Fig. 13.31   The comparison of priorities on VHD's

- **Equal (=)**
  The priority of the vehicles or trains on the VHD is equal.

- **Greater (>)**
  The priority of the vehicle on the first VHD is higher than the priority of the vehicle on the second VHD.

- **Smaller (<)**
  The priority of the vehicle on the first VHD is lower than the priority of the vehicle on the second VHD.

- **Greater than or equal to (≥)**
  The priority of the vehicle on the first VHD is greater than or equal to the priority of the vehicle on the second VHD.

- **Less than or equal to (≤)**
  The priority of the vehicle on the first VHD is less than or equal to the priority of the vehicle on the second VHD.

- **Unequal (≠)**
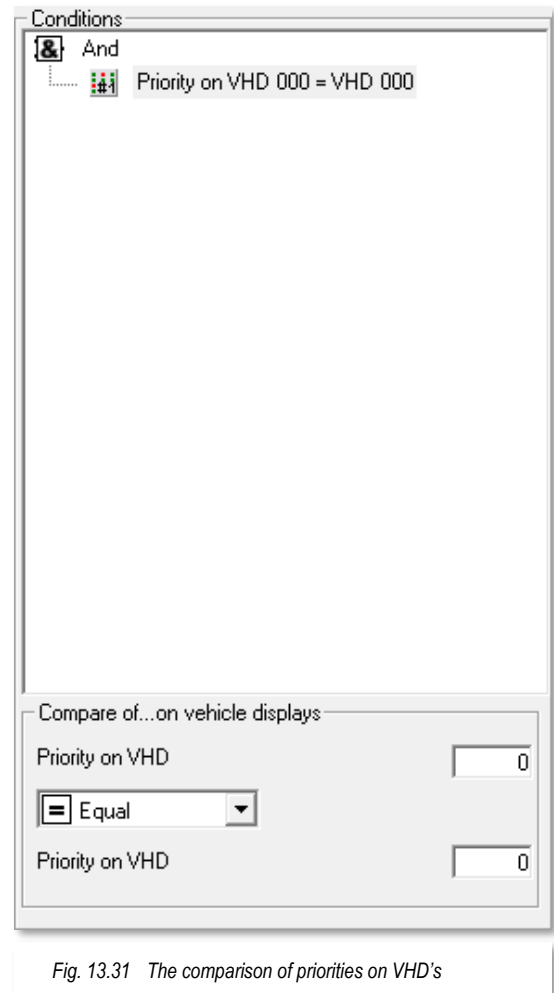 The priority of the vehicle on the first VHD is unequal to the priority of the vehicle on the second VHD.

> In the case of a MiVHD on which several vehicles or trains are entered, only the vehicle or train in the first position is considered.

13.2.30 The "vehicle with colour" condition

Here you can make the execution of a trip or a switching action dependent on the colour of the vehicle number. The condition is basically the same as the "Vehicle colour on vehicle display" condition (see section 13.2.9), only the reference to a vehicle display is missing here.

To select the condition, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition><Vehicle with colour>.

You can enter the digital address of the vehicle using the keyboard or simply drag and drop the image of the desired vehicle from the vehicle bar, a vehicle control or the vehicle monitor into the *"Vehicle"* field. The model designation of the vehicle is then displayed here instead of the digital address.

Use the seven switches to set the colour of the vehicle number. The switch shown pressed is decisive here.

Fig. 13.32   The "Vehicle with colour" condition

- 🚂 Black - normal driving mode

- 🚂 Green - vehicle/train is in route sequence

- 🚂 Red - vehicle/train is blocked for contact-related automatic operation

- 🚂 Blue - vehicle/train is blocked for time-based automatic operation

- 🚂 Purple - vehicle/train is blocked for any automatic operation

- 🚂 Manual (M) - manual driving of the vehicle/train active

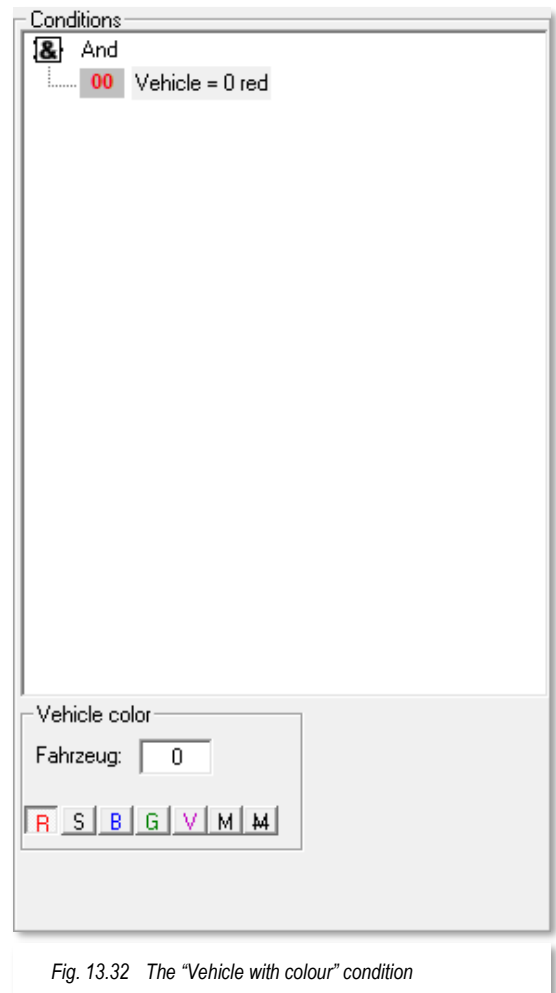- 🚂 ~~Manual (M)~~ - manual driving of the vehicle/train inactive

13.2.31 The condition "Vehicle position in the train" (expert mode)

With this condition allows you to make the execution of a journey or switching action dependent on the position of a specific vehicle in the train.

To select the condition, <u>right-click</u> on the "*And*" folder and then trigger the menu command <New condition><vehicle position in train>.

You can enter the digital address of the vehicle using the keyboard or simply drag and drop the image of the desired vehicle from the vehicle bar, a vehicle control or the vehicle monitor into the "*Vehicle*" field. The model designation of the vehicle is then displayed here instead of the digital address. You can use the same procedure for a specific carriage in the train. For this wagon, drag the image from the wagon monitor into the "*Vehicle*" field.

Open the wagon monitor with the 🖼 icon from the "*Monitor*" toolbar of the main programme.

Enter a value for the vehicle position here again using the arrow keys. The operators already used for some conditions are also available again:

🚂 **Equal (=)**
The vehicle position is equal to the set value

🚂 **Greater (>)**
The vehicle position is greater than the set value

🚂 **Smaller (<)**
The vehicle position is smaller than the set value

🚂 **Greater than or equal to (≥)**
The vehicle position is greater than or equal to the set value

🚂 **Less than or equal to (≤)**
The vehicle position is less than or equal to the set value

🚂 **Unequal (≠)**
The vehicle position is not equal to the set value
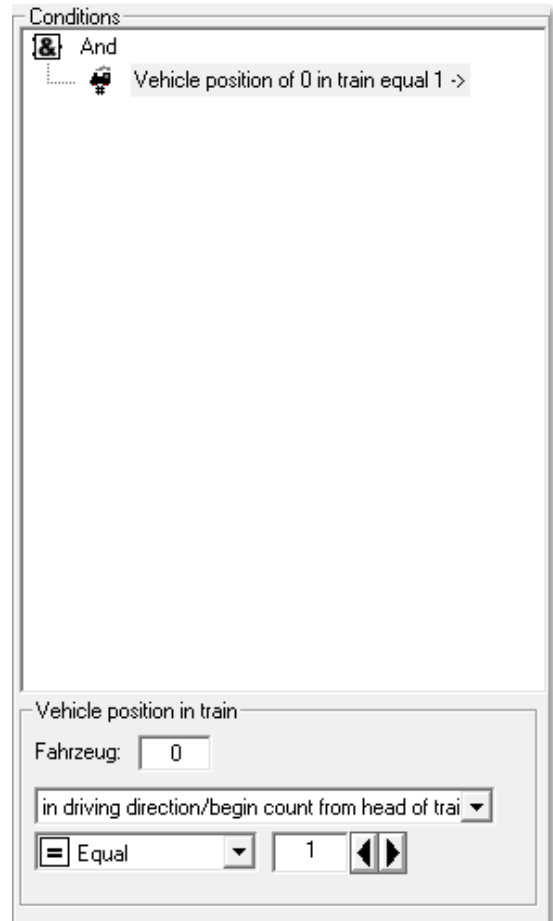
Fig. 13.33   The condition "Vehicle position in train"

Finally, you can determine from where the vehicle count starts:

- 🚂 In the direction of travel - counted from the head of the train
- 🚂 Against the direction of travel - counted from the end of the train

13.2.32   The "Vehicle driving direction" condition (expert mode)

This condition is about the direction of a vehicle. The specified vehicle can be in a train.

Please note that the vehicle direction does not refer to the direction of travel. It refers to the orientation of a vehicle.

To insert the condition, right-click on the "*And"* folder and then trigger the menu command <New condition><vehicle driving direction>.

In the "Vehicle" field, you can enter the digital address of a vehicle using the keyboard. However, you also have the option of dragging and dropping the image of a vehicle into the field. You can either drag the vehicles from the vehicle control or the vehicle bar into the field.

However, you can also use this condition to query the vehicle direction of wagons, even in the train. If you want to enter a wagon, which in most cases does not have a digital address, drag the image of the wagon from the wagon monitor into the "Vehicle" field. Open the wagon monitor with the 🖳 icon from the *"Monitor"* toolbar of the main programme.

The radio button allows you to select the direction forwards or backwards.
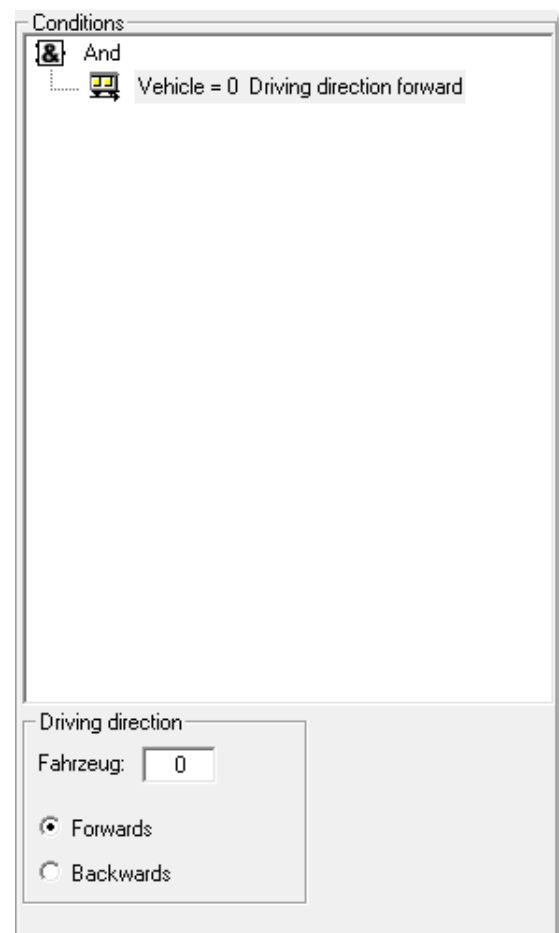
Fig. 13.34   The condition "Vehicle driving direction"

13.2.33   The "At travel though" condition (expert mode)

The condition "At travel through" is only offered in the conditional profile lines of the profile or vehicle macro editor. This means that a profile or macro line with this condition is only executed if the vehicle is in a route sequence or in an automatic journey and changes to the next route without stopping (e.g. connecting journey).

The check can be set in such a way that the check takes place when the vehicle passes into the next route or from the previous route.

13.2.34 The "route/route sequence/vehicle macro active" condition (expert mode)

With you can use this condition to make the execution of a movement or switching action dependent on whether a (specific) route, route sequence or a vehicle or train macro is currently active.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition><route/route seq./ macro active>.

The lower list fields are used to specify your selection. You can choose between the following options here:

- 🚂 Route active
- 🚂 Route sequence active
- 🚂 Route or route sequence active
- 🚂 Normal route active
- 🚂 Coupling route active
- 🚂 Division route active
- 🚂 Macro active

You can set additional filters for all the selection options mentioned, so that you can map the entire spectrum from 'any' to a specification for a specific route, route sequence or macro.

You can achieve an even greater level of detail

Fig. 13.35   The condition "Route/route sequence/macro active""

by selecting specific vehicles or trains that are currently using the routes, route sequences or macros listed above. You can select the vehicles or trains according to their name or series or also according to the digital address. The familiar filters (starts with, ends with, contains, etc.) are also used here.

13.2.35 The "Train director state" condition (expert mode)

The "train director state" condition allows the status of a configured train director to be queried.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition> <Train director state>.

All train director entries that you have created in the programme section of the same name are offered to you in a selection list. After selecting an entry, a further selection list is displayed. The query as to whether the train director entry is activated or deactivated applies equally to all train director entries. Depending on the train director type, the list is supplemented by further specific selection options.

For example, you can set the query for the number of counted trains for the train director type "Train density measurement" and then link this again with the already known operators (equal, larger, smaller, etc.).

Fig. 13.36 The "train director state" condition

13.2.36 The "Turntable/transfer table/train storage status" condition (expert mode)

With the condition "Turntable/transfer table/train storage status" can be used to query various statuses of the devices mentioned.

To do this, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition><turntable/transfer table/train storage status>.

All turntables, transfer tables or train storage facilities that you have created in **Win-Digipet** are displayed in a selection list.

The status messages to be queried include

- 🚂 Message 'moving'
- 🚂 Message 'Position reached'
- 🚂 Message 'Emergency stop/fault'
- 🚂 Current target position
- 🚂 Current position

The query for the individual states differs depending on the type. For example, there are only the parameters active or inactive for the "Position reached" query, while the query for the actual position can be set to a specific track and can then be linked again with the known operators (equal, greater, less, etc.).
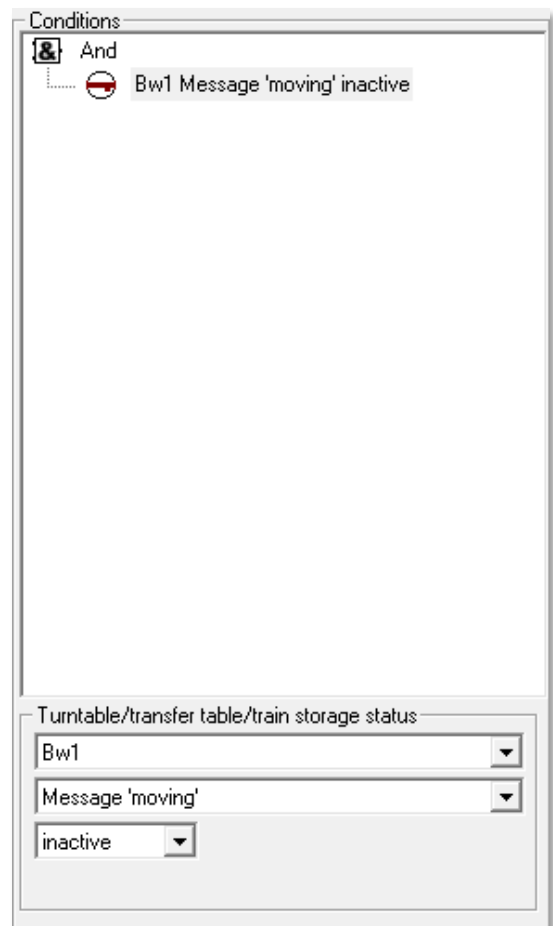

Fig. 13.37   The condition "Turntable/transfer table/train storage status"

Please note that the hardware used, e.g. turntable decoder or feedback contacts, is responsible for generating the position messages.

13.2.37 The condition "Tour-automatic status" (expert mode)

You can also make the execution of a journey or switching action dependent on whether a (different) automatic journey is (in)active. In **Win-Digipet,** up to five automatic journeys can be executed simultaneously.

To do this, right-click on the "*And*" folder and then trigger the menu command <New condition> <Tour-automatic status>.

In this condition, the name of the tour-automatic journey is used as a criterion. You can use this name with the familiar filters (starts with, contains, ends with, equals), and the selection "all" is also included for any FAM.

The condition is considered to be fulfilled if the named tour-automatic is "active" or "inactive" depending on the selection.
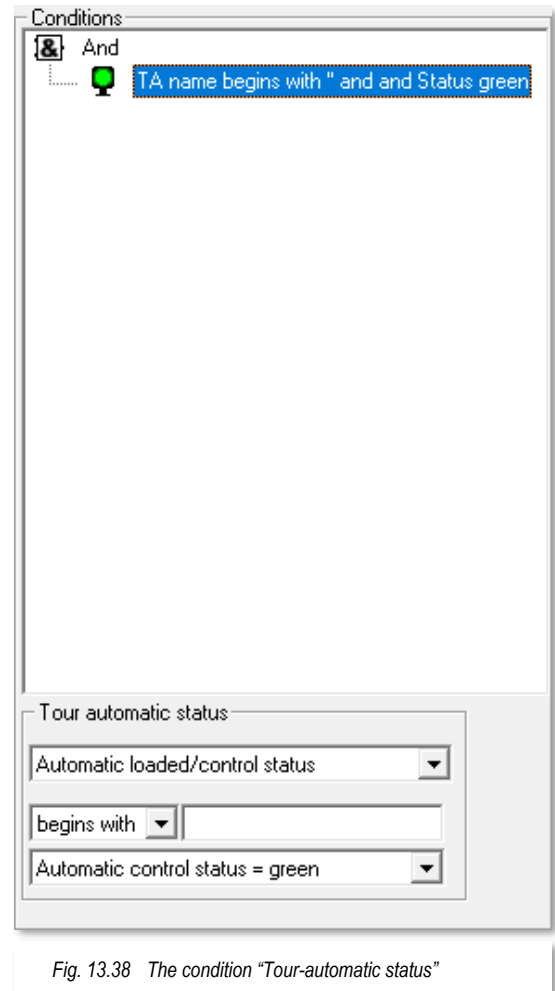
Fig. 13.38   The condition "Tour-automatic status"

13.2.38 The condition "Digital system" (expert mode)

Another condition query can make the execution of a movement or switching action dependent on whether a specific digital system is active.

To do this, right-click on the "*And"* folder and then trigger the menu command <New condition> <Digital system>.

In this condition, you are offered a selection list of all the digital systems installed on your model railway layout. Simply select the relevant digital system. The condition is considered to be fulfilled if the selected digital system is "active" or "inactive", depending on the selection.

13.2.39 The "Booster" condition (expert mode)

The execution of a movement or switching action can also be made dependent on whether a booster area of your system is switched on or off.

To do this, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition> <Booster>.

A prerequisite for this function is that you have configured the booster management of **Win-Digipet** in the main programme and in the track diagram editor.

You will see two selection lists in the condition table. The top list contains the booster zones you have set up and the bottom list allows you to select whether the relevant booster zone should be switched on or off as a fulfilment criterion for the condition.
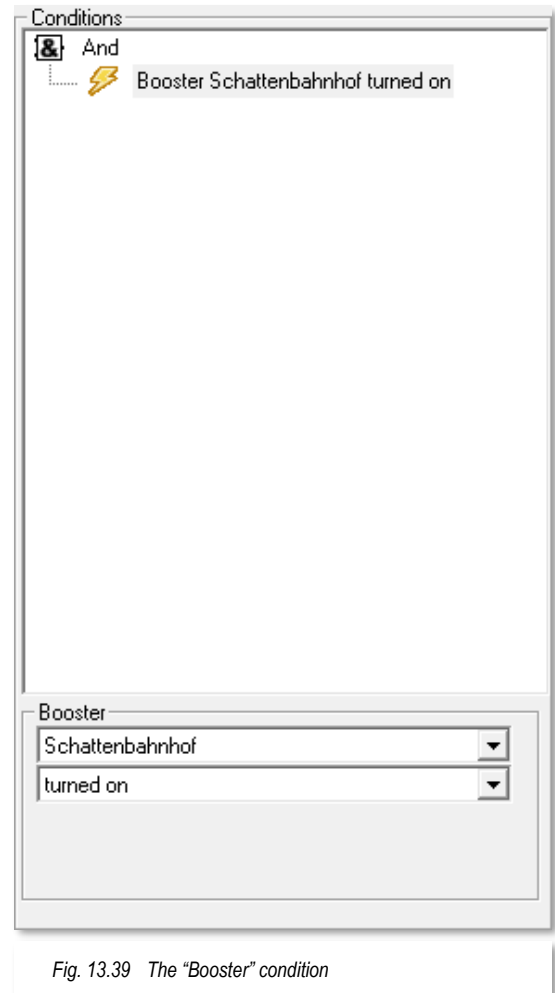
Fig. 13.39   The "Booster" condition

13.2.40 The condition "All vehicles/trains stopped" (expert mode)

This condition queries the so-called "STOP" function of **Win-Digipet.** The "STOP" function is **not an** emergency stop, as the digital systems are not switched off here, but only the speed of the vehicles is set to "V=0". The STOP function can be found in the **Win-Digipet** toolbar.

To insert the condition, <u>right-click</u> on the "*And"* folder and then trigger the menu command <New condition> <All vehicles/trains stopped>.

The condition query does not offer any additional parameters.

13.2.41 The "extended feedback status" condition (expert mode)

The condition "extended feedback status" allows you to query whether a defined feedback contact is in a "frozen" state or not. Frozen feedback contacts are required in **Win-Digipet** for train lifts, for example. In this case, not all levels of a train storage may always be energised, but the last known status of a feedback contact can still be retained.

To insert the condition, right-click on the "*And"* folder and then trigger the menu command <New condition> <Extended feedback status>.

The parameters of the condition query are "frozen" or "unfrozen".

In addition, the options open (Zimo), minus potential (Zimo) and plus potential (Zimo) can be used for feedback decoders from the manufacturer Zimo.
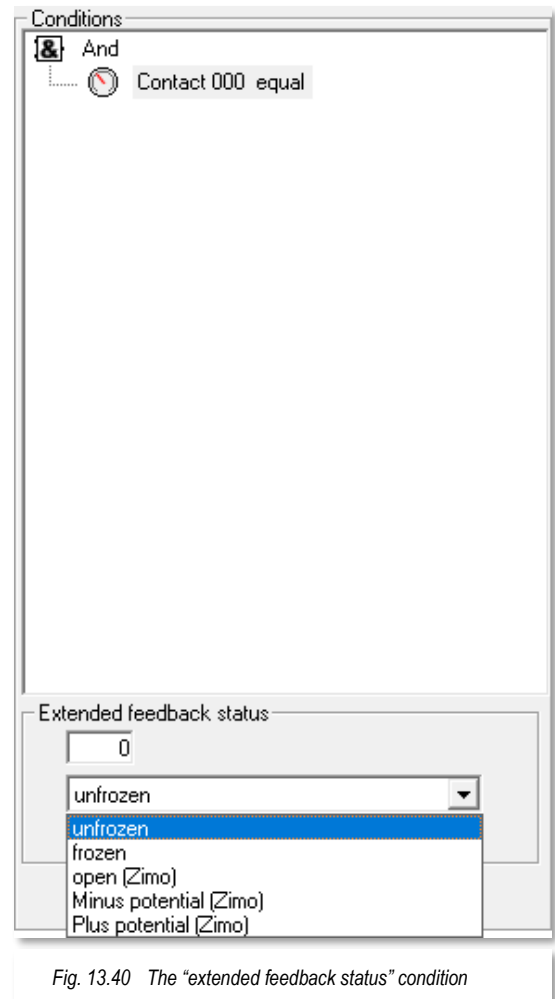
Fig. 13.40   The "extended feedback status" condition

13.2.42 The condition "Programme status" (expert mode)

The execution of a journey or switching action can also be made dependent on whether the system or office version of **Win-Digipet** is being executed.

To do this, right-click on the "*And"* folder and then trigger the menu command <New condition> <Programme status>.

In addition to the aforementioned parameters of the system or office version, the simulation active or inactive variants can also be selected.

The condition is used, for example, to ignore booster queries, which are not available in the office version.

The condition is considered fulfilled if the selected variant of **Win-Digipet** is activated.

13.3 Link conditions

Linking is the logical connecting of conditions with each other. A logical operation is a Boolean algebra operation. Logical operations can be used to combine simple statements into more complicated statements.

The truth value of the compound statement must be clearly determined by the truth values of the simpler statements it contains, for example by means of a truth table.

A truth table is the definition of a logical operation. Several input signals - in this case conditions - are combined to form an output signal by means of logical operations. The logic operation defines the laws and logical relationships between the input signal and the output signal.

Logical operations are also called set operators. In digital technology, AND, OR, NOT, NOR and NAND are the most common basic logical circuits.

Based on these basic logical circuits, the conditions in **Win-Digipet** can be linked with each other using the set operators "*AND*", "*OR*" and "*NOT*".

Additional operators in **Win-Digipet** are "*MINIMAL, MAXIMAL* and *EQUAL*". The "*NOT*" link and the three additional links mentioned are only available to you, along with some other link functions, after activating the expert mode in the respective editor.

13.3.1 Link conditions with "AND"

The "AND" link is the standard link of the conditions in **Win-Digipet**. In principle, an "AND" link means that <u>all</u> linked conditions must be fulfilled before the value "TRUE (fulfilled)" can be set as the result of the check.

The example in the Fig. 13.41 shows that the set condition link is only "TRUE" if the entered counter displays the value "1" "AND" any vehicle is entered in vehicle display 050.
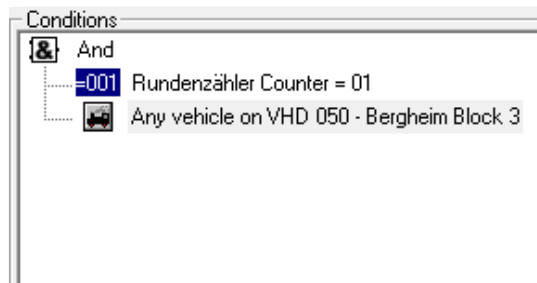

Fig. 13.41   An "AND" operation

13.3.2 Link conditions with "OR"

The "*AND*" logic function can also be converted into an "*OR*" function.

To do this, select the "*And*" folder with the <u>left mouse button</u> and then click with the <u>right mouse button</u>. In the short menu that appears, click on the menu command <Change to...> and then on <Or> and the function changes immediately.

Alternatively, you can also click on the "*And*" folder with the <u>middle mouse button</u> and change the function.

With an "OR" link of conditions, at least one of the linked conditions must be fulfilled before the value "TRUE (fulfilled)" can be set as the result of the check.
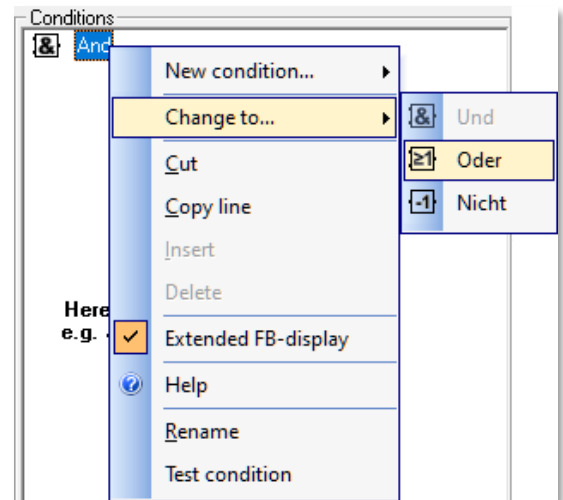

Fig. 13.42   The change to an "OR" link

13.3.3 Testing the conditions

All conditions entered in the editors can be tested immediately if you right-click in the conditions area and click on the <Test condition> menu command in the short menu that appears.

Click to place a tick in front of the menu command. The test function is switched on and the result is immediately displayed with green ticks or red crosses. You can also change the corresponding symbol positions in the track diagram in order to fulfil the conditions for the test.

The test function for conditions also works in the simulation mode of **Win-Digipet**. This means you can also carry out the tests without a system connection in the office version.

The example in the Fig. 13.43 shows that the condition "green counter >1" is not fulfilled, but the second condition "yellow counter =0" is displayed as fulfilled. As this is an "AND operation", the overall result is negative as only one of the set conditions is fulfilled.

If the display does not meet your requirements, you can change this by changing either the conditions or the folder, for example from "*And"* to "*Or"*. However, this change should be in line with your requirements.
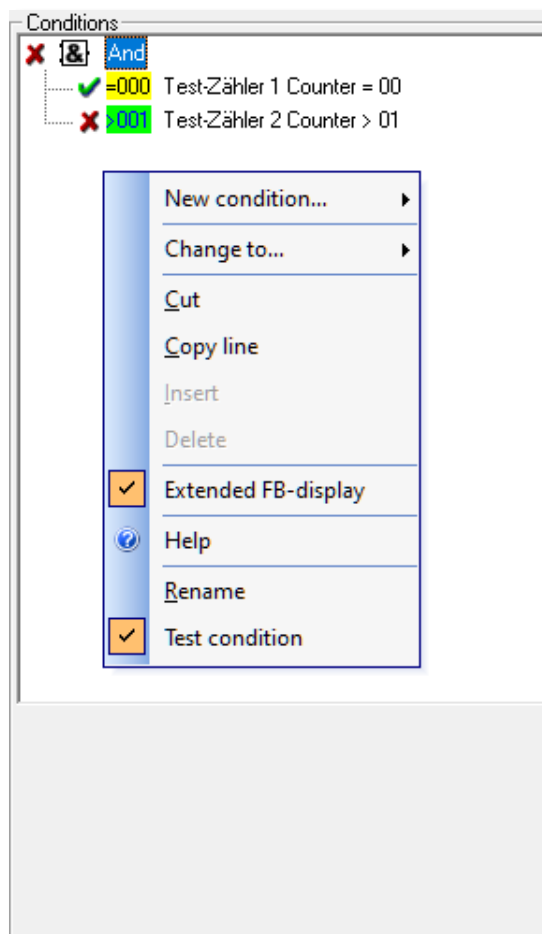
Fig. 13.43   Testing of the conditions

13.3.4 Switch on expert mode

With activating the so-called expert mode in the editor via the menu commands <Options><Expert mode>, the additional commands shown in the image are available and you can also create additional subfolders for the "*And*" and "*Or*" folders.

When expert mode is activated, the conditions as shown in Fig. 13.44 can be used as an example.
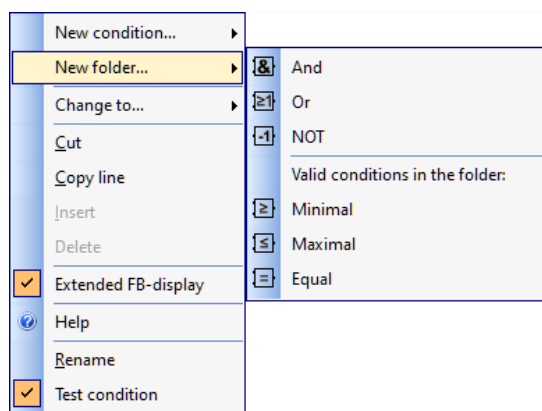

Fig. 13.44   Extended linking options in expert mode

13.3.5   Only drive if ... but not if...

All the conditions described above can also be linked with "*NOT*" if required if you have switched on expert mode.

In the following example from the tour-automatic editor, a route/route sequence from Burghausen station to the "Overtaking" area should only take place if both tracks are signalled as free and no vehicle or train is on its way to one of the two tracks.

You will recognise a complex-looking mixture of "AND", "OR" and "NOT" links in the graphic. The test mode for the conditions is also activated here. In this way, you can reproduce the situation shown in the track diagram.
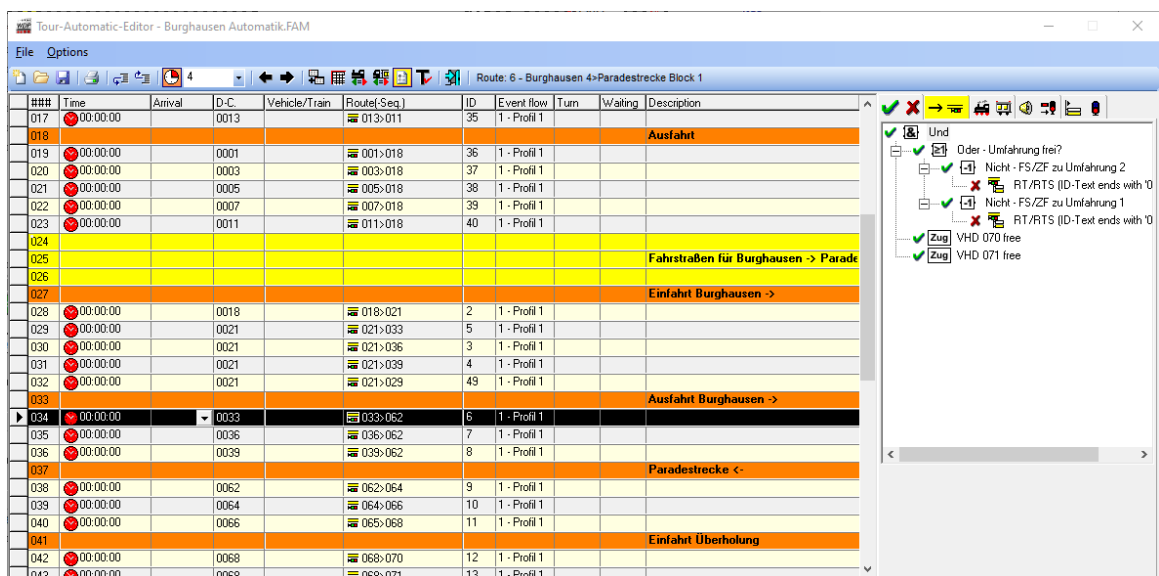

Fig. 13.45   A simple example of "NOT links"

You will see either a green tick (fulfilled) or a red cross (not fulfilled) in front of each link. These are the respective results of the conditions that are arranged under the links.

To arrive at an overall result, you must now check the group with the top link of the condition tree. In this case, the top link is an "AND". As all conditions in this example have a positive result, the top link is also reported as fulfilled. The route or route sequence can therefore be set.

The practical application of this perhaps abstract example is that you can thus create an early check option for free sidings, e.g. in the staging yard, and thus counteract possible overload situations.

13.3.6 Number of applicable conditions "Minimal"

All conditions described above with the standard link "*AND*" can also be linked with "*MINIMAL*" if required if you have switched on <Expert mode>.

To do this, select the "*And*" folder with the left mouse button and then click the right mouse button. In the short menu that appears, click on the menu command <Change to...><Minimal> and the function changes immediately.

You can use the two arrows to specify the minimum number of switch-on conditions that apply. However, the number must not be greater than the number of entries above, otherwise the condition for executing the movement or switching action will never be fulfilled.
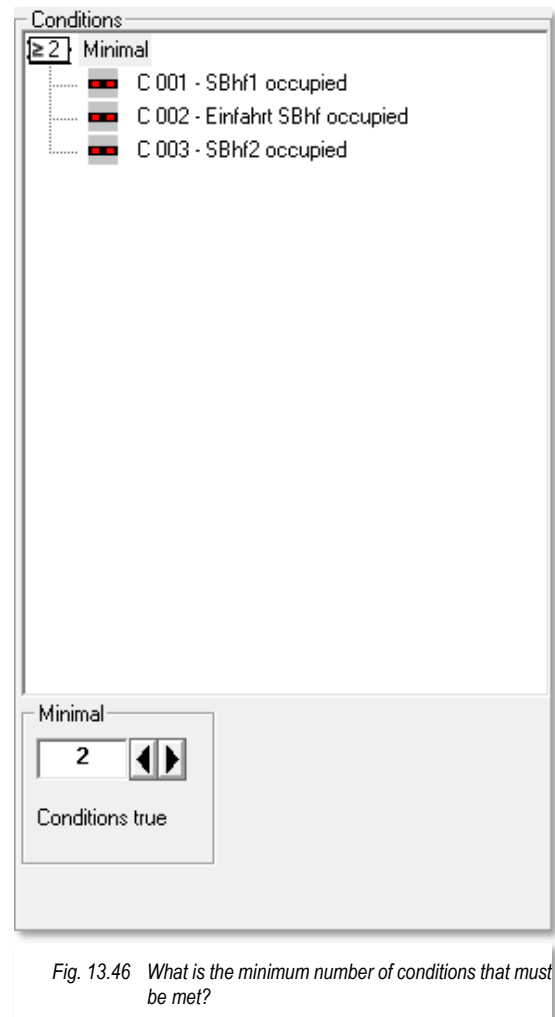
Conditions
≥ 2 | Minimal
  C 001 - SBhf1 occupied
  C 002 - Einfahrt SBhf occupied
  C 003 - SBhf2 occupied

Minimal
2 ◄ ►
Conditions true

Fig. 13.46 What is the minimum number of conditions that must be met?

All the examples shown are deliberately kept simple and only show the basic functionality.

Of course, you can create customised combinations of all functions according to your ideas. There are almost no limits here

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13.3.7 Number of applicable conditions "Maximal"

All conditions described above with the default link "*And*" can be linked to "*Maximal*" if required; if you have switched on <Expert mode> and select the menu command <Change to...><Maximal> in the short menu, the function changes.

You can use the two arrows to specify the maximum number of applicable switch-on conditions. You could enter any number here, but it only makes sense to enter a smaller number than the number of entries above.

Only if you set the value in the "*Maximal*" field to a lower value will the condition either be fulfilled or not fulfilled, depending on the contact status, try it out.

13.3.8 Number of applicable conditions "Equal"

All conditions described above with the default link "*And*" can also be linked with "*Equal*" if required if you have switched on <Expert mode>. If you select the menu command <Change to...><Equal> in the short menu, the function changes immediately.

13.3.9 Rename condition link

When you have finished and checked everything, you can rename the inserted links. This will make it easier for you to recognise the purpose of the entries later.

To do this, select the folder, click with the right mouse button and then with the left mouse button on the <Rename> command. The function (And, Or etc.) is retained, but is supplemented by a hyphen. You can then enter the desired text.
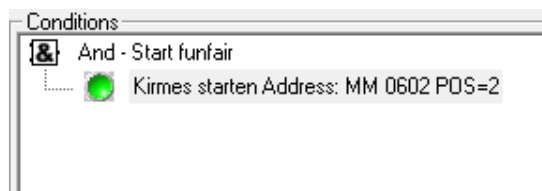

Fig. 13.47   A link has been renamed

13.3.10 Notes on entries, move, delete

As described above, you can drag all entries for feedback contacts, solenoid devices and counters directly into the large condition window using the left mouse button.

> If test mode is switched on (menu command <Test conditions>), you cannot drag & drop symbols from the track image into the conditions window.
>
> If you want to test conditions with feedback contacts in test mode, you should switch on the simulation and set the corresponding feedback contacts to busy or free with clicks in the FB-Monitor or in the track diagram.

You can delete conditions that are no longer required directly after marking them by pressing the <Del>-key on the PC keyboard. You do not necessarily have to use the menu command of the short menu.

You can also move the entries from bottom to top and vice versa in the conditions window using the left mouse button.

13.4 Circuits and switching actions

In the previous sections explained in detail how you can use conditions in **Win-Digipet** under which journeys or circuits (switching actions) are processed. You have learnt that you can use the conditions in many editors.

But how are the results of the condition checks analysed?

If the result of a condition evaluation is positive, different actions are executed in the various parts of the programme. These actions can be, for example, movements or switching of solenoid items.

The following table shows what type of switching or execution of movements can be carried out in the individual programme sections:

Routes editor	Follow-up switching (follow-up actions)
Profiles	Execution of conditional profile lines
Vehicle/train macros	Execution of conditional macro steps
Tour-automatic journeys	Execution of conditional routes
	Execution of conditional route sequences
	Execution of conditional solenoid device circuits
	Switching actions when executing a route or route sequence
Dispatcher	Execution of switching operations or switching actions
Train Director	Block routes (TD-Expert)

The processing of journeys in a tour-automatic or the processing of conditional lines in the profiles or macros has already been explained in the individual chapters of this documentation. At this point, we will focus on switching and switching actions.

The following table lists all switching actions in **Win-Digipet** and shows in which editors the individual actions can be processed. Some of the actions are also only available in expert mode. The Fig. 13.48 shows the menu of the various switching actions in the dispatcher window.

	Routes	Tour-Automatic	Dispatcher
Vehicle-related actions			
Vehicle colour		●	●
Vehicle colour on vehicle display		●	●
Crane macro		●	●
Vehicle/train macro for vehicle		●	●
Vehicle/train macro on vehicle display		●	●
Change vehicle type	●	●	●
Change wagon type	●	●	●
Change length (X)	●	●	●
Change train name	●	●	●
Change digital system for vehicle/train	●	●	●
Change train turn block		●	●
Control in route/profile/macro without delay factor	●	●	●
Reset maintenance timer	●	●	●
Set battery charge	●	●	●
Set direction of travel			●
Stop/start vehicle			●
Set position in vehicle display			●

	Routes	Tour-Automatic	Dispatcher
Solenoid device/counter	●	●	●
Counter calculation	●	●	●
Logbook/memo/text record	●	●	●
Play sound		●	●
Switching the booster on/off			●
Switch virtual/momentary contact	●	●	●
Switch simulation contact	●	●	●

	Routes	Tour-Automatic	Dispatcher
Emergency stop			●
(De)activate TD/dispatcher entries	●	●	●
Tour-automatic influence	●	●	●
Change extended feedback status	●	●	
Set clock	●	●	●
Vehicle display blocking	●	●	●

● - Function is only available in expert mode

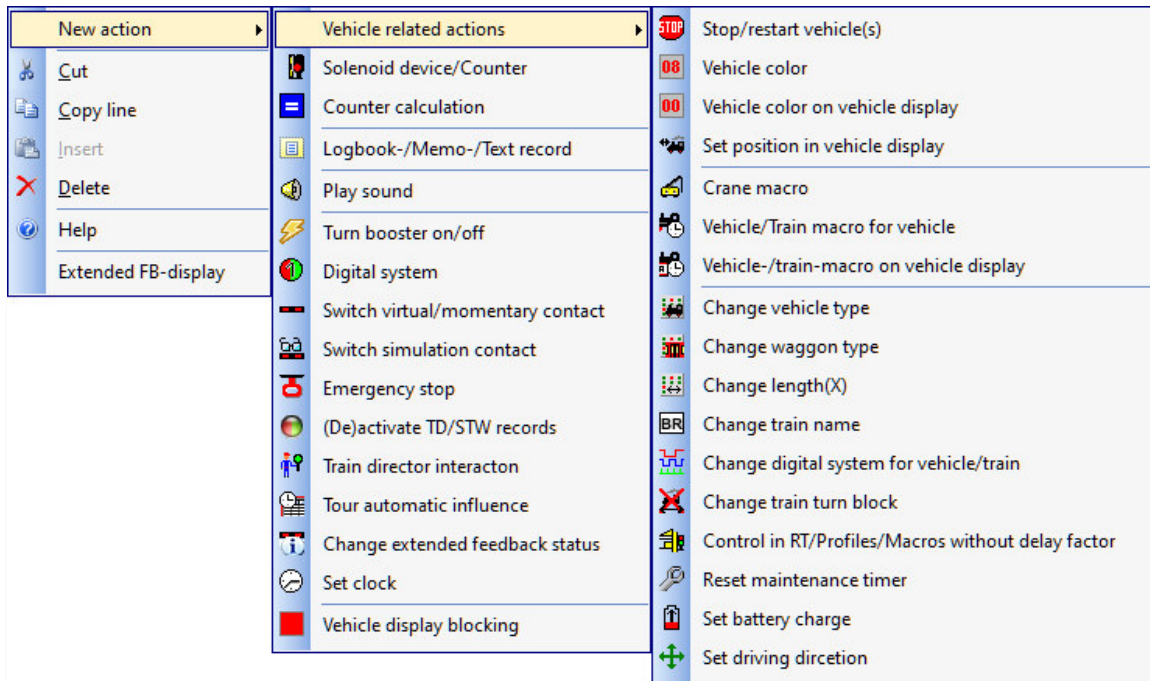You can access the short menu for the actions by <u>right-clicking</u> in the switch-on or switch-off field[34] and selecting <New action><...>.

Fig. 13.48   The short menu with the possible switching actions of the dispatcher

13.4.1   Vehicle-related switching action "Stop/start vehicle" (expert mode)

This action, which is only available in the dispatcher, allows you to specifically stop or restart vehicles if the defined conditions apply. This action differs from the "Emergency stop" action in that you stop the moving vehicles, and the system remains in operation.

You can limit or extend the vehicles to be stopped to a single or all vehicles. The same also applies to restarting the stopped vehicles if the triggering condition no longer exists. You can set which vehicles are to be affected using a corresponding selection list.
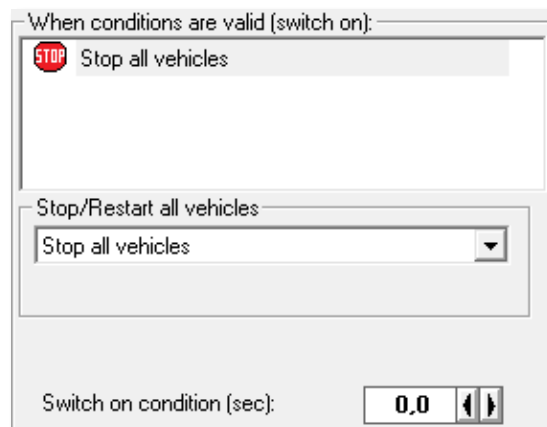
Fig. 13.49   The "Stop/start all vehicles" action

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[34] Differs depending on the editor

An example of the use of this action would be to interrupt a locomotive travelling the wrong way due to an incorrectly set of turnouts.

13.4.2   Vehicle-related switching action "Vehicle colour" (expert mode)

The "Vehicle colour" action allows you to change the colour of the entry for one or more vehicles on the vehicle displays. In addition to the option of changing the colour for an individual vehicle, where you must enter the digital address, the selection list also offers you the following options:

Fig. 13.50   The "Vehicle colour" action

- 🚂 All vehicles
- 🚂 Single vehicle
- 🚂 All black vehicles
- 🚂 All red vehicles
- 🚂 All blue vehicles
- 🚂 All violet vehicles
- 🚂 All green vehicles
- 🚂 All manual vehicles

You can change the colour to black, red, blue, and violet or switch from automatic to manual mode. To do this, simply click on the respective button with the corresponding colour. We explained the meaning of the individual colours earlier in this chapter (see section 13.2.9) in detail.

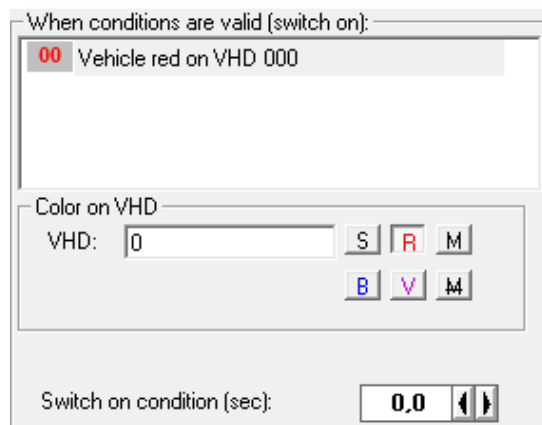### 13.4.3 Vehicle-related switching action "Vehicle colour on vehicle display" (expert mode)

Similar to the action described above, the "Vehicle colour on vehicle display" action allows you to change the colour of a vehicle's entry on a vehicle display.

To do this, enter the number of the vehicle display in the corresponding field in the dialogue.

You can change the colour to black, red, blue, or violet or switch manual operation on or off. To do this, simply click on the button with the desired colour or function. We have already explained the meaning of the individual colours earlier in this chapter (see section 13.2.9) in detail.

Fig. 13.51 The "Vehicle colour on vehicle display" action

13.4.4 Vehicle-related switching action "Set position in vehicle display"

This switching action sets the vehicle or train position on an intelligent vehicle display (iVHD) to a defined distance value. The distance value can be set in centimetres (cm) or millimetres (mm) to the start or end of the vehicle display. As an additional option, you can set the distance value to "unknown".
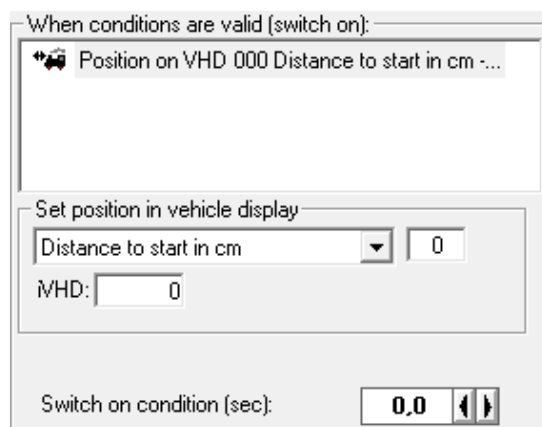

Fig. 13.52 The switching action "Set position in vehicle display"

13.4.5   Vehicle-related switching action "Crane macro" (expert mode)

With you can use the "Crane macro" switching action to execute an existing macro for a defined crane or function model.

The dialogue offers you two selection list fields for selecting the crane and the macro created for the selected model.

You must have previously created the crane or the functional model in the vehicle database and recorded the associated macros using the editor for crane macros.
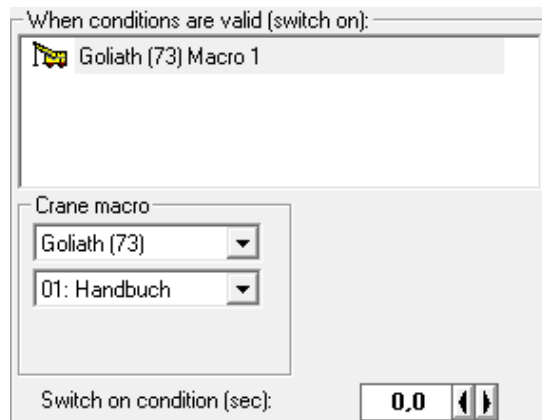

Fig. 13.53   The "Execute crane macro" switching action

13.4.6   Vehicle-related switching action "Vehicle/train macro for vehicle" (expert mode)

With The "Vehicle/train macro for vehicle" switching action allows you to execute an existing macro for a defined vehicle or train.

Enter the digital address of the vehicle in the corresponding field in the dialogue. Alternatively, you can also drag the image from the vehicle control or the vehicle bar into the field. You are already familiar with this procedure from the previous chapters of this documentation.

Use the button 📁 to select an existing macro from the macro list that appears. The list only shows you macros that are valid for the vehicle entered, i.e. vehicle-specific macros, train macros or basic macros.

Fig. 13.54   Perform the "Vehicle/train macro" switching action

The button ！ controls whether the macro should also be executed for an active route or route sequence for the selected vehicle.
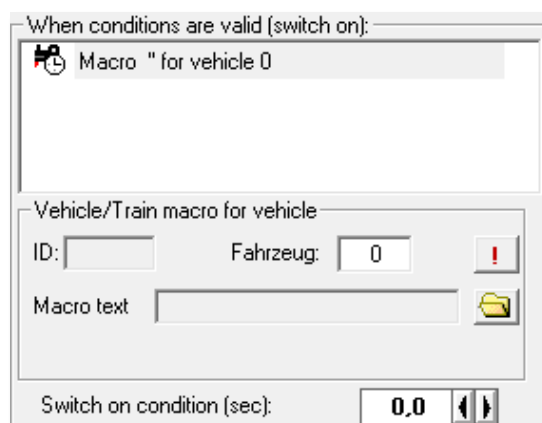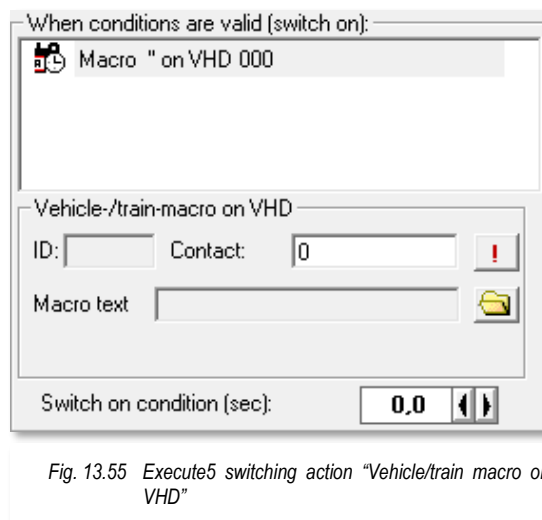
13.4.7 Vehicle-related switching action "Vehicle train macro on vehicle display" (expert mode)

With the switching action "Vehicle/train macro on vehicle display" allows you to execute an existing macro for a vehicle or train on a vehicle display.

In the dialogue, enter the contact number of a vehicle display in the corresponding field.

Use the button 📁 to select an existing macro from the macro list that appears. Please note that only valid macros for the vehicles can be played later during execution.

The button ❗ controls whether the macro should also be executed for an active route or route sequence for the selected vehicle.

Fig. 13.55 Execute5 switching action "Vehicle/train macro on VHD"

13.4.8 Vehicle-related switching action "Change matrix types" (expert mode)

Three further possible switching actions relate to the matrix types of the first three categories (vehicle type, waggon type and length (X)) for a vehicle on a defined vehicle display.

To do this, enter the matrix change for the vehicle that is entered on a specific vehicle display in the dialogue using the respective selection list.

In a tour-automatic journey, entering a "0" in the "VHD" field causes the matrix change to be applied to the vehicle currently travelling the route/route sequence of the current tour-automatic line.

The matrix changes are the same for the three actions mentioned above.
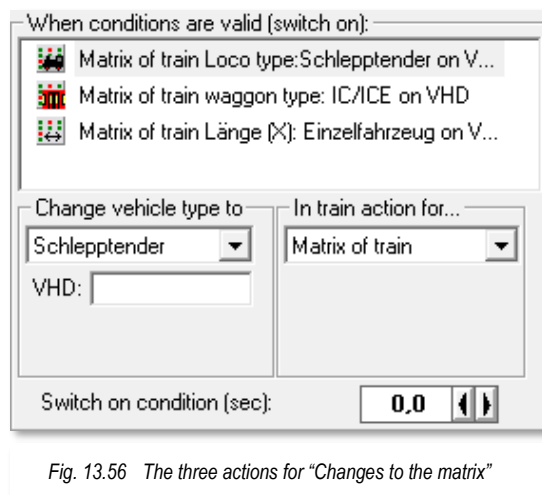
Fig. 13.56 The three actions for "Changes to the matrix"

13.4.9   Vehicle-related switching action "Change train name" (expert mode)

The "Change train name" switching action changes the train name on a defined vehicle display.

To do this, enter the name to be given to the train that is entered on a specific vehicle display in the dialogue with help.

In a tour-automatic journey, entering a "0" in the "VHD" field causes the train name change to affect the train that is currently travelling the route/route sequence of the current tour-automatic line.
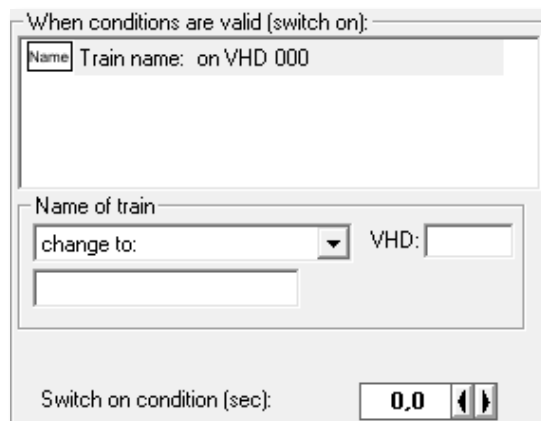
Fig. 13.57   The "Change train name" action

13.4.10 Vehicle-related switching action "Change digital system for vehicle/train" (expert mode)

The switching action "Change digital system for vehicle/train" causes the digital system currently controlling the vehicle to be changed on a defined vehicle display.

To do this, use the selection list in the dialogue window to select the digital system that is to take over control of the vehicle/train and enter the number of the vehicle display.
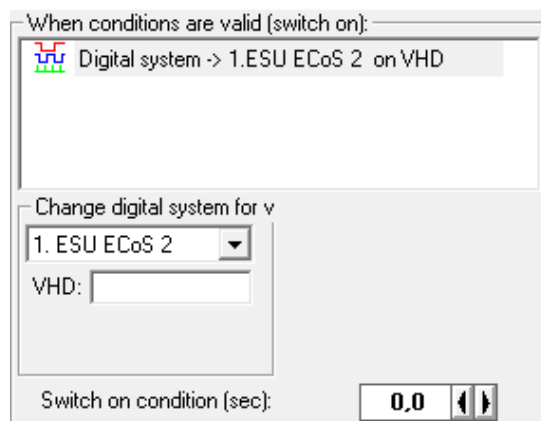
Fig. 13.58   The "Change digital system for vehicle" action

⚠ Please note that you must **never** operate two digital systems in one circuit at the same time. Always observe the electrical preconditions, otherwise the hardware may be destroyed.

13.4.11 Vehicle-related switching action "Change train turn block" (expert mode)

With The "Change train turn block" switching action can be used to deactivate or activate a train reversing lock on a defined vehicle display.

To do this, select the required change from the list and enter the number of the vehicle display on which the change is to take place.

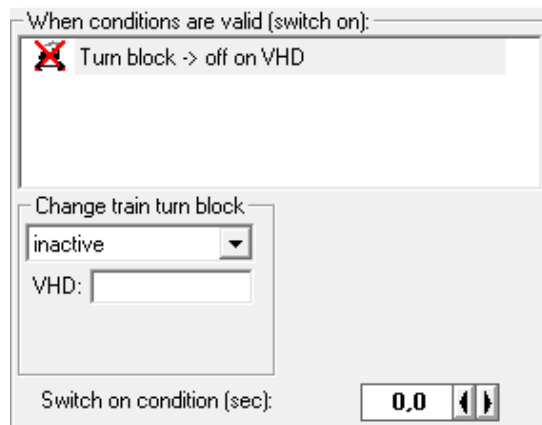You can set up the turn block for a train in the train composition of **Win-Digipet.**

Fig. 13.59   The "Change train turn block" switching action

13.4.12 Vehicle-related switching action "Control in routes/profile/macro without delay" (expert mode)

The switching action "Control in routes/profile/macro without delay" deactivates or activates the delay set in the vehicle properties of **Win-Digipet** on a defined vehicle display.

To do this, select the required change from the list and enter the number of the vehicle display on which the change is to take place.

Please do not confuse the delay from the vehicle properties with the delay functions that can be switched off via a function button on some vehicle decoders.
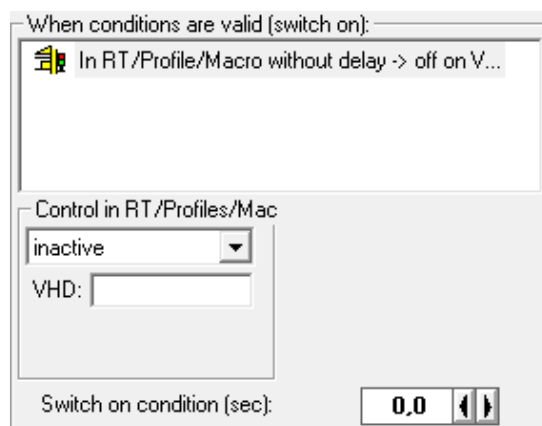

Fig. 13.60   The switching action "...control without delay""

13.4.13 Vehicle-related switching action "Reset maintenance timer" (expert mode)

With You can use the "Reset maintenance timer" switching action to reset the value of the maintenance counter from the vehicle database for a vehicle on a defined vehicle display.

To do this, enter the number of the vehicle display on which the change is to take place.
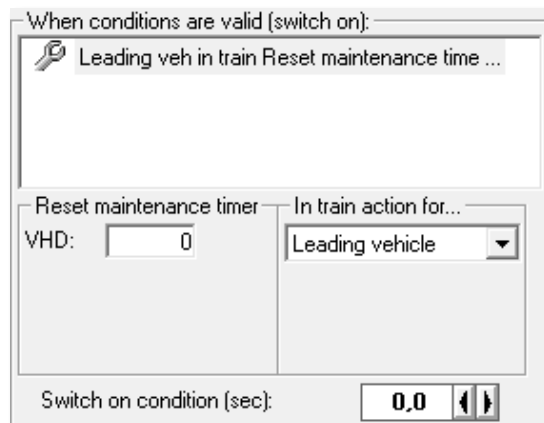
Fig. 13.61   6 switching action "Reset maintenance timer"

13.4.14 Vehicle-related switching action "Set battery level" (expert mode)

The "Set battery level" switching action sets the charge status of a battery-powered vehicle on a defined vehicle display.

To do this, enter the number of the vehicle display on which the change is to take place and set the battery charge level value in per cent.
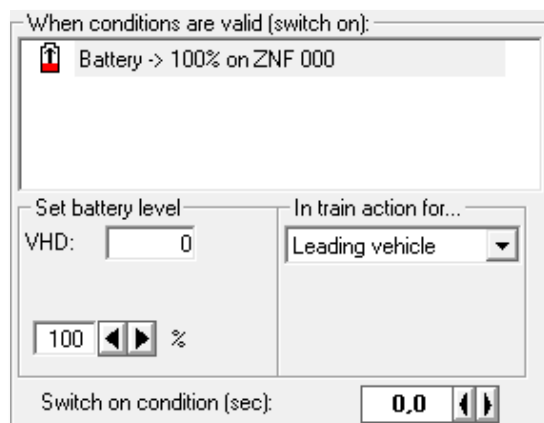
Fig. 13.62   7 switching action "Set battery level"

13.4.15 Vehicle-related switching action "Set driving direction" (expert mode)

With The "Set driving direction" switching action allows you to determine the direction of travel of a vehicle or train on a defined vehicle display.

To do this, enter the number of the vehicle display on which the action is to take place and set the direction of travel using the four cardinal points with the corresponding radio button.

The switching action can also be restricted so that it is only executed if the direction of travel of the vehicle or train is not (yet) set on the vehicle display. In this case, activate the checkbox in the dialogue window.

The direction of travel is not about whether a vehicle should drive forwards or backwards, but in which direction it should leave the vehicle display.
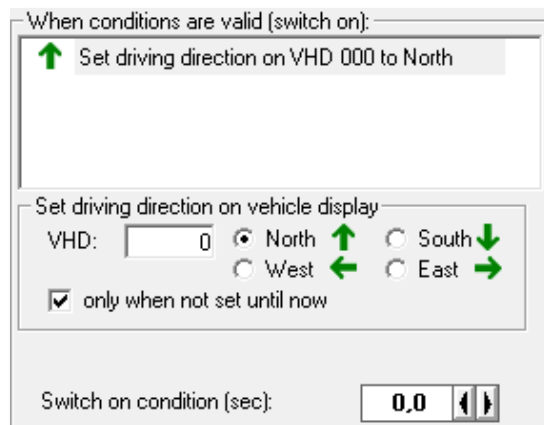

Fig. 13.63 The switching action "Set driving direction"

13.4.16 Switching action "Solenoid device/counter"

The "Solenoid device/counter" switching action moves a solenoid item entered here to the defined position.

Drag and drop a solenoid item or counter from the track diagram into the field and set the corresponding switch position with mouse clicks.

To do this, hold down the left mouse button and drag and drop the corresponding counter symbol into the reserved field. Set the position of the solenoid device to be executed with mouse clicks.

The value of a counter (+1 -1 00) is set by clicking several times with the left mouse button on the inserted counter symbol.

Fig. 13.64 The "solenoid device/counter" switching action

If you have set the value "*00*" with the left mouse button, then after clicking the right mouse button in the small "Set target value" window, you can set the desired number up to 9999 using the keyboard or the two arrow keys.
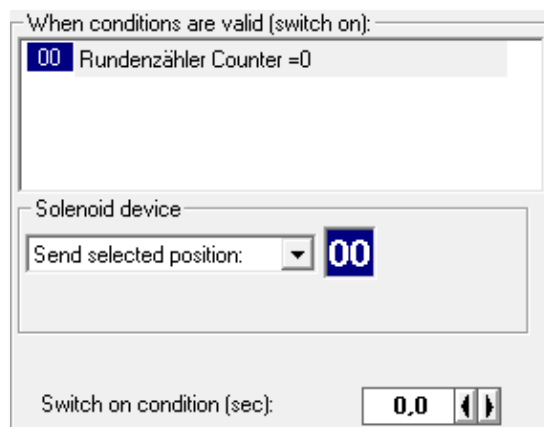
13.4.17 Switching action "Counter calculation" (expert mode)

With this switching action, you can calculate the value of a counter depending on another counter or various other criteria.

Drag and drop one or two counters from the track diagram into the reserved fields and select the desired calculation from the selection list. Depending on your selection, you will be offered the parameter entries required for the selected calculation.

The possible calculations are:

Fig. 13.65   8 switching action "Counter calculation"

- **Equal value of counter**
  Set the value of a counter equal to the value of another counter

- **Minus value of counter**
  Subtract the value of a counter from the value of another counter

- **Plus value of counter**
  Add the value of a counter to the value of another counter

- **Equals number of vehicles on VHD**
  Set the value of a counter to the number of vehicles on a specific VHD

- **Equals train length on VHD**
  Set the value of a counter to the value of the train length of a train on a specific VHD

- **Equal digital address on VHD**
  Compare the value of a counter with the digital address of the vehicle on a defined VHD

- **Equal priority on VHD**
  Compare the value of a counter with the priority value of a vehicle or train on a defined VHD

- **Vehicle position in train**
  Set the value of a counter to the position value of a specific vehicle in a train

- **Train positioning in VHD**
  Set the value of a counter to the distance value of a vehicle or train to the start or end of the iVHD. The value can be displayed in centimetres or millimetres.

- **Battery level on VHD**
  Set the value of a counter to the charge level (in per cent) of a vehicle battery on a VHD

- **Set random value**
  Set the value of a counter to a random value. The value range can be between "0" and "9999". The increment can also be set.
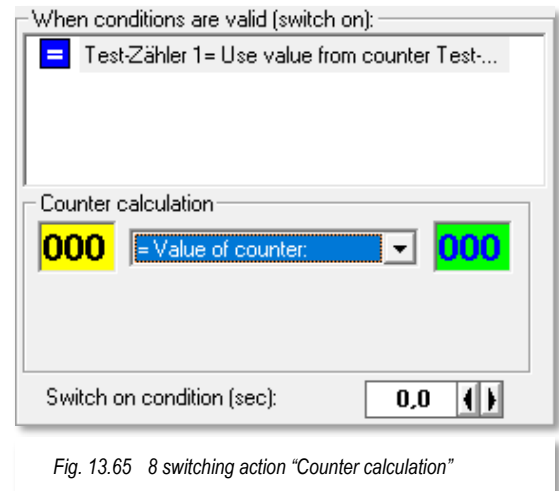
- **Changing the colour of a counter**
  The colour of a counter can be changed from Standard to Individual or vice versa

- **Current central clock hour**
  Set the value of a counter to the current hour value of the central clock

- **Current central clock minute**
  Set the value of a counter to the current minute value of the central clock

- **Current centre clock second**
  Set the value of a counter to the current seconds value of the centre clock

- **Current central clock day**
  Set the value of a counter to the current day value of the central clock (Mon=0 to Sun=6)

- **Train director state**
  Transfer the counter value of a configured dispatcher (e.g. TD-HYC - number of occupied VHD) to a counter

13.4.18   Switching action "Logbook/memo/text record" (expert mode)

The "Logbook/memo/text record" switching action is primarily used for user support. As you can see from the name, it can be used to create entries at various points in the programme that can indicate certain system statuses and thus serve to ensure safety during operation.

Select the desired type of entry from the selection list and enter a text. In this dialogue, you can also use the "Extended text input" function. Depending on your selection, you will be offered the necessary parameter entries here.
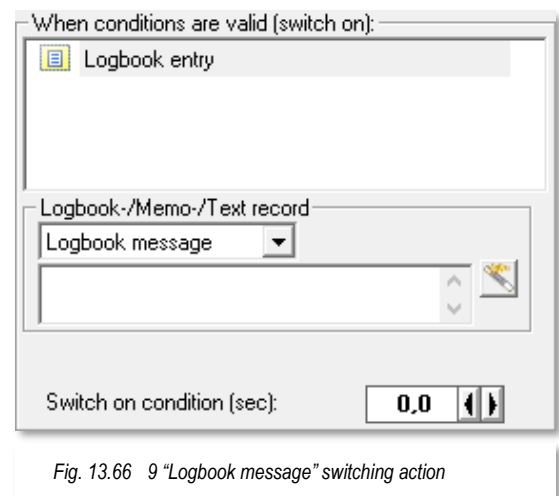

Fig. 13.66   9 "Logbook message" switching action

The following entries can be generated in detail:

- **Logbook message**
  This creates an entry with a time stamp in the **Win-Digipet** operating log (logbook).

- **Memo entry**
  A memo ("sticky note") with the entry stored here is displayed.

- **Delete memo entry**
  A memo can also be deleted here by entering the memo ID.

- **Text in track diagram**
   A text stored here is displayed in the track diagram at a specific coordinate. The text must already have been entered in the track diagram editor.

- 🚋 **WDP mobile message**
  You can use this switching action to send a message text to the **Win-Digipet** Mobile app on your smartphone. A message can be sent to all or only certain connected clients.

- 🚋 **UDP message**
  A text (code) is sent over the network via the UDP protocol to a client defined via the IP address. In addition to the IP address, you must specify the UDP port of the external programme on the client.

- 🚋 **External programme**
  This switch action allows you to start an external (executable) programme on your computer and pass it the entered text as a parameter. In addition to the text, you must also enter the correct file path to the executable file.

13.4.19 Switching action "Play sound"

With You can use this "Play sound" action to play any sound file.

Use the button 📁 to select a file. By default, all .wav and .mp3 files located in the \SOUND subdirectory of the **Win-Digipet** programme directory and the other subdirectories there are displayed. However, you can also change to any directory and select a file from there. For reasons of clarity, however, we recommend that you keep the sounds underlined required for your project in the above-mentioned directory.

Below the sound selection field, there is another list field in which you can select the speaker of your **2.1**, **5.1** or **7.1 sound system** via which the

Fig. 13.67   The "Play sound" switching action

sound is to be played. You can listen to the selected sound file using the small green arrow ▶. With the help of the button 🔁 you can repeat the file permanently or define the number of repetitions by clicking again.
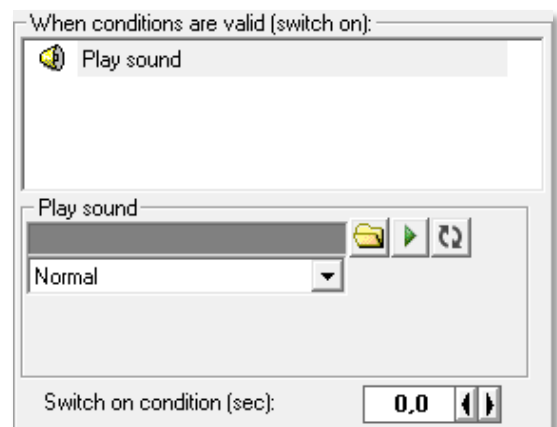
13.4.20 Switching action "Switch booster on/off" (expert mode)

With switching action "Switch booster on/off" you can switch boosters on or off.

To be able to use this action, you must have set up the booster management of **Win-Digipet.**

These circuits are also controlled via selection lists, which you use to select your booster ranges and the required switching action.
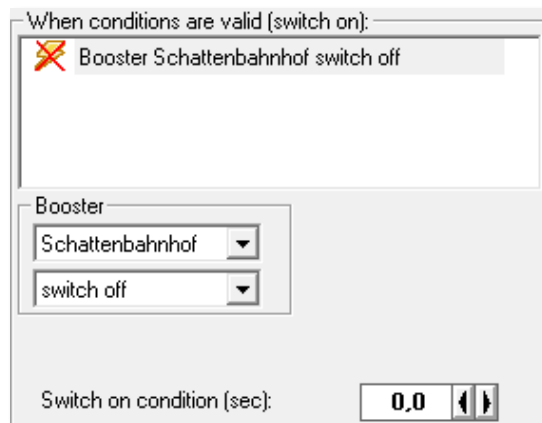
Fig. 13.68   The switching action "Switch booster"

13.4.21 Switching action "Digital system" (expert mode)

The "Digital system" switching action can only be found in the dispatcher. It is used to set individual digital systems of your model railway layout to emergency stop (Stop) or operation (Go). An emergency stop controlled with this action does not stop the entire system.

Use the selection lists in the dialogue window to select the digital system and the switching status.
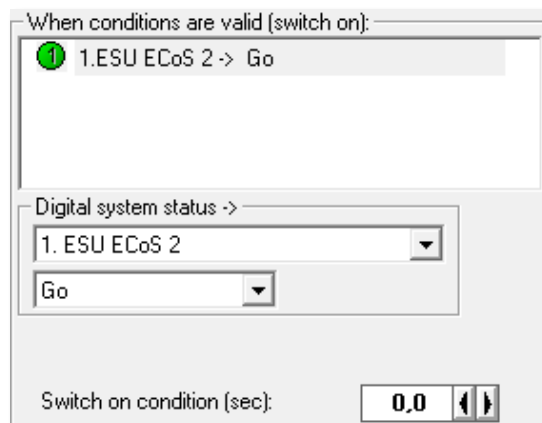
Fig. 13.69   The "Digital system" switching action

13.4.22 Switching action "Switch virtual contact/momentary contact"

With this action, you can switch a virtual contact that does not actually exist on your system or an existing moment contact.

In the chapter 5 on the "Track diagram editor" we already dealt with the topic of momentary contacts and talked about more complex circuits for resetting momentary contacts. You can now find these with the switching action shown here.

You create virtual contacts in **Win-Digipet** using the editor for "Virtual contacts & pulse generators".(see section 16.18)

As soon as **Win-Digipet** recognises a virtual contact, the display here in the dialogue window changes from "momentary contact" to "virtual contact".
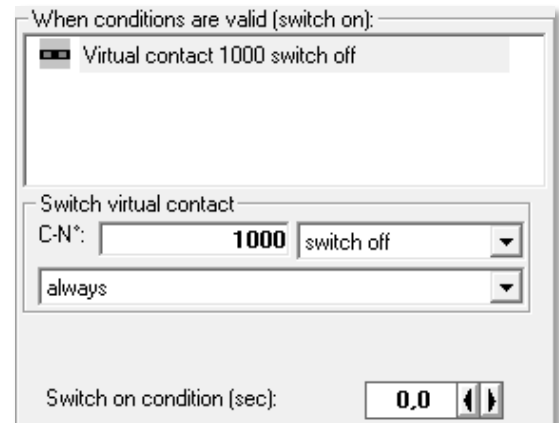
Fig. 13.70 The switching action "Switch virtual/momentary contact"

Enter the number of the virtual or momentary contact in the dialogue and define whether it should be switched on or off.

The contact entered must have been created in advance, otherwise the contact number entered here will be highlighted in red and therefore marked as an error.

You can also use a selection list to specify the cases in which the contact should be switched:

- 🚂 Always
- 🚂 Only with entry on associated VHD
- 🚂 Only if there is no entry on the associated VHD

13.4.23 Switching action "Switch simulation contact"

This switching action is primarily used to switch feedback contacts while **Win-Digipet** is operating in simulation mode, i.e. without a system connection. Here it can be helpful to have certain contact switching operations carried out that cannot be triggered by vehicles in routes, for example.

The configuration of the switching action essentially corresponds to the switching action "Switch virtual contact/momentary contact" described in the previous section.

13.4.24 Switching action "Emergency stop" (expert mode)

With you can use this switching action to carry out a targeted emergency stop if the defined conditions apply. The difference to the "Digital system" switching action is that the "Emergency stop" command is sent to all digital systems on your model railway layout.

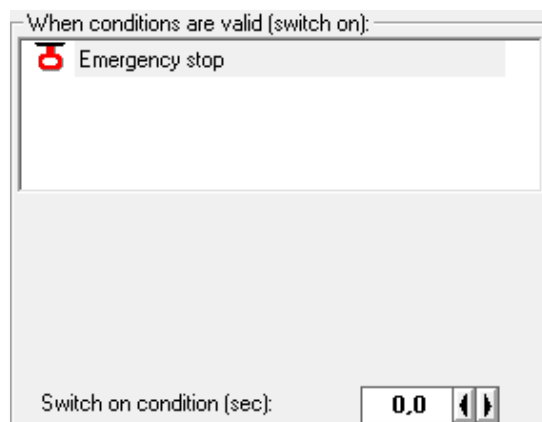The configuration dialogue offers no further setting options.

Fig. 13.71   The "Emergency stop" switching action

> ⚠ Please ensure that the triggering situation has been rectified before cancelling the emergency stop (manually).

13.4.25 Switching action "(De)activate TD/dispatcher records" (expert mode)

With The switching action "Activate or deactivate Train director/dispatcher entries" can be used to activate or deactivate individual entries in both parts of the programme.

You select the necessary entries using the selection list fields in the dialogue. The individual entries of the two programme sections are listed in the selection list with their respective names and a data record number for reliable identification.

However, it is advisable to pay attention to clear designations when creating data records, not only in the train director or dispatcher.
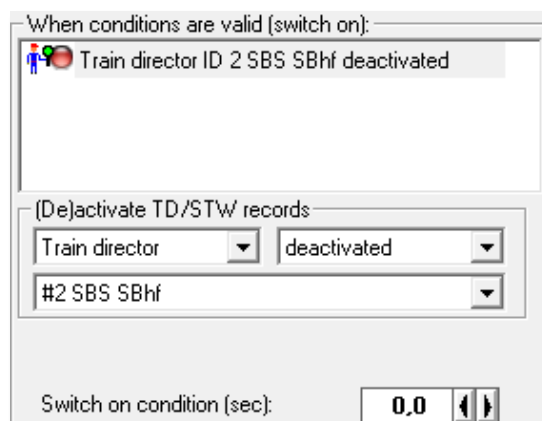
Fig. 13.72   10   switching   action   "(De)activate   TD/dispatcher entries"

13.4.26 Switching action "Train director interaction" (expert mode)

The switching action "Train director interaction" has the task of instructing a defined vehicle display to the next exit of an established Train director "Hidden yard control" (TD-HYC).

In the dialogue window, select the relevant train director entry and define a vehicle display from the area of the train director entry.
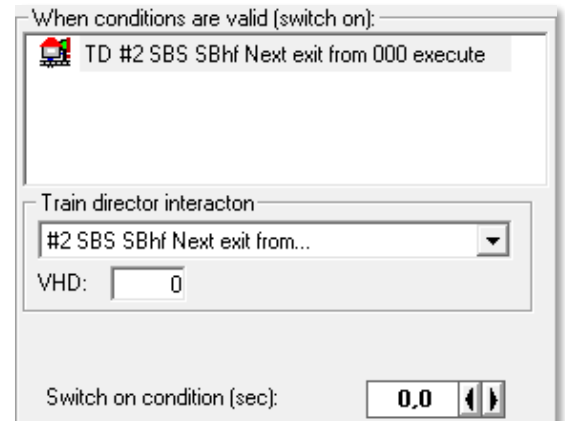

Fig. 13.73   The switching action "Train director interaction""

13.4.27 Switching action "Change extended feedback status" (expert mode)

With You can use the "Change extended feedback status" switching action to "freeze" a feedback contact or cancel the "frozen" status.

Frozen feedback contacts are required in **Win-Digipet** for train lifts, for example. In this case, not all levels of a train buffer may always be energised, but the last known status of a feedback contact can still be retained.

Enter the number of the relevant feedback contact in the dialogue window and select the required action from the selection list.
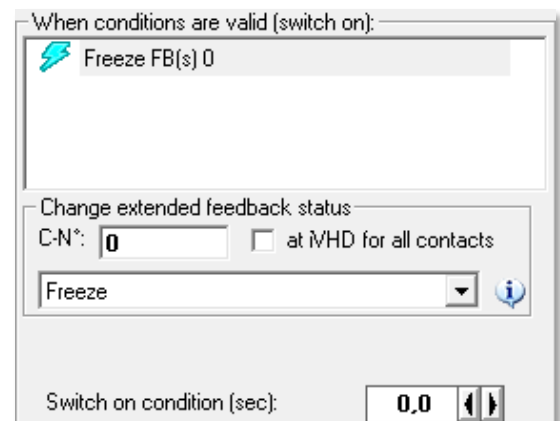
Fig. 13.74   11 "extended feedback status" switching action

13.4.28   Switching action "Set clock" (expert mode)

With you can use the "Set clock" switching action to influence various clock times that are used in **Win-Digipet.**

This allows you to set the time of the central clock or the time of a running tour-automatic journey to a specific value.

Furthermore, the time factors of the central clock or the clock in the tour-automatic system can be influenced.

Enter the required values using the selection list or value fields. You can enter the numerical values using the arrow keys or the keyboard.
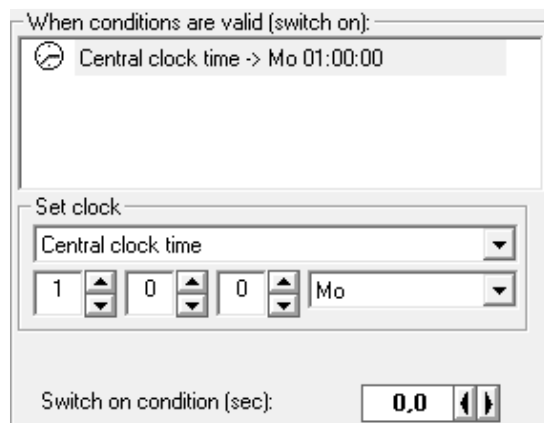
Fig. 13.75   12 "Set clock" switching action

13.4.29   Switching action "Vehicle display blocking" (expert mode)

With You can use the "Vehicle display blocking" switching action to block the assignment of vehicle displays. This means that traffic to the entered vehicle display is restricted or prevented. The following options are offered in the selection list:

- Block transit
- Block destination
- Unblocking
- Delete vehicle or train number

Fig. 13.76   13 switching action "Vehicle display blocking"

In the dialogue, enter the contact number of the vehicle display for which the block is to apply. You can also limit the entered block to one direction. The direction is specified here as usual according to the cardinal points.

Please note, for example, that a direction block to the north or south would not make sense for a horizontally arranged vehicle display.

Finally, you can decide whether the switching should also be carried out if the specified drive vehicle display has an entry.
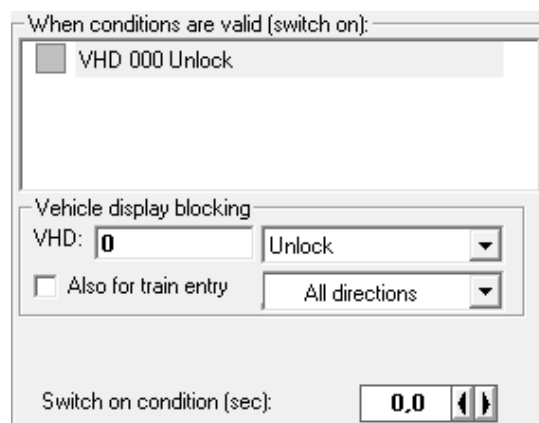
Version 2021
Premium Edition

Chapter 14

14. TURNTABLE, TRANSFER TABLE AND TRAIN STORAGE

14.1 General information

Since versions, **Win-Digipet** has had the dialogue for the intelligent turntable. This dialogue has now been completely revised for version 2021 and now also manages segment turntables, transfer tables and train storage facilities in addition to turntables. The term "train storage" here refers to so-called train lifts or paternosters for example.

The main task of the intelligent turntable control is to align the platform track with the requested siding, taking into account the vehicle on the platform, its direction of travel and the direction of departure of the requesting siding.

In this chapter, we will look at setting up the device types mentioned in **Win-Digipet**. All the device types mentioned have control via control modules (decoders) in common. These decoders are generally controlled via solenoid device addresses.

Before you get to work and enter your turntable, segment turntable, transfer table or train storage in **Win-Digipet**, the device decoder used should be configured. This means that each track or level can be accessed without any problems via a solenoid device address and the assigned digital system. Please refer to the operating instructions of the respective manufacturer.

In principle, any turntable decoder can be programmed using **Win-Digipet** if it can be addressed via solenoid device addresses. If necessary, draw a track diagram in which you assign these addresses required for programming to some switches (buttons) and you are ready to go.

	Please note!
	If your project was created in a previous version of **Win-Digipet** and an intelligent turntable control system has already been programmed there, you need not worry. All settings will be adopted and work as before.
	However, you may have to incorporate new functionalities in the track diagram and in the turntable dialogue at a later date.

14.2 Create/add track diagram for a turntable

To create or add a turntable to your track diagram, switch to the track diagram editor and then click on the "Symbol groups" type field in the symbol selection.

In the symbol group category "Turntable/transfer table/train lift", you will be offered pre-prepared symbol groups for drawing a turntable or transfer table or a train lift. Corresponding symbol groups are also provided for drawing a segment turntable.
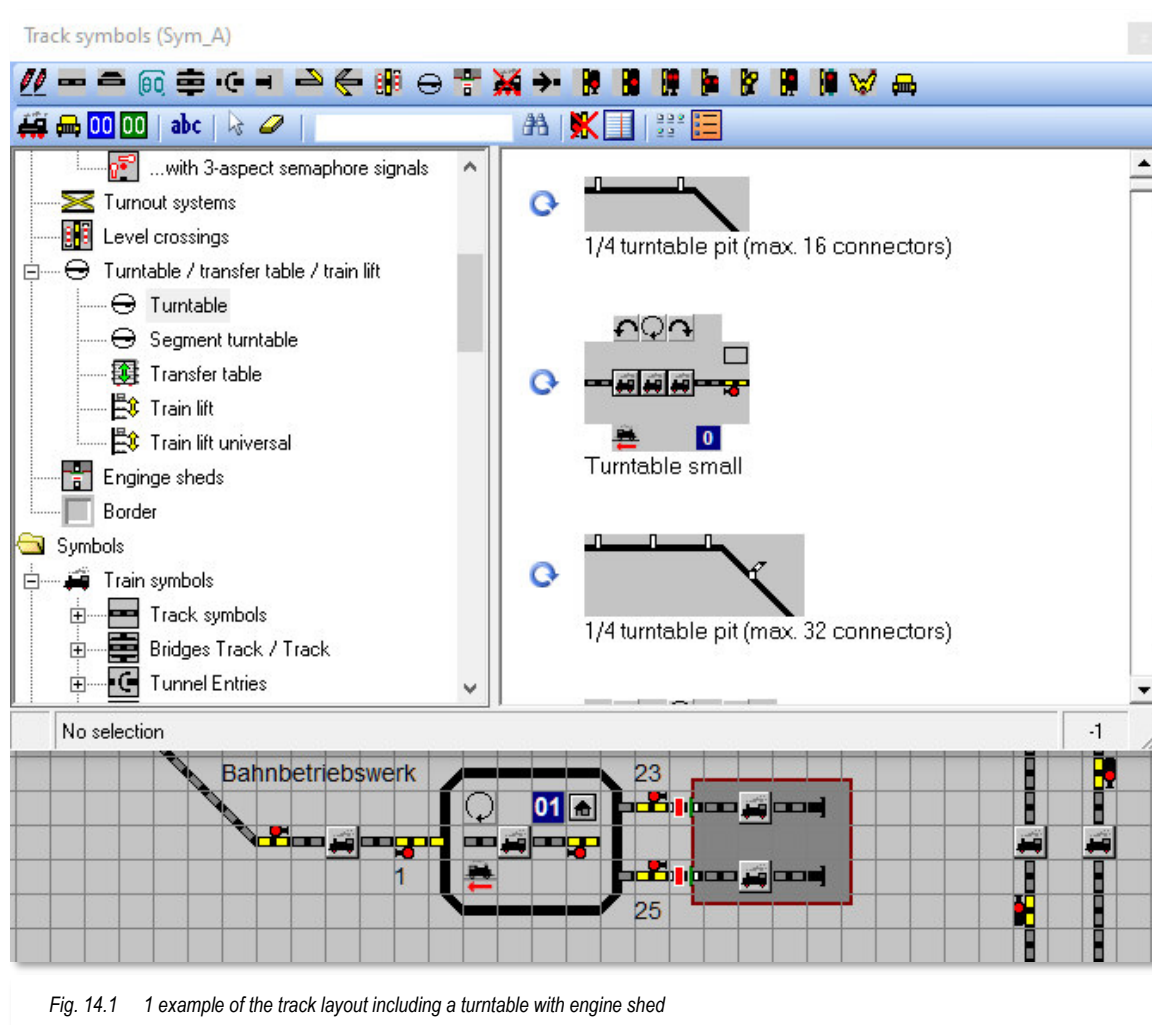

Fig. 14.1   1 example of the track layout including a turntable with engine shed

Use these symbol groups to draw the turntable in your track diagram; a possible example can be seen here. In addition to the symbol groups, some of which are scalable and rotatable, there are also many individual symbols available to represent a turntable. You can use the symbol groups to draw your turntable very quickly in your track diagram.

When designing your turntable in the track diagram, make sure that you also draw in the switch symbols for the single step left and right, change of direction and 180° rotation functions. It may also be useful to show the three LEDs (Clear, Input and End). Which function symbols you need later also depends on the type of turntable decoder used.

14.3 Track diagram symbols for segment turntable or train lift

Also the corresponding symbol groups are also available in the symbol selection for recording segment turntables, transfer tables or train storage facilities. The following graphics show two examples.
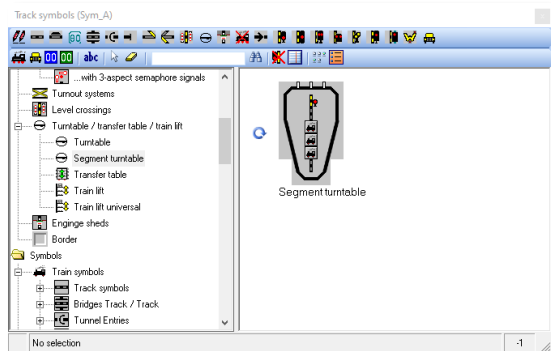
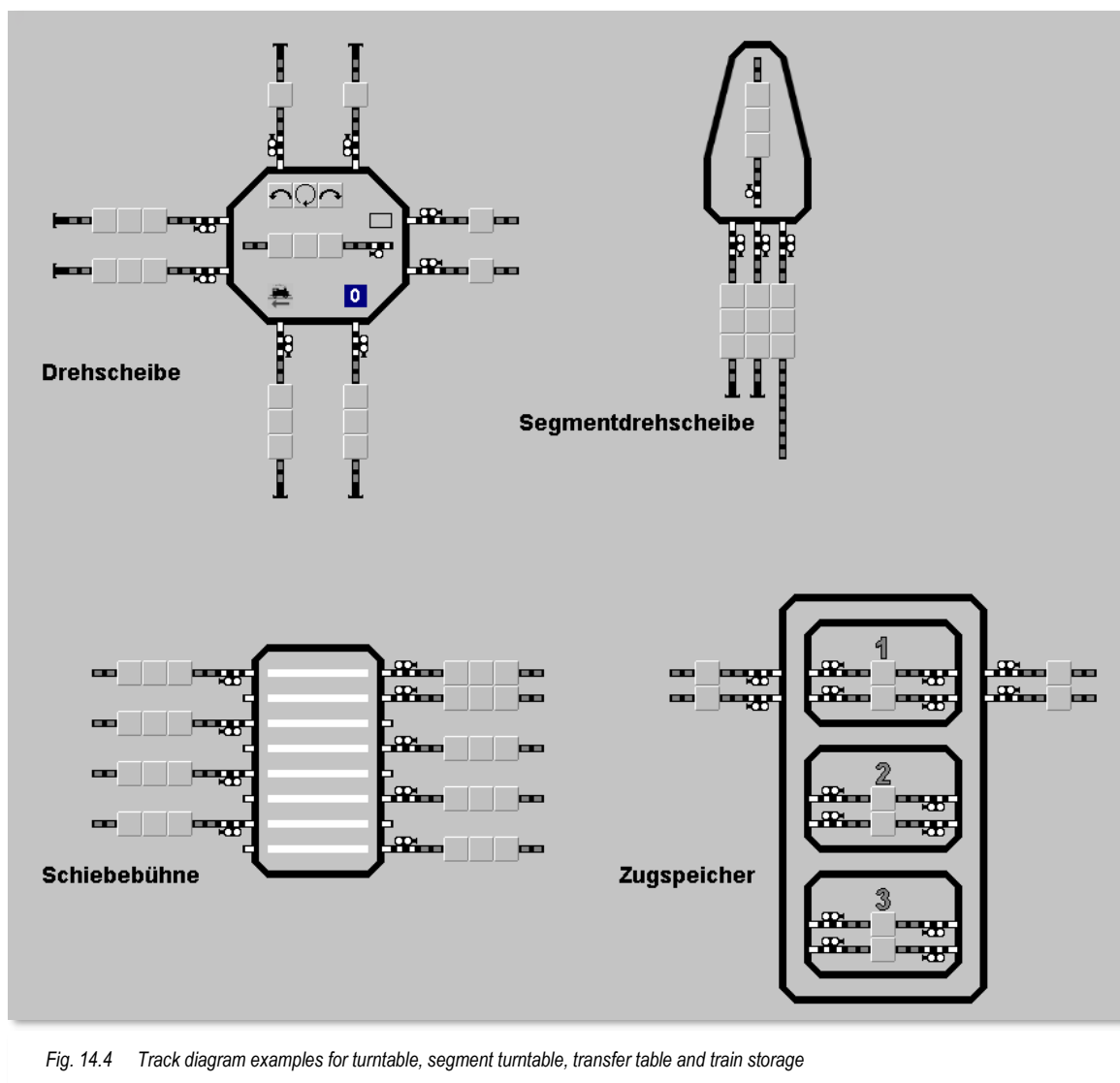Fig. 14.2   2 for a segment turntable
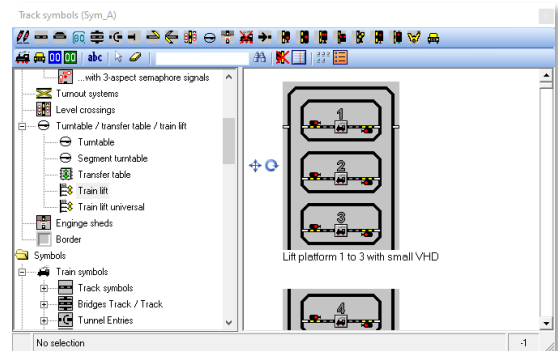
Fig. 14.3   Symbol3 for a train lift

14.4 Track diagram examples

The following illustration shows some examples of the design of turntable, segment turntable, transfer table and train storage. All examples have been created from the available symbol groups in the track diagram editor.

Fig. 14.4   Track diagram examples for turntable, segment turntable, transfer table and train storage

To explain the Fig. 14.4 some German words should be translated 😉:

Drehscheibe = Turntable

Segmentdrehscheibe = Segment turntable

Schiebebühne = Transfer table

Zugspeicher = Train storage

14.5 Feedback options on the turntable

With feedback modules, you can create interesting feedback signals around the turntable. However, this sometimes requires mechanical modifications to the turntable. The necessary instructions can be found free of charge on the **Win-Digipet** homepage under the heading Workshops (Workshops #10, #21, #26 and #33). Please note that the workshops may have been created for older versions of **Win-Digipet** or are aimed at specific hardware. In principle, the things described in the documentation are still applicable today and must be implemented for your particular situation.

For example, you can display a "real" position feedback of the platform from each connected track via feedback contacts.

When operating the turntable on your model railway layout, the siding will then light up **red** when the turntable platform reaches the siding.

There are three connections on the left-hand connector strip of the **Märklin 7687** decoder:

- **B** = Traction current (+)
- **0** = Ground (-) for the right rail of the turntable bridge
- **0** = ground (-) for their left rail.

If you have not separated the turntable platform into three track sections (feedback contacts) after the workshops, you can use **one** of the two **0 connections** for feedback of the turntable bridge assignment. Connect it to an input socket on your feedback module. When operating the turntable on your model railway layout, the turntable platform will then be illuminated **red** as soon as a locomotive passes the platform.

For this purpose, the "ground" feather on the platform must no longer have any electrical contact with the connecting rails and all connecting tracks must be supplied separately with digital current. (Detailed instructions on this in workshop #10 on the **Win-Digipet** homepage)

14.5.1 Detection of the turntable feedback contacts in the track diagram

If you have made the modifications to your turntable after the workshops, you can, for example, display a "real" position feedback of the platform from each connected track by means of feedback contacts. You record these feedback contacts in the track diagram as with normal track sections.

The three indicator lights of the turntable decoder, which may be present depending on the type, can also be inserted in the track diagram, and provided with the corresponding feedback contacts. The platform itself normally only has one contact. As a rule, only one (intelligent) vehicle display is required on the platform.
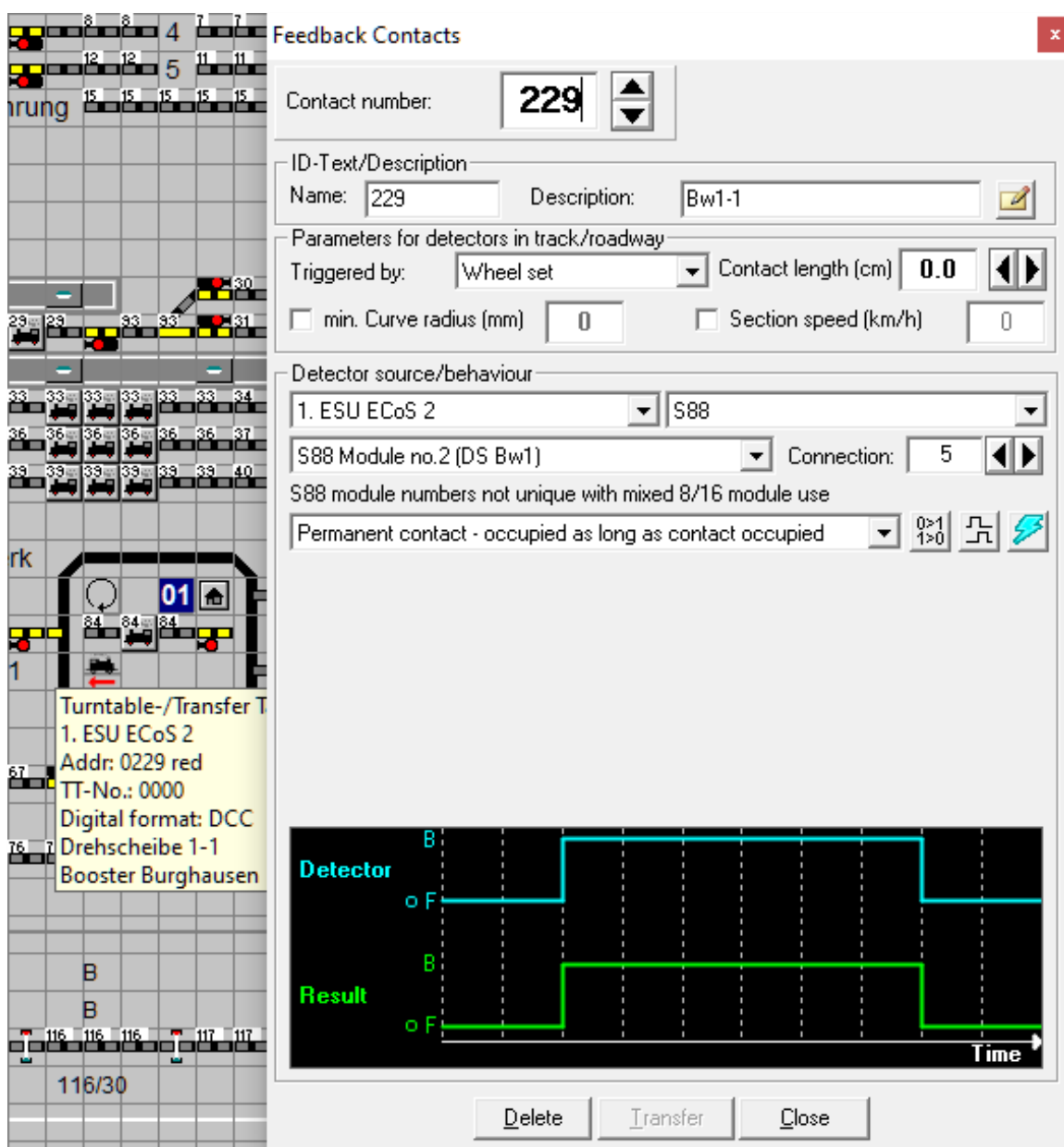
Fig. 14.5   A feedback contact number has been assigned to the track connection

14.5.2 Addresses of the track connections and command buttons

After you have entered the feedback contacts in your track diagram, transfer the solenoid device addresses of all track connection points to the drawn turntable track diagram.

Please note the following instructions for recording!

- 🚂 Each track connection and each command button is designed as a solenoid item: Clicking on them triggers a function.

- 🚂 Your turntable decoder should be programmed correctly.

To enter a **command button,** click on its symbol in the turntable track image. The "Solenoid device registration" window appears, in which you assign the correct address and the "*RED*" or "*GREEN*" connection.
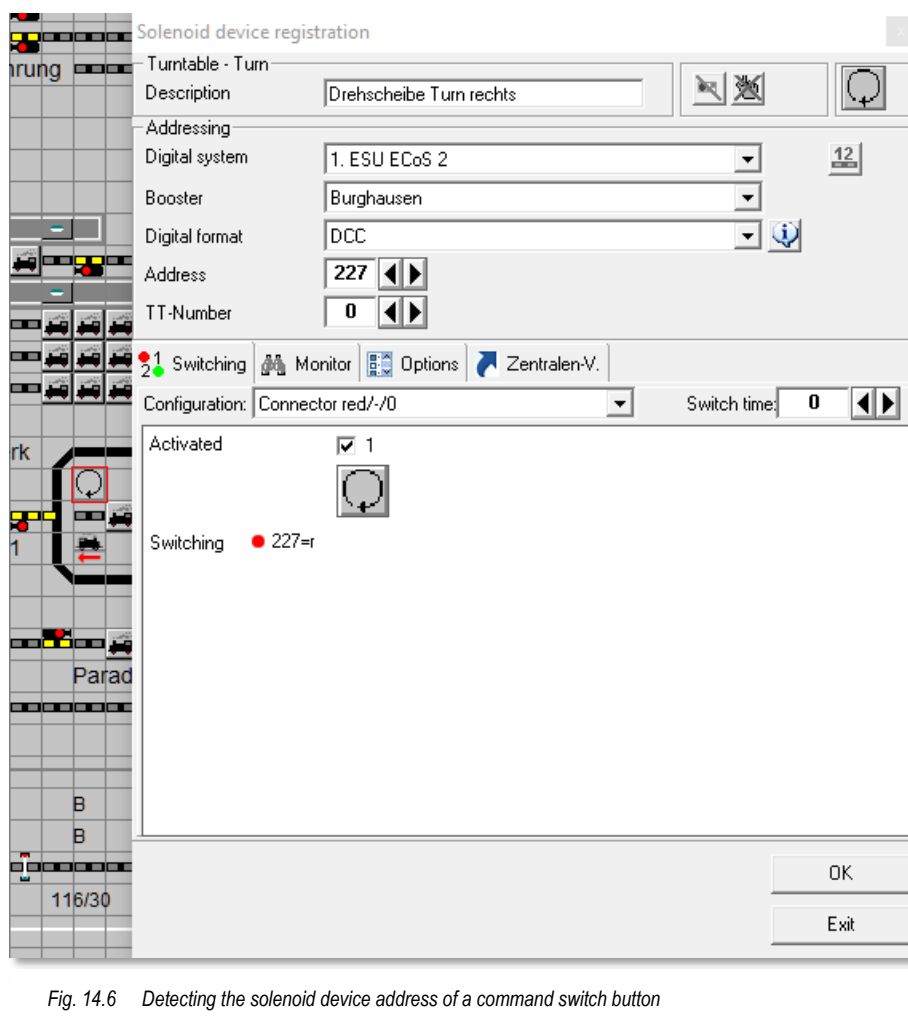
Fig. 14.6   Detecting the solenoid device address of a command switch button

Some turntable decoders require the three buttons for "Input" (225 green), "Clear" (226 red) and "End" (225 red) for programming and troubleshooting. You can also draw these buttons in the track diagram and assign the corresponding addresses. The addresses

mentioned here are taken from the keyboard address range "15" of the Märklin command set. Many manufacturers of turntable decoders still use the address ranges 15 (225 red to 240 green) or 14 (209 red to 224 green) as standard addresses in the Motorola or DCC protocol. However, you have the option of using other address ranges or protocols. Always follow the operating and programming instructions of the decoder manufacturer.

To enter a **connector,** click on the connector symbol in the turntable track diagram. The "Solenoid device registration" window appears. Enter the address that you noted when programming the decoder and select either "*RED"* or *"GREEN"* from the "Configuration" list (cf. Fig. 14.7). Click on the **'*OK'*** button to enter the selected track connection.
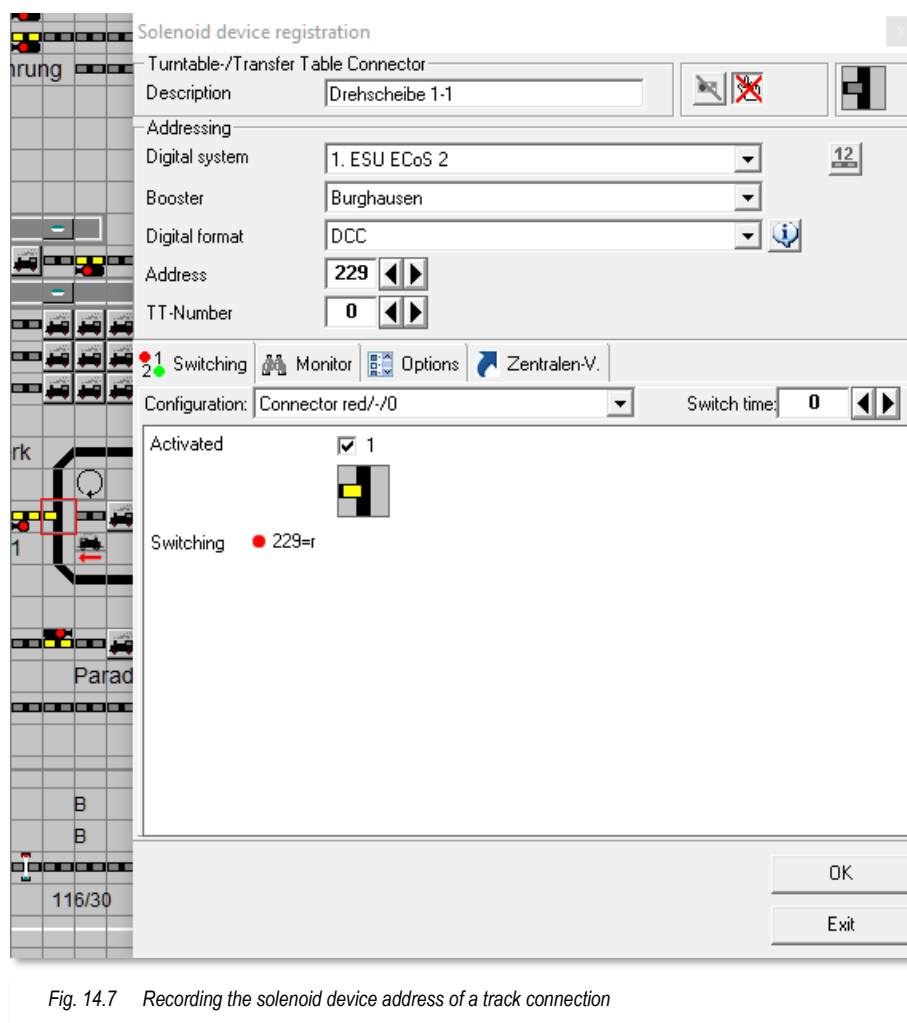
Fig. 14.7   Recording the solenoid device address of a track connection

Position monitoring should be set to "Monitoring by intelligent turntable" for all solenoid item symbols that are associated with the operation of a turntable, segment turntable, transfer table or train storage unit. This setting option can be found for the corresponding symbols (connections, turn, step, etc.) on the "Monitor" tab in the dialogue window for solenoid device registration.

You should always set the "*Show all addresses*" button for address assignment so that you can immediately see which addresses you have already entered. The message "Digital address already... already exists!" can be ignored because each connection is a half of the two-aspect address ("red" or "green"). Always enter a meaningful name in the "Description*"* field, such as "Turntable 1-1" in the picture, to make your work easier later on.

If you have If you have drawn several turntables, transfer tables or train storage units in your track diagram, you must assign each of these devices its **own unique number (turntable/transfer table/train storage unit number)**. This ensures that they do not interfere with each other during operation.

All solenoid items that are then assigned to this turntable or transfer table are given the same number.

14.6 Turntable in the Selectrix digital system

The control of the Märklin turntable described above can also be carried out in the Selectrix system with minor restrictions and the following additions. You can also use the turntables from Fleischmann etc. for this purpose

14.6.1 Solenoid device registration for Selectrix

In **Win-Digipet** you can also integrate and control a turntable drive from the manufacturer MÜT or another Selectrix turntable decoder. In this case, you should observe the following sequence when entering the solenoid device:

-   Select the digital system
-   Select Selectrix digital format
-   Enter turntable connection and corresponding address
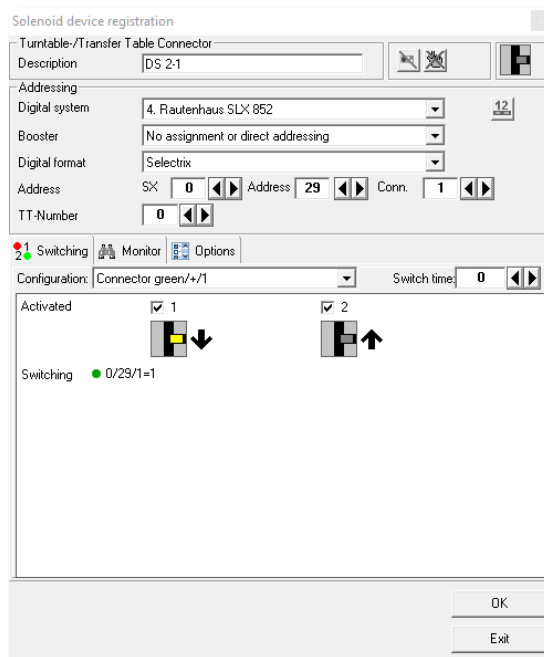
Fig. 14.8   4 for a track connection with SX protocol

When you registrate the solenoid addresses of the MÜT turntable drive, you should note that MÜT counts the connections 0 - 63, while **Win-Digipet** counts them from 1 - 64. When the MÜT turntable drive is delivered, the connections are activated as follows:

-   1st semicircle from 1 - 24
-   2nd semicircle from 33 - 56

14.7 Intelligent turntable/transfer table/train storage control system

With the intelligent turntable/sliding platform/train storage control in **Win-Digipet** allows you to control one (or more) of these devices very conveniently. In principle, the following turntable decoders, among others, are suitable:

- Märklin 7686 or 7286 with decoder 7687
- Sven Brandt turntable decoder
- TT-DEC from the Littfinski company
- Rautenhaus SLX 815/819 decoder
- Turntable drive from MÜT
- DSM PIC from Stärz
- DinaSys Turntable Controller
- Fleischmann TurnControl
- BiDiB StepControl
- ...

A BiDiB StepControl or a switching decoder can be used to operate segment turntables. The same applies to transfer tables or train storage units.

This list can be extended, as **Win-Digipet** also allows less well-known or self-built turntable decoders to be integrated into the configuration dialogue "Turntable/transfer table/train storage". These decoders generally have the feature that the connections can be controlled directly by pushbuttons. Some of these decoders always take the shortest route, while others allow the direction to be specified. The entry "Other *Decoder type"* is provided for this in the selection list for the decoder type.

The user must observe a few special features here to ensure perfect functionality with **Win-Digipet:**

- All connections or levels must be directly accessible via pushbuttons (i.e. not just the connections of half a turntable as with the Märklin protocol, for example)
- In addition, opposite connections must also be recorded, even if they are not equipped with a track output (example for a turntable with 48 connections, where connections 1-3 are used, then connections 25-27 must also be recorded). This is the only way **Win-Digipet** can recognise the commands for the reverse position of the platform.

Optionally, buttons can be entered in the dialogue field with which the direction of rotation can be predetermined. However, this is only necessary if the turntable decoder used does not automatically select the shortest way to turn when a track is selected.

Before using the turntable configuration dialogue, however, you must have drawn your turntable in the track diagram and programmed the turntable decoder according to the manufacturer's instructions.

14.7.1 Register turntable/transfer table/train storage

To enter a turntable, segment turntable, transfer table or train storage device, select the command <Operation><Turntables/transfer tables><New...> from the **Win-Digipet** main menu. If you have already created data records in this area in your project, these will also be displayed with their names in this menu, and you can open them for editing or monitoring. In the image, you can see that a turntable with the name "Bw1" has already been configured.

To create a new turntable, select the menu item<Create new turntable>.
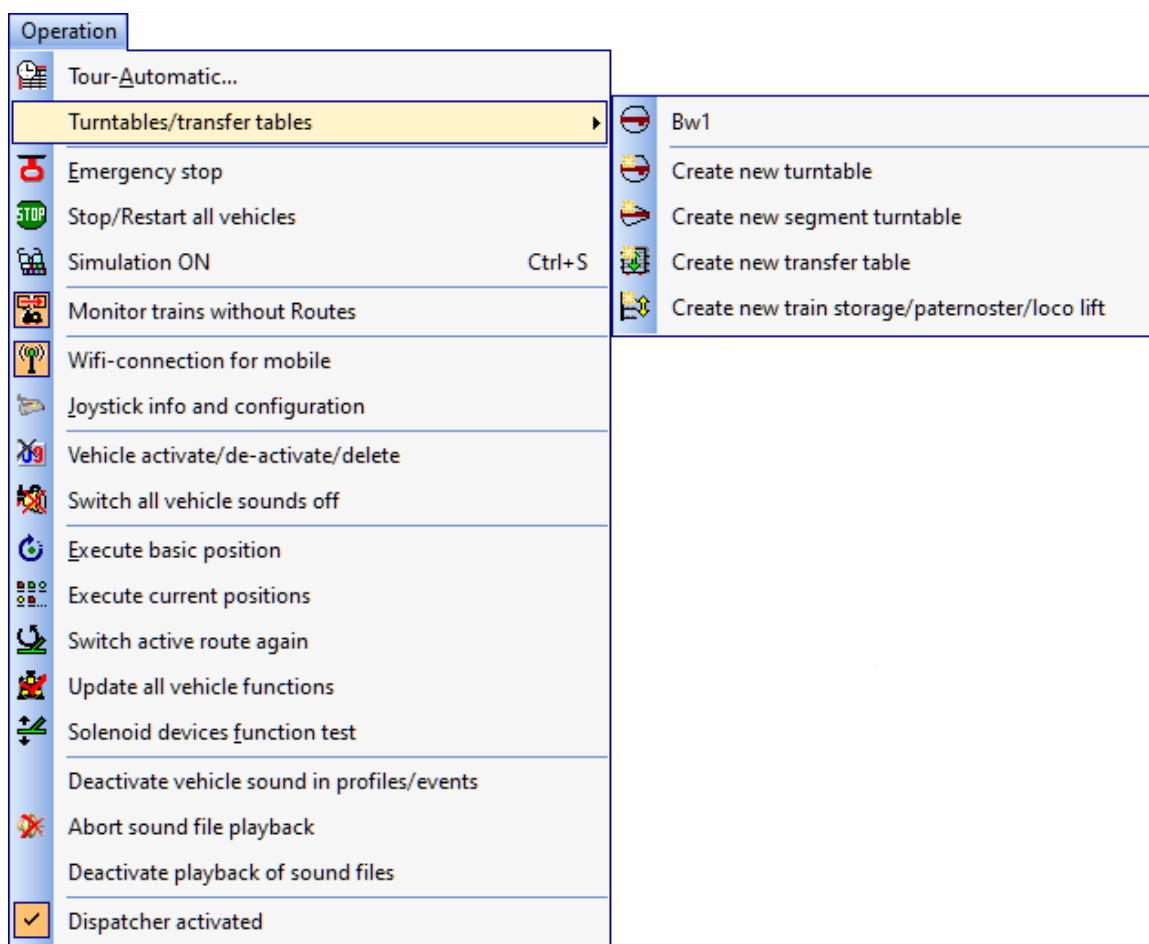
Fig. 14.9   The menu for creating a new turntable, transfer table or train storage

14.8 Dialogue intelligent turntable - Operating mode (I)

After a confirmation prompt, the dialogue for a turntable is displayed. This dialogue has two modes, the operating mode, and the editing mode. You can leave the window open during operation of your model railway layout if required; it provides you with important information on the operating status, for example of your turntable. As soon as you have created a new data record using the menu described above, the turntable dialogue window opens. The edit mode is automatically displayed for a newly created data record.

In addition, a new button becomes visible in the turntables/sliding platforms toolbar, which you can use later to call up the turntable dialogue window and monitor the "finished" turntable in operating mode. However, you will only see the button if you have activated the toolbar (right mouse button in the main toolbar area) for turntables/transfer tables.

Fig. 14.10   5 turntable dialogue window in operating mode

Due to the logical structure of this documentation, the operating mode is described further below in this chapter.

14.9 Dialogue intelligent turntable - Edit mode

The illustration shows the empty turntable dialogue in edit mode. It contains several register cards whose tabs are arranged vertically on the right-hand side. On the left-hand side, there is a graphical representation of your turntable in the upper section and an area for configuring the track connections in the lower section.

You can access edit mode by clicking on the small button 📝 at the top of the window.
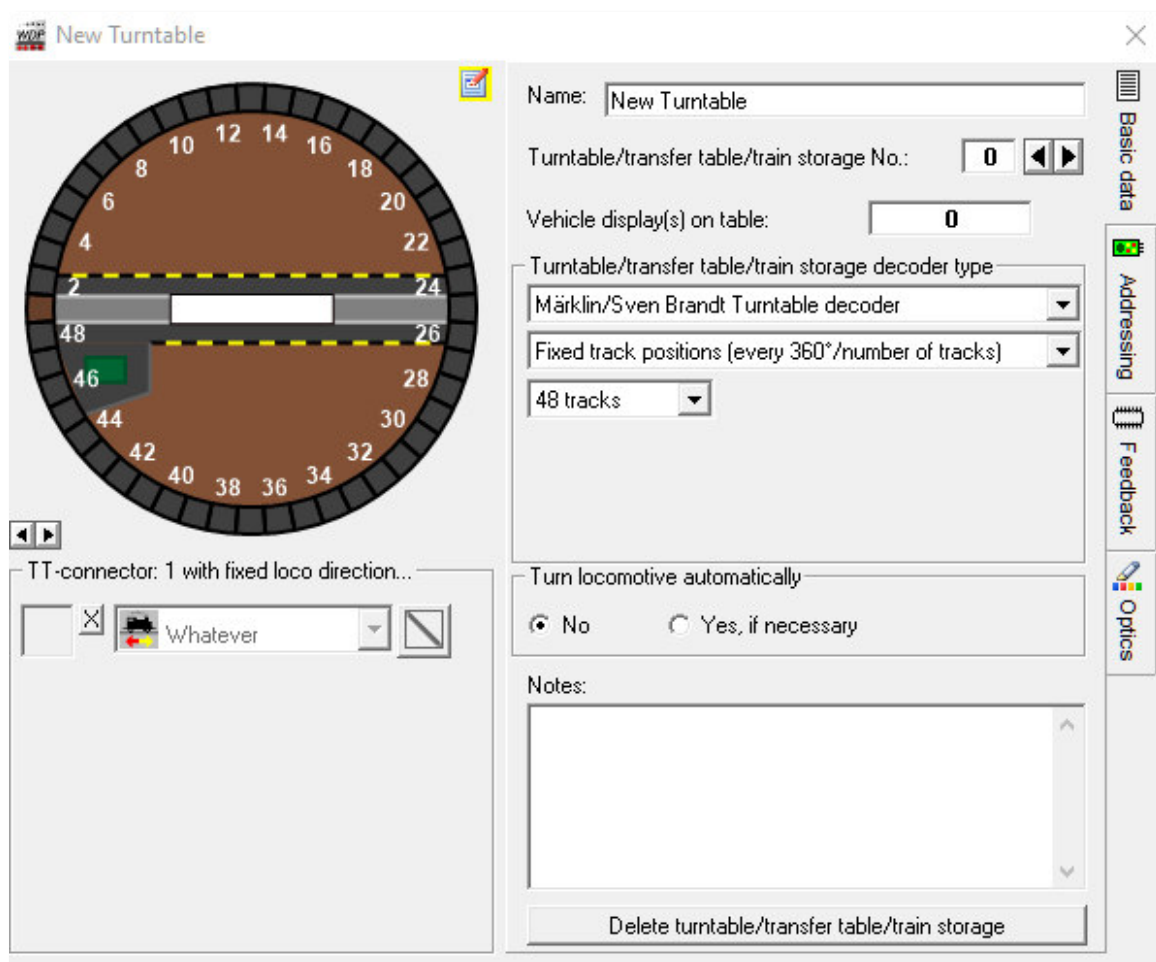
Fig. 14.11   The empty "Turntable" configuration dialogue in edit mode

14.9.1 Dialogue intelligent turntable - "Basic data" tab

This tab (see Fig. 14.11) contains the basic settings for a turntable. At the beginning of the configuration, you should assign a meaningful name to the turntable. The "Name" field is provided for this purpose. In the demo project, we have given the turntable the name "Bw1".

The next "very important" field is the number of the turntable. It has already been explained earlier in the chapter that all solenoid items required to control the device must have the same turntable number (cf. Fig. 14.7 and Fig. 14.8).

As long as you only operate one device from the turntable, segment turntable, transfer table or train storage category on your model railway layout, you can leave the "0" as the default value for the turntable number.

As soon as a second device is to be recorded, it is recommended to start counting with the value "1". The value range for the turntable / transfer table / train storage number comprises the values 0-255.

The feedback number of the vehicle display on the turntable platform is stored in the "*Vehicle display on table*" field.

The following block contains several list fields. The type of turntable decoder is specified in the top selection list. The type shown here in the Fig. 14.12 represents all decoders that work with the Märklin command set. Examples of this are the manufacturers: Märklin, LDT, Sven Brandt.

Selectrix decoders, BiDiB decoders or other decoders are also available here, whereby the latter also include proprietary developments.
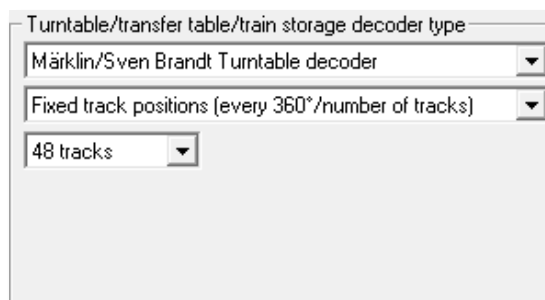
Fig. 14.12   Selecting the decoder type

The second selection list shows the entry "Fixed track positions..." by default. This means that the complete circle is divided by the number of tracks defined in the third selection. Here you can define a quantity of tracks between 2 and 64 track positions. The default value here is set to 48 tracks, which corresponds to a track spacing of 7.5° for a full circle of 360°.

However, the "Variable track positions" setting can also be selected from the list. As soon as this selection has been made, you must enter the track spacing in a table yourself based on the number of tracks. The values can be entered in degrees in relation to the reference track 1.

The tab (cf. Fig. 14.11) also offers the option of automatically changing the direction of travel for a locomotive on the platform if the departure direction defined for the destination connection makes this necessary.

This tab is completed with a freely writable note field and the option to delete the entire data record. This is done after a corresponding confirmation prompt.

14.9.2 Dialogue intelligent turntable – "Addressing" tab

The "Addressing" tab contains the digital system with which the turntable is controlled as the top entry. If you operate several digital systems on your model railway layout, select the digital system that generates the track protocol for the turntable decoder.

Depending on which protocol is used by selecting the digital system, the corresponding address fields are displayed. The views at this point differ depending on the protocol. Our illustration shows the control with an ESU ECoS2 and a decoder that works with the Märklin command set in keyboard area 15. As mentioned above, this address range includes the solenoid device addresses from 225 RED to 240 GREEN. The two predefined keyboard address ranges 15 and 14 can be selected here using the two buttons. Drag and drop the solenoid device for the 180° rotation from the track diagram into the "Turn symbol" field. It is irrelevant whether you prefer a clockwise or anti-clockwise rotation.
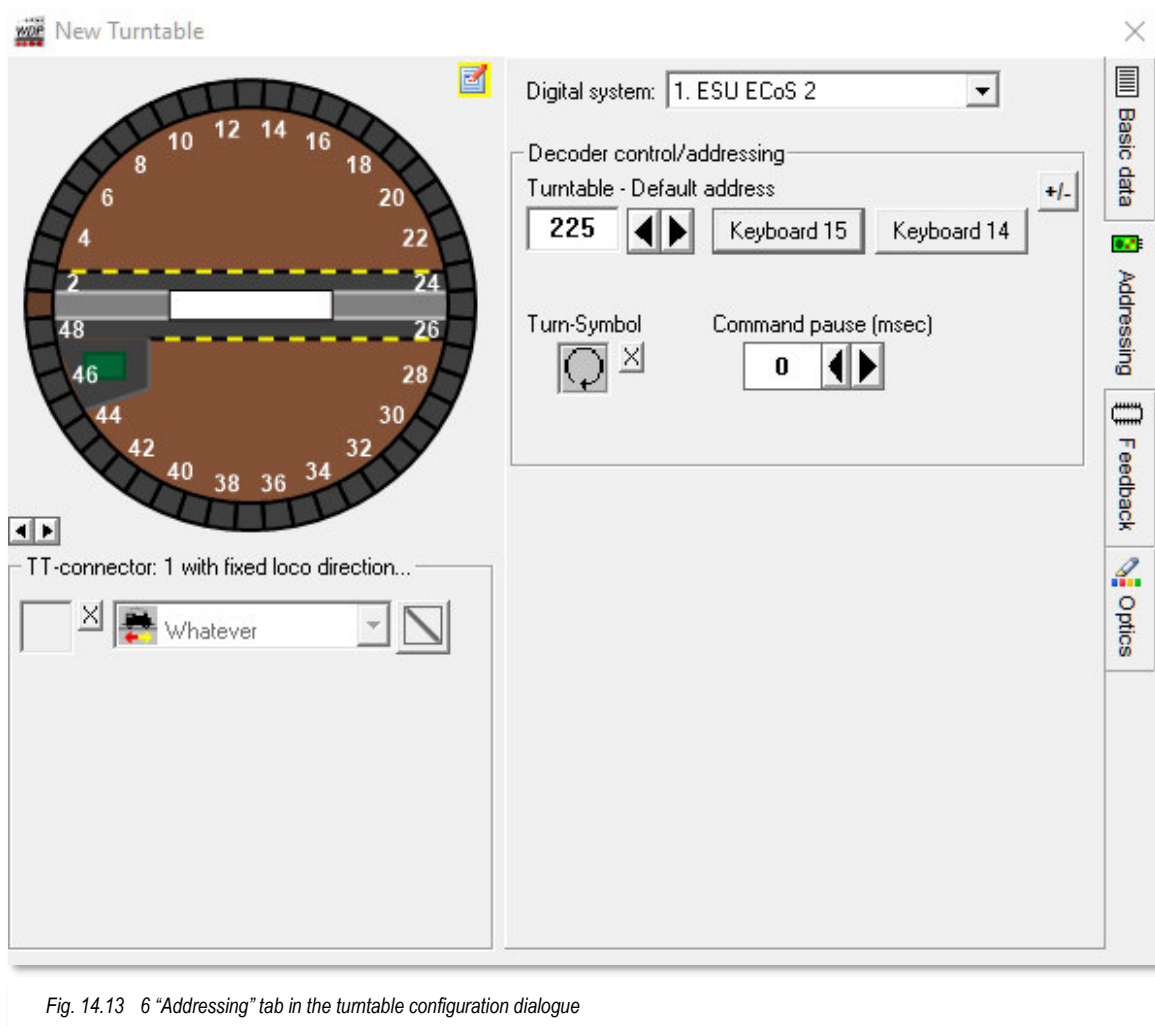
Fig. 14.13   6 "Addressing" tab in the turntable configuration dialogue

The input of a command pause is not necessary for all decoders available on the market. However, it has been shown in the past that some products "swallow" sent commands if

they are sent in too rapid a sequence. In these cases, a value between 500 and 1000 msec has proven to be practicable.

An additional field, which is only displayed after clicking the $^{+/-}$ button, only affects model railway enthusiasts who operate their layouts with 2-conductor tracks. A solenoid device symbol can optionally be placed in the field using drag & drop, which is responsible for automatically reversing the polarity of the platform track, e.g. via a relay.

In addition, the polarity for each individual track connection can be defined using a further button.

14.9.3 Dialogue intelligent turntable – "Feedback" tab
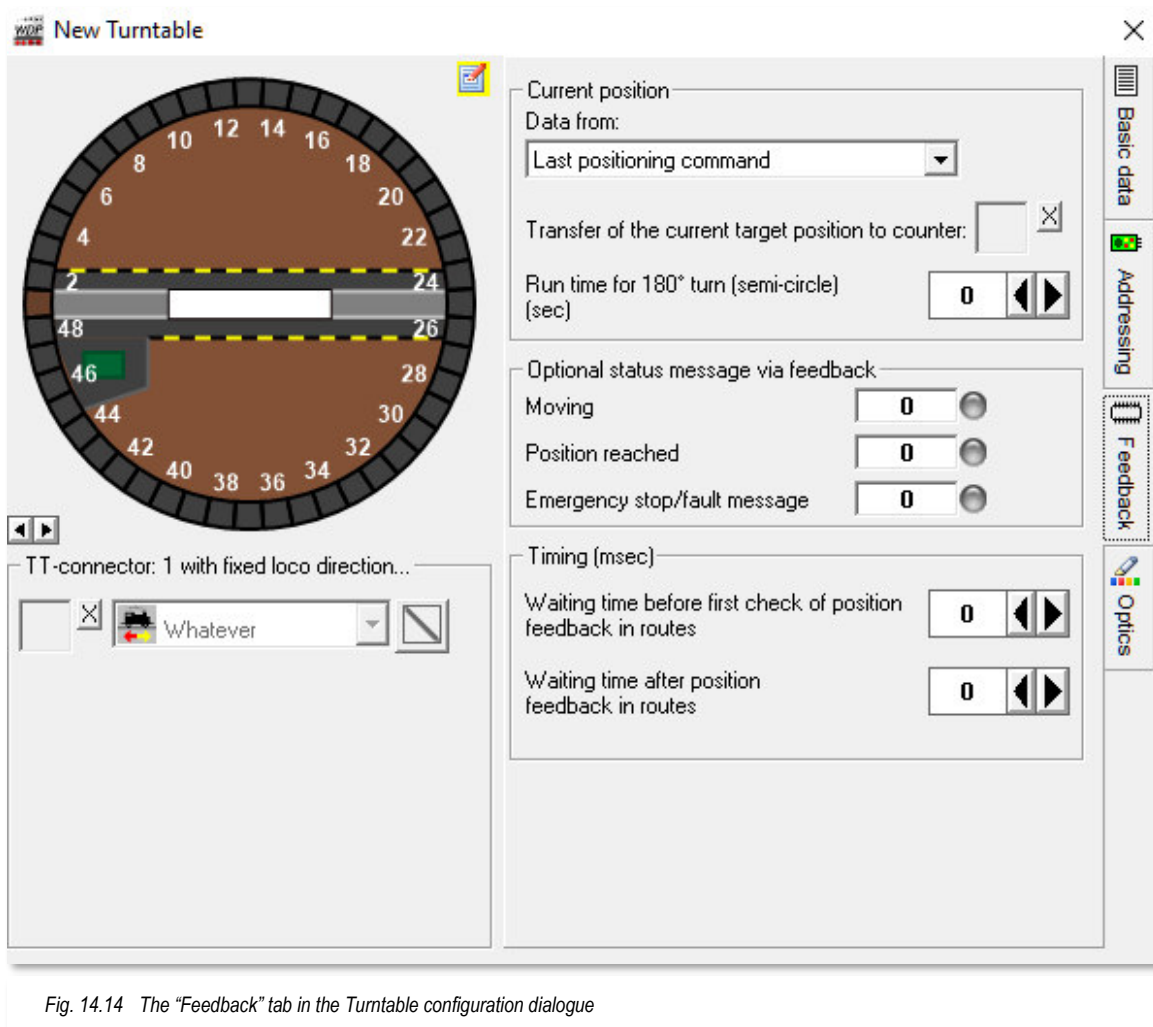
Fig. 14.14   The "Feedback" tab in the Turntable configuration dialogue

The third tab of the configuration dialogue concerns the feedback from your turntable, transfer table or train storage. The card is essentially divided into three areas:

- Current position
- Optional status message via feedback
- Time behaviour

The "Current position" block contains a selection list from which the type of positioning can be determined.

The following options are available here:

- **Position determination from last positioning command**
  The position is taken from the last positioning command, i.e. no "real" positioning takes place.

- **Position message via feedback contact**
  The position is determined from the status message of a feedback contact (per track connection). Opposite sidings should each have their own feedback contact.

- **Decoder feedback**
  The position feedback is signalled by the decoder. The recommended setting if the decoder offers this functionality (e.g. Dinasys Turntable Controller, MüT DS decoder, Rautenhaus SLX815/819, Stärz DSM Pic, etc.).

- **Position from counter (position number)**
  The position value is transferred from a counter symbol. The transfer of the position value to the counter may have to be realised with separate hardware.

- **Position from counter (angle in degrees (°))**
  The position angle is transferred from a counter symbol. The transfer of the angle to the counter may have to be realised with separate hardware.

- **Position from counter (angle in 1/10°)**
  The position angle is transferred from a counter symbol. The transfer of the angle to the counter may have to be realised with separate hardware.

The determined position value can also be transferred to a counter symbol. To do this, drag and drop a counter symbol from the track image into the field provided.

The "Optional status message via feedback contact" block is important for decoders that provide these messages via a connection. The connections can then be connected to the input of a feedback module and the corresponding feedback contact number can be entered here. You can then place additional symbols in your track diagram to indicate the respective status. Some turntable decoders provide the aforementioned status messages automatically, without the entry of feedback contacts. When selecting such a decoder (e.g. Stärz DSMPic, Dinasys TurntableController, Rautenhaus SLX815, BiDiB StepControl, Müt DS Decoder) on the "Basic data"" tab, the status LEDs are displayed here in the block. The possible status messages are:

- In motion
- Position reached
- Emergency stop/fault message

The last block on this tab contains a setting for the waiting time in routes after position feedback has taken place. This means that a vehicle within a set route will only move off once the position report has been received and the delay time entered here has elapsed. The delay value is specified here in milliseconds.

14.9.4 Dialogue intelligent turntable – "Optics" tab
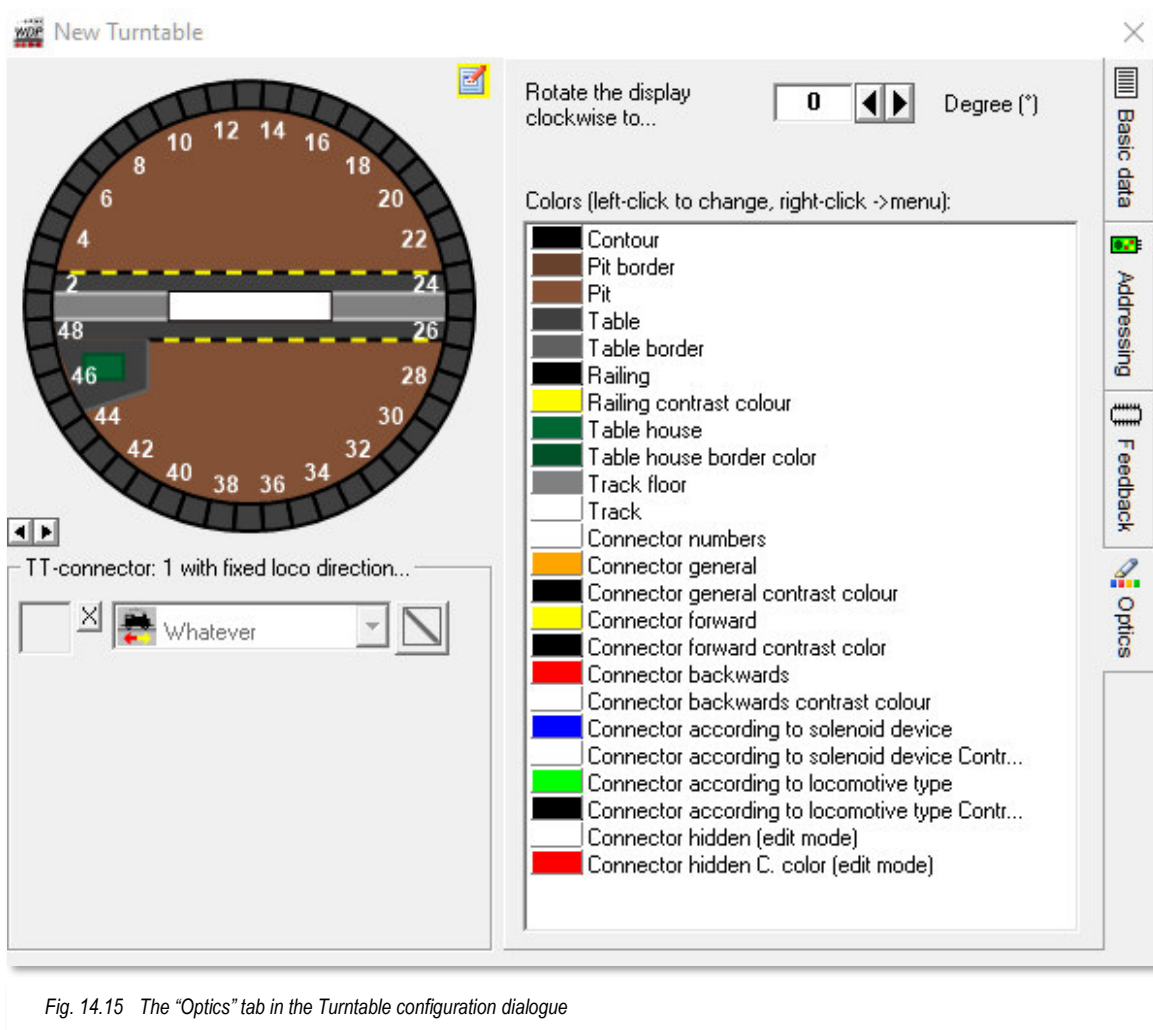
Fig. 14.15   The "Optics" tab in the Turntable configuration dialogue

The settings on this tab are used for the "visual representation" of your turntable, segment turntable, transfer table or train storage in **Win-Digipet**. This does not refer to the logical representation in your track diagram, but to the graphical representation in the dialogue.

As soon as you leave the editing mode and switch to operating mode, you can leave the turntable dialogue open, and a realistic image of your device will be displayed in the window. You can also follow the movements of the set-up device on the screen, a long-cherished wish of many model railway enthusiasts.

You can adjust the individual colours of the listed elements according to your own preferences by clicking on one of the colour fields with the left mouse button and setting the desired colour in the following colour selection dialogue. A click with the right mouse button displays a short menu which you can use to reset the colour of the respective element to the default value.

The display of the turntable in the dialogue window can be adjusted to the real situation on your model railway layout using the "Rotate display..." arrow buttons. This allows you to see immediately if the display deviates from the real situation.

14.9.5 Dialogue intelligent turntable - setting up the track connectors

In addition to the tabs discussed in the previous sections, the configuration dialogue on the left-hand side offers the configuration of the existing track connections. This is about which connections of the turntable are assigned to tracks and which symbols from the track diagram represent them.

The setup of the track diagram symbols for the track connections, in particular the assignment of the solenoid device addresses, has already been described above in section 14.5.2 above.

To set up the track connections in the configuration dialogue, use the left mouse button to select a track connection from the graphical representation of the turntable. After clicking, the selected connection starts to flash and is also marked with a double arrow <>. In the Fig. 14.16 you can see that connection "1" has been marked.

The selected number of the connection is also listed again in the field below the graphic. Now drag and drop the symbol representing connection "1" from the track diagram into the left-hand field.
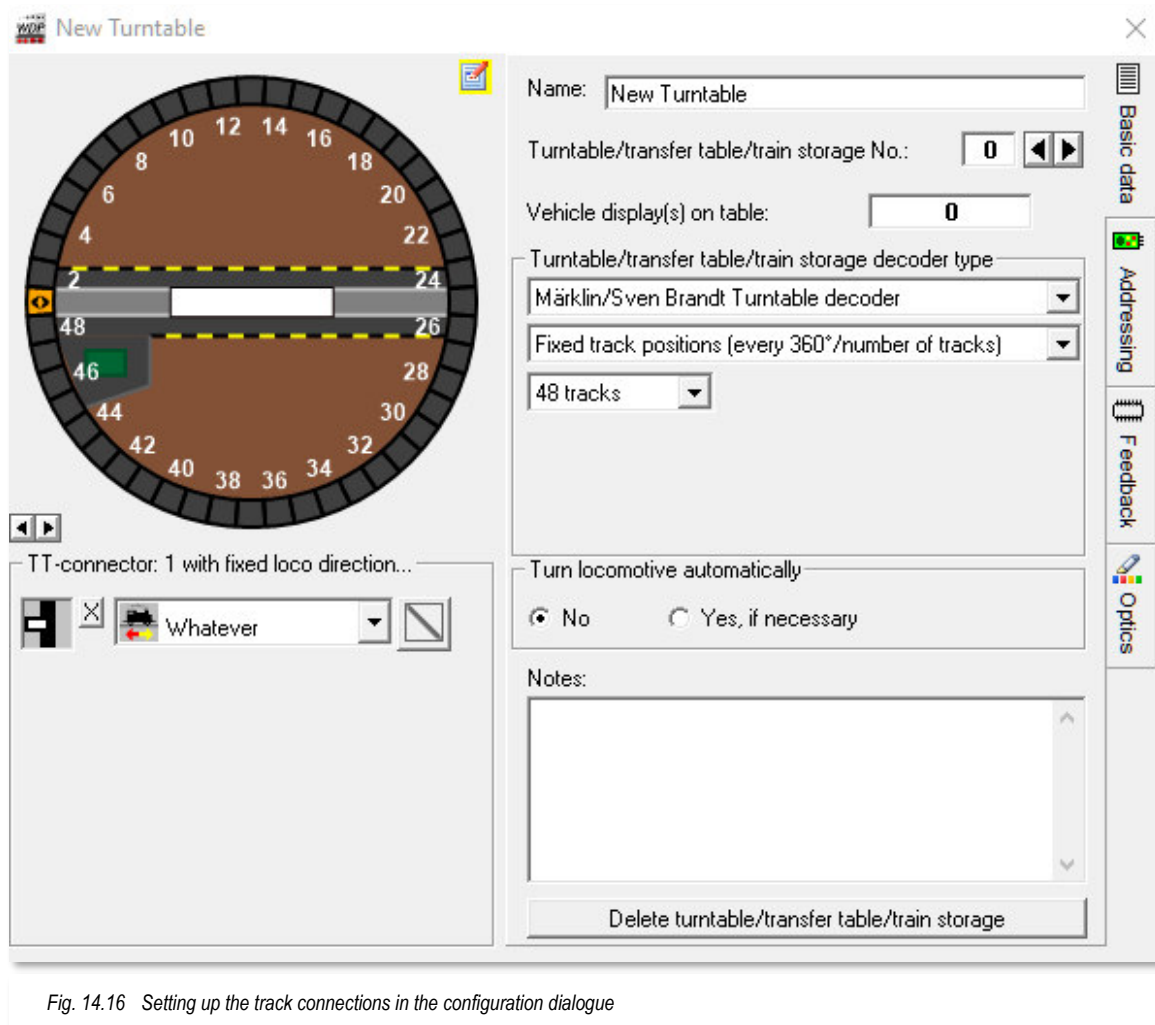
Fig. 14.16   Setting up the track connections in the configuration dialogue

The selection field in the centre determines the direction in which the vehicle should leave the turntable platform. The default setting here is "Whatever", but the following entries are available for selection:

- **Whatever**
  The locomotive may enter the track (leaving the platform) forwards or backwards

- **Backwards**
  The locomotive may only leave the platform backwards onto the track

- **Forward**
  The locomotive may only leave the platform forwards onto the track

- **By solenoid device**
  The direction is determined by the position of a solenoid device from the track diagram. As usual, drag and drop the relevant symbol (symbol no. 1303) into the field that appears.

🚂 **By locomotive type**
When you select this option, a matrix field is displayed in which you can set the departure direction for each locomotive type separately. Simply click on the locomotive type buttons. The buttons change colour with the following meanings:

- 🚂 Red - Backwards
- 🚂 Yellow - Forward
- 🚂 Orange - No matter
- 🚂 Blue - By solenoid device
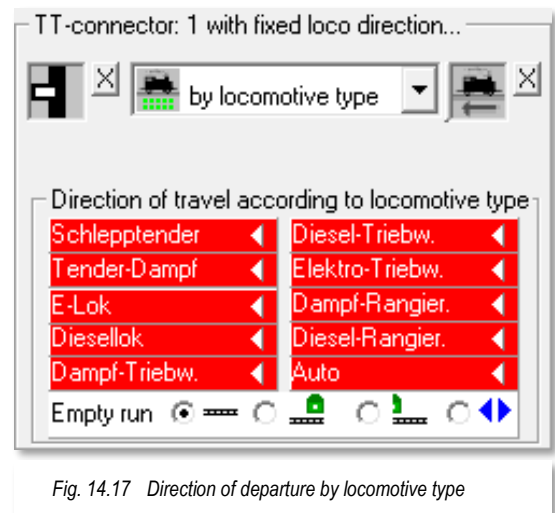
Fig. 14.17   Direction of departure by locomotive type

At the bottom of the dialogue box, you can use the radio buttons to decide in which direction the stage should turn during an empty run (before the locomotive drives onto the stage), i.e. the position of the stage house after the stage request has been completed. The following options can be selected here:

- 🚂 Turn the stage the shortest way to the requesting connection (position of the stage house does not matter)
- 🚂 Rotate the stage so that the position of the stage house is at the requesting connection after the rotation is complete
- 🚂 Rotate the stage so that the position of the stage house is opposite the requesting connection after the rotation is complete.
- 🚂 Rotate the stage depending on the position of the solenoid item

14.9.6 Hiding unused connections

Connections, where you have not placed a track connection can be easily hidden using the ◻ symbol. This makes the graphical display clearer and supports you in later operation as soon as you want to operate your device with the turntable dialogue.

14.9.7 Position report via feedback contact

As soon as tab, you have selected the setting for the current position of the turntable "Position message via feedback contact", you will be offered an additional field in which you can enter the number of the feedback contact corresponding to the track connection. In the track diagram editor, we described in section 14.5.2 we recommended setting the position monitoring for track connections to monitoring by the intelligent turntable dialogue. The contact entry now provides feedback to the entries in the track diagram editor.
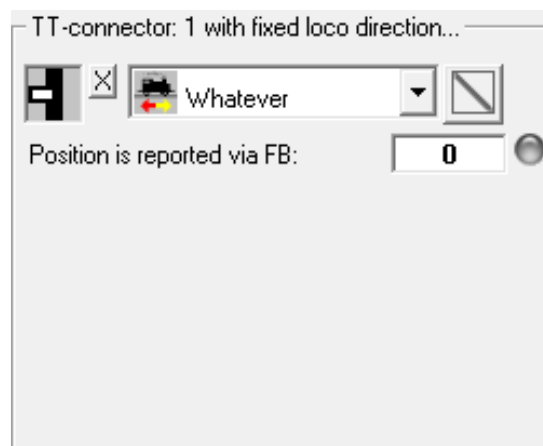
Fig. 14.18   7 position report by a feedback contact

14.9.8 Dialogue intelligent turntable - Deleting a data record

With using the "Delete turntable/transfer table/train storage" button (see Fig. 14.16), you can delete the current data record in the editing mode of the "Intelligent turntable" dialogue.

14.9.9 Dialogue intelligent turntable - Exit edit mode

Exit edit mode by closing the dialogue window with the cross or by clicking the edit symbol 🖉 . If you have made changes to the configuration, you will be prompted to save them. If you answer no to this, your entries will be discarded. It is therefore advisable to confirm the save prompt with *'Yes'* when making changes.

14.10 Dialogue intelligent turntable - operating mode (II)

After In the previous sections you have learned how to configure a turntable (or segment turntable, transfer table or train storage) in **Win-Digipet**, we will now look at the operating mode of the "intelligent turntable" dialogue.

> In the operating mode of the turntable dialogue, a realistic image of your turntable etc. is displayed. You can control the device set up in the dialogue and follow the movements of the turntable etc. on the screen.
>
> A long-cherished wish of many model railway enthusiasts who control their model railway layout with **Win-Digipet.**

The dialogue is called up via the button described in section 14.7.1 (see Fig. 14.9). Here you will find your data record under the name entered in the configuration dialogue. In the demo project for this manual, this is the name "Bw1".

Alternatively, a turntable/transfer toolbar can be displayed in the main **Win-Digipet** toolbar. All created turntables etc. are then stored in this bar as icons (e.g. ⬚ Bw1). You can activate the toolbar by right-clicking in the free area of the main toolbar and activating the entry for turntables/transfer tables from the menu.

14.10.1 Operating mode turntable dialogue - Overview

After calling up your data set (e.g. Bw1), the turntable dialogue box appears in a similar way to the adjacent illustration. Depending on the type of decoder used, the dialogue window may contain additional control or display elements, such as the status LED mentioned above. It should be noted that the LED colour "red" indicates a malfunction while the LED colour "orange" indicates the rotation of the platform.

In our example, the graphical representation shows a turntable with 48 connections, whereby three of the connections (1, 23, 25) are fitted with tracks. The remaining connections have been hidden here.

The position of the stage between the opposite connections "1" and "25" is also recognisable. The stage house is located at connection "1".
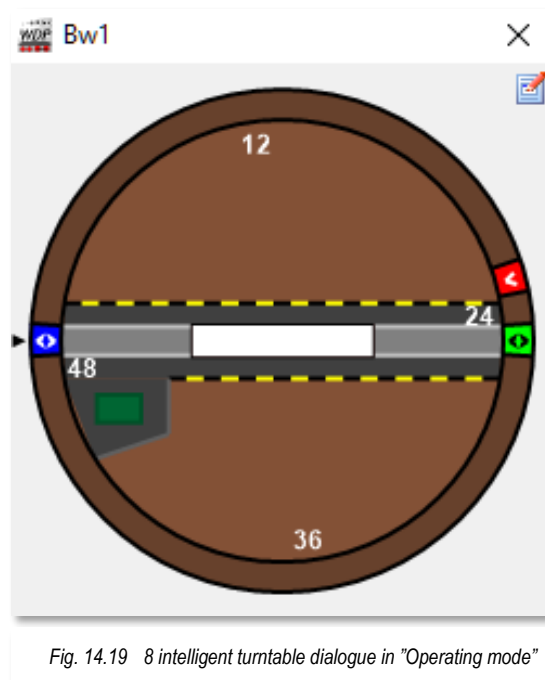
Fig. 14.19   8 intelligent turntable dialogue in "Operating mode"

The coloured representation of the track connections shows the set departure direction, whereby the colours have the following meaning:

- 🚂 Red - Backwards
- 🚂 Yellow - Forward
- 🚂 Orange - No matter
- 🚂 Blue - By solenoid device
- 🚂 Green - By locomotive type

14.10.2   Intelligent turntable dialogue operating mode - Operation

A turntable (or segment turntable, transfer table or train storage) can be operated either from the turntable dialogue window or from the track diagram. If you want to control your depot manually, you will probably prefer to operate it using the turntable dialogue. In contrast, manual operation during operation, possibly in conjunction with a tour-automatic system, directly from the track diagram seems to make more sense.

The turntable can be operated by simply clicking on a track connection. If you click on one of the connections, a context menu appears offering you several options.
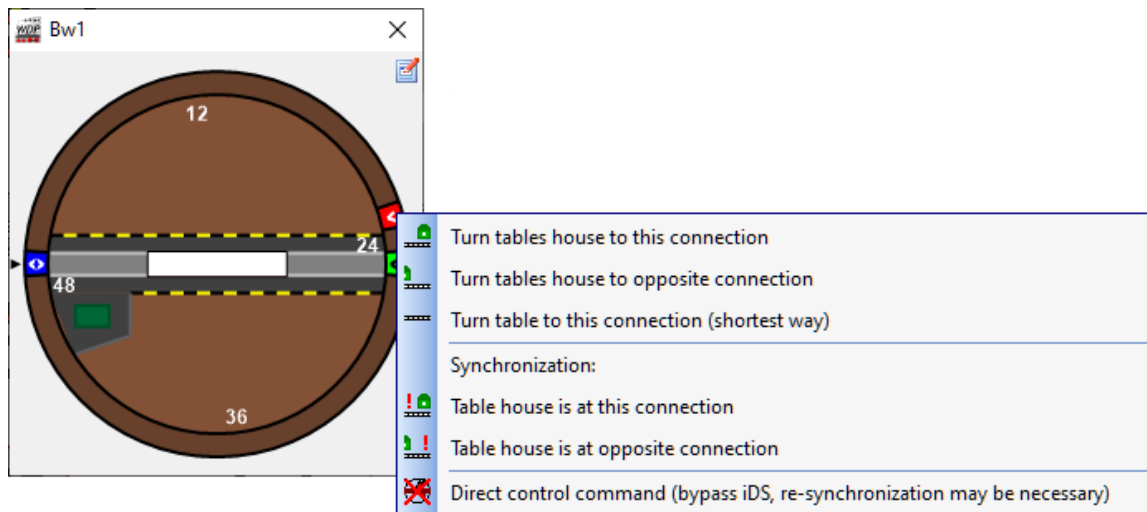
Fig. 14.20   The turntable should be rotated to the selected track connection

- 🚂 **Turntables house to this connection**
  The stage is rotated so that the stage house is positioned at the selected connection after the rotation is complete.

- 🚂 **Turntables house to the opposite connection**
  The stage is rotated so that the stage house is positioned at the opposite connection after the rotation is complete.

- 🚂 **Turntables house to this connection (shortest way)**
  The stage is rotated along the shortest route to the selected connection without the position of the stage house being relevant after the rotation.

The "Synchronisation" section of the short menu synchronises the position of the platform saved in **Win-Digipet** with the real position on the model railway layout. This synchronisation is necessary if the positions differ. This can be the case after a malfunction of the turntable, emergency shutdown of the model railway layout, etc. During synchronisation, no rotation is performed, only the real position of the platform is saved in **Win-Digipet.** To synchronise, select one of the two menu items based on the position of the stage house.

> ⚠️ After editing a data record, the turntable should be synchronised to be on the safe side.

The last menu item "Direct control command" sends a direct control command to the selected track connection (e.g. turn command to connection "229 RED") without the intelligent turntable function being involved. After selecting this menu item, synchronisation may be necessary.

14.10.3 Operating mode turntable dialogue - position feedback

As mentioned above, the intelligent turntable dialogue in operating mode represents an image of the real turntable in **Win-Digipet.** This means that, as a rule, the displayed position of the platform track should correspond to the status on the model railway layout.

With the help of position feedback, whether via feedback contacts or via a function of the decoder used, it is possible in the turntable dialogue to detect differences between the stage position stored in **Win-Digipet** and the real stage position on the model railway layout.

The Fig. 14.21 shows such a situation. The position of the platform stored in **Win-Digipet** (in this case the platform house at connection 24) is shown in solid colours. The position of the stage track reported via feedback contacts (here stage house at connection 47 - without track) is displayed in transparent colours. Should such a situation occur on your model railway layout,

Fig. 14.21   The reported stage position does not correspond to the Win-Digipet position

synchronisation according to the procedure described above is absolutely necessary before operation.

After synchronisation, only one stage (in solid colour) is displayed, as usual. This means that the display in the turntable dialogue matches the reported position of the hardware.

The stage is also displayed transparently as soon as you rotate the stage to a connection via the dialogue. The target position is displayed transparently while the rotating stage appears in solid colours. Here too, the position feedback is responsible for displaying the actual stage position during the rotation process.

14.11 Routes to and from the turntable

The intelligent turntable can also be integrated into routes via the track connection symbols. You can include the turntable's connection symbols in the normal route recording as well as in the follow-up switching so that they can be requested when approaching the turntable, for example.

Routes leading from or to the platform can be created with the route assistant. With the route assistant, it is also possible to create entire route sets for entrances and exits with a turntable (or segment turntable, transfer table or train lift). The procedure is comparable to route sets for station entrances and was described in the chapter 7.

If no route has yet been created for a possible route from or to the platform, you can use the route navigator. This part of the programme will also offer you the possible routes and save them as a route if required. The description of the route navigator can be found in section 7.3 of this documentation.

14.11.1 Routes to and from the turntable in the automatic journey system

The routes can also be integrated into a tour-automatic. Please note that a journey via the turntable must be interrupted. This means that a locomotive must have come to a standstill on the platform before a new route can be requested for it, as otherwise the platform could turn too early.

Here you insert an intermediate stop at the vehicle display on the platform in all lines that contain a route to the platform (see section 10.19). This procedure ensures that the route to the platform can be processed before the next route (from the platform) is set. These subsequent routes can also be entered in the tour-automatic function as connecting journeys (see section 10.16).

You can determine the duration of a stopover according to your personal taste.

14.12 Dialogue intelligent turntable - Segment turntable

The dialogue window of the turntable dialogue is essentially similar to the settings of a turntable when configuring a segment turntable. For this reason, this section only deals with the differences and special features for setting up and operating a segment turntable. As the name suggests, a segment turntable is a partial segment of a full-circle turntable.
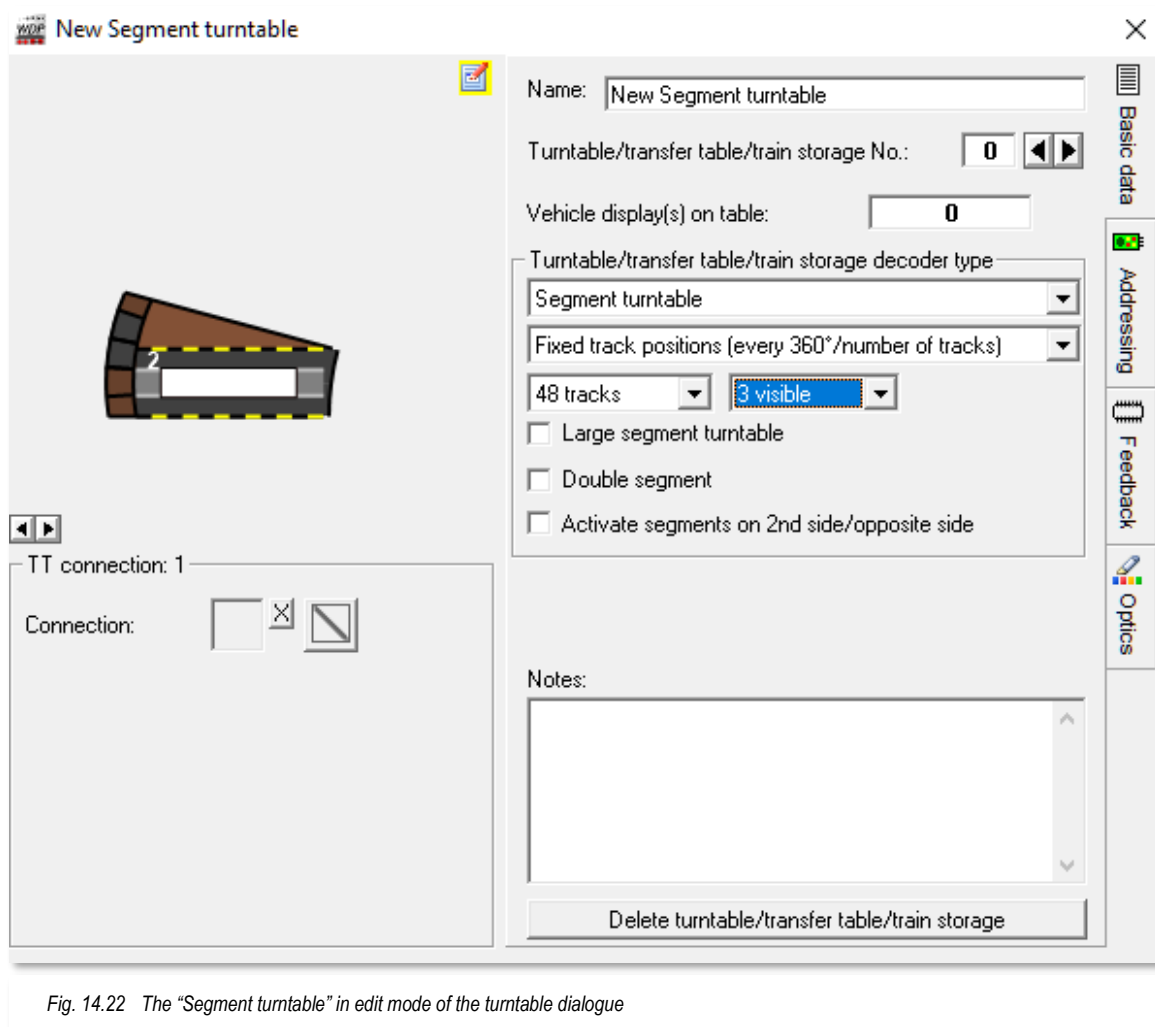
Fig. 14.22   The "Segment turntable" in edit mode of the turntable dialogue

The segment of the circle is displayed in the turntable dialogue for a segment turntable. Here you can specify how many visible connections of a full circle turntable your segment turntable has. By entering the number of tracks on the (imaginary) full circle turntable, you can define the angle between the track connections. However, you also have the option of defining variable track connection positions in a table. As with the "normal" turntable, the decoder is selected via a selection list.

The dialogue also offers the option of configuring a "large" segment turntable, a double-segment turntable, and a 2-sided segment turntable, it's up to you making the right choice which type of device you are using on your model railway layout. The other tabs, setting options and operating functions correspond to those of a full-circle turntable described above.

14.13 Dialogue intelligent turntable - Transfer table

The dialogue window of the turntable dialogue is essentially the same as the settings for a turntable when configuring a transfer table. For this reason, this section only deals with the differences and special features for setting up and operating a transfer table.
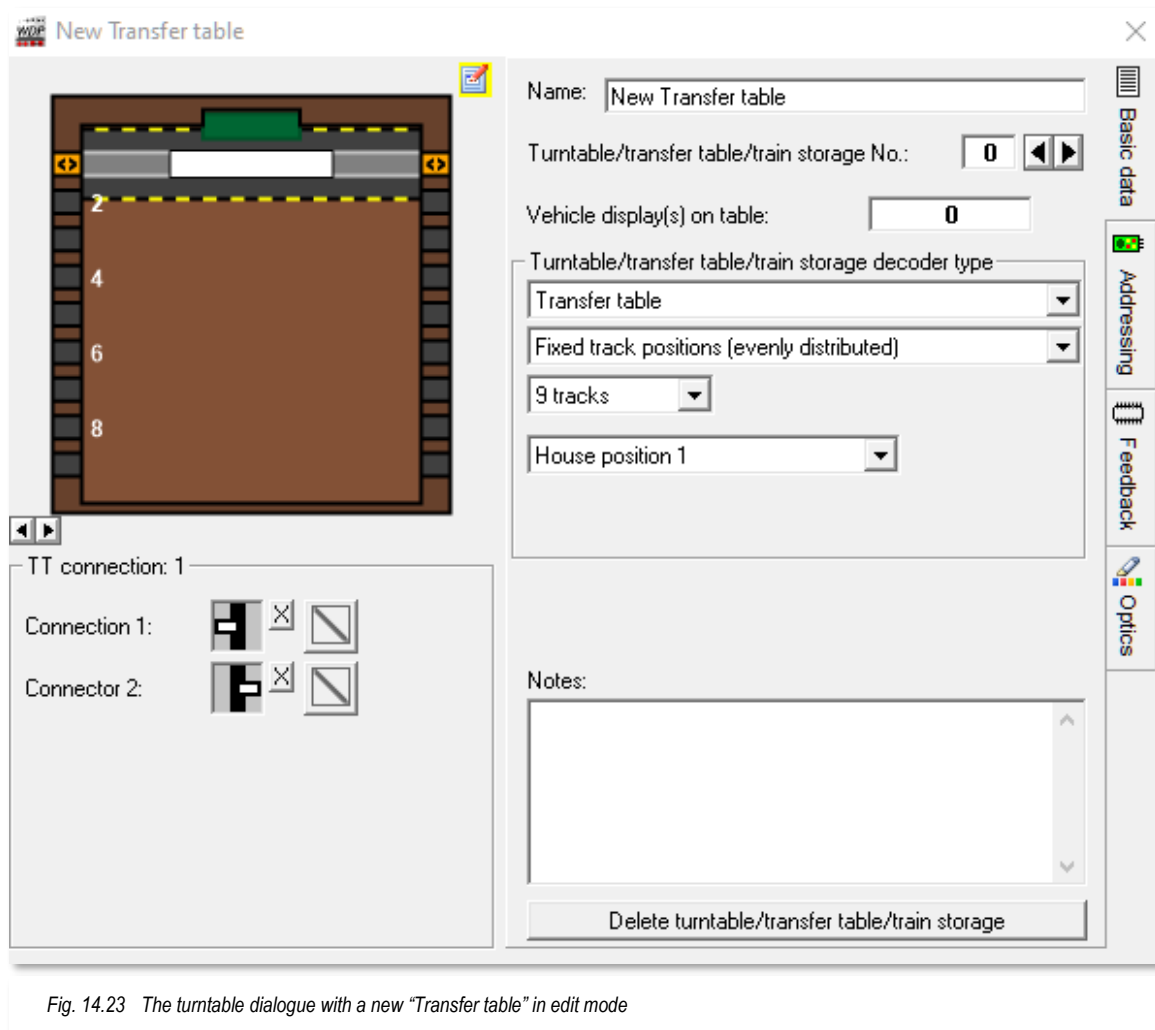
Fig. 14.23   The turntable dialogue with a new "Transfer table" in edit mode

A transfer table usually has sidings on two sides of a rectangular base. These can be opposite each other.

The representation in the Fig. 14.23 shows a configuration of opposing connectors. Here, the symbols are entered in both fields provided for this purpose. The track positions can be evenly distributed or the distance between the tracks (in mm) can be stored in a table.

In our example, nine tracks are set for the transfer table. This number is not the number of sidings, but the number of positions that can be approached by the platform.

The position of the stage house can be displayed above or below the stage. You can also hide it if you wish. As with the turntable, the decoder is selected via a selection list

The other tabs, setting options and operating functions correspond to those of a turntable described above.

14.14 Dialogue intelligent turntable - Train storage

The dialogue window of the intelligent turntable dialogue is essentially similar to the settings of a turntable when configuring a train storage system. For this reason, this section only deals with the differences and special features for setting up and operating a train storage system.

In Win-Digipet, the term train storage refers to device types such as paternosters or train lifts etc..
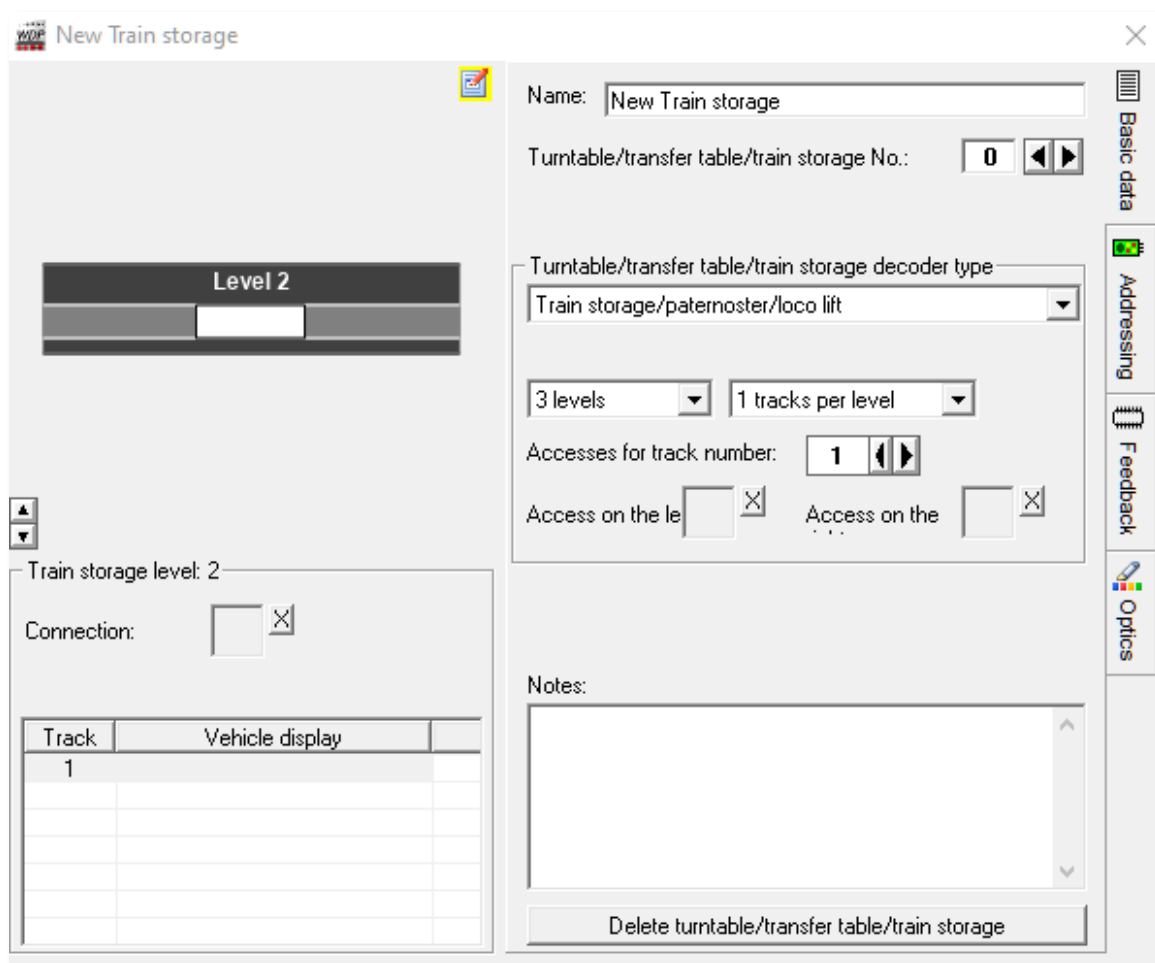
Fig. 14.24   The turntable dialogue with "Train storage" in edit mode

The representation in the Fig. 14.24 shows a configuration of a train storage with three levels and one track per level. The fields for the access routes are again intended for the symbols of the sidings. If you have more than one track per level, the number of access points must be increased accordingly.

Enter the numbers of the vehicle displays and the symbol of the respective track connections for each level in the table on the left-hand side.

The "Addressing" tab also offers the special feature compared to the other device types that the level feedback sensors are frozen when the movement starts. This means that **Win-Digipet** saves the status of the feedback contacts even if the level is not active and

therefore de-energised. You have already encountered the "freezing" of feedback contacts several times in this documentation.

The other tabs, setting options and operating functions correspond to those of a turntable described above.

Version 2021
Premium Edition

Chapter 15

15. CRANE, FUNCTIONAL MODEL CONTROL & INFRACAR

15.1 General information

With **Win-Digipet** can also be used to control cranes from Roco, Märklin, Trix and other manufacturers. These are essentially the following cranes:

- **Roco**
  gantry crane, gantry crane (control variant 2) and railway crane

- **Märklin**
  Goliath, Goliath MFX 49954, slewing crane 7651 and 76515, gantry crane 76500 and 76501, coaling station, railway slewing crane 46715, 46716 or 46717, tower railcar and torpedo ladle car, Ardelt 57t,

- Uhlenbrock gantry crane

- Lux hoover, rail grinder, overhead line grinding carriage, wheel cleaning system, centre conductor grinder

- **Trix** gantry crane 66105 (almost identical to Märklin 76500)

- **Heljan** Container Terminal

The cranes from Märklin use the Motorola protocol, while Roco and other manufacturers offer the cranes with either Motorola or DCC decoders. If you have a crane or several cranes with a digital decoder, you can make an impressive addition to your model railway layout.

> All, cranes and functional models supported by **Win-Digipet** are managed in a file called KranControl.wdp. This file is located in the programme directory of your Win-Digipet **installation**.
>
> In the event that additional crane or function models are supported by **Win-Digipet** in the future, this definition file will be replaced via the automatic or manual update function in the Start Centre.

This section is also interesting for "non-crane operators", as you can, for example, assign vehicles to the special controls used here and thus call up so-called crane macros, which you can then execute manually, in profiles, in the tour-automatic journeys or in the dispatcher.

The advantage here is that even unusual scenarios can be realised, as you are not tied to any routes or start/stop commands.

The Crane macros have a similar structure to the vehicle/train macros already discussed, except that these are models with special functionality.

You can combine the vehicle/train macros with the crane macros via profiles, for example, and generate fascinating sequences on your model railway layout in this way. You can give free rein to your creativity.

15.2 Enter crane in the vehicle database

By way of example the operation of the Märklin Goliath is described in this section. Other cranes must be operated accordingly.

Firstly, you must enter the crane in the vehicle database. You can find suitable images for your cranes on the Internet or create them yourself.

Then copy these images to the \EIGENE subfolder in the **Win-Digipet** programme directory. You can then call up the images in the vehicle database via "My images".

The cranes are entered as a wagon/train in the vehicle database. Once you have opened the vehicle database, select the 🚂 icon or the <File><Enter new waggon/train> menu item.

The "Basic data" tab contains, among other things, a "Vehicle/Crane" selection list with all supported crane and function models. Select your crane from this list.
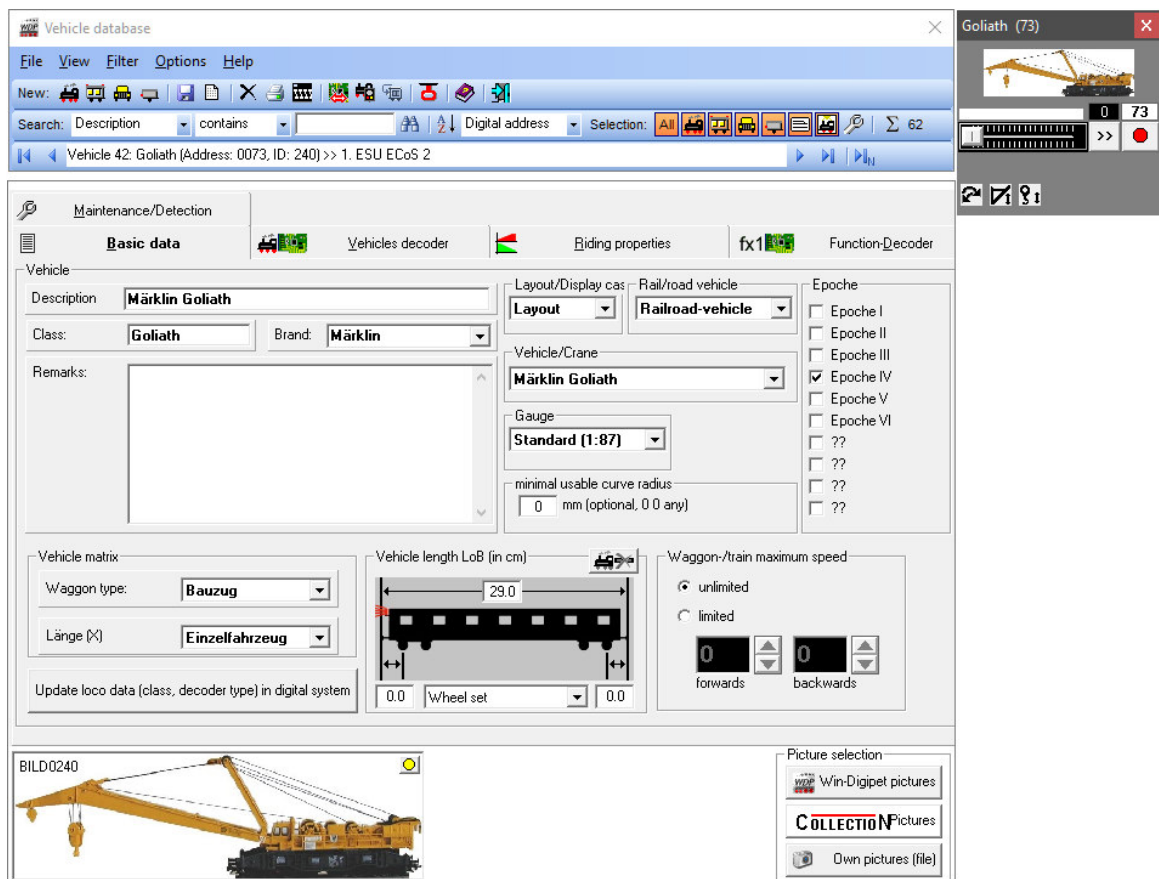
Fig. 15.1   All supported crane types can be found in the Vehicle/Crane selection list

15.2.1 Record cranes – "Vehicle database - Vehicle decoder" tab

In the input field "*Digital address*" on the Vehicle decoder tab, enter the digital address of the crane to be detected.
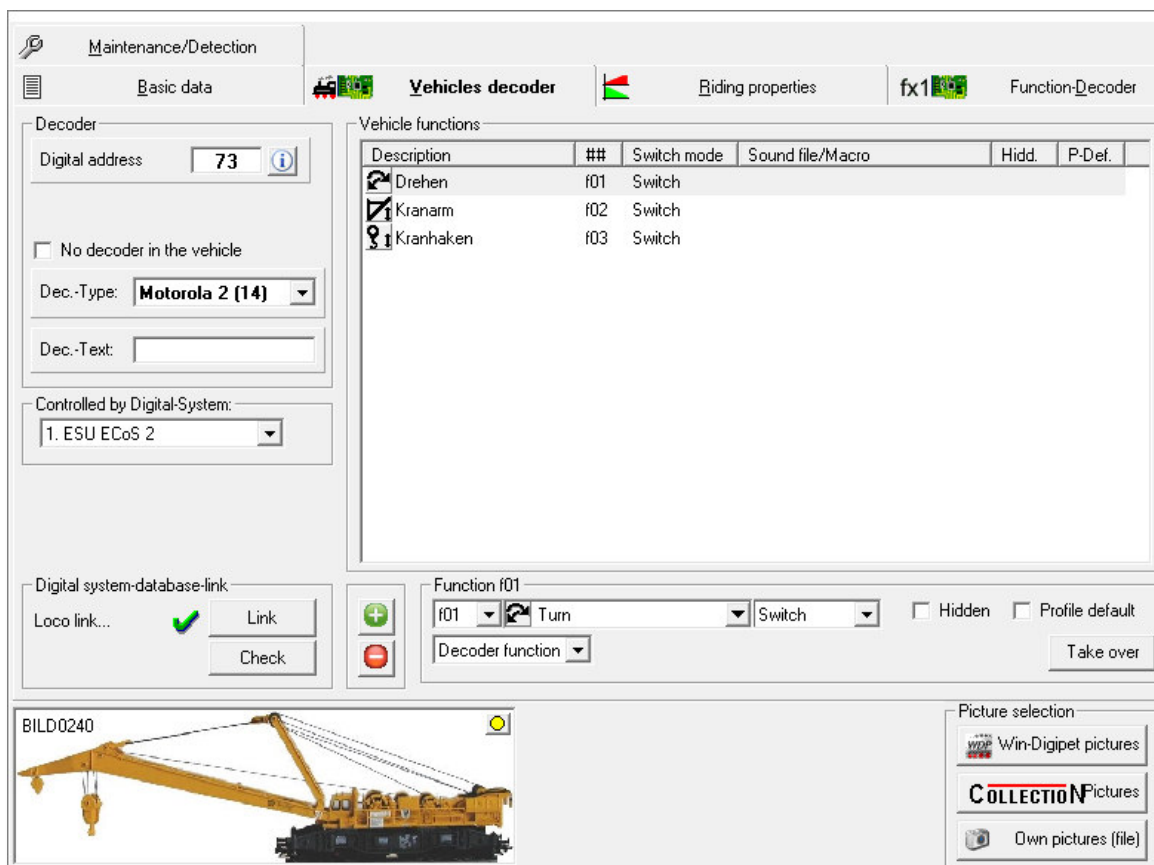
Fig. 15.2   *The information on the decoder and the functions on the "Vehicles decoder"" tab*

Address 73 is permanently assigned to the Märklin Goliath crane used here as an example.

The decoder type and thus the protocol used must also be specified here for the crane. Click on the "*Decoder type*" arrow and select the corresponding entry from the selection list. You must also enter the digital system that controls the crane here.

Enter all functions of the crane used, as already described in section 4.5.6 for the vehicles, after clicking on the **'New special function'** button. The crane used in this example has the functions f01 to f03 (cf. Fig. 15.2).

> You can also control the crane functions without the special functions entered here. However, we recommend that you always enter them here. Some digital control centres only send the commands if the entry is present here.
>
> All functions of the crane used are stored in the KranControl.wdp file. You should **not** change this file.

15.2.2   Open Crane Control

A crane control is opened via the waggon monitor. You can access this part of the programme by clicking on the ⊞ icon in the Extras toolbar of the main **Win-Digipet** programme.

Fig. 15.3   The waggon monitor displays the cranes as well as the wagons

After clicking, the waggon monitor appears with all recorded wagons, summarised wagon groups and cranes. The Fig. 15.3 shows an example of this.

Now click on the image of the desired crane (in this example the Goliath) and the corresponding crane control will open. Controlling a crane with the crane control is similar to controlling a vehicle. Depending on the crane used, it has different functions and therefore each crane control will have different buttons.

The crane is controlled using the buttons, which can influence each other as shown here on the Goliath crane. The movement is triggered according to the selected direction (left and right or up and down) using the slider. The *'Idle'* button can be used to stop any movement of the crane.

> You should select low speeds here. Each click on the small slider increases the speed in steps of 5.
>
> Depending on the function used, the switch for the direction changes its display depending on whether there will be a left/right movement or an up/down movement of the crane.

15.2.3   The crane control
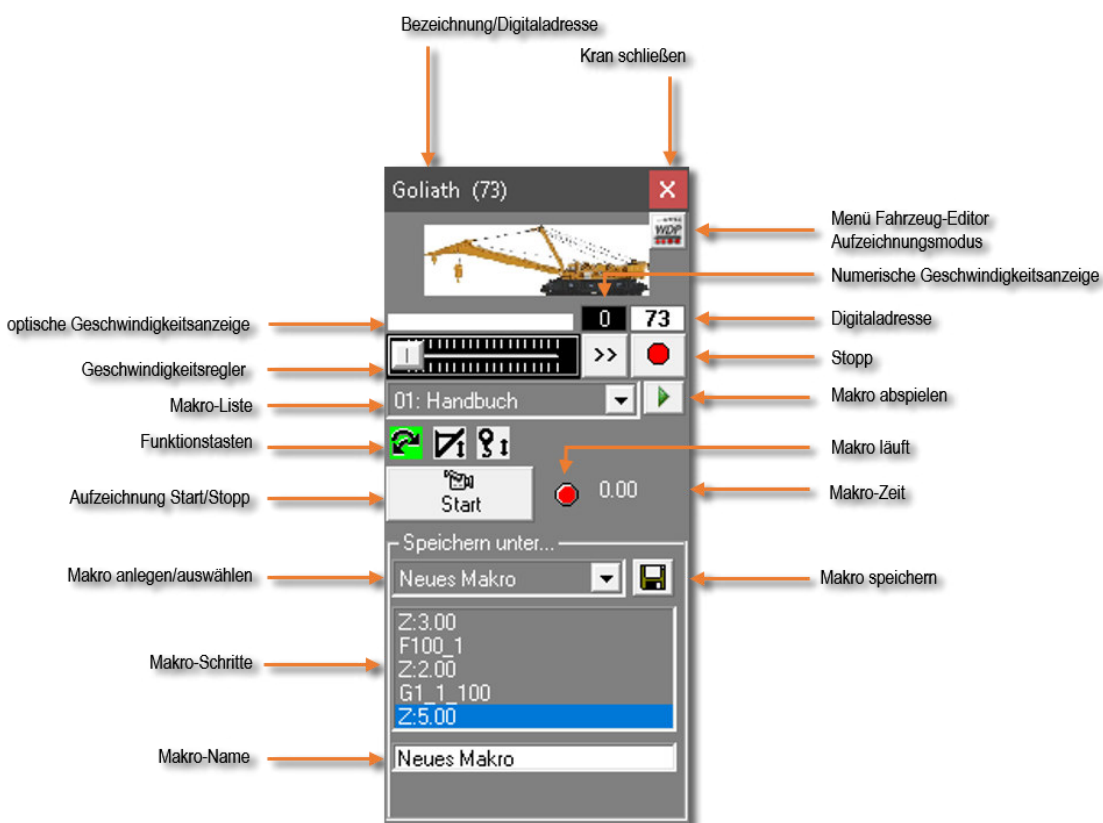
Fig. 15.4   The functions of the crane control

Which function buttons are displayed depends on the crane used. Further settings (e.g. selection of the data format) can be made via the **'Vehicle editor menu'** button. This applies in particular to cranes from the manufacturer Roco.

Special features of cranes from the manufacturer Roco:

Here you set the "*function switching pause*" that the crane requires to switch sequentially through the respective functions. This is the factory setting for Roco with the Motorola decoder.

As the Roco cranes react quite differently, vary the pause time a little to find the optimum setting for you. Do not set the pause times too short, otherwise the **Win-Digipet** command sequence may be too fast and the Roco crane may "swallow" some commands. If the values are too high, the function may switch backwards. Tests have shown that a value of 600 msec is recommended.

In the "*Synchronisation*" list field, you can select the function that is to be executed each time your model railway system is switched on or after each emergency stop (whenever the power was switched off).

You can use the '***Display home position (after emergency stop)***' button to restore the home position of the Roco crane after an emergency stop.

15.2.4   Information about the Märklin crane types 46715, 46716 and 46717

If you own one of the Märklin cranes mentioned above, you have to adjust some settings on the control centre when controlling with the Intellibox I and the Tams Master Control.

The following special options must be changed for Intellibox I:

- 902 from 12 (default) to 16
- 914 from 18 (default) to 40.

With the Tams Master Control, the MM signal pause must be changed from short to long (4.025ms).

You must enter Motorola 2 as the decoder type in the vehicle database.

The digital address of the crane can be **changed** with all control centres that support the Motorola format.

15.3 Test crane

After these settings, which are not required for Märklin cranes, you can close the settings again and carry out the first tests with the crane.

The crane data entered is saved in the **Win-Digipet** vehicle database.

After **each** emergency stop or when the Roco crane has been de-energised, press the '***Display home position (after emergency stop)'*** switch so that the functions and directions of rotation of the crane control are synchronised with the Roco crane again.

15.4 Record crane macros

By click on the WDP symbol ![WDP] at the top right of the Crane Control (cf. Fig. 15.4) to open a short menu in which you are also offered the recording mode for crane macros. Selecting this menu item expands the Crane Control window downwards and takes you to the macro recording area.

The macro recording takes place after clicking on the button ![Start]; the button labelling changes to '***Stop'***.

Now carry out all the desired movements of the crane manually. The resulting command and time sequence is recorded and displayed in the status window.

To change the direction of movement, you must first press '***Idle'***. Make sure that you do not confuse the idle button for changing direction with the recording stop.

You can end the finished recording by clicking on the button ![Stop] to stop recording.

You can now give this macro an individual name in the text field below. Click on the disc symbol ![disc] to save the recording.

In the macro selection list below the slider and in the selection list below the "Save as..." text, you should now see the name of the macro you have created preceded by a number, e.g. "01: Manual" (cf. Fig. 15.4). The preceding number is the number of the recorded macro and cannot be changed.

By clicking on the ![play] icon, you can view the recording you have just created and completed directly as long as you still have the recording window open, and the command sequences are still displayed in the viewing window. If you are satisfied with your recording, close the recording area again by deselecting the command in the short menu. The recorded macro is now available in the macro list. To record further crane macros, proceed as described above.

> **It is not** possible to convert macros already created in a previous version (2009.5c or earlier) of **Win-Digipet.**
>
> In this case, you must re-record all recorded macros.
>
> This **does not** apply to macros recorded with version 2012 or higher.

15.4.1 Edit, delete crane macros

The created crane macros can be edited. If you press the <Shift>-key, the ![play] icon for playing a macro, the icon changes to ![edit] the icon shown here for editing a macro. After clicking on this symbol opens the "Crane macro editor" dialogue with the data of the selected macro (here in the example the "macro 01: Manual"). In the Crane macro editor, you can edit all macro steps in the individual lines and add or delete lines as required.

Select the line to be edited. Depending on the type of macro step, an editing field will appear at the bottom in which you can make the desired changes.

You can change lines with speeds, for example, using a slider or a selection list for the direction.

Click in the slider area to change the speed again in 5% increments, while you can use the slider to make very quick adjustments. If you then want to be very sensitive, use the cursor buttons for left and right, with which you can adjust in 0.1% steps.

As in many other parts of the programme, clicking the right mouse button in a selected line displays a short menu (cf. Fig. 15.7) offering further editing options.

In addition to the familiar function of moving lines from other parts of the programme, the menu offers you the option of adding further actions to your crane macro.

In addition to the functions of the model, dependencies on feedback contacts can also be created here, i.e. the subsequent lines for such an entry are only executed when the entered feedback contact has assumed the selected state (F/O).

Solenoid items or counters can also be changed in a controlled manner using a macro step so that further dependencies can be created, e.g. in a tour-automatic journey.

Fig. 15.5   The crane macro editor allows you to edit recorded macros
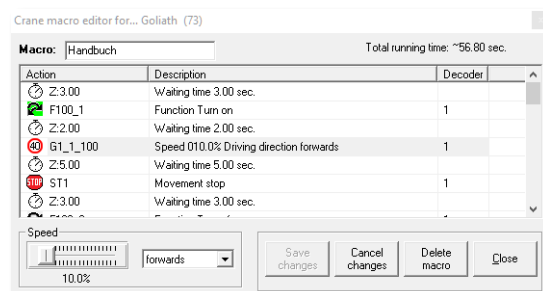
Fig. 15.6   The speed is adjusted here using a slider
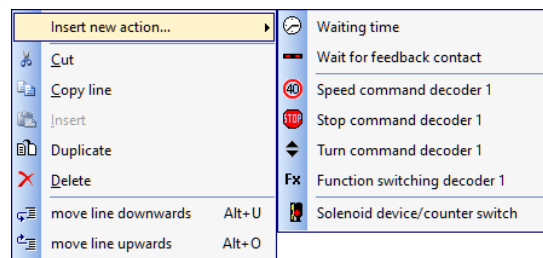
Fig. 15.7   The short menu of the crane macro editor

Once you have finished making all the changes, click on the **'Save changes'** button so that your work is not in vain.

You also have the option of undoing changes before saving them by clicking on the **'Cancel changes'** button. However, this only works as long as your changes have not yet been saved or the change window has not yet been closed.

Click on the **'Delete macro'** button to delete the current macro and click on **'Close'** to exit the Crane macro editor.

15.5 Tips on crane macros

As cranes cannot provide feedback, you should not record the macros with millimetre precision, as there will always be deviations when playing back the recorded sequences.

Here are some tips that you should bear in mind when working with crane macros:

- Always set the crane to a defined starting position before making a macro recording. This can be, for example, a direction of rotation of 180 degrees to the rail (or whatever makes the most sense for you). The macro is always played back as you have recorded it.

- So, if your macro starts by moving the tick upwards for 10 seconds, but it is already at the top when the macro starts, there is no feedback, and the macro tries to perform this action again.

- It is also a good idea to either end a macro in the same position as it began, e.g. to play a macro several times in succession, or to move it to a position where a second macro begins as the start position in order to achieve a chain in this way.

- Do not create macros that have to work with millimetre precision, because the motors always run a little behind, so that after a macro has been run several times, the crane deviates further and further and may then place its load next to the wagons.

- While a macro is running, the other control buttons on this crane control are locked except for the stop button. You can recognise that a macro is still running by the illuminated light on the crane control. If you want to stop a macro from running for any reason, simply press the stop button. Please bear in mind that if you then want to start the macro again, **it will restart completely from the current position**!

- Please always observe all safety regulations specified by the respective manufacturers so that electrically conductive or highly flammable materials never fall onto the tracks!

15.6 Integrate crane macros in Win-Digipet

The recorded crane macros can be used very well in **Win-Digipet.** In conjunction with contact events in the various editors, you can call up crane macros, similar to the event-controlled switching of solenoid items.

You can use the crane macros as follows:

- Manually by selecting the desired crane macro in Crane Control
- Automatically in the profiles.
- Automatically in the tour-automatic (in lines with "event flow: contact events" and as a switching action)
- As a switching action in the dispatcher.

15.7 Infracar system in Win-Digipet - General information

The model car control systems from the Faller Car System or Mader could already be controlled with WDP. The InfraCar system from Karsten Hildebrandt has also been implemented.

The familiar systems from Faller and Mader, for example, only recognise two states "Stop" or "Full throttle".

The InfraCar system, as a supplement, sends commands via infrared light for:

- Accelerating/braking
- Automatic brake light
- Infinitely variable speed control
- and up to 6 switching functions (e.g. light, indicator, blue light)
- if a corresponding decoder is installed in the car/truck.

This means that the InfraCar system can also be used to fully utilise functions that you are familiar with from model railway control in operation with the cars.

15.8 Settings for the InfraCar system

The InfraCar system must be entered in the system settings on the "Hardware - Digital systems" tab.

15.8.1   Entering road vehicles in the vehicle database

Next, enter your road vehicles in the vehicle database. There you will also find a decoder type for the InfraCar system.

Make the entries for the individual data records in the same way as described in the chapter 4.

Of course, you can use addresses that you already use for the vehicles, as **Win-Digipet** "recognises" that the vehicle entered is not a locomotive, but that a completely different decoder should be addressed. Furthermore, you can use up to 6 special functions if these are available.

15.8.2   Functions for the InfraCar system

When Once you have connected and configured the InfraCar system, all the functions and automatic features familiar to vehicles are immediately available. The "road" must be drawn into the track diagram like "rails".

You can use the following symbol tables for this purpose:

- Road and railway symbols **Sym_Auto_Bahn**
- Railway and road symbols **Sym_Bahn_Auto**
- User icons   **Sym_U**
- Or self-created symbol tables

You can call up the corresponding symbol file in the **Win-Digipet** system settings.

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Chapter 16

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16.   MODEL RAILWAY OPERATION WITH WIN-DIGIPET

16.1 General information

If you have read all the previous chapters of this manual at this point, all the individual data for your digital model railway layout has been recorded in **Win-Digipet** and the track layout, vehicles, routes and profiles have been created. The entries for the route sequences and the automatic routes have also been made.

This fulfils all the requirements for optimum, convenient control of your model railway layout with **Win-Digipet**.
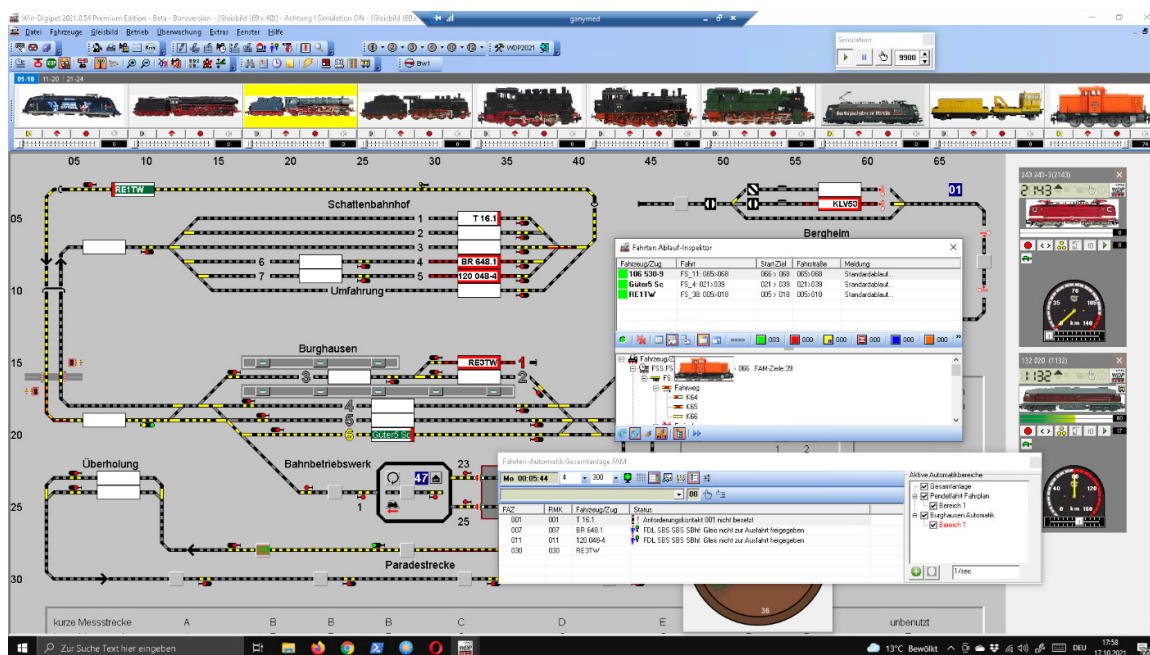
Fig. 16.1   The **Win-Digipet** screen during operation with a running tour-automatic journey (German version)

In the **Win-Digipet** track diagram, the clear and convenient command centre, you can switch and control your system.

This chapter describes the control functions and how to use them in model railway operation. If anything in the individual parts of the programme is still unclear to you when reading the chapter, please refer to the relevant chapter. When you start **Win-Digipet**, your track diagram is loaded automatically, and you are in the main programme.

The display of the track image corresponds to the last status, i.e. you see everything as you left it.

- the size of the track layout
- the track diagram display according to the selected symbol table
- the zoom factor
- the ready-to-use vehicle controls
- the position of the vehicle moulding.

> If you can no longer see open windows of editors (e.g. routes editor etc.) on your screen when working with **Win-Digipet**, you may have moved them out of the screen area.
>
> Please remember the options for resetting the screen configuration or *'Reset window positions'* in the Start Centre.
>
> This function can be used to set all **Win-Digipet** windows to the screen position 0.0 and thus move them back into the visible area of the screen.

16.1.1 System settings

Via icon ![icon] in the toolbar you have access to the system settings; this part of the programme is described in chapter 3. You can also access the system settings via the menu item <File><System settings>.

> You should **not** make **any changes** to the system settings while the **model railway is in operation**.

16.2 Solenoid devices

16.2.1 Place individual solenoid items in the track diagram

Point the mouse pointer in the track image to the solenoid device you want to place. The mouse pointer changes to a hand. If you have activated one of the following options in the **Win-Digipet** main menu, so-called tool tips are displayed under the mouse pointer with all relevant information about the object. You will find the same menu entry in a context menu that appears when you click with the right mouse button in a free area of the track image. is displayed.
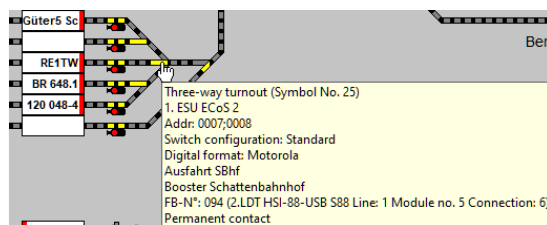
Fig. 16.2   The quick info for a solenoid device

- 🚂 <Track diagram><symbol information under mouse pointer><addresses and FB numbers only>

- 🚂 <Track diagram><Symbol information under mouse pointer><Complete information>

To switch a solenoid item in the track diagram, click on the corresponding symbol with the left mouse button until the required position is reached.

With three-way turnouts, double crossing turnouts or other multi-term solenoid items, it may be necessary to click several times until the required position is reached. You can set any number of solenoid items in succession.

In the case of solenoid devices, you will see a short menu after clicking the right mouse button, where you can select the solenoid item directly with a further click of the left mouse button.

Solenoid items with the same address - e.g. distant signal and main signal are on one decoder input - are automatically synchronised with their positions on the screen. This also applies to turnouts with the same decoder address.
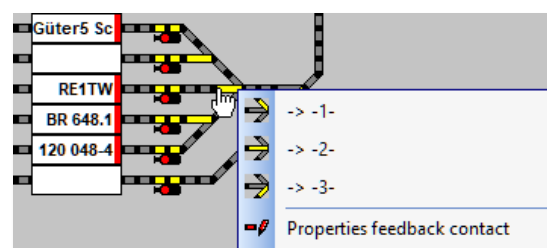
Fig. 16.3   The short menu of a solenoid device

If you have installed angled three-way turnouts in the track diagram using a horizontal and a vertical single turnout, each with its own address, make sure that both turnouts are set to "Straight" before each switching to "Branch".
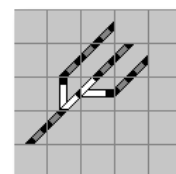
The counter value shown in the track diagram can not only be changed via the switching actions in the various programme sections but can also be set manually in the track diagram to a value between **"0"** and **"9999"**. To do this, click on the counter symbol with the <u>left mouse button</u> and set the desired value in the "Set counter" window that appears using the keyboard or the two arrow keys. Click on the **'OK'** button to accept the value.
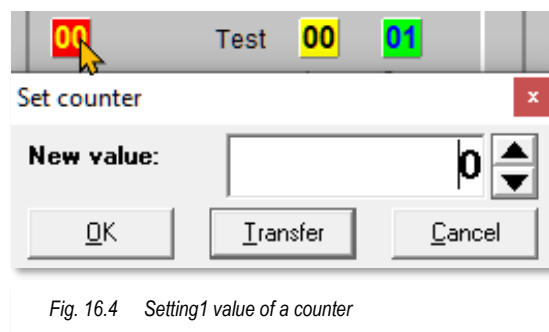
Fig. 16.4   Setting1 value of a counter

Proceed in the same way for a registered SX display [00].

16.2.2   Basic position of the solenoid devices

Via menu <Operation><Execute basic position> in the main programme, you can switch all solenoid devices to the basic position. You may have defined the basic (home) position of a solenoid item when entering it in the track diagram editor.

> Solenoid items that you have labelled with the option "Exclude from basic position" when entering are not switched when the menu item is selected.

Use the symbol ▦ or the corresponding menu command <Operation><Execute current positions> to switch all solenoid items to the positions displayed on the screen.

These functions are always useful if, for example, you need switches, signal positions, etc. for an automatic movement at the start in a position you have defined in conditions, or if, for example, after construction work on the model railway layout with manual setting of turnouts, you want to align these with the track layout again.

16.2.3   Set active routes again

The menu item <Operation><Switch active routes again>, resets all active routes. This function can be called up after an emergency stop, for example, to ensure the correct position of the solenoid items.

16.2.4   Function test for solenoid devices

The icon ⇄ in the "Operation" toolbar or the menu command <Operation><Solenoid devices function test> with the same name opens a dialogue for testing the solenoid devices on your model railway layout. This function test carries out a number (2-10) of switching operations for your solenoid items that you specify. You can set a pause between 100 msec and 5 sec between the individual switching operations.

The number of switching operations is set here in steps of two, i.e. each solenoid item switches back and forth at least once.

You can also select whether you want to perform the test for the turnouts only or for all solenoid items. You can exclude individual items from the function test by selecting them in the list and deleting them from the test list using the **'Delete selection'** button. You can also use the <Ctrl> or <Shift>-keys to select multiple items, which is typical for Windows.

The solenoid device symbols can also be dragged directly from the track image into the test list using the drag & drop function. This is useful if you only want to test a few solenoid items.

The **'Start'** and **'Stop'** buttons start or stop the test run.
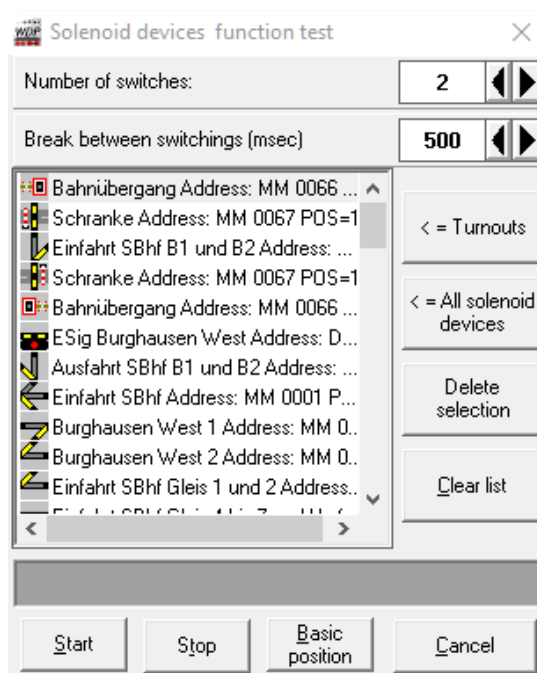
Fig. 16.5   The solenoid device function test

A three-way crossover is always set six times to ensure the correct display after the switching operations, regardless of the number of switching operations you have set in the dialogue window.

16.3 Testing and support functions - The error check

The check routine in **Win-Digipet** is able to detect and display misconfigurations in your project. Errors, warnings, or information are assigned to the individual programme parts or editors. They can then be edited directly from the error check dialogue window. For technical reasons, you only have to edit the errors and information of the track diagram editor there. The check routine described here can also be found in the track diagram editor.

You can call up the error check with the icon ![icon] from the "Editors" toolbar or using the menu command <File><Check for Errors>.
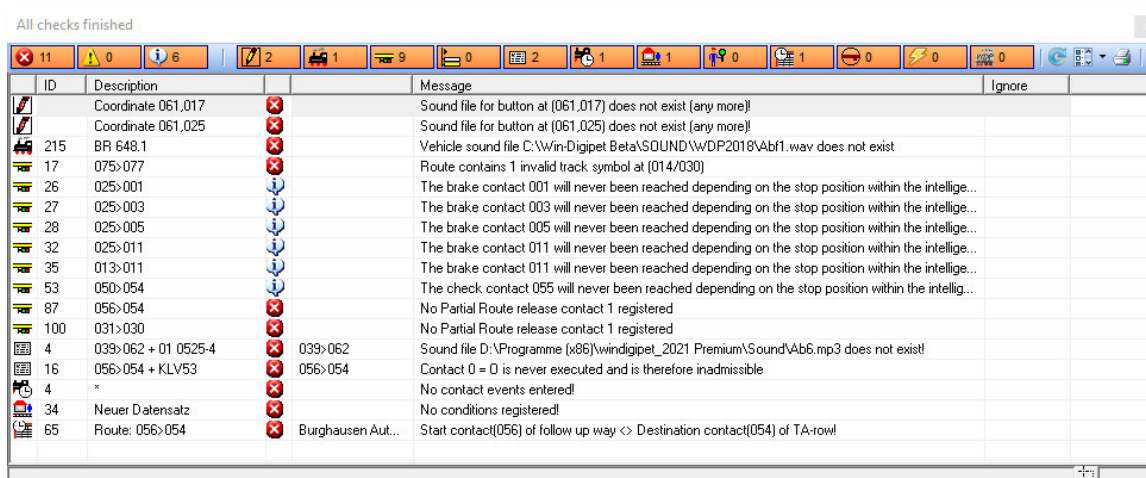
Fig. 16.6   The error check is carried out in all parts of the programme

After the call, the test window opens (see Fig. 16.6) opens and lists the check results after a short search phase. All checks of the various editors are summarised in the dialogue window. This means that you can see briefly where there are errors in the programme and correct them.

16.3.1   Test result categories

In the upper part of the dialogue window, there are three groups of icons or buttons on the left. The left-hand group comprises the three categories:

- 🚂 Information   [ⓘ 6]
- 🚂 Warning   [⚠ 1]
- 🚂 Error   [❌ 11]

The entries with an information symbol [ⓘ 6] are to be understood as notes. They do not represent an error, but errors may occur in the operating sequences. For example, if the test contact is not reached on an iVHD due to the holding position.
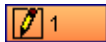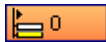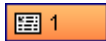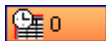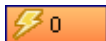
The entries with the yellow warning triangle ⚠ 1 should always be regarded as a warning. However, they do not represent an error in the true sense of the word. For example, if you have entered a feedback contact in a route that is not part of the route recording, this may be intentional on your part. However, **Win-Digipet** cannot know this and so you will receive a warning, which you should take seriously and check.

All entries with a red cross ❌ 11 are real errors, i.e. you must eliminate them, otherwise the correct running of the programme cannot be guaranteed. In the example image (see Fig. 16.6), for example, an error has been recognised in the track diagram editor, which means that an assigned sound file is not (or no longer) available and therefore could not be played.

The numbers displayed behind the icons provide information about the number of entries in the respective category. The same number display also applies to the second group of icons in the top row of the dialogue window.

16.3.2 Error checking in the various programme sections

The symbols shown here represent the various programme parts of **Win-Digipet that** are examined by the check function. In detail, these are:

🚂	Track diagram	✏ 1
🚂	Vehicle database	🚂 1
🚂	Routes	▭ 11
🚂	Route sequences	▭ 0
🚂	Profiles	▤ 1
🚂	Vehicle and train macros	🕑 1
🚂	Dispatcher	🚃 2
🚂	Train director	🚩 1
🚂	Automatic journeys	🕐 0
🚂	Intelligent hub	⊖ 0
🚂	Booster management	⚡ 0
🚂	Other parts of the programme	▦ 0

All the symbols mentioned so far can be switched on or off by clicking on them. However, this does not mean that no check is carried out for the switched off programme parts. Instead, the respective entries are temporarily hidden. This maintains clarity and helps you to correct any longer error lists. After calling up the check function again, all sections are reactivated.

After you have worked in the track diagram editor, please remember to agree to the automatic check of the track diagram. This is the only way to synchronise changes to the track diagram with other parts of the programme.

If you reject the check when leaving the track diagram editor, you will have to correct any errors yourself later.

16.3.3   Further functions of the error check

In the error check dialogue, you have four more functions at your disposal which you can execute by clicking on the corresponding icons.

The ⟳ symbol causes the check results list to be updated, which means that the check is carried out again in the open dialogue window.

The ▦ symbol contains a short menu from which you can make further optional settings.

With the "Select TA files for check" function, you can exclude or include certain tour-automatic files from the check by selecting or deselecting them. For example, this function could be used if you are compiling new tour-automatic journeys, and these are not yet complete. After

Fig. 16.7   Optional settings for the error check

opening the check functions, however, all TA files are always subjected to a check; the exclusion of files described here requires a subsequent update of the checklist.

Certain messages from the track diagram editor can be marked in the error check and thus hidden from the checklist. This mainly concerns error messages that must be associated with the track diagram and the symbols used. You have read about symbols and coordinates in the chapter on the track diagram editor. In the event that symbols are used without continuation (which does not necessarily have to be an error), this will result in an error message here in the check routine. You can show or hide the ignored error messages using the second option in this menu "Show masked message (not)".

The last menu item can be used to disable the check for the existence of sound files in the project on the computer.

The print 🖨 and close 🗗 symbols are self-explanatory or have already been covered in detail in other chapters and will therefore not be discussed again here.

16.3.4   The test results list

The list of test results is the main part of the dialogue window. It is divided into seven columns, the meaning of which is explained here.

In the first column, the symbol of the programme section in which the test result of this line was created is displayed. Here you may find entries from all the programme sections listed above (see Fig. 16.6).

The second column contains the respective ID of the route, route sequence or line number in a tour-automatic file.

The third column contains the name of the route, profile, etc. For messages from the track diagram editor, the coordinate in the track diagram is specified here.

Column number four shows the symbol of the three categories (info, warning, error) into which the message has been categorised.

The next column may contain additional information on the entries in the second column. For example, the name of a tour-automatic file can be found here if the event originated in the tour-automatic editor programme section.

The most important column is the message column. A detailed text on the check result of the line is displayed here. Please understand that we are not listing all possible messages at this point in the documentation. Rest assured, there are hundreds!

The last column contains the above-mentioned tick marks for the ignored entries in the list. The entries in this column are only displayed if they have not been selected using the "Show masked messages (not)" function (see Fig. 16.7) has not been switched off.

> Double-click on a line in the check results list to jump directly to the error, warning or note displayed in the corresponding part of the programme and make the necessary corrections very quickly.
>
> One exception here are messages from the track diagram editor. For technical reasons, you **must edit** these messages in the track diagram editor.

16.4 Test and support functions - The search function

Via the icon 🔍 in the "Editors" toolbar of the main programme to access the general search function in **Win-Digipet**. As an alternative to the icon, you will find a corresponding entry in the <File><Search> menu.

You can use this search function to search for the following in all parts of the programme:

- Solenoid devices/counters
- Feedback contacts
- Vehicles/trains
- Routes
- Route sequences
- Vehicle/train macros
- Logbook/memo/text actions

For example, you can find out in which parts of the programme a particular solenoid device occurs. The dialogue window for the search function is similar to the error checking dialogue discussed in the previous section.
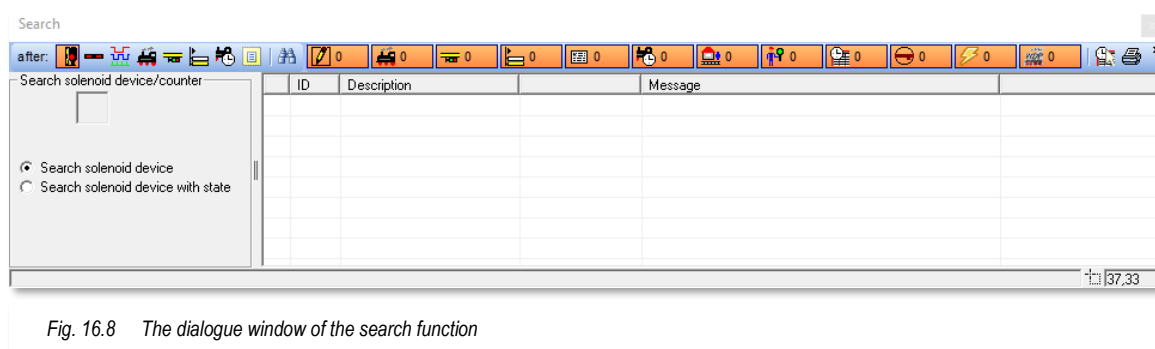
Fig. 16.8   The dialogue window of the search function

The window is divided into two sections. In the left-hand section, you use a selection of symbols to define what you want to search for. The right-hand section is dominated by the results list. This list can be sorted according to the same criteria as in the error check (see section 16.3.2) and thus only display entries from certain parts of the programme.

16.4.1 Search for solenoid devices/counters

To search for a specific solenoid device/counter, select the item, and drag & drop the desired symbol from the track image into the field provided.

The digits recognisable in Fig. 16.9 show the coordinates of the solenoid device symbol entered.

At this point you can still decide whether entries for this solenoid item/counter should be searched for in general or in a specific position.

Fig. 16.9   The search for a solenoid item/counter

16.4.2 Search for feedback contacts

To search for a specific feedback contact, select the symbol of a track or road section and drag & drop the desired symbol from the track image into the field provided. Alternatively, you can enter the feedback contact number using the keyboard.

At this point you can still decide whether entries for the selected feedback contact should be searched for in general or in a specific position (free or occupied).
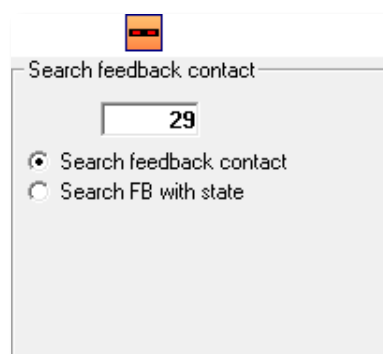
Fig. 16.10 The search for a feedback contact

16.4.3 Search for vehicles or trains

To search for the entries of a specific vehicle or train, drag & drop the image of the vehicle from the vehicle bar, the vehicle control or the wagon monitor into the field provided. This method can also be used to search for wagons that are in a train formation. The prerequisite for this is that the wagon has also been created as a vehicle in the vehicle database and has been added to a train in the train composition.

At this point you can still decide whether you are looking for a specific vehicle or a train name. You can also enter the train name using the keyboard.
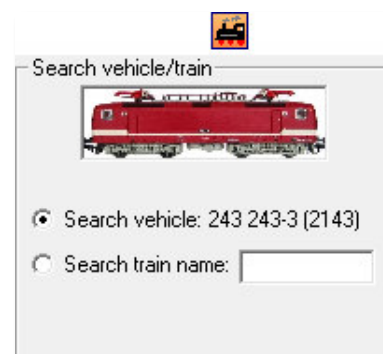
Fig. 16.11 2 search for a vehicle or train

16.4.4   Search for routes

To search for the entries of a specific route, enter it in the search window using the start/destination function.

The **"Transfer to search window"** button transfers the selected route from the start/destination dialogue to the search dialogue window.
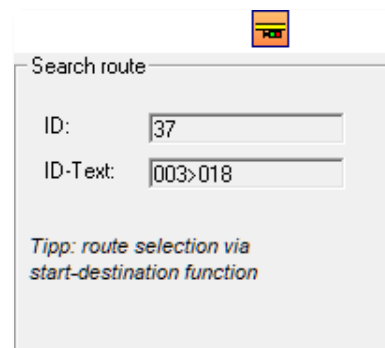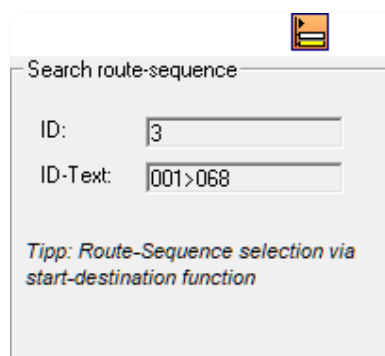

Fig. 16.12   3 search for a route

16.4.5   Search for route sequences

To search for the entries of a specific route sequence, enter them, as well as a route, in the search window using the start/destination function.

The **"Transfer to search window"** button transfers the selected route sequence from the start/destination dialogue to the search dialogue window.

Fig. 16.13   Searching for a route sequence

16.4.6   Search for vehicle or train macros

To search for vehicle or train macros, click on the **'Select macro'** button in the dialogue window and select the macro to be searched for from the list that appears.

Double-click on the macro line to enter the selected macro in the search dialogue.

Fig. 16.14   The search for a vehicle/train macro

16.4.7 Search for logbook/memo/text actions

The Logbook/memo/text actions are mainly found in this documentation in chapter 13 . These switching actions can be used to create entries in the logbook, in memos or as text in the track image.

These switching actions can be found using the search function. The search window offers you two selection lists. Use the first selection list to decide which type of text action you want to search for. You are offered the following selection options:

Fig. 16.15   4 search for a "text action"

- 🚂 In all areas
- 🚂 Logbook
- 🚂 Track diagram text
- 🚂 Memo entry (text or ID)
- 🚂 Task list

With the second selection you link your entered search parameter with the operators "begins with, contains, ends with, equals and all" known from various parts of the **Win-Digipet** programme.

16.4.8 Perform a search

To perform a search, click on the 🔍 icon in the toolbar of the search dialogue. **Win-Digipet** now searches for the object entered in the search field in all parts of the programme. For example, a solenoid device is found in route recordings, as a follow-up switching or as a condition or switching action in the dispatcher.
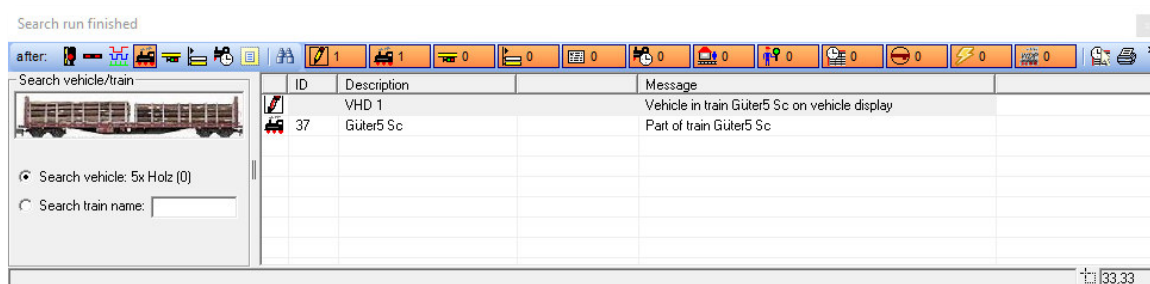

Fig. 16.16   The search for a specific vehicle

The Fig. 16.16 shows the search for a specific wagon (wooden wagon). The image of the vehicle was transferred from the wagon monitor to the search dialogue using drag & drop. Two entries are listed here as a result of the search.

🚂 The vehicle is in a train (Güter5 Sc) on VHD 1

🚂 The vehicle is part of the "Güter5 Sc" train

If you select the first line (...on VHD) in the results list, the relevant vehicle display will be highlighted in red in the track diagram.

> ⚠️ A list entry, for example with a found solenoid device, opens the corresponding entry in the routes editor, for example, when double-clicking on the line. This allows you to make changes very quickly if necessary.

16.5 Test and support functions - The logbook

The logbook in **Win-Digipet** is exactly what its name suggests. All events and messages during the operation of **Win-Digipet** are recorded here. You have an operating log at your fingertips, so to speak.

The logbook is activated in the background every time **Win-Digipet is** started, even if you have not displayed the logbook window on the screen.

You can open the dialogue window by clicking on the ⊞ icon in the "Monitor" toolbar. You can also find a corresponding entry in the main menu under <Monitor><Logbook>.

The window that then opens shows a list with entries of all events and messages that have occurred since **Win-Digipet** was started. All messages are provided with a time stamp. This time stamp is, of course, to be viewed in real time and has nothing to do with the model railway time from the tour-automatic. In events where the model railway time is relevant (e.g. when executing routes), it is also logged.

All messages are also categorised with a graphic symbol. This makes it very easy to assign the messages to the various components or programme parts.

The Fig. 16.17 shows an extract of the operating log from the start phase of **Win-Digipet**. You can see that some general information (e.g. date, programme version and project name) was recorded at the beginning.

This is followed by the important hardware initialisation phase.

The example here clearly shows that in this case the office version of **Win-Digipet** has been started and therefore no digital system is connected.

After the digital systems, the vehicles are initialised until the message "**Win-Digipet** ready" appears in the message window.

All subsequent messages will normally revolve around the driving mode or error messages will be displayed. You may then have to follow up these messages and eliminate the sources of error.

Fig. 16.17   The **Win-Digipet** logbook

System messages that are only briefly displayed on the screen for technical programme reasons are also recorded in the logbook.

Below the message window there are a few more operating icons for the dialogue window. The first group of icons 💾 📋 ❌ is self-explanatory; here you can save the accumulated messages in a text file or paste them into another programme (e.g. a word processor) via
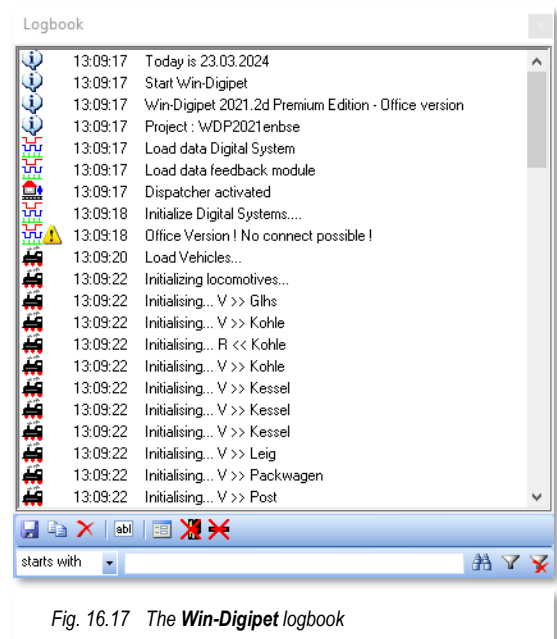
the Windows clipboard. The third icon in this group deletes the accumulated entries in the message window.

You can use the abl symbol to add your own short notes to the log. For example, after transferring the log to a word processing programme, you can quickly find specific text passages again using the search function of the respective programme.

The symbol hides the logbook after a few seconds. However, the window is still active and is only displayed transparently on the screen. The same behaviour can be seen in the central clock, for example. The window becomes visible again as soon as you move the mouse over it.

The last two symbols in this series give you the option of also logging solenoid device switching or contact events in the logbook. However, the clear recommendation is to only use these options for troubleshooting purposes for performance reasons and otherwise leave them switched off.

At the bottom of the logbook window, you will find a line that allows you to filter the accumulated messages.

Here you can search specifically for character strings in the accumulated log or only display the messages specified according to the filter criteria set.

If you only want to see messages when, for example, route 006>015 is called up, set the filter to "contains 006>015". All other messages are then no longer displayed until the filter is deleted again. However, the messages that are not displayed are still present in the operation log.

The messages in the logbook are largely self-explanatory. It is important that you always check which error messages are displayed so that you can carry out targeted root cause analysis.

16.6 Test and support functions - The memo window

Surely you are familiar with these small, usually yellow, sticky notes from everyday life. They are supposed to remind us of important things that we tend to forget.

The memo window in **Win-Digipet is** such a sticky note in electronic form. Here in the programme, it also has the task of reminding you of important things before they are forgotten.

However, the memo window is much more than just a paper label. The memo window can be labelled, attached, and removed both manually and automatically by various parts of the programme, e.g. as a switching action in the dispatcher.

You can open the memo window by clicking on the 🟨 icon in the "Monitor" toolbar. The <Memo> entry with the same name can also be found in the <Monitor> menu.

An empty "yellow" note is displayed on the screen. By clicking with the right mouse button, you can call up a short menu, as is usual in the programme. The short menu allows you to create manual entries in the memo window and, if desired, displays a bar for the settings of the window. To display the settings, right-click in the memo window. The Fig. 16.18 shows the Memo window with the settings bar displayed.
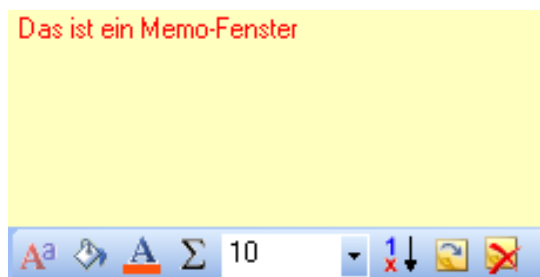
You can use the icons to change the font, font size and font colour. The background colour and the number of entries and their order can also be changed here. The sum symbol defines the maximum number of entries in a memo window. The last two icons control the display of the window when the programme is started and the automatic hiding of an empty memo window.

As already explained at the beginning of this section, you can create entries manually. However, the far more important function is the creation of memo entries from the switching actions in the routes editor, in the tour-automatic

Fig. 16.18   The memo window

Fig. 16.19   A memo window with an automatic entry

editor and in the dispatcher. With the extended text editor in these programme sections can be used to compile interactive texts that are intended to draw your attention to certain situations on your system. We have already explained the operation of the switching actions and the extended text editor in the chapter 13 on "Conditions and circuits.

The example in Fig. 16.19 shows an automated memo entry from the dispatcher. Here, the train name entered on the vehicle display is queried when a solenoid item is activated in the track diagram. As soon as the item is switched off, the entry in the memo window is also deleted. The example can also be found in the WDP2021 demo project.
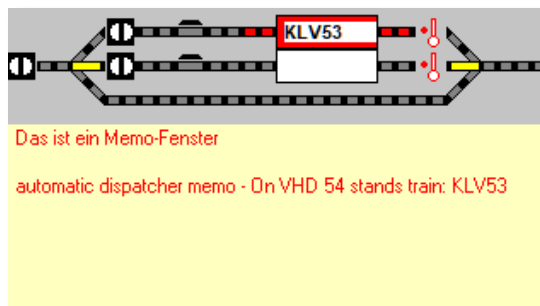
16.7 Set routes or route sequences

Routes or route sequences can be set manually or automatically in **Win-Digipet.** If you use automatic routes, all routes or route sequences are set automatically if the setting conditions are met. How you can set routes or route sequences manually on the screen is explained in the following sections.

16.7.1   Switch and drive with the start/destination function

If you want to If you want to set a route or route sequence manually, you have two options.

Either right-click on a vehicle display (VHD) and select the "Select start" entry from the short menu and, in a second step, right-click again on the vehicle display that is the destination of the route. Again, a short menu appears from which you can select the "Select destination" entry.

The second option is even simpler: Click on the start vehicle display with the middle mouse button and then, within 10 seconds, on the destination vehicle display. The existing routes or route sequences between the two selected vehicle displays are then displayed in the "Start/destination selection" dialogue window.

If you receive the message "No route/route sequence found!" in this dialogue window, it is very likely that you have not yet created a route or route sequence between the selected vehicle displays.
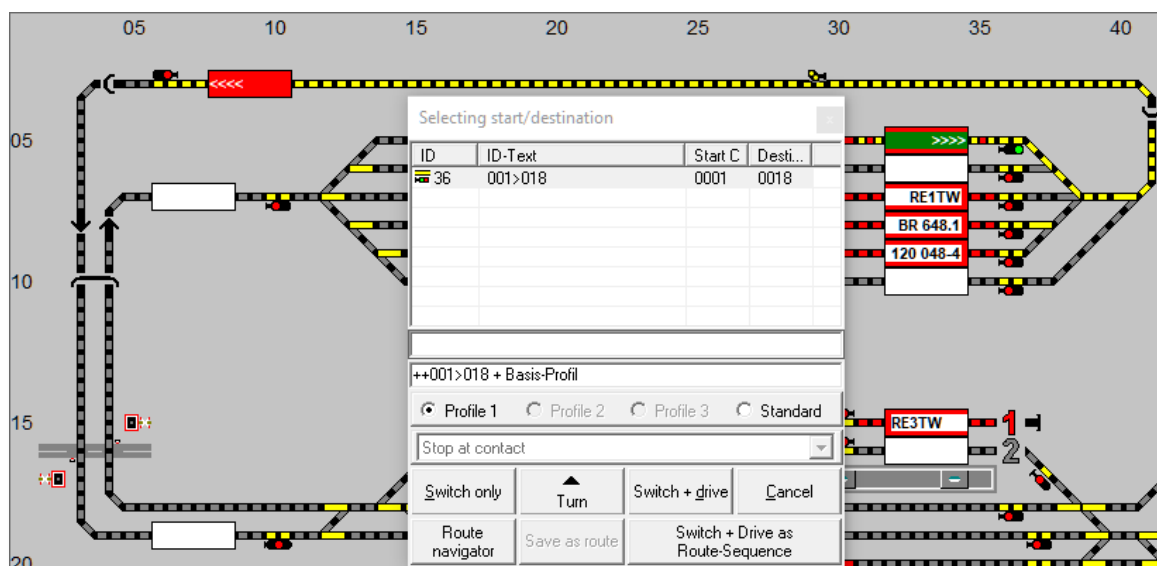

Fig. 16.20   The start/destination selection dialogue shows a route found for the selected start and destination combination
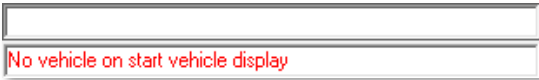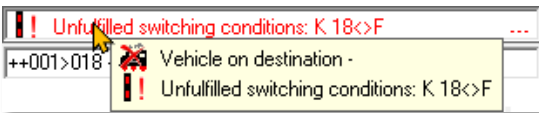
You can now create and save a route or route sequence for this start/destination combination. You can also use the route navigator to create a temporary route and run the train. These temporary routes are available for further journeys until the programme is closed. Temporary routes created with the route navigator can also be saved permanently.

Use this function with caution, however, as it is very easy to create a proliferation of routes out of convenience.

However, if the start/destination function was successful, the "Start/destination selection" window opens. All routes and route sequences found are displayed there in a list with their ID-Text and internal ID number. The route marked in the list is also highlighted in yellow in the track diagram (see Fig. 16.20).

In the example screen, the route is executed with a "basic profile", i.e. a profile exists for this route that is valid for all vehicles.

The message line of the dialogue window can contain various entries. Basically, a red message here means that the route/route sequence cannot be executed for the reason indicated. Some examples are listed below:

🚂	No Route(-Sequence) found!	"No route/route sequence found!" if the desired driveway is not recorded as route or route sequence.
🚂	! Unfulfilled switching conditions: Start-VHD 1<>0 ++001>018 + Basis-Profil	The route cannot be executed here due to an unassigned feedback contact (switching conditions not fulfilled)
🚂	No vehicle on start vehicle display	No vehicle is entered on the start VHD.
🚂	! Unfulfilled switching conditions: K 18<>F ... ++001>018 🚫 Vehicle on destination - ! Unfulfilled switching conditions: K 18<>F	There are two messages in this window. You can recognise them by the three red dots. If you move the mouse over the line, all messages are displayed. In this case, the route is not free, as there is still a vehicle on the destination VHD. The switching conditions are not fulfilled as the destination contact is not free.
🚂	Vehicle on vehicle display within route Default event	In this case, a vehicle is still entered on a vehicle display within the selected route.
🚂	++001>018 + Basis-Profil	With this display of an empty line, everything is "OK" and the route or route sequence can be set.

Now select the desired route or route sequence by clicking on the list line; it is displayed in the track diagram with start (green) and destination contact (red), as well as yellow illumination. The **'Switch + drive'** button is automatically activated when a vehicle with the vehicle number/train name is located on the vehicle display of the start contact. If you have selected a route, the "Start/destination selection" is also supplemented by the **"Switch +drive *as route sequence"*** button.

You now have the following options:

- Click on **'*Switch only'*;** the route is set and is illuminated in yellow, and you can drive on it **manually** with a vehicle or train.

  You can control the vehicle either via an existing control panel, hand controller or via a vehicle control in **Win-Digipet.**

- If the **'Switch + drive'** button is active because a train number is entered in the vehicle display of the start contact of the route or route sequence called up, you can now select how the vehicle should drive:

  You select "*Standard".*
  The values for acceleration and travelling speed are taken from the vehicle database and the routes editor.

  The vehicle is braked at the braking contact before the target contact. As soon as the vehicle has reached the target contact of the route or route sequence, it is **automatically stopped**.

  You select *"Profile 1".*
  The vehicle is then automatically set in motion by clicking on the **'Switch + drive'** button. The values for the driving speed, acceleration and other driving behaviour are taken from profile 1 of the vehicle/route combination in the profile database. The same applies to the other profiles.

  However, selection with the radio button is only possible if one or more profiles have been created for the selected route(s).

  As soon as the vehicle has reached the destination contact of the route or route sequence, it is automatically stopped.

- In both above variants, you will receive a warning if this route has been blocked for a specific vehicle/waggon type in the route database or if a fixed destination matrix has been assigned for the destination vehicle display and the vehicle on the start vehicle display does not correspond to the specified matrix settings.

This route can still be set, however, because the **'Switch + drive'** button is also activated. In this case, **you alone decide** whether the vehicle is allowed to drive or not. You virtually override all restrictions and instructions of the programme and are of course responsible for the consequences of your decision.

If the vehicle or train needs to change direction **'Turn'** button, which also visually indicates the direction of the vehicle. However, if the direction of travel of the vehicle or train is incorrect, a corresponding warning message will be displayed. The dialogue obtains this information from the direction of travel information of a route.

Depending on your selection on the "Program settings – Vehicles" tab (see section 3.8) in the system settings, the corresponding vehicle control is automatically opened after clicking on **'Switch + drive'** and, if necessary, automatically closed again when the target contact is reached.
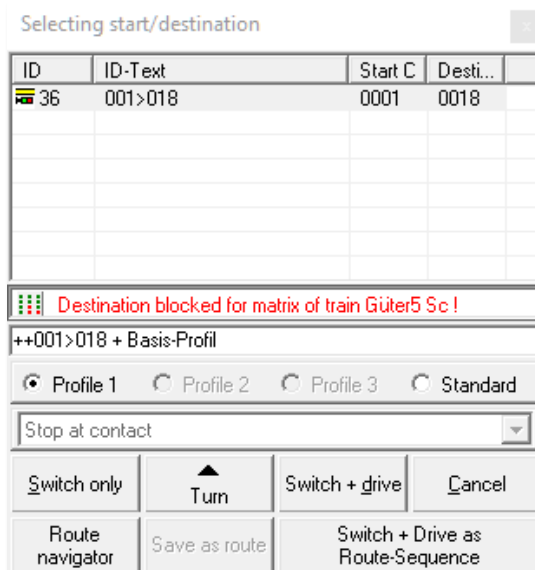

Fig. 16.21   5 route destination is blocked due to the matrix.

16.7.2   Start/destination function – "Switch and drive as route sequence"

In the "Start/destination selection", you will also see the **"Switch + drive as route sequence"** button. This gives you the option of immediately requesting a route that is still occupied using this button.
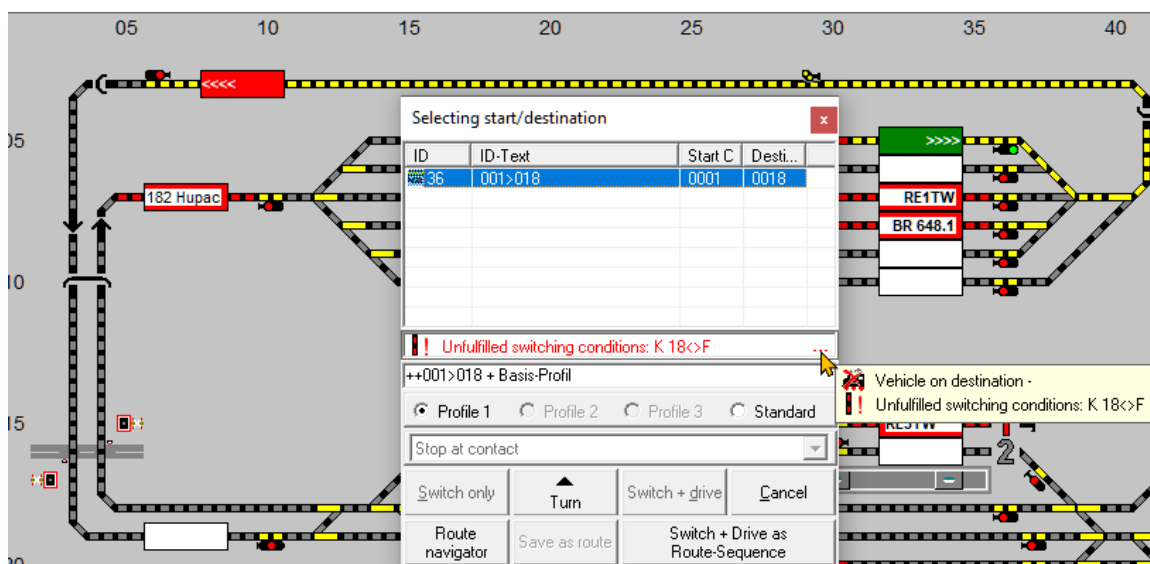

Fig. 16.22   The destination of the route is occupied here by a vehicle

When this button is selected, all current conditions within the route, such as occupied contacts, vehicles on vehicle displays within the route, etc., are checked and, if necessary, displayed as red message(s) in the dialogue window.

After clicking on the **"Switch + drive as route sequence"** button, the window of the "Tour Event-inspector" opens, the route is entered and the vehicle/train number in the start vehicle display is displayed in green.
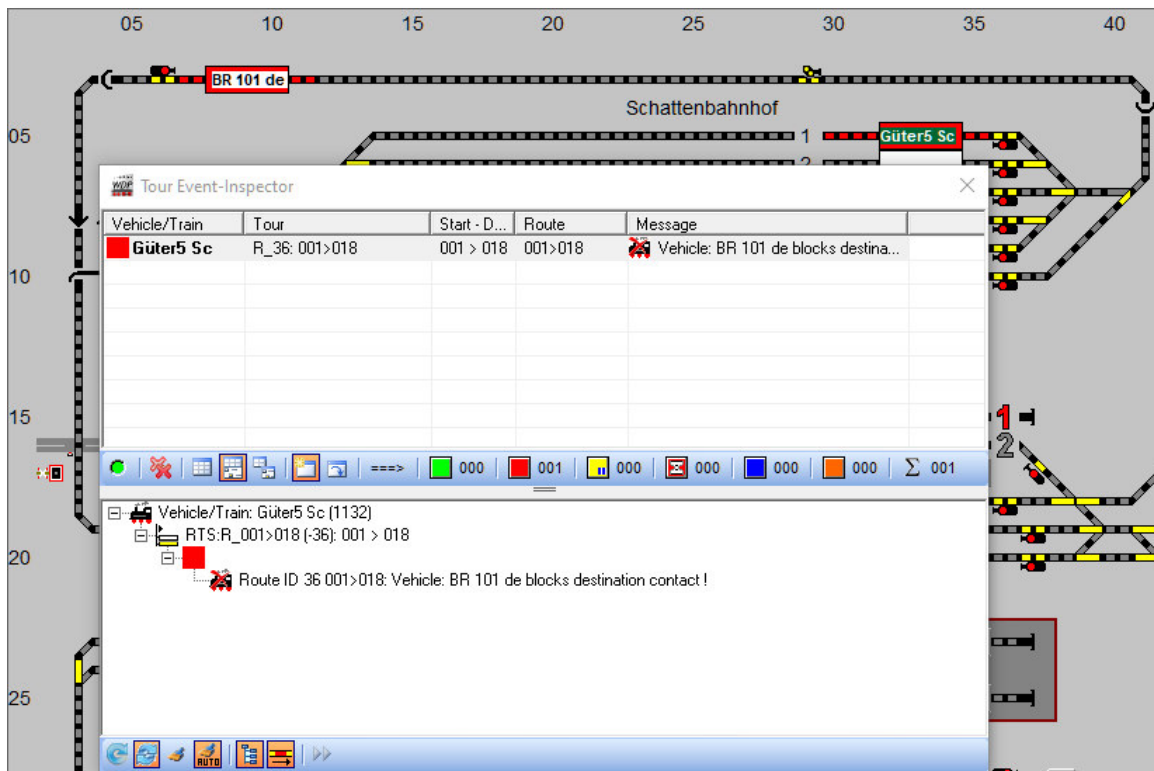

Fig. 16.23   The "Tour event inspector" displays the "pending" route with a red label

The example in Fig. 16.22 shows that there is a vehicle at the destination and the route cannot yet be executed for this reason. The route called up as a route sequence is marked with a red symbol in the route sequence inspector. You can also recognise the corresponding display in the "Message" column in the graphic. Optionally, a detail area can be added to the tour event inspector window. The sequence details (route, profile steps, etc.) for a route or route sequence are displayed here.

> The detail area essentially corresponds to the "train monitoring" from the previous programme versions and has been integrated into the tour event inspector.

Only when the vehicle "BR101 de" has cleared the vehicle display and the switching conditions for the route are thus fulfilled is the route set and the route displayed in the tour event inspector with a green symbol. Once the route has been completed, the inspector is closed again. The tour event inspector can be started at any time using the **<F7>-key** on your keyboard.

16.7.3   Attach a route to an existing tour

With the option to "attach" another route/route sequence to an existing tour, you can use the start/destination dialogue to "request" another "tour" for the vehicle/train. This "attached" route or route sequence must start at the destination vehicle display of a tour currently being executed.
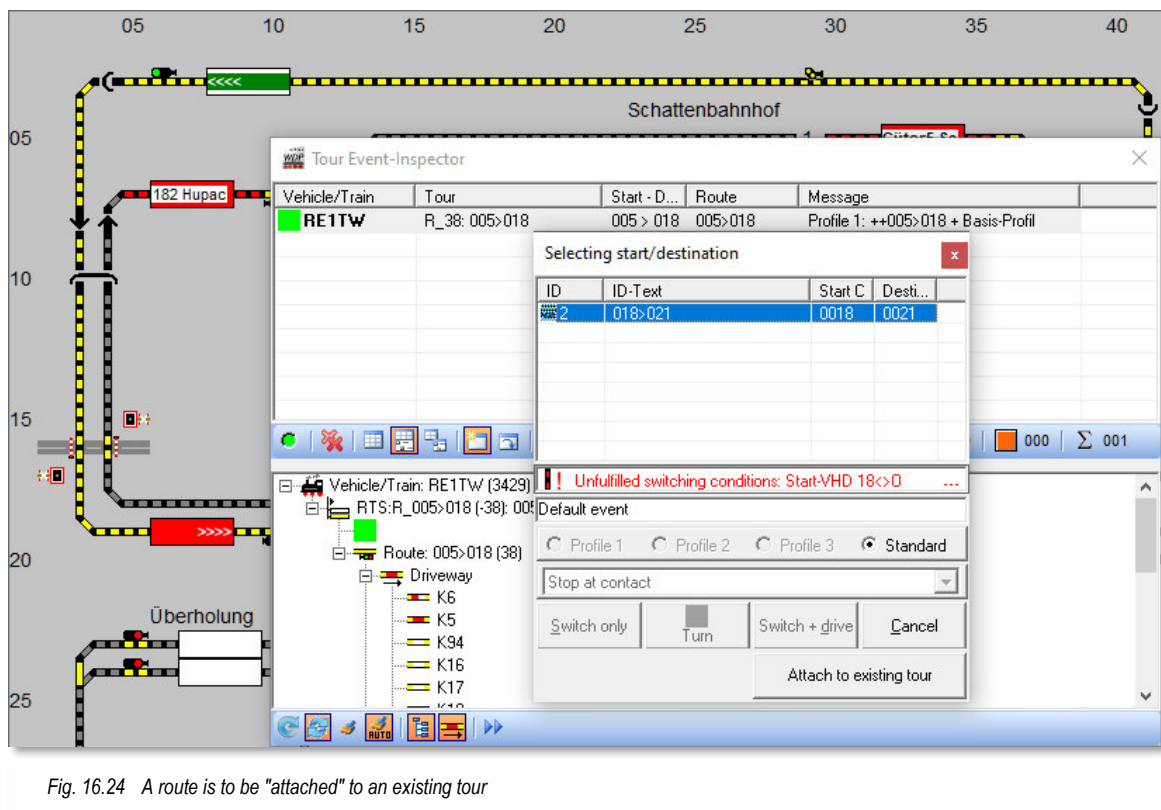

Fig. 16.24   A route is to be "attached" to an existing tour

The Fig. 16.24 shows that the train "RE1 TW" is in an active route from the shadow station to the block signal "Exit SBhf". The start/destination function was used to call up a route from the vehicle display at this signal to the "Burghausen West entry" vehicle display. This route cannot (yet) be set as the start contact is not (yet) occupied. The start/destination dialogue recognises that a trip to the "Exit SBhf" vehicle display is active and offers to attach the selected route to the existing tour.

After pressing the *"Attach to existing tour"* button, the journey is appended in the tour event inspector and noted as an appended journey in the "Tour" column in the row with the first tour. You can recognise this again by the three dots and by moving the mouse over it in the quick info.

16.7.4   Set routes with the virtual keyboard

With This function allows you to set up to **32** frequently used routes particularly quickly; the configuration of the "virtual keyboard" is described in the "Routes" chapter (see section 7.14) for a detailed description.

If you click <Extras><Virtual keyboard with route assignment> in the main menu, the virtual keyboard with the route assignments appears.

Fig. 16.25 The virtual keyboard

Point to the command button with the ID number of the route you want to set. Its description is displayed in the lower display line and a quick info about the stored route is also displayed for you.

If you then click on the command button, the route is set and is illuminated in yellow if its setting conditions are met, otherwise you will also receive a warning message here.


But beware!

You must control the vehicle or train manually. It is not moved automatically by **Win-Digipet**, as is the case with the '*Position and drive*' function.

16.7.5   Occupied vehicle display within a route

As problems with malfunctioning feedback signals on the model railway layout, great importance was attached to safety within the routes.

In **Win-Digipet, it is** not possible to set a route that runs via a vehicle display with a vehicle or train number entered there. If you try to set such

a route by mistake, you will also receive a red warning message "Vehicle on vehicle display within route". Such a route is not called up in tour-automatic mode.
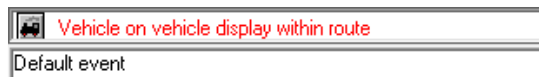
16.7.6   Start route sequence with the start/destination function

A route sequence can be set manually in the same way as a route. Here too, you can choose from the variants described above (see section 16.7.1).

If the start/destination function was successful, the "Start/destination selection" window opens. All route sequences that the system has determined are displayed there in a list with their ID-Text and internal ID number.

Select the desired route sequence by clicking on its list line; it will appear illuminated yellow in the track diagram, i.e. "ready to set".
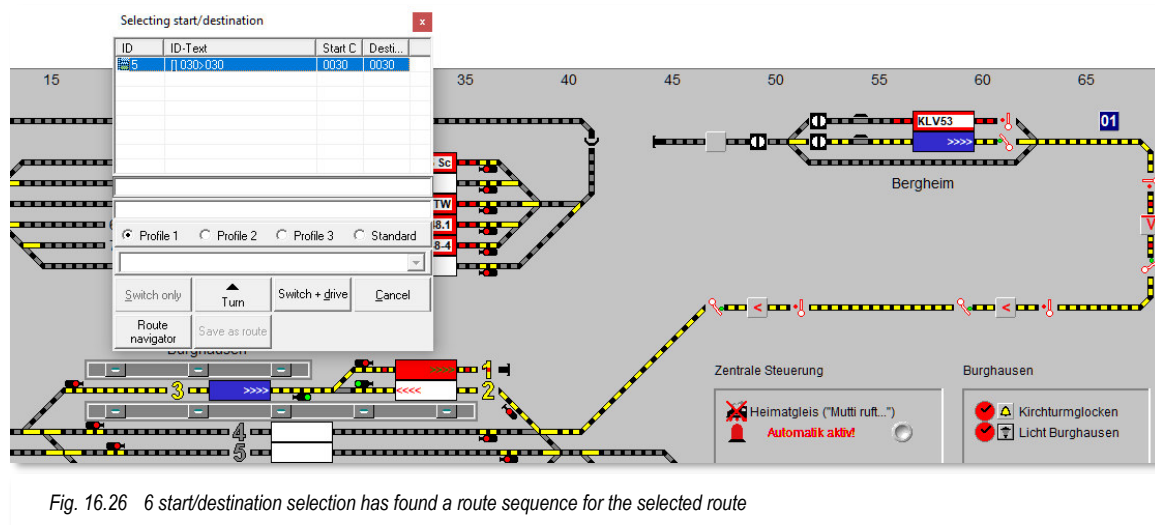
Fig. 16.26 6 start/destination selection has found a route sequence for the selected route

The **'Switch + *drive'*** button is automatically activated if a vehicle or train with the vehicle or train number is entered in the start vehicle display.

If necessary, select the procedure ("*Profile 1*" to "*Profile 3*", "*Standard*") of the route sequence. The procedure that you have set as the default in the system settings on the "Program settings – General" tab (see section 3.7) is always selected automatically. If you want the vehicle to change direction **before starting**, click on the **'*Turn'*** button**.** However, if the direction of travel of the vehicle or train is incorrect, the train will be turned automatically unless you have suppressed automatic turning for the selected route sequence in the route sequence editor.

Once you have selected everything, click on the **'*Switch + Drive*'** button to start the route sequence and the sequence will start as soon as the setting conditions for the first route within the route sequence are met.

The route is illuminated in yellow; the train number changes colour to "GREEN" and the "Tour event inspector" window opens and informs you about the start and sequence of the route sequence.

When the testing contact (**Check next route within route sequence at contact:)** of the route is reached, the control conditions of the subsequent route are checked and, if all requirements are met, the subsequent route is set. This is repeated until the route sequence has reached its destination or the route sequence can no longer be executed. In the tour event inspector, the route sequence is then highlighted in red and a text indicating the cause of the interruption is added.
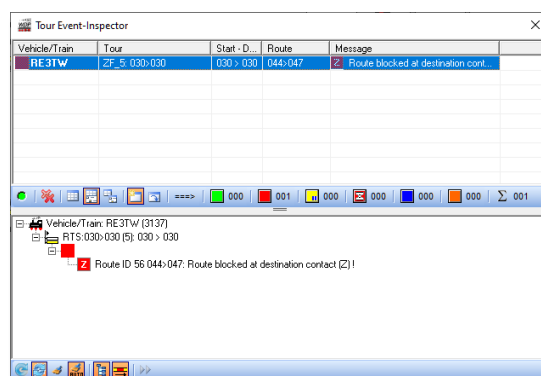
If you have entered a waiting time in the system settings for the automatic termination of a route

Fig. 16.27 A route sequence has stopped due a blocked VHD

sequence (see section 3.13.3), this time is always used if a route sequence cannot be continued for various reasons. After the set waiting time has expired:

- 🚂 the route sequence is stopped
- 🚂 the route sequence in the Route Sequence Inspector is marked with a red hourglass
- 🚂 the vehicle or train number remains "GREEN"
- 🚂 A warning is signalled, and a sound is emitted.

You must now either eliminate the reason for the interruption of the train journey and continue the journey by clicking with the <u>right mouse button</u> in the relevant line of the journey sequence inspector or delete it.

16.7.7 Route sequence selection only with the start vehicle display

If you have If you have created many route sequences, it can happen that in some cases you no longer know which destination vehicle displays belong to a start vehicle display.

To manually select the route sequence, click **twice** with the <u>middle mouse button</u> on the start vehicle display of the route sequence to be selected. After the two mouse clicks, the "Start/destination selection" window opens, and all route sequences found are displayed in a list with their ID-Text and the start and destination contacts under their internal ID numbers.

The **'Switch + drive'** button is automatically reactivated when a vehicle or train with the number or train name is in the vehicle display of the start contact.

Now select the procedure ("*Profile 1*" to "*Profile 3*", "*Standard*") of the FSS and click on the '***Turn***' button before starting if this is required. Once you have selected everything, click on the **'Switch + drive'** button to start the route sequence. It will start as soon as the positioning conditions for the first route within the route sequence are met.

16.7.8 Route sequence blocked by matrix

When manually setting a route sequence, you may also be shown a message that the "Route sequence cannot be travelled due to the matrix or train length!"

You will always receive this message if a route within the route sequence created is blocked for the vehicle or train that is currently on the start vehicle display or if the permitted train length is exceeded or not reached.

16.7.9   Track manual driving without a route

The "Monitor trains without routes" function allows you to control vehicles and trains manually without calling up a route. The **Win-Digipet** main menu offers a corresponding function for this under <Operation><Monitor trains without routes>. As an alternative to this menu item, the "Operation" toolbar contains an icon 🖥 with similar functionality.

In the properties of a vehicle display, you have become familiar with the "Neighbourhood" tab in the chapter 6 . The entries on this card are mainly made automatically by **Win-Digipet**. The vehicle displays that are in the direct neighbourhood of a vehicle display and are therefore "accessible" are listed here.

If a vehicle starts to move, the program usually knows the direction of travel of a vehicle in addition to the neighbouring vehicle displays. The program registers that the speed of a vehicle is >0 and transfers the vehicle or train to the neighbouring vehicle display in the direction of travel as soon as one of the feedback contacts of the (iVHD) switches to occupied. The prerequisite is that the feedback contact must have been "free" beforehand. You can specifically prevent tracking on the tab mentioned for each vehicle display.

> ⚠️ Tracking manual journeys also works without detection systems such as RailCom.

16.8 The tour event-inspector

All set routes and route sequences are displayed in the so-called "Tour Event-inspector. The individual routes are displayed in the upper part of the window in list form and in the lower, optionally switchable detail area in a tree structure, whereby each route/route sequence is displayed in its individual steps. The sequence of vehicle/train macros is also displayed in this is also displayed in this detail area.

Fig. 16.28 7 window of the tour event inspector with active routes and route sequences

The "Message" column in the list area shows a message text on the current status of the active route, which can also be used for analysis in the event of an error.

> A message can conceal several notifications. For example, when an automatic journey is running, all journeys that are being checked for the possibility of being stopped are displayed.
>
> All messages are displayed by moving the mouse over a highlighted line.

Double-click on a line in the tour event inspector to open the vehicle control of the vehicle associated with the tour.

You are informed in detail about each individual tour and can therefore intervene to localise and eliminate errors. However, detailed monitoring is also used, for example, to delete set routes or route sequences that are no longer required from the memory.

To do this select the corresponding entry in the journey list with the right mouse button and select <Delete/cancel tour> from the short menu

You can contact the tour event-inspector at any time:

- by clicking on the 🔭 icon on the "Monitor" toolbar.
- or with the **<F7>** function key on your computer
- or with the menu command <Monitor><Tour inspector>

Both parts of the inspector also contain a number of symbols. These are partly used to provide information on the active tours and to control the behaviour of the tour event inspector.
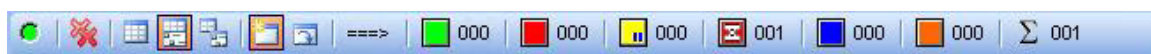

Fig. 16.29   The symbols of the list area in the tour event inspector

---

The list area of the tour event inspector offers a whole range of information icons. The coloured symbol area informs you about the number of active tours in the list. A distinction is made between the states listed below:

- 🚚   🟩 000   drives

- 🚚   🟥 000   stops

- 🚚   🟨 000   Route sequence stopped manually (pause)

- 🚚   ⬜ 000   Route sequence stopped due to elapsed waiting time

- 🚚   🟦 000   Waiting time during stopover

- 🚚   🟧 000   Waiting time between switch the route and driving off

The summary symbol adds up all journeys and displays the result numerically.

The left-hand icons of the bar are control icons. They have the following functions:

- 🚚   The tours in the list are interrupted or continued

- 🚚   The tours in the list are cancelled after a confirmation prompt and deleted from the active list

- 🚚   The detailed area of the tour event inspector is hidden

- 🚚   The detail area of the inspector is in the same window

- 🚚   The detail area of the inspector is displayed in a separate window

- 🚚   The inspector window is automatically displayed during active tour-automatic

- 🚚   The inspector window is displayed when the programme is started

The detail area also contains some control symbols. These have the following tasks:

- 🚚   Update entries

- 🚚   Update entries automatically

- 🚚   Clean up completed entries

- 🚚   Automatically clean up completed entries

- 🚚   Display detailed information automatically

- 🚚   Show route information

- 🚚   Advance simulation (only with active simulation)

The route information is visualised with the help of small red bars. In the Fig. 16.30 you can see that a vehicle or train is travelling on route 021>033. In the route information, we can see that the start contact 21 was occupied and has already been left (red marking on the left). Contact 32 is occupied (red marker in the centre), where the vehicle is currently located, while the other feedback contacts 33 and 34 have not yet been processed by the vehicle (no red marker).

In the event of a fault, this visualisation makes it easier for you to recognise that feedback contacts in the travel path may not have functioned reliably.
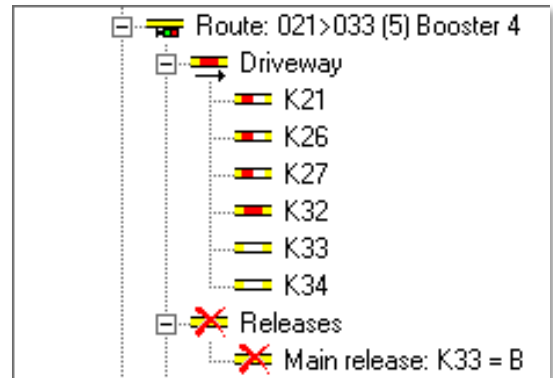
Fig. 16.30   Driveway information within the route

16.9 Blocking vehicle displays

With **Win-Digipet** you have the option of blocking vehicle displays or individual routes.

16.9.1 Transit blocking for vehicle displays

In this In this example, track 6 at Burghausen station is to be blocked for the transit of trains. To do this, right-click on the empty vehicle display with the feedback contact 39, as shown here in Fig. 16.31.

Fig. 16.31   The short menu of a vehicle display

Several commands are possible in the short menu, whereby only the <block transit> command comes into question here. Now click on this command with the left mouse button, whereupon the vehicle display is displayed in red with a white "X".

If you now want to set a route **via** the blocked vehicle display, you will receive the warning message "Route manually blocked (X)!" in the "Start/destination selection" window.

Fig. 16.32   The transit block is shown with a "X"

You can also make the blocking of tracks direction dependent. To do this, hold down the **<Shift>-key** and click on a blocked vehicle display. The "X" will change to an "X>" or an "<X" depending on the blocking direction. The direction lock can be adjusted by clicking several times while holding down the **<Shift>-key**.

> ⚠ A vehicle display must be empty, otherwise the commands for locking the vehicle display will not be displayed in the short menu.

16.9.2 Destination lock for vehicle display

In this example, track 6 at Burghausen station is to be blocked as the destination for the trains. To do this, right-click on the empty vehicle display with the feedback contact 39. From the short menu (see Fig. 16.31), select the command <block destination> with the left mouse button and the vehicle display is immediately displayed in red with a white "Z".

Fig. 16.33   The destination block is shown with a "Z"

If you now want to set a route **to this** blocked vehicle display, you will receive the red message "Destination contact blocked (Z)!" in the "Start/destination selection" window.

You can also make the destination lock of vehicle displays direction dependent again. To do this, hold down the **<Shift>-key** and click on a blocked vehicle display. The "Z" will change to a "Z>" or a "<Z" depending on the blocking direction. The direction dependent destination blocking can be adjusted by clicking several times while holding down the **<Shift>-key.**

Blocking vehicle displays works both in manual mode with the start/destination function and in automatic mode with tour-automatic system.

> In manual mode with the start/destination function, you can skip the red message by clicking on the '**Switch + Drive'** button.
>
> In this case, the train would run, but **not if** you had clicked on the '**Switch + drive as route sequence'** button.

16.9.3   Unlocking vehicle displays

To remove a block, <u>right-click on</u> the vehicle display marked in red with the "Z" or "X" and then click on the now activated command <Unlock> from the short menu (see Fig. 16.34).

Once the closure has been lifted, the vehicle display can be used again without restrictions.
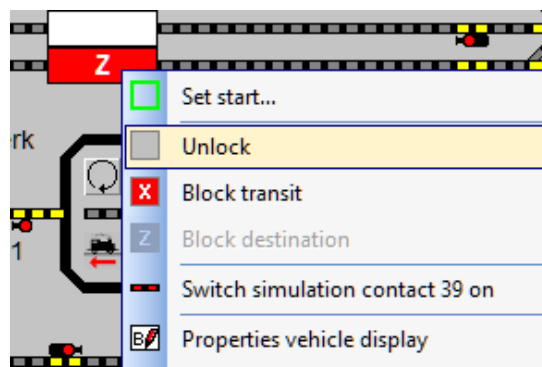
Fig. 16.34   Cancelling the lock of a vehicle display

16.10 Changing the view of the track diagram

If your track image extends beyond the edge of the screen, you can move the track image on the screen using the two scroll bars at the edge.

However, it is even easier to do this by holding down the centre mouse button. After a click with the middle mouse button in the track image, the mouse pointer changes to a quadruple direction pointer (framed in red), and you can move the track image on the screen by keeping the middle mouse button pressed.

However, you can further customise the view of the track diagram to suit your personal ideas and requirements. The following options are available to you for this purpose.
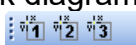
16.10.1   Change zoom levels

The zoom setting of the track image can be changed:

- 🚂 via the menu command <Track diagram> <Zoom +> or <Zoom ->
- 🚂 with the right mouse button via the short menu <Zoom +> or <Zoom ->
- 🚂 or by clicking on the magnifying glass icons 🔎 🔍 in the toolbar.

In both the <track image> menu and the short menu, you will also find selection list fields for adjusting the magnification levels.

16.10.2   Select track diagram sections

The sections from your track diagram, which you have defined in the track diagram editor, can be selected on the screen by clicking on the corresponding icon in the "Screen partitions" toolbar or via the short menu after clicking with the right mouse button in the track diagram.

This function is very helpful if you have a large track diagram and want to switch to the individual image sections in order to control operations on the layout. Up to nine possible image sections can be defined in the track image editor and selected here.

16.10.3   Select multiplans

Within the programme **Win-Digipet** has only one track diagram. This track diagram is the so-called masterplan. In addition to the masterplan, so-called sub-track layouts are possible, which we call multiplans. Multiplans are rectangular sections of the master plan that can be displayed in separate windows and can be positioned freely. These windows are particularly suitable for users with two or more screens. You can set up to 20 multiplans in your project. This significantly increases the overview of your track layout. If you create the multiplans skilfully, you can also completely dispense with the display of the masterplan during operation.

You have already learnt how to configure multiplans in the chapter on the track diagram editor (see section 5.5.16).

You can call up the individual multiplans using the "Multiplans" toolbar. This toolbar may still be hidden in your system. In this case, <u>right-click</u> in a free area next to the toolbars and select "Multiplans" from the short menu. The toolbar with your configured multiplans is now displayed. As an alternative to the toolbar, the corresponding entries for calling up your multiplans can be found in the <Track diagram><Multiplans> menu.

The exemplary graphic from the WDP2021 demo project shows you multiplans that have already been created. The masterplan has been hidden here (closed) and the track diagram has been split into several windows.
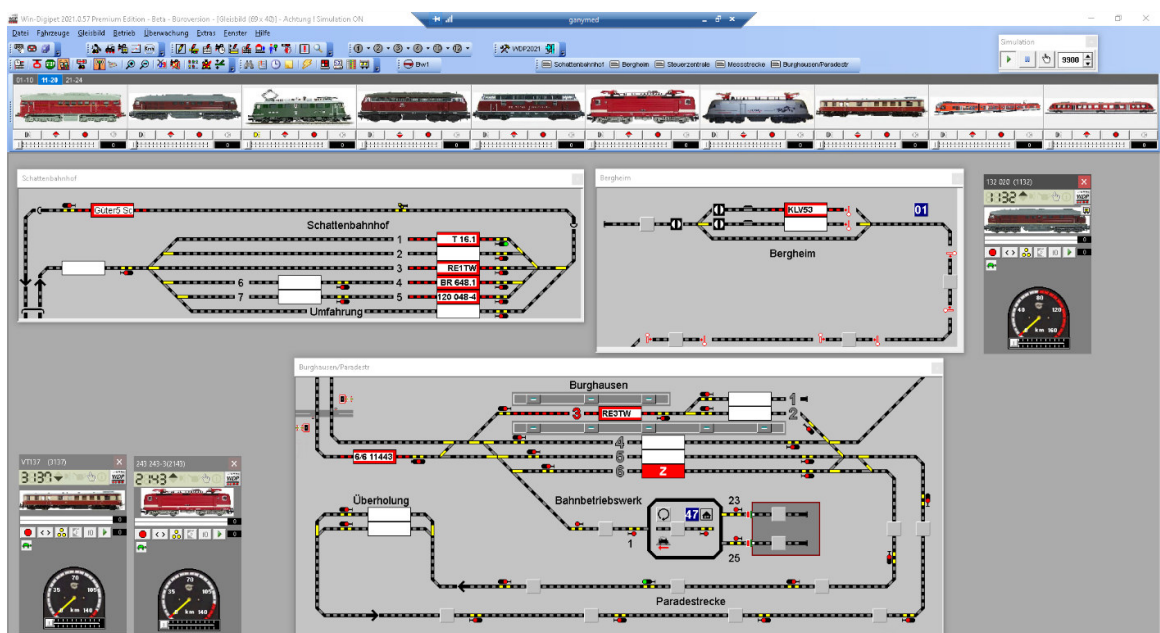
Fig. 16.35   Several multiplans are displayed instead of the master plan (Screenshot from German version)

The display of the symbols in the masterplan and the multiplans is absolutely synchronised, regardless of whether it concerns switching operations or the execution of routes.

You can display the master plan again by selecting <Show masterplan> from the <Track diagram> menu. You can hide the multiplans using the typical close symbol ▣.

16.11 Change symbol table

In **Win-Digipet** you have the option of adapting the colour scheme and the display of the individual track symbols to your personal preferences. There are 20 different symbol tables available for this purpose. **Win-Digipet** also offers you the option of creating your own symbol tables using the track symbol editor in the Start Centre.

The selection of symbol tables in the system settings has already been described in this manual in section 3.12.

Never switch to the system settings during "running operation".
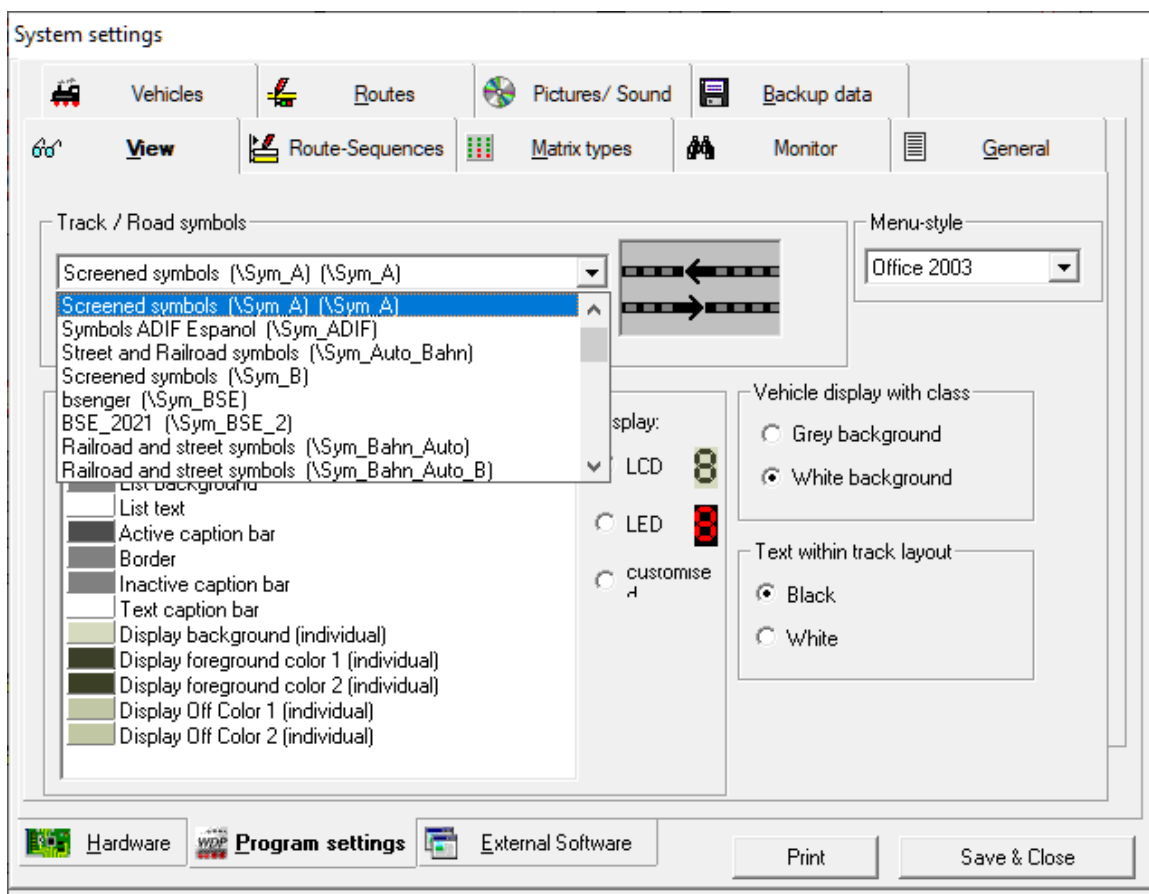
Fig. 16.36   The selection of the symbol table can be found in the system settings

16.12 Customise taskbars in the main programme

In **Win-Digipet** there are 14 standard taskbars. These are in detail:

Main taskbar

Taskbar for selecting the screen partitions
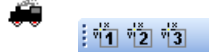
Taskbar for operating the vehicle controls

Taskbar for customising the vehicle bar
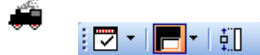
Taskbar for the external hardware

Status of the digital systems taskbar

Vehicle bar
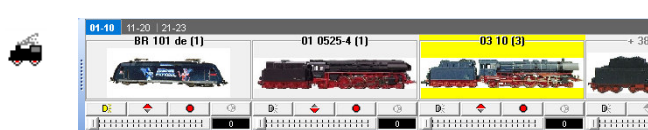
Taskbar for multiplans
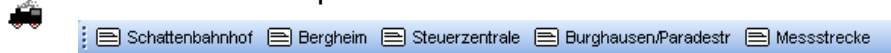
Taskbar for the editors

Vehicles taskbar

Operation taskbar

Monitoring taskbar

Project/End taskbar

Turntables/transfer tables taskbar

You can also create your own customised taskbars. The taskbars are shown or hidden depending on your settings or become transparent after the set time. They can be displayed in two different states, as a "docked" or "undocked" taskbar.

🚂 **Docked taskbar**
A taskbar is "docked" if it is located at the edges of the application window and has a marker on the left that corresponds to the menu style.

Fig. 16.37 Example of "Docked" toolbars
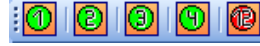
🚂 **Undocked taskbar**
It is "undocked" if the taskbar "floats" as a freely movable window in the application window.

Fig. 16.38 8 of an "undocked" toolbar

16.12.1 Change docked taskbar to undocked taskbar

You can move a taskbar from the docking area to any position in the application window using the left mouse button. Click on the outer left edge of a taskbar (here, for example, on the dotted vertical line) and drag the taskbar away from the docking area to the desired position while holding down the left mouse button.

16.12.2 Place undocked taskbar

Position the mouse pointer on the title bar of the Symbols window. Drag the Symbols window to the desired position. However, if you drag the Icons window to an edge of the application window, it is automatically docked there as a taskbar.

16.12.3 Undocked taskbars are displayed transparently

All undocked taskbars are displayed transparently by default after a short time. They are only fully displayed again when you hover over them with the mouse.
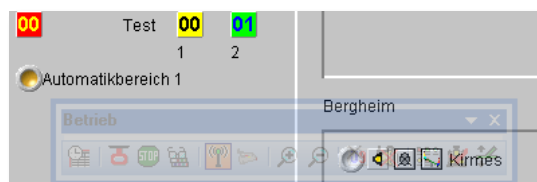
Fig. 16.39 A transparent toolbar

You can change these settings as follows:

- 🚂 <u>Right-click</u> within the menu bar or taskbar.

- 🚂 Click on **'Customise taskbars'**. A new window appears.

- 🚂 Click on the "Options" tab and make the desired settings there. The default values are shown below (cf. Fig. 16.41).

16.12.4 Show or hide taskbars

For taskbars that you do not need for your tasks in **Win-Digipet**, you can deactivate the view. To do this, call up the taskbar menu again (see Fig. 16.40) by <u>right-clicking</u> in a free area within the menu bar or taskbar.

Deactivate the checkboxes for the taskbars that are to be hidden.

The hidden taskbars can be shown again at any time by reactivating the corresponding checkbox.

✓	Main toolbar
	Screen partitions
	Vehicle Controls
	View vehicle bar
	External Hardware
✓	Status Digital-Systems
✓	Vehicle bar
	Multiplans
✓	Editors
✓	Vehicles
✓	Operation
✓	Monitor
✓	Project/End
✓	Turntables/transfer tables
	Customize toolbars...
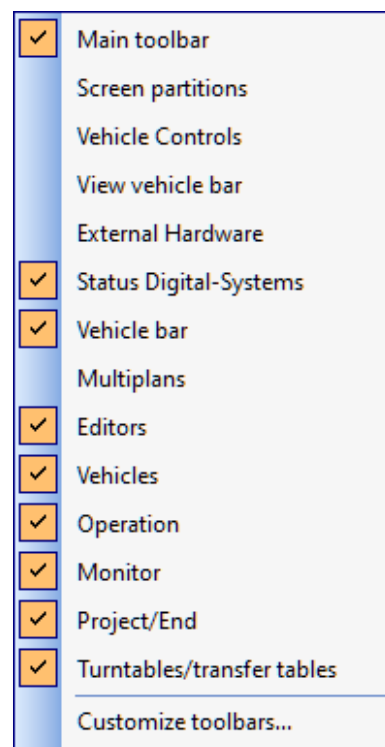
Fig. 16.40 The toolbars short menu
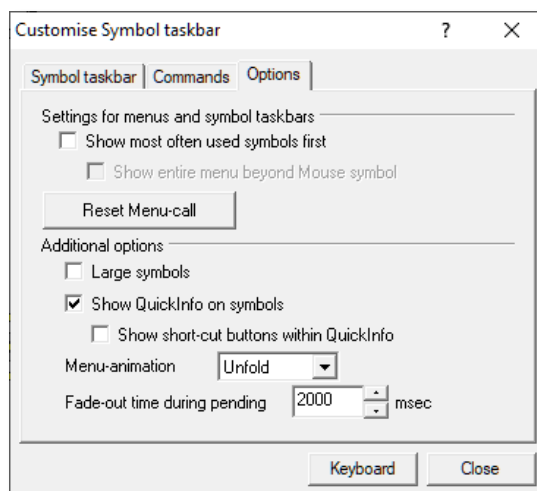
Fig. 16.41 9 options for displaying the toolbars

⚠️ Each taskbar that is displayed is shown either in its default position or in the position it was last moved to.

16.12.5 Customise taskbars individually

You can customise taskbars by dragging them with the mouse to remove icons that are not required or to add a new icon or command.

- 🚂 To do this, call up the taskbar menu again (see Fig. 16.40) by right-clicking within the menu bar or taskbar.

- 🚂 Click on **'Customise taskbars'**. A new window appears.

- 🚂 Select the *"Commands"* tab.

- 🚂 Drag the icon you want to remove from a taskbar with the mouse or

- 🚂 Drag another icon from the "Commands" tab to the taskbar that you want to change.
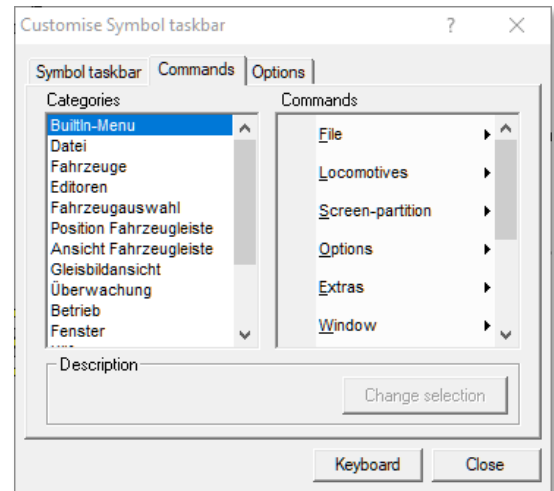
Fig. 16.42 Customising the toolbars

16.12.6 Create customised taskbar

- 🚂 To do this, call up the taskbar menu again (see Fig. 16.40) by right-clicking within the menu bar or taskbar

- 🚂 Click on **'Customise taskbars'**. A new window appears.

- 🚂 Click on **'New'** on the *"Symbol taskbars"* tab.

- 🚂 Assign a name for the new taskbar and click on **'OK'**.

- 🚂 Drag the desired icons from the *"Commands"* tab into the new taskbar.
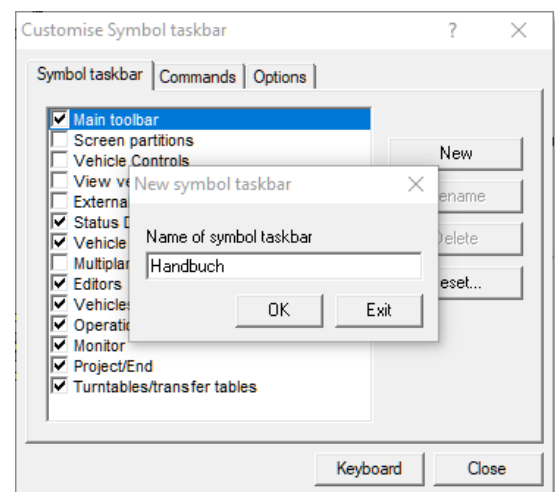
Fig. 16.43 Create your own toolbar

⚠️ Only the user-defined taskbars can be deleted or renamed.

16.12.7 Restore all standard taskbars

- To do this, call up the taskbar menu again (see Fig. 16.40) by right-clicking within the menu bar or taskbar

- *On the "Symbol taskbar"* tab, click on the *'Reset'* button or

- In any taskbar, <u>left click</u> on the small down arrow on the right and drag the mouse down a little to open a short menu

- Click on the menu command *'Reset Taskbar'*.
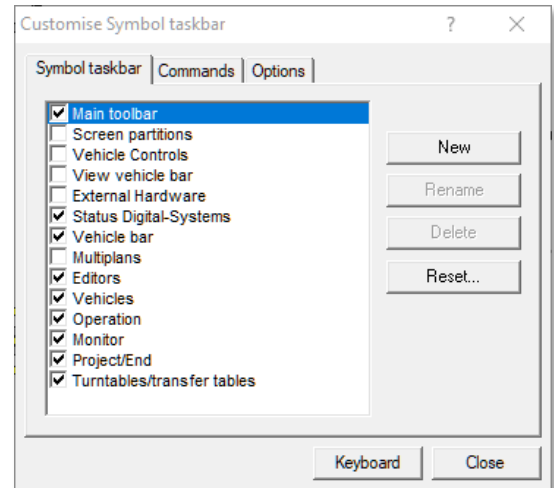
Fig. 16.44   10 the toolbars

When the taskbars are reset, **all** taskbars are always reset to the standard view and the user-defined taskbars are also deleted.

In **Win-Digipet**, you can place all taskbars, including the vehicle bar, anywhere on the screen. This functionality can prove to be very practical when using two screens.

When **Win-Digipet** is closed, all taskbars are saved with their position, size and dock status.

16.12.8 Important notes on the taskbars

The taskbars should not be adjusted during operation. If you do so anyway, **all** running processes and **all** vehicles will be stopped immediately. You cannot change the "Screen partitions" and "Status of digital systems" taskbars, you can only hide or show them again.

16.13 Display of the vehicle or train numbers

With **Win-Digipet** you can only usefully control vehicles or trains on the model railway layout if you have placed vehicle displays with registered feedback contact numbers in the track diagram. The vehicles or trains are moved from vehicle display to vehicle display in the track diagram via their vehicle or train number or their train name.

16.13.1 General information

The display of the vehicle or train number requires the following:

- 🚂 You have placed symbols for vehicle displays in the track diagram editor when creating the track diagram.

- 🚂 You have entered a feedback contact number in each of these fields. If a "0" has been entered as the feedback contact number in a vehicle display, no vehicle address can be entered there using "drag & drop".

- 🚂 You have entered a feedback contact number as the number of the start contact and another feedback contact number as the number of the destination contact for each route in the routes editor.

The display of the vehicle or train numbers works when the vehicles or trains are driven via route switching, i.e. when setting routes or route sequences with the start/destination function or in the tour-automatic function.

The display of the vehicle or train number also works in manual mode if you activate the "Monitor trains without routes" function in the "Operation" taskbar using the 📟 icon (see section 16.7.9).

When you exit the vehicle database, the vehicle or train numbers on the vehicle displays are automatically updated, even if you have carried out a sorting within the vehicle database or set individual vehicles to "*Display case*".

A special feature is the display of vehicle numbers for 4-digit vehicle addresses. As a four-digit address does not fit into a "small" vehicle display (or the font size would be too small or not visible for this display), the first digit of the four-digit address is marked with a colour code based on the international colour code for resistors. This means for the first digit:

1	Brown	4	Yellow	7	Violet
2	Red	5	Green	8	Dark grey
3	Orange	6	Blue	9	White

If the vehicle address is 3429, for example, the number 429 is shown in the vehicle display and the background of the vehicle display is displayed in orange. Vehicle addresses up to the value 999 are displayed with a grey background colour as standard.

If you have placed three symbols for vehicle displays horizontally or vertically next to each other and assigned the same feedback contact number, then these three symbols form a large vehicle display. In this case, the digital address of the vehicle is not displayed, but the model designation or the train name.

> You can assign the same feedback contact number to several different vehicle displays in your track diagram.
>
> Vehicle or train numbers that you enter in one of the fields will then appear in both fields; they will also be deleted in both fields if the vehicle is no longer on the relevant vehicle display.

This can be advantageous for certain operating states, for example in the following case:

🚂 You can also place vehicle displays of staging yard areas that are not visible on a section of the screen as "duplicates" on another, clearly visible location and thus recognise when and where a vehicle or train has arrived in the staging yard area that is currently not visible.

🚂 With a combination of vehicle displays, you can see both the digital address of the vehicle and its model series designation or the train name. This gives you the best overview of the vehicles and trains on your model railway layout, as shown here in the picture on the left with the colour displays for 4-digit train numbers and the blocking signs for tracks and routes and in the right-hand part of the picture with the different colour displays of the vehicles.

Fig. 16.45   The colour representation of vehicle display combinations

16.13.2   Vehicle display without contact enquiry

First make sure that the "*Jumps from start to destination without contact interrogation*" option is ticked in the system settings on the "Programme settings - General" tab (see section 3.7.7).

Now <u>right-click</u> in the vehicle bar on the image of the vehicle that you now want to control, hold down the <u>right mouse button</u>, drag the mouse pointer to the relevant vehicle display and release the <u>right mouse button</u>. The digital address of the vehicle appears immediately in the vehicle display.

If **this** vehicle number already exists on your track diagram, you will receive a message: "Attention! Vehicle (…) does already exists" and the position is highlighted in red on the track diagram. This makes it easier to find an existing duplicate entry of a vehicle or train number.

Then place the vehicle or train on the vehicle display, which is also the start contact of the desired route.

In the main menu under the command <Track diagram><show image when mouse over VHD>, you define what is displayed when a vehicle display with an entered vehicle or train is moved over. Here you can choose between an image display of the leading vehicle or the entire train. You can also add the vehicle or train length and the position on the vehicle display to the selected view.

The Fig. 16.46 shows a traction unit on a vehicle display. In this example, the vehicle has come to a stop at a distance of 5.0 cm from the end of the track in the direction of travel. There is 46.9 cm of free track behind the vehicle. The digital address (3648) and the length of the vehicle (48.1 cm) are also shown in the graphic.
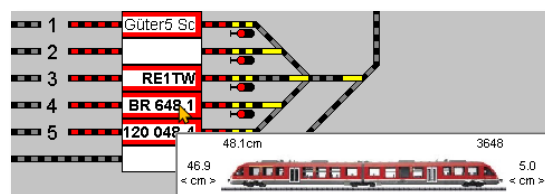
Fig. 16.46 Information about a vehicle on a vehicle display

If several vehicles or trains are entered one behind the other on a multi-intelligent vehicle display (MiVHD), such a situation is also displayed graphically and with the correct distances calculated by the programme.

If you click on a vehicle display with an entered vehicle number, the corresponding vehicle control ("Maxi" or "Mini") of the vehicle appears immediately, with which you can control the vehicle straight away.

Now click with the middle mouse button on the start vehicle display and then again with the middle mouse button on the destination vehicle display. Select the route in the start/destination selection and click on **'Switch + *Drive*'** to set the route. After the command, the vehicle number jumps **directly** from the start VHD to the destination VHD of the selected route. The same happens automatically in an active tour-automatic.

This is the default setting, which you should also use, if possible, as you can always see immediately where a vehicle/train should go after setting the route. This means that you can immediately see where the vehicle/train should actually be, even if the route is cancelled.

If there are other vehicle displays or vehicle detection indicators within the route, the vehicle or train number is shown in grey on these fields.

16.13.3   Vehicle display with contact enquiry

First make sure that the "*Blank if start contact is free, display, if destination contact is occupied*" checkbox is ticked on the "Program settings – General" tab (see section 3.7.7) in the system settings.

Now right-click on the image of the vehicle you want to control in the vehicle bar, hold down the right mouse button, drag the mouse pointer to the relevant vehicle display and release the right mouse button. The digital address of the vehicle or the model designation (or the train name) appears immediately in the vehicle display.

If **this** vehicle number already exists on your track diagram, you will receive a message: "Attention! Vehicle number (…) already exists" and this position is marked in red on the track diagram. This makes it easier to find an existing duplicate entry of a vehicle number.

Then place the vehicle or train on the vehicle display, which is also the start contact of the desired route.

Now click with the <u>middle mouse button</u> on the start VHD and then again with the <u>middle mouse button</u> on the destination VHD. Select the route in the start/destination selection window and click on **'Switch + drive'** to set the route. The vehicle number is hidden in the start VHD when the vehicle or train leaves the start contact and is shown in the destination VHD when the vehicle reaches the destination contact. The same happens automatically in an active tour-automatic.

16.13.4   Vehicle detection indicator

In **Win-Digipet** you can use so-called vehicle detection indicators on long stretches of your track diagram. These symbols are not recognisable in the track diagram as they look like a normal track symbol. Only when you move the mouse over them will a "quick info" with a yellow background be displayed (see Fig. 16.47).

As soon as a vehicle in a **set** route travels over this contact, the vehicle number is also displayed in the track diagram. The vehicle number is then displayed for as long as the associated feedback contact remains triggered (see Fig. 16.48).
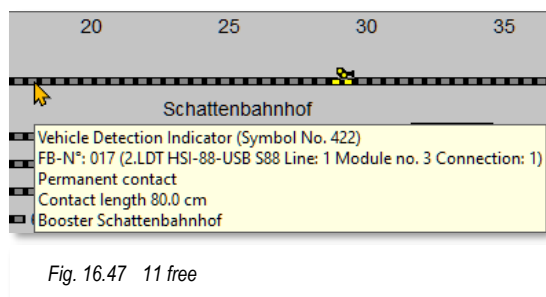
Fig. 16.47   11 free
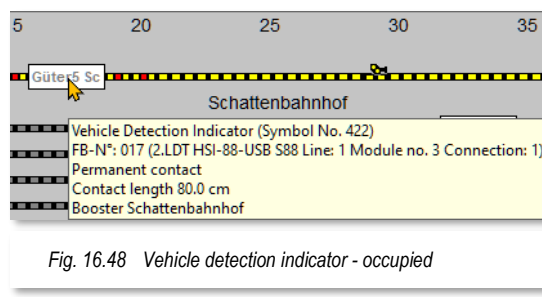
Fig. 16.48   Vehicle detection indicator - occupied

Just like a vehicle display, the train number tracking symbols can be drawn with one or three symbols in the track diagram editor and provided with a feedback contact number.

16.13.5   Vehicle detection with the TD-88 transponder method

In **Win-Digipet** you can also use the TrainDetect TD-88 train number identification system from Littfinski Daten Technik (LDT).

To do this, you must equip your vehicles with so-called TRANS-1 or TRANS-2 transponders.

Transponders are small "electronic labels" that you attach to the vehicles on your model railway.

Further information can be found on the Bühler electronic GmbH website http://www.ldt-infocenter.com.

The "electronic label" must be entered for each vehicle in the vehicle database or via the "Edit vehicle" menu in Vehicle Control.

The "*Train detection*" input field can be found on the "Maintenance/detection" tab. After selecting the detection system, two new buttons become visible, whereby the **'D*elete*'** button can only be activated after the vehicle's "electronic label" has been learnt via the '***Learn*'** button.

Once you have entered all vehicles, enter the additional data for the TD-88 train number identification system via the short menu of the respective vehicle display. By selecting the <Vehicle display properties> entry, you can make the necessary settings for the readers on the *"Maintenance/detection"* tab.
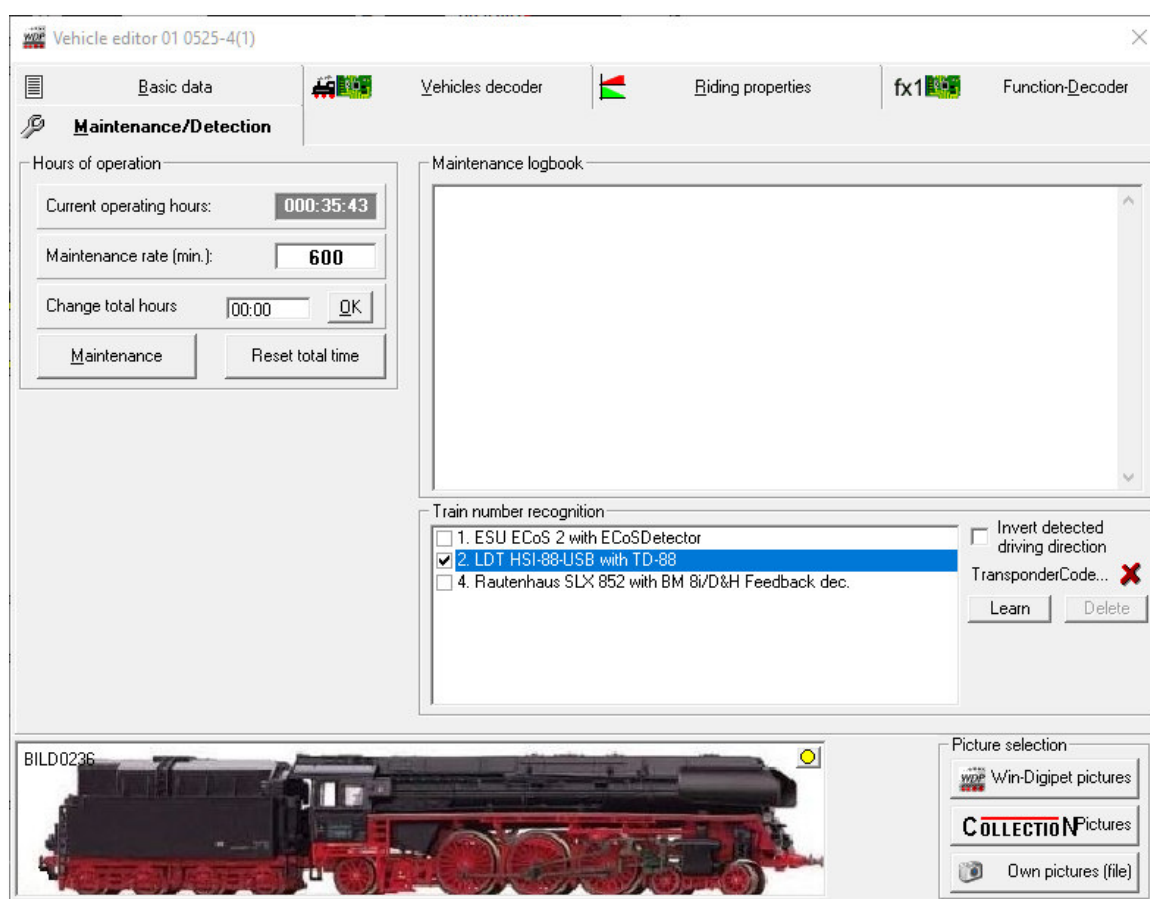
Fig. 16.49   The detection of a locomotive with a vehicle detection system

Intelligent vehicle displays combine several contacts. Due to the different stopping positions, it cannot be guaranteed that the train will also reach the contact with the reader and that the identification can be carried out. For this situation, you can configure a reader

for the properties of a vehicle display or feedback contact on the "Detection" tab and, in the case of a feedback contact without a vehicle display, associate it with an intelligent vehicle display.

You must install transponder readers (COL-10) at the desired detection points on your model railway layout and connect them to the TrainDetect-88 (TD-88). You should therefore always install these transponder readers (COL-10) where you have provided vehicle displays in the track layout so that the read vehicle number can be transferred there.
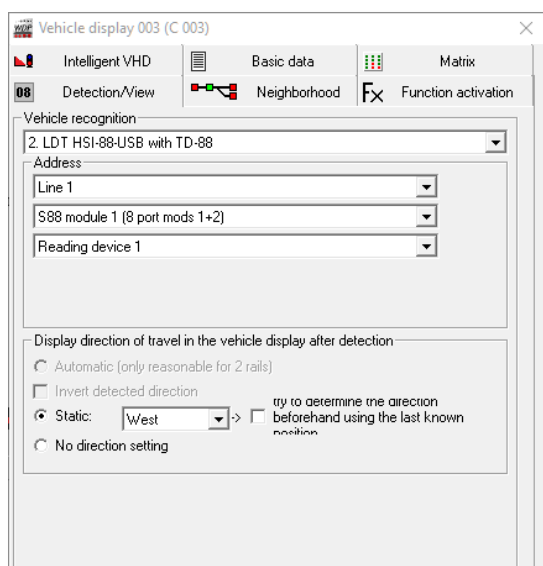
Fig. 16.50   Vehicle detection system on a vehicle display
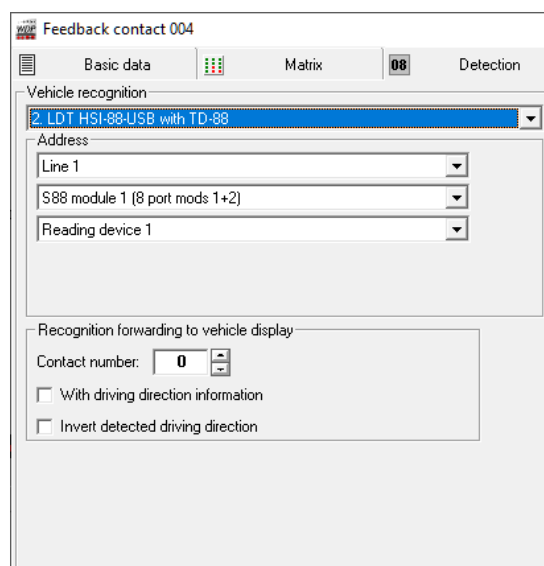
Fig. 16.51   Vehicle detection system on an associated feedback contact

After the system selection, further input fields become visible and expect corresponding entries, such as the number of the line on the HSI-88, the number of the s88 module and the number of the connected reader.

Click on the *'OK'* button to complete the entry and proceed in the same way with the other vehicle displays if you have fitted the readers (COL-10) there.

16.13.6   Vehicle detection with the Helmo Inter-10 system

If you are using the Inter-10 system from Helmo, you must activate this in the system settings, as this system is connected to the computer as a digital system via an additional serial interface.

The locomotive is fitted with a transponder and the data is recorded as described in the previous section. With the Inter-10 system, however, 99 readers (otherwise 31) can be managed.

16.13.7   Vehicle detection with the occupancy detector 8i from the MÜT

In **Win-Digipet** you can also use the train number recognition via the occupancy detector 8i from the MÜT for the Selectrix system.

To do this, you must have installed one of the DHL decoders in your locomotives, as only these decoders can report their own address back to the track. You can find the necessary information on the website http://www.digirail.de.

As with the transponder system, you must also enter the electronic label for each vehicle in the vehicle database or via the "Edit vehicle" menu in Vehicle Control.

The "*Train detection*" input field can be found on the "Maintenance/Train detection" tab (cf. Fig. 16.49). Select the digital system used with the intelligent track occupancy detectors 8i.

Once you have entered all vehicles, enter the additional data for the BM 8i train number identification system via the respective short menu of a vehicle display. By selecting <Properties vehicle display>, you can make the necessary settings for the readers on the "Detection/view" tab. The dialogues correspond to those shown in the graphics Fig. 16.50 and Fig. 16.51 were shown.

After selecting the system, further input fields become visible and expect an SX address to be entered in the three list fields-.

Click on the '*OK*' button to complete the entry and proceed in the same way with the other vehicle displays if you have connected the 8i occupancy indicator there.

Intelligent vehicle displays combine several contacts. Due to the different stopping positions, it cannot be guaranteed that the train will also reach the contact with the reader and that the identification can be carried out. For this situation, you can configure a reader in the feedback contact properties and associate it with an intelligent vehicle display.

16.13.8   Vehicle detection with the Tams RC-Link interface

If you are using the Tams RC-Link interface, you must activate this in the system settings. This system is connected to the computer via an additional serial interface.

If you have equipped your locomotives with RailCom-capable decoders, you must enter additional information on the relevant tab in the vehicle database. Only RailCom-capable decoders can report their own address and a little more back to the track. You can find additional information on this on the website http://www.tams-online.de.

As with the systems described above, you must also enter the electronic label for each vehicle in the vehicle database or via the "Edit vehicle" menu in Vehicle Control (cf. Fig. 16.49).

The "*Train detection*" input field can be found on the "Maintenance/detection" tab.

Select the Tams RC-Link digital system used in the "*Train detection*" field so that the data transmitted by the vehicle decoder can be taken over by **Win-Digipet**.

Up to 24 local detectors can be connected to the Tams RC-Link interface. If a vehicle is located in a section that is monitored by a local detector, data can be transmitted from a RailCom-capable decoder to **Win-Digipet** via the detector and the interface. This makes it possible to use the Tams RC-Link interface for train number recognition. To do this, connect a detector to the track area that is to be monitored with a vehicle display.

Once you have entered all the vehicles, enter the additional data for the Tams RC-Link train number identification system in the properties of the vehicle displays. This procedure is the same as the procedure described in the previous sections (cf. Fig. 16.50 and Fig. 16.51).

	Make sure that RailCom is activated in the locomotive decoders.
	Refer to the instructions for the vehicle decoder to find out how to activate it. It may be necessary to update the decoder firmware in order to use RailCom. You can use the WDP locomotive programmer to setup the decoder.

16.13.9   New vehicle with RailCom-capable decoder recognised

If a **new** vehicle with a RailCom-capable decoder is placed on a feedback contact of the model railway layout equipped with a RailCom detector or travels along this section, the detector reads out the digital address of the vehicle and **Win-Digipet** automatically calls up the vehicle assistant.

The vehicle wizard shows which detector with which digital address has reported this vehicle.

There are now two options for taking over the registered vehicle:

- If the vehicle with the recognised digital address is already contained in the vehicle database, the assistant suggests linking the vehicle to the existing address.

- If the vehicle with the recognised digital address does not yet exist in the vehicle database, the assistant suggests creating a new vehicle.

16.14 Control of vehicles

The vehicles can be controlled both manually and automatically. In automatic mode with tour-automatic journeys or manual setting of a route or route sequence via the start/destination function, the vehicles will drive, brake and stop automatically if the commands in the routes or profiles provide for this. You have made the corresponding settings for this in the vehicle database, routes editor and profile editor.

The following tools are available for driving the vehicles manually:

- 🚂 the vehicle bar
- 🚂 the vehicle controls
- 🚂 and your digital control panels (digital system, hand controller, mobile phone, etc.)

For a quick overview of all vehicle activities, **Win-Digipet also offers** you the very clear vehicle monitor for use in addition to the things mentioned above.

16.14.1   The vehicle bar

All vehicles recorded in the vehicle database (usually with their own drive) and labelled with the identifier "*Layout*" (see section 4.4.3) are displayed in the vehicle bar. This bar can hold a maximum of 250 vehicles. You can arrange them, with the images of your vehicles, at a screen edge of your choice or floating at any position on the screen.

To maintain clarity and quick access, a maximum of ten vehicles are entered in each tab by default. In the <Vehicles><Vehicle bar> menu, you will find a selection list that allows you to increase the number of vehicles per tab up to 20. You can set any desired value in this area.

*Fig. 16.52   The **Win-Digipet** vehicle bar in the display with 10 vehicles per tab*

The tabs are automatically updated as soon as you add new vehicles to your vehicle database, delete them or temporarily assign the identifier "Display c*ase*". By clicking on a tab above the images, the vehicles contained on the tab are displayed directly for selection.

You can show or hide the vehicle bar as a taskbar (see section 16.12.4). You can specify where the vehicle bar should be displayed on the screen in the <Vehicles><Vehicle bar><Position> menu and then select the desired position. This position can be at any edge of the screen or <floating vertically/horizontally>.

However, the vehicle control bar (located below the vehicle image with four switch icons and a slider) is **only** displayed when a horizontal position is selected.

You can define the display of the vehicle bar by clicking on the arrow of the symbol in the taskbar and then selecting it. The views recognisable in the image are available for selection here.

Finally, the height of the vehicle bar can be adjusted in six steps by clicking on the menu item once or several times.

In the vehicle bar, vehicles that are due for maintenance are marked with a yellow frame. Vehicles for which manual control is activated are labelled with a red frame.

Road vehicles that have a battery charge level with a remaining runtime of "0" are displayed in the vehicle bar with an orange frame, provided the vehicle has been assigned a runtime.
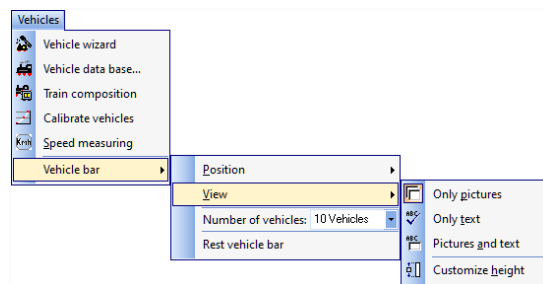

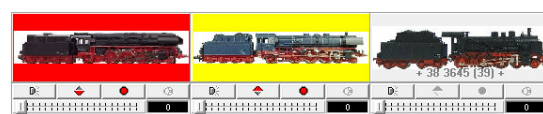*Fig. 16.53   The menu for the appearance of the vehicle bar*

Fig. 16.54   Examples of colour coding in the vehicle bar

16.14.2   Operating the vehicle bar

The vehicle bar is usually operated conveniently using the mouse. It enables direct, fast operation of up to 20 vehicles, depending on which tab has been selected. However, the vehicle bar only allows you to operate the basic functions with the help of four buttons: "LIGHT", "TURN", "STOP" and "VEHICLE SOUND" (from left to right) as well as setting the speed with display of the driving speed in km/h (cf. Fig. 16.54). Special functions, function decoders and the display of target and actual speeds are not available here. Changed vehicle data from the vehicle bar is updated directly in an open vehicle control. This also happens the other way round.

Multiple tractions can also be operated via the vehicle bar. However, the control panels for "STOP" and "TURN" are deactivated for linked traction locomotives (grey display). Only the control panels for "LIGHT" and "VEHICLE SOUND" can be selected in the control bar for the locomotives linked to a traction.

You can also set the speed of a vehicle using the mouse. Drag the slider in the control bar to the right to increase the speed or to the left to reduce it.

> When setting the speed by dragging the slider, the slider may jump back if you hold it down for a long time.
>
> Therefore, pull it to the desired position and release it again immediately. The set speed is only adopted after the control is released.
>
> However, if you click once or several times in the area of the slider on the far right to increase the speed or on the far left to reduce it, the speed is changed in stages.

After clicking on the image of the corresponding vehicle in the vehicle bar, you can also change the speed of the vehicle using the keyboard.

- 🚂 Arrow → and arrow to ↑ = Increase speed
- 🚂 Arrow ← and arrow to ↓ = Decrease speed
- 🚂 **<END>-key** = go to V_{max}[35]
- 🚂 **<POS 1>-key** = Stop

16.14.3   The vehicle controls ("Maxi" or "Mini")

The size of the vehicle controls when opening is determined in the system settings on the "Programme settings – Vehicles" tab (see section 3.8) with the setting "*Always open with small vehicle controls from the vehicle bar*". If you have not ticked this option, the large vehicle controls will always open.

You can execute the following commands by clicking on the icons ⬆️⬆️❌ in the "Vehicle controls" taskbar. Please note that this taskbar may be hidden. Identical commands can be found under the <Window> menu item in the main menu.

- 🚂 **Arrange controls at the top** ⬆️
  All visible controls in the track image are moved to the top of the screen and minimised at the same time. You can do the same with the **<F2>** function key on your keyboard.

- 🚂 **Minimise all controls** ⬆️
  All visible vehicle controls in the track diagram are reduced to small vehicle controls ("Mini"). You can do the same with the **<F3>** function key on your keyboard.

- 🚂 **Close all controls** ❌
  All controls are hidden and closed. You can do the same with the **<F4>** function key on your keyboard.

The vehicle controls are opened when you click on the following elements with the <u>left mouse button:</u>

- 🚂 the vehicle image in the vehicle bar
- 🚂 on a vehicle display with a registered vehicle
- 🚂 the digital address of the vehicle in the vehicle monitor

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[35] V_{max} = maximum speed

As a result of one of the above actions, the large or small vehicle control of the selected vehicle is opened in the programme with the saved data. These are the digital address and the pictograms for the functions and special functions that you have saved in the vehicle database for the vehicle.

You can move the vehicle controls to any position on the screen. To do this, click on the title heading of the vehicle control with the <u>left mouse button</u> and then drag the vehicle control to the desired position on the screen while holding down the mouse button.

By clicking on the ![WDP] symbol in the vehicle control, you can also reduce its size via the short menu that appears if there is limited space in the track diagram. To do this, select the <Small vehicle control> entry.

Different display types of the vehicle controls

| Large vehicle control in LED look | Large vehicle control in LCD look | Large vehicle control with attached wagons | Large vehicle control with opened waggon menu |

| Large vehicle control of a waggon | *Large vehicle control of a road vehicle* | *Small vehicle control of a road vehicle* | Small vehicle control of a multiple unit |

The view of the vehicle controls (LCD, LED or individual colouring) is set in the system settings <Program settings - View>. At this point, you can also configure the colour display

of the vehicle controls as you wish. We have already discussed this option in detail in the chapter 3 on the system settings. Further settings on vehicles can be found there.

16.14.4 Change vehicle data via the vehicle control

It is particularly easy to access a short menu for editing the vehicle by clicking on the WDP icon. It is not necessary to switch to the vehicle database to do this. The following functions are stored in this menu:

🚂 **Edit vehicle**
By selecting this entry, you can access all tabs of the vehicle from the vehicle database. All changes on the tabs are immediately transferred to the vehicle's data record in the database.

🚂 **Program vehicle's decoder**
This selection takes you to the decoder programming programme section of **Win-Digipet**. All vehicle decoder settings can be entered, changed, and saved here.

🚂 **Measure/calibrate vehicle**
This menu item takes you directly to the "Measure speed profile" dialogue of the vehicle database. All functions as explained in the section 4.8 can be carried out.

Fig. 16.55 You can access the short menu for the vehicle via the WDP symbol

🚂 **Edit train**
Select this menu item to open the dialogue for "Train composition". The train composition in which the vehicle is currently located is displayed in the dialogue window. Locomotives and wagons or road vehicles and trailers can be combined into trains using the train composition dialogue.

🚂 **Train inspector**
When called up, the detailed view of the vehicle's active tour is displayed. The detailed view in the Tour event inspector includes the active journeys of all vehicles.

🚂 **Control manually without delay**
If the vehicle is operated manually, the delay set in **Win-Digipet** is ignored. This does not refer to the existing decoder function "Switch off delay".

🚂 **Control in routes/profiles/macros without delay factor**
When operating in routes or with profiles or within macros of the vehicle, the delay set in **Win-Digipet** is not taken into account. This does not refer to the existing decoder function "Switch off delay".

🚂 **Stop vehicle**
The **individual** vehicle is stopped.

🚂 **Small vehicle control**
This menu item is self-explanatory

The in Fig. 16.55 for a vehicle control can be accessed in the same way from a wagon control. However, due to the functionality of a wagon, the menu items for calibrating the vehicle or programming the vehicle decoder are omitted.

As soon as you edit a vehicle from the Vehicle Control, it is in edit mode. You can recognise this mode by the stylised flashing pencil at the top of the Vehicle Control.

> Please note that a vehicle that is in edit mode cannot be controlled by **Win-Digipet.** All other vehicles on the system can still be controlled.
>
> A moving vehicle is stopped as soon as you enter edit mode.
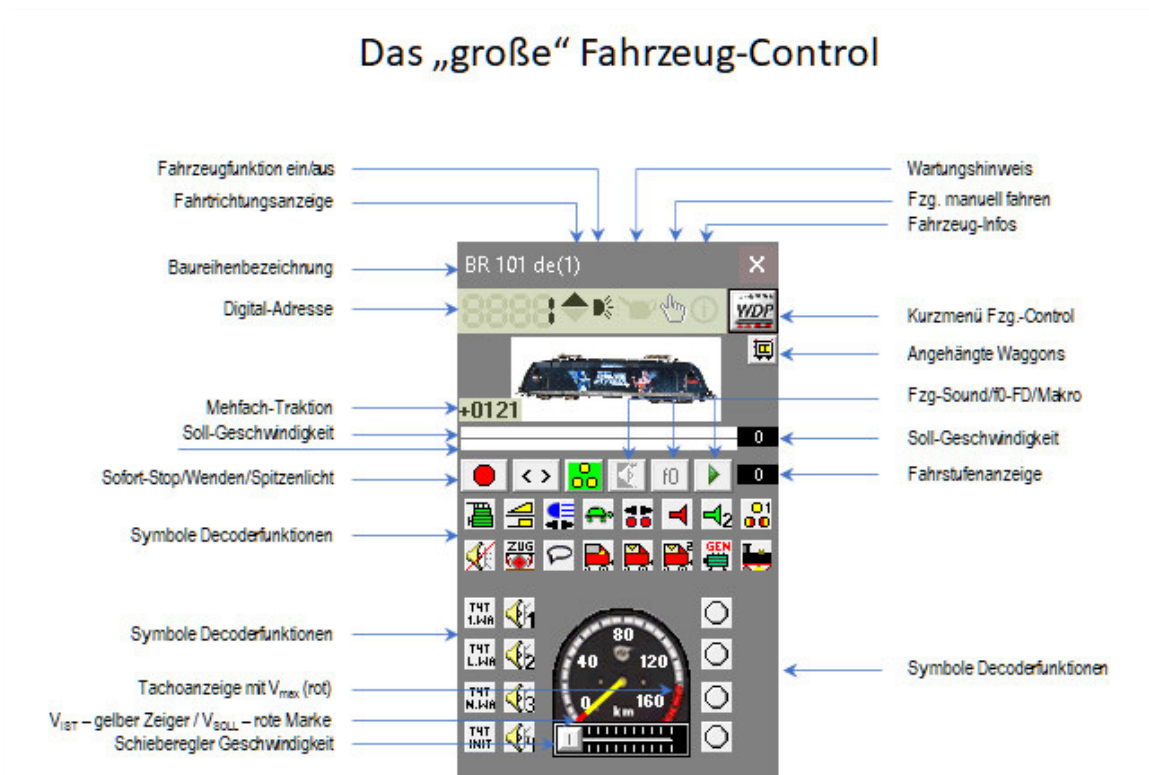
16.14.5 Description of the vehicle controls ("Max", "Mini" or "Micro")

Win-Digipet offers vehicle controls in three sizes for controlling your vehicles:

- 🚂 Large vehicle control "Maxi",
- 🚂 Small vehicle control "Mini"
- 🚂 Vehicle monitor ("Micro") as a space-saving variant for arranging many vehicle controls on the screen.

16.14.6 Large vehicle control ("Maxi")

Fig. 16.56   The elements of the "large" vehicle control unit

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Which pictograms displayed in the large Vehicle Control depend on the settings in the vehicle database; they are not arranged and displayed statically, but dynamically. The function icons (pictograms) for a maximum of 28 special functions can be displayed on a Vehicle Control.

The target speed can be set very quickly using the slider or by clicking the outer edge of the speedometer with the left mouse button. The speed is displayed in the speedometer with a yellow pointer and a red marker.

The Fig. 16.56 shows all the elements of a large vehicle control in conjunction with a brief explanation (in German language).

16.14.7   Small vehicle control ("Mini")

In the small vehicle control, the pictograms of any installed function decoder are **not** displayed.

The target speed can be set using the slider, while other functions are triggered by clicking on the corresponding pictograms.

The operating elements of the small vehicle control are otherwise similar to those of the large vehicle control (cf. Fig. 16.56).
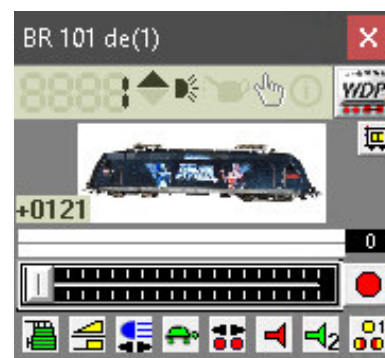
Fig. 16.57   The small vehicle control unit

16.14.8   The vehicle monitor ("Micro")

You can switch the vehicle monitor by clicking on the ⬛ icon in the "Monitor" toolbar. There is also a corresponding entry for the vehicle monitor in the <Monitor> menu.

The vehicle monitor offers you a comprehensive overview of all vehicles in the system in a minimum of space. You can immediately see which vehicle is travelling, accelerating, braking, stopping, needs maintenance or whose vehicle number has been set to "RED, GREEN, BLUE or VIOLET".

Fig. 16.58   12 vehicle monitor

Click on the vehicle number in the vehicle monitor to display the corresponding vehicle control and you can control the vehicle directly.

If you hover over the monitor with the mouse, the images of the corresponding vehicle are displayed, provided you have set this in the short menu of the vehicle monitor. The vehicle can be stopped immediately by clicking on the speed colour field (vehicle stops,

accelerates, drives and brakes). And you can switch between these functions by clicking on the vehicle function or the direction of travel display.

You can control the immediate stop, the direction of travel and the vehicle function (e.g. top lighting on/off) directly in the vehicle monitor. The coloured squares are used to indicate the current status of the vehicle. The meaning of the colours in detail:

- 🚂 Red - vehicle stationary
- 🚂 Green - vehicle is travelling
- 🚂 Yellow-green - vehicle accelerates
- 🚂 Red-yellow - vehicle brakes

If you click with the <u>right mouse button</u> in the free area of the vehicle monitor, the window shown in Fig. 16.59 with the various commands that you can select or deselect.
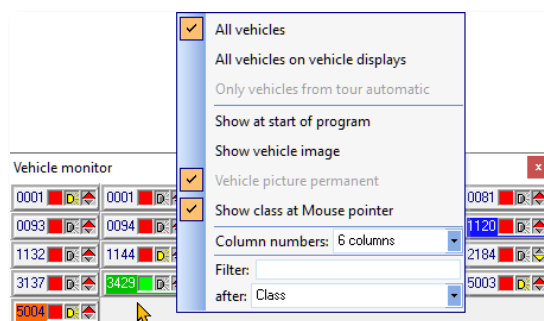
Fig. 16.59   The short menu of the vehicle monitor

When you <u>right-click</u> on a vehicle, the short menu shown in the image is supplemented by the commands already known from the short menu of a vehicle control (cf. Fig. 16.55) are added.

Here you can select the display of all vehicles, only the vehicles on a vehicle display or only the vehicles from the active tour-automatic journeys.

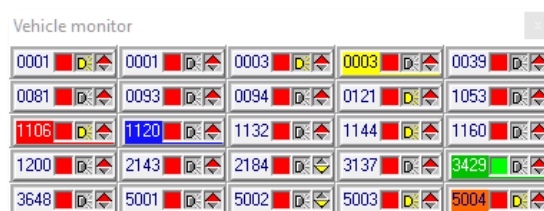You can also make settings in this menu:

- 🚂 Display vehicle monitor at programme start
- 🚂 Show vehicle image
- 🚂 Display vehicle image permanently or only when hovering over it with the mouse
- 🚂 Show class under the mouse pointer when you "hover" over the vehicle monitor with the mouse
- 🚂 Number of columns (1-16) in the Vehicle Monitor dialogue window

The single-column display is particularly suitable for positioning the vehicle monitor at the vertical edges of the screen.

You can move the vehicle monitor and the small vehicle image to any position on the screen. The windows are displayed again at the last selected position on the screen each time the programme is started.

If you use the vehicle monitor, you can also do without the vehicle bar to save space when driving in automatic mode. You can also drag and drop individual vehicles onto the vehicle monitor. You can delete individual vehicles in the vehicle monitor by pressing the **<Shift>-key** and <u>right mouse button</u> on the vehicle to be deleted.

> ⚠️ If the vehicle monitor is displayed when you start the programme even though you switched off the monitor the last time you drove, you must tick

the box **Fehler! Verweisquelle konnte nicht gefunden werden.**in the short menu shown in Fig. 16.59.

16.14.9 Operating the vehicle controls

The graphic in Fig. 16.56 explains all the functions of a vehicle control. You can issue all commands by clicking on the various pictograms. The target speed can be set very quickly using the slider or by clicking with the left mouse button on the outer edge of the speedometer, where the red marking then appears.

By double-clicking with the <u>left mouse button</u> in the target speed field on a vehicle control, you can also enter the numerical value for the speed using the keyboard. Alternatively, if the corresponding vehicle control is active, you can also issue commands via your computer keyboard for the following functions:

Function button	Function
Arrow → and arrow to ↑	Increase speed
Arrow ← and arrow to ↓	Reduce speed
<END>-key	go to V_{max}
<POS 1>-key and **<space>-bar**	Stop
<D>-key and **<R>-key**	Change direction of travel
<F>-key button	Vehicle function on/off
Key **<1>** to **<8>**	Special function **f1** to **f8** on/off

16.14.10 Drag/delete vehicle number onto vehicle display

Hold down the <u>right mouse button</u> and drag a vehicle or train number onto a vehicle display (VHD) using the following options:

- from the illustration of a vehicle from the vehicle list
- from the image of a vehicle from an open Vehicle Control or
- from the vehicle number in the vehicle monitor

Either the digital address (VHD with one symbol) or the class (VHD with three symbols in horizontal or vertical alignment) of the selected vehicle is then displayed in the vehicle display. This is the train number when controlling with **Win-Digipet.**

As soon as you have created trains in the train composition and given them a train name, this train name is shown in the 3-symbol vehicle displays.

If there is already a train number on the vehicle display or if the selected vehicle is already entered on another vehicle display, you will receive a safety message which you must answer accordingly.

You can **delete** a train number by right-clicking on the vehicle display and selecting the menu command <Delete vehicle from VHD>.
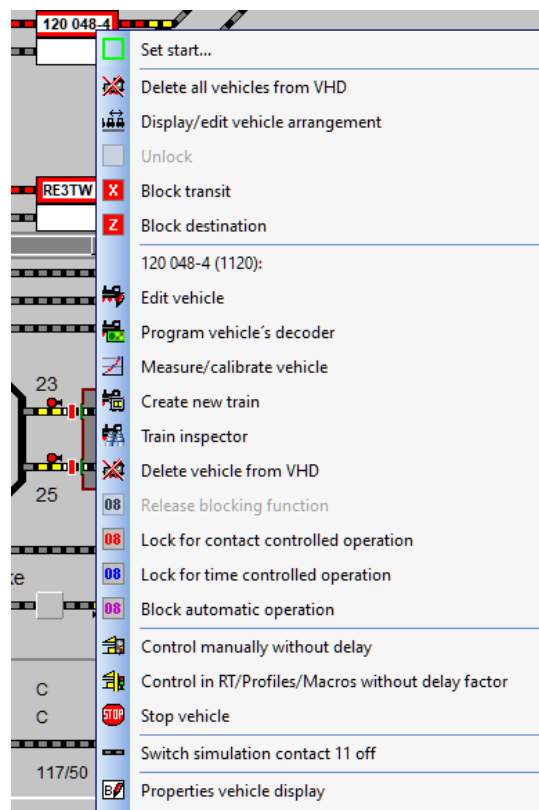
Fig. 16.60   The short menu of a vehicle display

16.14.11 Activate, deactivate or delete all vehicles on vehicle displays

Click in the "Operation" taskbar on the ![icon] icon to open the "Deactivate/activate vehicles" dialogue window. In this dialogue, you can change the so-called vehicle colour (train number colour) for all vehicles entered on the vehicle displays. As an alternative to clicking on the icon, you can also call up the command in the <Operation><Activate/Deactivate/Delete Vehicles> menu.

The labelling of the buttons is self-explanatory, and the corresponding function is triggered after a click. The top four buttons change the colour of the train number on **all** vehicle displays.

With the button **'Delete all vehicle displays'** deletes all train numbers in the track diagram after a corresponding confirmation prompt.

The effects of the train number colour on the sequence control in **Win-Digipet** should be recalled at this point:
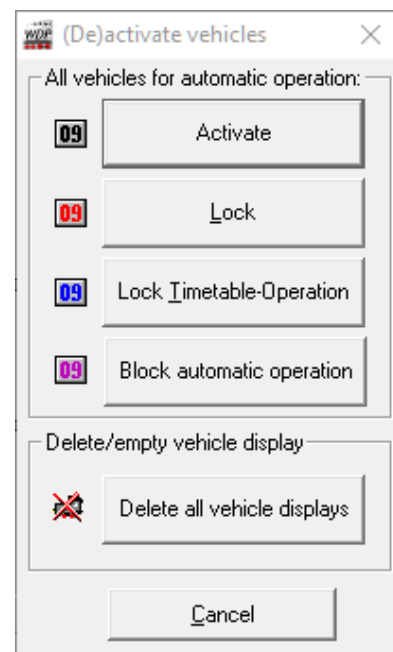
Fig. 16.61 (De-) activate vehicles

🚂 BLACK/WHITE,
so the vehicle or train can run in any automatic function

🚂 **RED**
the vehicle or train will no longer continue in a tour-automatic mode if lines with the red symbol 🔴 - for "*After arrival"* - are entered. It is blocked for **contact-related** automatic operation.

🚂 **BLUE**
then the vehicle or train will no longer continue in the automatic journey mode for lines entered with a "*departure time"* and the green symbol 🟢 or the arrow symbol ↔️. It is blocked for **time-based** automatic operation.

🚂 **VIOLET**
The vehicle or train is disabled for any tour-automatic operation.

16.14.12 Activate, deactivate or delete individual vehicles on vehicle displays

You can also activate, deactivate or delete individual vehicles or trains on the vehicle displays. Move the mouse over the train number to be changed in the vehicle display, click the right mouse button and select the corresponding menu command (cf. Fig. 16.60).

The selectable menu commands will be different depending on the current train number colour, e.g. the menu command "RED" will not be selectable for a red train number.

However, you can also make the changes using the following keys or key combinations. Move the mouse over the train number to be changed in the train number field and click to switch between the train number colours:

- 🚂 **RED** 03 and **BLACK** 03   **<ALT>-key** + <u>right mouse button</u>
- 🚃 **BLUE** 03 and **BLACK** 03   **<ALT+Shift>-key** + <u>right mouse button</u>
- 🚂 **VIOLET** 03 and **BLACK** 03   **<CTRL+ALT+Shift>-key** +<u>right mouse button</u>
- 🚃 to delete the train number   **<Shift>- key** + <u>right mouse button</u>

The key combination **must** always be pressed together with the right mouse button.

With the above key combinations and mouse clicks on a vehicle display with an entered train number, you can switch back and forth between the colours, i.e. from "BLACK" to "RED" or from "BLACK" to "BLUE".

The basic setting for the colour "BLACK" or "WHITE" is set in the system settings - view in the text colour in the track image.

> **Important note!**
>
> The deletion of **an** entered train number takes place **without any** further security enquiry.

16.14.13 Show individual vehicles in the track diagram

Alternatively to the method described in section 16.4 which you can also use to localise vehicles in your track diagram, there is another method for finding a vehicle or train in the track diagram.

To do this, click with the <u>middle mouse button</u> on the vehicle image in the vehicle bar, the vehicle control or the vehicle monitor to display the position of the vehicle in the track image.
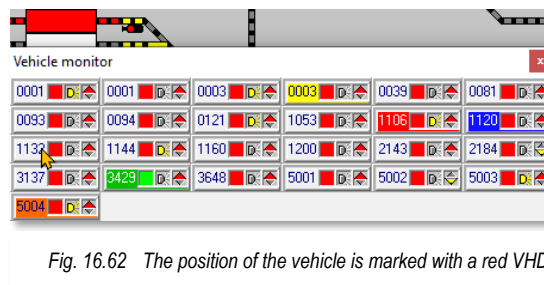
Fig. 16.62   The position of the vehicle is marked with a red VHD

As you can see in Fig. 16.62 **Fehler! Verweisquelle konnte nicht gefunden werden.**the corresponding vehicle display is shown "filled in red". The train number is temporarily hidden and can only be seen again after releasing the <u>middle mouse button</u>.

16.14.14 Driving vehicles with control panels (digital systems)

You can control your vehicles at any time using an existing control panel (digital system) on your model railway layout.

With modern digital control panels such as Intellibox, Tams Master Control, ESU ECoS or Märklin Central Station[36] the same vehicle can be called up both in **Win-Digipet** and on the digital system.

With the Lenz system, you may receive a short message "Vehicle already under control" if you want to control a vehicle with the vehicle control ("Maxi" or "Mini") and this vehicle is already being called up and operated on a hand controller.

16.14.15 Control vehicles manually

If you have ticked the box for manual control of vehicles in the system settings on the "Program settings – Vehicles" tab (see section3.8), an additional button will be visible in the vehicle controls.

By clicking on the 👆 button in the large (Maxi) or small (Mini) vehicle controls, you can use **Win-Digipet to** move a vehicle on the system within a running tour-automatic operation without computer control.

The computer sets the routes and you, as the "driver", control the vehicle either via the controller of the control centre, with the vehicle control unit or other external control devices, such as a joystick or a smartphone or tablet.

Fig. 16.63   Manual control of a vehicle

So that you can immediately see which vehicle is being controlled manually, the vehicle appears in the vehicle bar with a red frame (see Fig. 16.54) (any yellow frame is covered if the maintenance interval has been exceeded). In the vehicle monitor, the train number is displayed with a black background, as shown in Fig. 16.63 can be recognised.

> ⚠️ Please also note the information on "manual driving" in section 16.7.9 of this chapter.

---

[36] The list is to be understood here as an example

16.14.16 Update functions of all vehicles

In the "Operation" toolbar of **Win-Digipet** you will find the icon ![icon] . The corresponding command can also be found in the <Operation><Update all vehicle functions> menu.

By clicking on this symbol or the menu command, the current statuses of the special functions are sent again to all vehicles that are set to "Layout" in the vehicle database.

16.14.17 Switch off sound functions for all vehicles

With clicking on this symbol ![icon] switches off the sound functions of all vehicles on the system with a "handshake". The corresponding command can also be found in the menu <Operation><Switch all vehicle sounds off>.

The function icons that represent a sound function (e.g. driving noise) are marked with the corresponding "(S)" feature in the function icon list and are switched off when this programme function is called up.
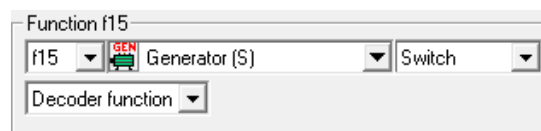
Fig. 16.64 A sound function of a vehicle

The Fig. 16.64 shows an excerpt from the vehicle decoder tab of a vehicle in which a sound function is assigned. This would be switched off with the programme function described here.

If you create your own pictograms using the function symbol editor, you can also add such a marker to them.

16.15 The train composition

In **Win-Digipet** you can put together entire trains, for example from (several) locomotives and carriages (individual carriages or groups of carriages) and drive them.

16.15.1 Multiple tractions

First of all, a brief description of what multiple traction is. In **Win-Digipet** you can combine up to five locomotives into a multiple traction. You may say that this is an unrealistic scenario. But even on our "big" railway, so-called "locomotive trains" are formed from time to time. And if you look across the Atlantic, you will realise that five locomotives in one train is not uncommon.

In large-scale operation, the locomotive directly in front of a train is always the train locomotive. Any other locomotive that is coupled to the front of a train in **front of** the train locomotive is called the "lead locomotive".

A locomotive at the **end of** the train is not called a tail locomotive, but a "pushing locomotive".

And if you do the same on the model railway, you will have no problems with multiple traction in **Win-Digipet**.

Here, the "leading locomotive" or the "pushing locomotive" are simply called traction locomotives. Here are some examples:

- ◢ Double traction: 2nd locomotive = train locomotive, 1st locomotive = traction locomotive,

- ◢ Triple traction: 3rd locomotive = train locomotive, 2nd locomotive and 1st locomotive = traction locomotives,

- ◢ Train with pushing locomotive: pushing locomotive = traction locomotive, 1st locomotive = traction locomotive.

If you proceed according to these examples, the train locomotive is always the locomotive whose digital address (train number) you must drag onto a vehicle display. However, you can also specify the 1st locomotive as the leading vehicle (train number).
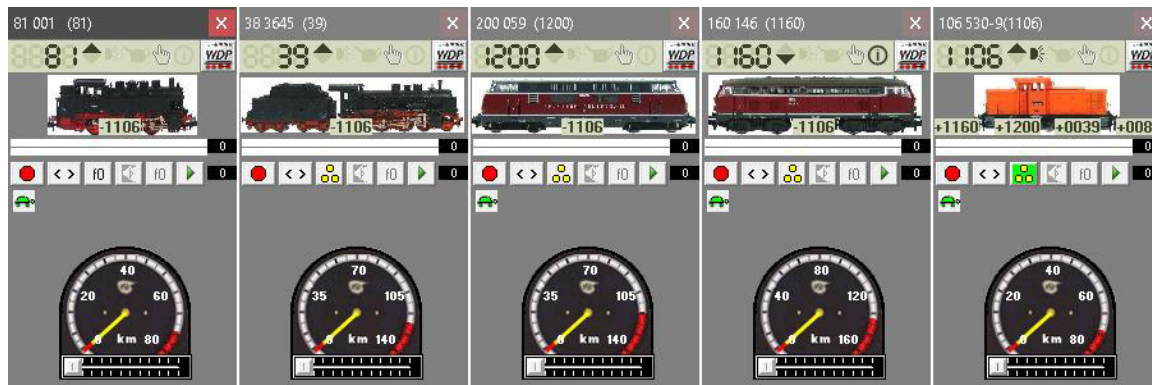
Fig. 16.65   Multiple traction with a total of five locomotives

This example shows a multiple traction consisting of locomotives 106 530-9 as the train locomotive. Locomotives 160 146, 200 059, 38 3645 and 81 001 act as traction locomotives. The train locomotive is the 106 530-9, you can only pull this locomotive on a vehicle display.

The following illustration shows the combined multiple traction on a vehicle display. The multiple traction has the train name "Lokzug" here. This train name is now entered in the vehicle display instead of the model designation of the locomotive.
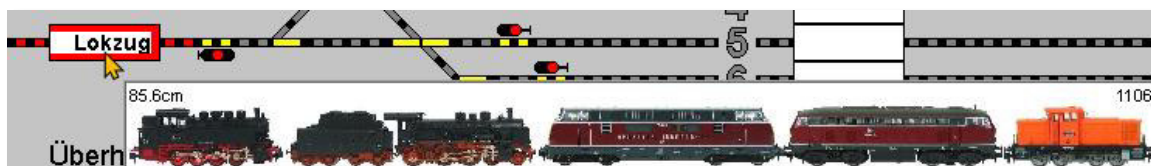
Fig. 16.66   The multiple traction "locomotive train" on a vehicle display

As soon as you move the mouse pointer over the vehicle display, a graphical representation of the train is displayed. The displayed orientation of the train and the order of the vehicles should correspond to the real situation on your model railway layout. In addition to the individual vehicles, the digital address and the calculated total length of the train can also be displayed in the graphic. The scope of the display depends on the options selected in the <Track diagram><Show image when mouse over VHD> menu for the image display of a train (cf. Fig. 16.46).
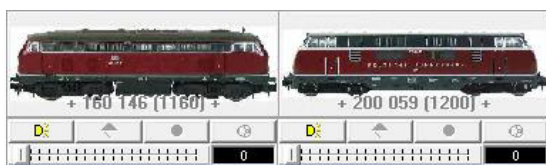
Fig. 16.67   Traction locomotives in the vehicle bar
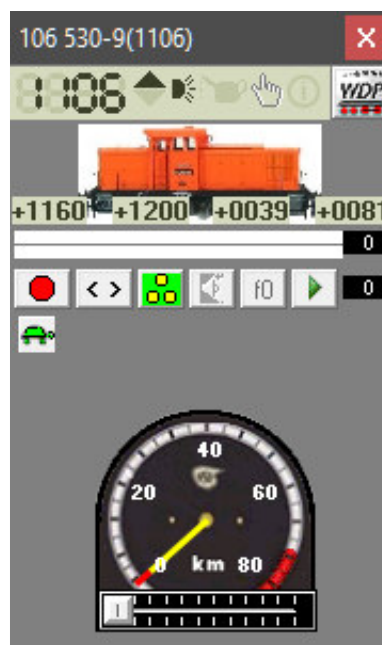
Fig. 16.68   The vehicle control of the train locomotive

Each traction locomotive is greyed out in the vehicle bar, i.e. it can no longer be called up until the traction has been resolved. The series designation of the traction locomotive is highlighted in grey and marked with two "+" signs as an identifier for a traction link (cf. Fig. 16.67).

The digital address(es) of the traction locomotives are displayed under the image of the train locomotive in Vehicle Control (cf. Fig. 16.68). In this way, you can easily recognise that a multiple traction has been put together.

> You should only combine locomotives into a traction that have received a speed profile via the 15-point measurement and therefore have almost identical driving behaviour.

A formed traction can only be cancelled via the train composition. You can open the train composition by clicking on the 🖼 icon in the "Vehicles" toolbar of **Win-Digipet** or by selecting the menu command <Vehicles><Train composition>.

You can also open the train composition for a multiple traction by right-clicking on the digital number of a traction locomotive displayed in the vehicle control of the train locomotive or on the image in the vehicle control of a traction locomotive.
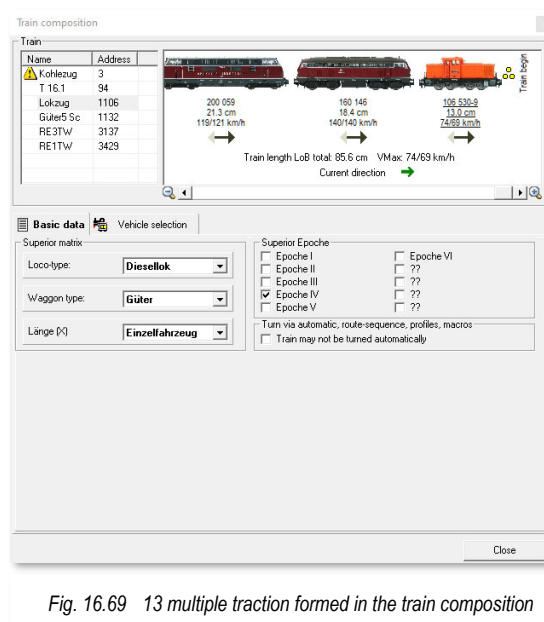
Fig. 16.69   13 multiple traction formed in the train composition

16.15.2   The editor for the train composition

The multiple traction created in the previous section will also be found in the train composition. This is treated as a train by **Win-Digipet** and is therefore listed here in the editor alongside the other trains.

You can use the grey marking in the Fig. 16.69 that the train name "Lokzug" has already been entered here for the multiple traction.

In the upper part of the editor window, you will find a current list of all trains compiled in **Win-Digipet on the** left-hand side. The trains shown here in the example are from the WDP2021 demo project.

If an entry in the train list on the left-hand side of the dialogue window is marked with a small yellow warning triangle, this means that at least one vehicle in this train set has a maintenance time that has been exceeded.
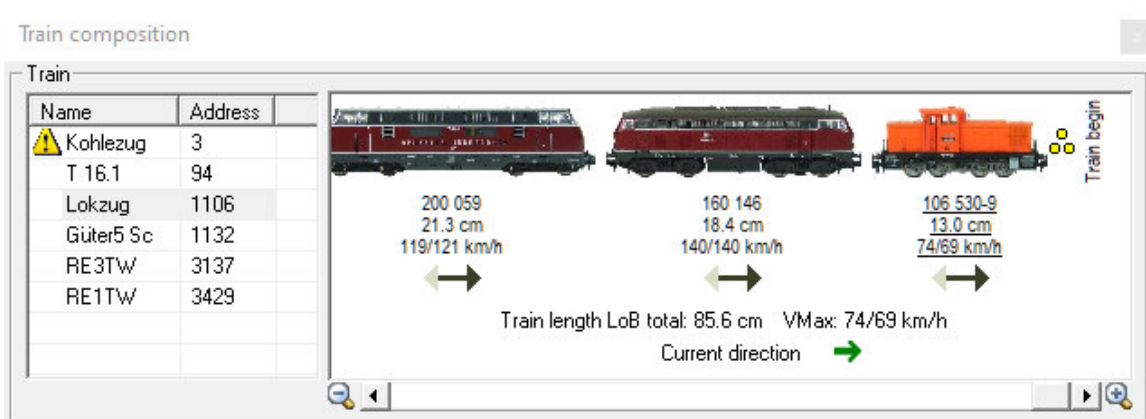
Fig. 16.70   The train composition dialogue shows the order of the vehicles in detail

As mentioned above, the locomotive train is also listed in this table. In addition to the name of the train, the digital address of the locomotive (1106) or the leading vehicle is also displayed. The leading vehicle does not necessarily have to be the locomotive, as in this example. The graphical representation of the train here in the dialogue window shows the assembled train with some detailed information.

The model designation, the length and the maximum speeds when travelling forwards and backwards are displayed below the images of the individual vehicles. The vehicle image is displayed depending on the orientation of the vehicle. The above information is underlined for the leading vehicle.

When assembling your vehicles into a train, make sure that they are physically aligned on the model railway layout and that the vehicle or train alignment is correctly recorded in the vehicle display.

You should also ensure in advance that your vehicle images in the vehicle database match the alignment and mirror them if necessary.

Only then will the evaluation of the direction of travel in the various parts of the programme function reliably.

The black arrow below each vehicle indicates the currently set direction of travel of the vehicle. The green arrow at the bottom of the graphic shows the direction of travel of the entire train. The direction of travel of the train is determined by the leading vehicle.

If a vehicle is set backwards in the train set, the actual direction of travel of **this vehicle** is also backwards in this case.

In addition to this green arrow, you will also find information on the calculated total length of the train and the maximum speeds depending on the direction of travel. These maximum speeds are determined by the slowest vehicle in the entire train.

Finally, the start and end of the train are also indicated in the train graphic by yellow and red dots respectively. In the example image Fig. 16.70 the direction of travel of the train is shown forwards. If you now switch the direction of travel of the leading locomotive, for example, there is no change for the black arrow, as the orientation of the locomotive has not been changed. However, the green arrow will change, as the overall direction of the train is determined by the leading vehicle. The green arrow now points backwards and therefore the leading locomotive is no longer at the start of the train, but at the end. Due to the change in direction, there is also no change in the leading locomotive. It remains the leading vehicle, although it is now at the end of the train.

16.15.3 Assemble a new train

To create a new train, select and mark the desired vehicle in the vehicle selection of the locomotives. After clicking with the <u>right mouse button,</u> select the command <Create new train with this locomotive> in the short menu and after clicking with the left mouse button, the selected vehicle is entered at the top of the train composition .

Another way to create a new train is in the short menu of a vehicle control. If a vehicle is not assigned to a train, you can select a corresponding menu item here, which opens the "Train composition" dialogue window. If the vehicle is already assigned to a train, the menu command in the short menu of the vehicle control changes to "Edit train". This command also opens the "Train composition" dialogue window.

Fig. 16.71   A new train is to be formed

Fig. 16.72   A waggon is attached to the train
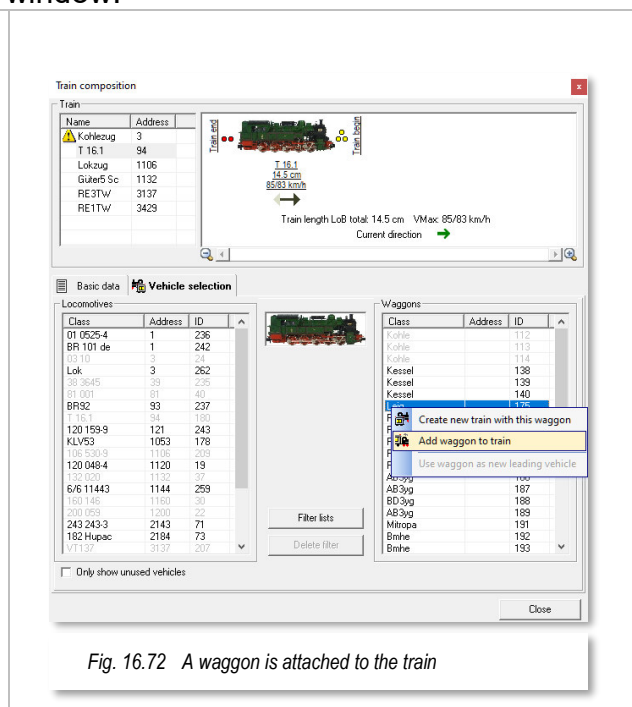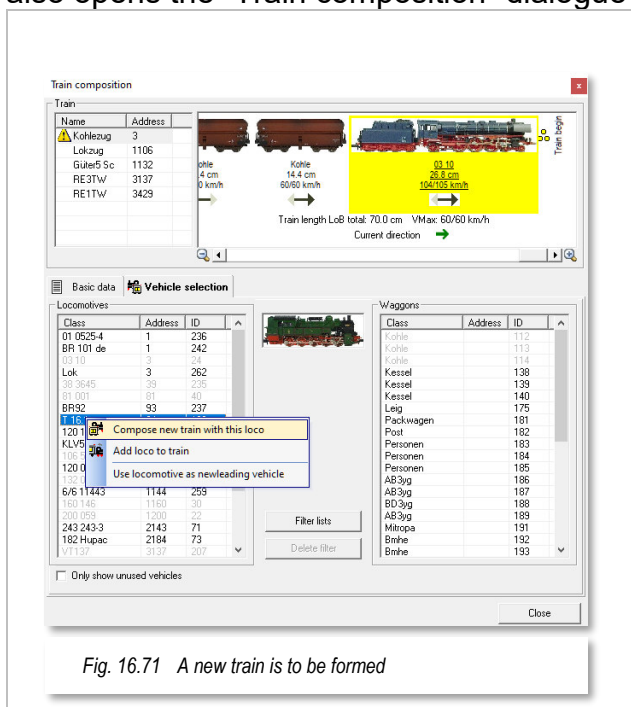
In this example, the "Leig" waggon is to be attached to the "T16.1" locomotive. To do this, select and highlight the desired vehicle in the list of wagons. After clicking with the right mouse button, select the <Add waggon to train> command in the short menu and after clicking with the left mouse button, the selected waggon is attached to the train at the top of the train composition.
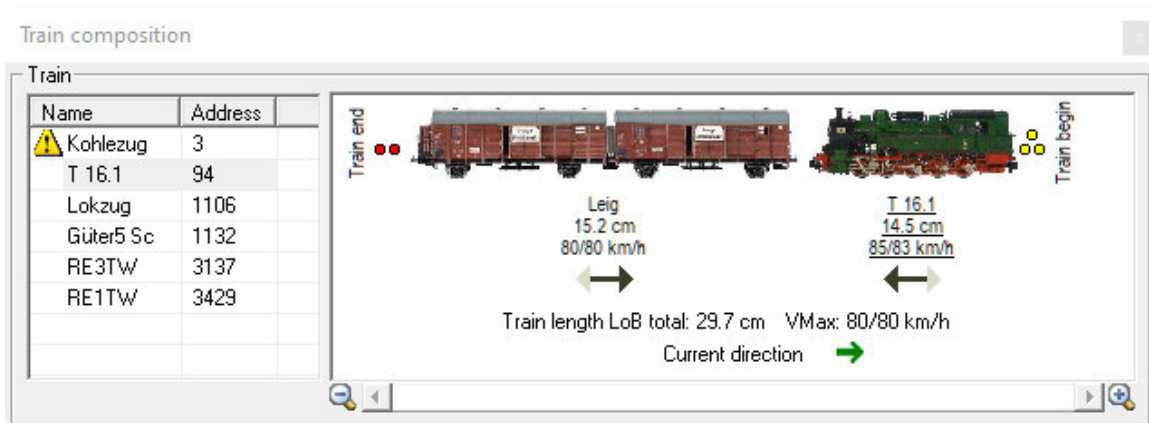
Fig. 16.73   The newly assembled train in the overall view

After the train has been formed, the train should be Fig. 16.73 shown. In this example, the leading locomotive is facing backwards in relation to the train. However, as the locomotive's direction of travel is forwards, it will push the train forwards in its direction of travel.

> You can also drag and drop the locomotives/vehicles and wagons/trailers directly from the two lists into the upper train composition windows.

If you always want to run a combined push-pull train with the driving trailer at the front and the locomotive at the rear of the train, please organise it accordingly in the train composition. However, please always note the direction of travel of the vehicles, which in such a case could be forwards for the locomotive and backwards for the driving trailer.

16.15.4   Edit a train composition

The train name is initially the series designation of the leading locomotive. In the previous example, this is "T 16.1", but you can also use the <Use name as train name> command to adopt the name of the wagon, in this case "Leig", as the train name. Alternatively, you can also assign a name of your choice (e.g. Leig train) to the train by clicking in the name column of the table at the top left. This means that the "Leig train" will always run on your model railway layout, but possibly with different locomotives.

You can change the composition of the new train by moving the wagons or wagon groups using drag & drop. You can also use the button shown in Fig. 16.74 command <Delete vehicle> to detach vehicles. If the train composition is changed, the currently calculated

"Train length (LoB)" is always displayed. The matrix settings of the selected vehicle can also be transferred to the matrix of the train via the short menu shown.

Fig. 16.74   The short menu for editing the train can be called up for each vehicle

You can define the matrix of a train in the Train composition dialogue box. The settings made here for the train in question apply as a so-called "superordinate train matrix". This means that all matrix settings for the individual vehicles of a train are overridden by the "superordinate train matrix". The same applies to the settings for the epochs in the fourth matrix column.

If it is necessary for a train not to be turned automatically, you can prevent this here in the dialogue window by ticking the box.

If you remove the leading vehicle from the train, you will be prompted to specify a new leading vehicle by clicking on it. A wagon can also act as the leading vehicle, so you also have the option of pulling trains without a locomotive onto the vehicle displays. These are then entered either with their class designation or train name or with the digital address "00" in the small vehicle displays. As soon as you add a locomotive to such a train, it automatically becomes the leading vehicle.

Fig. 16.75   The settings for the "superordinate train matrix""

16.15.5   Vehicle selection in the train composition

The "vehicle selection" tab of the dialogue window is essentially characterised by two vehicle lists. The list on the left contains all locomotives/road vehicles and the list on the right contains all wagons/trailers. You have made the classification in the vehicle database. In both lists, only those vehicles are listed that are labelled with the attribute "Layout" in the vehicle database.

As soon as you select an entry in one of the lists, the image of the selected vehicle is displayed between the two lists.

Fig. 16.76   The vehicle selection in the train composition

In the Fig. 16.76 you can see that some of the vehicles in the lists are displayed in "grey" (not selectable). Each vehicle can only be assigned to one train composition, so the

vehicles that cannot be selected are already used in trains. You can use a checkbox at the bottom of the dialogue window to hide the vehicles already used in trains.

The *"Filter lists"* button can be used to filter the vehicles according to their matrix settings. Filtered vehicle lists can of course also be reset. To do this, select the *"Delete filter"* button; this is activated as soon as a list filter has been set up.

16.15.6 Save or adopt train as template

After selecting an existing train and clicking the right mouse button, you can also use the commands in the short menu to dissolve, rename or, as shown here in Fig. 16.77 shown here, save it as a template.

You can also attach a saved train template to a new train locomotive at any time. To do this, right-click after inserting and selecting the new train locomotive and select the <Open templates> command.

In the "Train composition templates" window that then opens, the saved train compositions are listed. After selecting the desired train composition, click on the corresponding button.
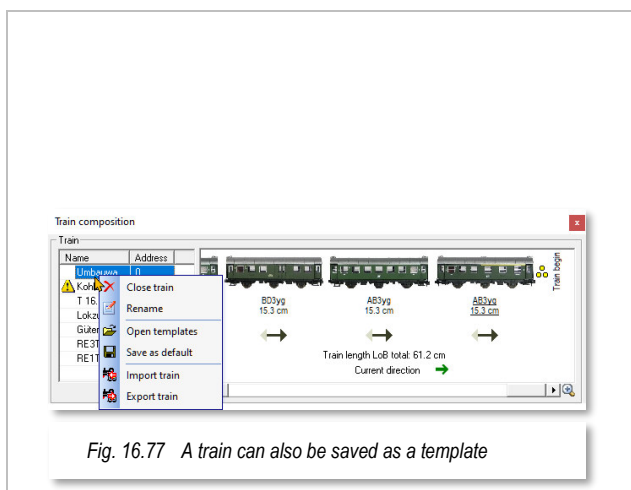
Fig. 16.77 A train can also be saved as a template
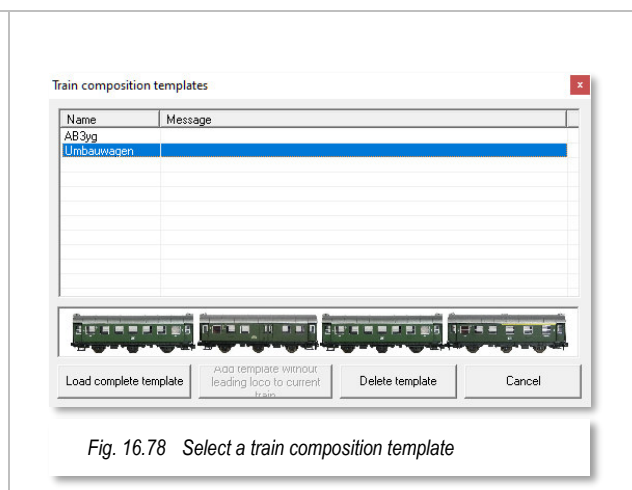
Fig. 16.78 Select a train composition template

A train template without a train locomotive can only be transferred to the train composition as a complete train. If you only want to attach the wagons contained in the template to an existing train, select the *"Add template without leading loco ..."* button.

You will usually answer *'Yes'* to the queries for transferring the train name and train matrix. However, always check the details in the **higher-level** train matrix and change the details if necessary.

Pay attention to the train name and, if possible, do not assign it twice. **Win-Digipet** can manage duplicate train names, but the risk of operating errors due to the "human factor" is very high at this point.

The composition of a "new" train may have different epoch or matrix settings that may not match your routes or the settings in the tour-automatic system.

Please note that the train composition here is a higher-level train matrix and also higher-level epochs. The individual vehicles may have different matrix settings.

When operating with trains in **Win-Digipet,** however, the train matrix is always used, i.e. the matrix settings of the individual vehicles are not considered in train operation. The same applies to the epoch settings.

You can also load the train compositions you have created in full, change them and save them again as a template or delete them.

16.15.7   Total train length (LoB)

With each change to the train composition immediately changes the "total train length". You can see this from the images in the previous sections. Please note that the specification of the real length has a different meaning than the matrix column Length(X).

If you use length(X) in your routes or automations, you should adjust the entry in the "*Length (X)*" list field accordingly so that both values match again.

A basic consideration would be to only use the real length specifications and to dispense with the matrix definitions for length (X). In this case, however, you may have to adapt your routes and tour-automatic journeys.

16.15.8   Extended vehicle control for trains

In the vehicle control of a leading locomotive (train number), an additional small symbol is displayed after a train has been formed.

Click on this symbol to list the attached wagons or wagon groups.

Clicking on an entry in the list opens the corresponding vehicle control for the attached wagon. Here, for example, any special functions of the wagon can be switched on or off.

Fig. 16.79   Extended vehicle control with control of an attached wagon

16.16 Emergency stop and other options

In model railway operation, it can happen from time to time that, for example, a switch has not switched correctly, and, in the worst case, a train collision can occur. If you recognise such a situation in time, you can trigger an emergency stop and bring the operation on the model railway to a standstill.

16.16.1 Emergency stop via <F9>, menu or toolbar

You can trigger an emergency stop at any point in the programme by pressing the **<F9>** function key on your computer. An emergency stop generally switches off the power to the entire system by setting all connected digital systems to STOP.

You can also trigger an emergency stop by clicking on the 🛑 icon in the "Operation" toolbar. The <emergency stop> command can also be found in the menu of the same name.

The emergency stop window opens with a corresponding message showing you who triggered the emergency stop (keypad, digital system, emergency stop button, etc.).
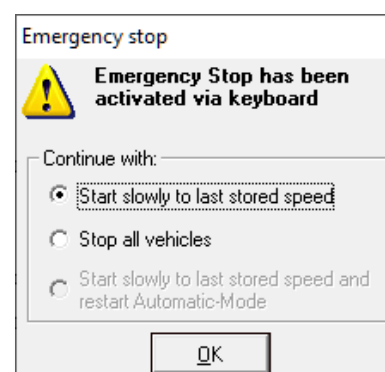
Fig. 16.80   The emergency stop window

After the emergency stop release, you now have up to three options as to how to proceed:

🚂 **Start slowly to last stored speed**
After *'OK',* the vehicles are accelerated to their current target speed at the moment of switch-off with the set delay.

🚂 **Stop all vehicles**
After *'OK', all* vehicles are stopped and you must specify the speeds manually, for example via the vehicle controls.

🚂 **Start slowly to last stored speed and restart automatic mode**
After *'OK',* the vehicles are brought up to the target speed reached before the switch-off with the set delay and the stopped automatic functions are also resumed.

After an accident for example, you can set the vehicles involved in Vehicle Control ("Maxi" or "Mini") to speed "0" before clicking the *'OK'* button. However, operation of the solenoid items on the track diagram is blocked until the emergency stop window is closed again.

The third option is only offered for selection if you have started an automatic system. Otherwise, the third option is greyed out (cannot be selected).

16.16.2 Emergency stop via switching actions

The automated triggering of an emergency stop can be realised with the help of an entry in the switching actions, for example in the "dispatcher" programme section. You can store the execution of an emergency stop there as an action that is executed when defined conditions or states are met.

Scenarios that can prevent accidents due to incorrectly set points are conceivable here. You have already learnt how to use the dispatcher and the switching actions in the chapters 12 and 13.

16.16.3 External emergency stop via feedback contact (push-button)

The menu item <Extras><External emergency stop with feedback contact> allows you to use pushbuttons that can trigger an emergency stop via a feedback decoder. After selecting the menu item, the configuration dialogue for this function opens.

Here you enter the feedback contact number for any emergency button on your model railway layout and confirm the entry by clicking on the *'OK'* button.

You can install emergency stop buttons anywhere on your system. These buttons then

Fig. 16.81   The configuration of an emergency stop button

trigger the emergency stop via the PC using a feedback contact that you specify. This saves you long journeys in an emergency.

After an emergency stop is triggered, you can proceed as described in the previous section. However, you also have the option of defining contacts in the dialogue shown here, which then cancel the emergency stop again in the three above-mentioned cases. Scenarios are also conceivable at this point with the help of entries in the dispatcher, which can automate the cancellation of emergency stop situations as far as possible.

16.16.4 Stop/start all vehicles

With click on the green ![STOP] icon in the main toolbar to stop your vehicles immediately. In contrast to the emergency stop, your system is not switched off and the symbol that has just been triggered changes from green to red ![STOP]. Furthermore, a "Attention! All vehicles are stopped" window is displayed, and a warning tone is played.

Once the fault has been rectified, you can accelerate the vehicles back to the set target speeds by clicking on the red ![STOP]icon in the main toolbar if you answer the safety question with **'Yes'**.

In the other case, all speeds in the vehicle controls etc. are set to "zero" and the vehicles remain stationary. Once all faults have been eliminated, you must give all vehicles the required movement command again manually via the vehicle control or the speed controller of the digital system if the routes are set again or were still set. You can also trigger this function at any point in the programme by pressing the **<F8>** function key on your computer.

> If your vehicles are no longer running, but the turnouts can still be switched, for example, then always check first whether this symbol ![STOP] is actually green and not ![STOP] red.
>
> **No vehicle can drive with a red stop symbol ![STOP] in Win-Digipet!**

Individual Vehicles can be stopped via the short menu of a vehicle control. To restart after such a stop, a task list is displayed in which you must confirm (cancel) the corresponding entry.

During the stop, a flashing stop symbol is displayed in Vehicle Control.
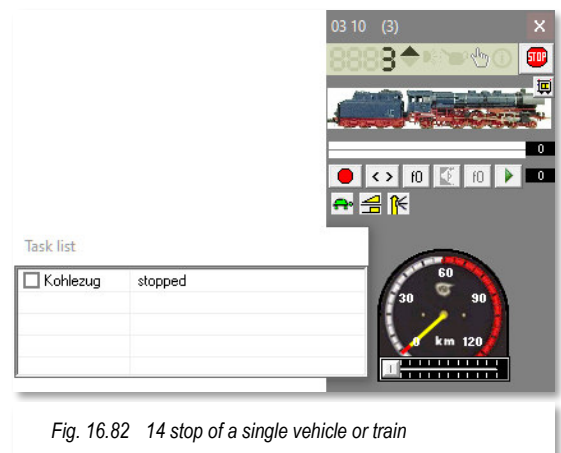
Fig. 16.82   14 stop of a single vehicle or train

16.16.5 Stop/start all vehicles via Switching actions

The automated triggering of a stop of all or only individual vehicles can be realised with the help of switching actions, for example in the "dispatcher" programme section. The execution of such a stop can be stored there as an action that is executed when defined conditions or states are met.

You can also use the same action to restart the stopped vehicles.

Scenarios that can prevent accidents due to incorrectly set points are also conceivable here. You have already learnt how to use the dispatcher and the switching actions in the chapters 12 and 13.

16.17 Operation with the tour-automatic

What is meant by the term "tour-automatic" has already been described in detail in the chapter 10 . The entries in the tour-automatic editor required for operation with tour-automatic journeys have also already been described in the sections there.

TIP - Automatic start!

If you wish, you can load a created tour-automatic journey directly when you start **Win-Digipet** if you select the "*Load tour-automatic*" option on the "Start project" action card in the **Win-Digipet** start centre and select an existing .FAM file from the selection list.

To start a tour-automatic journey, click on the icon in the "Operation" toolbar of the main **Win-Digipet** programme. As an alternative to the icon, you can also call up the corresponding menu item <Operation><Tour-automatic> from the menu bar of the main programme.

This will the "*Open TA file*" dialogue window opens in which the existing tour-automatic files (.FAM) in your project folder are listed. If you have already called up a .FAM file, the most recently executed tour-automatic file is highlighted and entered in the call line at the top of the window.

Click on the desired line and confirm with the '*OK*' button to open the selected file.

As an additional option in this dialogue is to delete (no longer required) .FAM files. After clicking on the '*Delete*' button and a confirmation prompt, the files are permanently removed from your project folder.
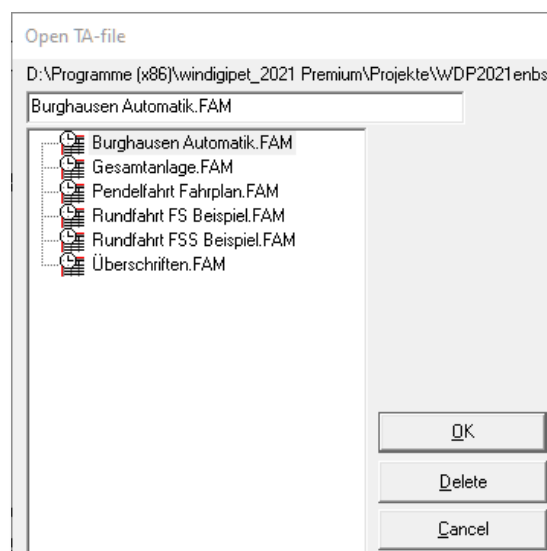
Fig. 16.83   15 dialogue for opening a .FAM file

It goes without saying that you should handle the "Delete" command with a certain amount of care.

It is possible to reactivate deleted files from an existing data backup, but this involves effort and uncertainty as to whether the backed-up file is up to date.

16.17.1 Start times of a tour-automatic journey

After you have selected a file in the *"Open TA file"* dialogue, the program displays another window. In this window, you can specify the start time for the automatic journey that has just been loaded.

You can choose one of the following options:

Fig. 16.84   Setting the departure time for the tour-automatic

- 🚂 **Begin of week: Mon 00:00:00**

- 🚂 **Central clock time**

- 🚂 **Last saved time**
  The time starts to run at the point in time at which the tour-automatic was stopped during the last execution

- 🚂 **First departure time within tour schedule**
  The first departure time (line with green clock) is adopted as the start time of the tour-automatic. If all lines in the tour-automatic are of the type "by arrival time", then Mo 00:00:00 is assumed as the start time here

- 🚂 **Individual start time**
  The start time can be freely set here in the window

- 🚂 **Row**
  The departure time of a specific line is adopted as the start time

The start time of the tour-automatic is only of interest if your .FAM file contains lines with a defined departure time.

> Please note that you cannot influence the waiting times after arrival by changing the start time.
>
> Lines with a wait time after arrival are generally only executed after the defined wait time has expired. In the settings for a "Waiting time after arrival", however, you can suspend the waiting time at the start of an automatic journey.

After selecting the desired start time, click the *'OK'* button.

If you have activated the *"Check positions at TA start"* option in the tour-automatic editor, this check is now carried out and you must correct the check result if necessary and confirm with the *'Next'* button.

Please note that activating the "Check positions at TA start" option only makes sense if your tour-automatic contains lines that map time-based automatic operation.

For the smooth running of such a "timetable operation", the trains are generally expected at fixed starting positions, which are then also entered in the relevant column in the tour-automatic editor.

16.17.2 Checks before the start of a tour-automatic

The checks carried out by the programme ensure that you check the starting positions of the vehicles before starting a tour-automatic journey, which are provided in the lines of the tour-automatic file, for example, for journeys according to fixed departure times with specified starting positions (fixed start contact). In earlier versions of **Win-Digipet,** you may have been familiar with this function from timetable operation.

The start positions are checked when a tour-automatic is started if you have set this option in the tour-automatic editor (see section 10.25.4).

If all start contacts are occupied, you will receive the message "All OK!" in this window.

However, if individual start contacts are not occupied by a vehicle, the number of the start contact, the vehicle number (or the train name) and the description of the route are displayed with the message "Contact not occupied". In the dialogue window, you can tick the option to automatically transfer the train numbers to the respective start contacts. However, be careful with this option and check whether your vehicles or trains are really at the expected positions.

As soon as the "Place vehicles automatically on start contacts" switch is activated, all vehicle

Fig. 16.85   The start contacts of a tour-automatic are checked

numbers are automatically entered in the start vehicle displays after clicking on the **'Continue'** button. You therefore do not need to concentrate on whether all vehicle displays are correctly occupied.

The programme also checks at this point whether all start vehicle displays for the timetable are assigned the correct vehicle or train numbers.

However, you must move the vehicles or trains to their correct starting positions yourself if they are physically in other positions on your model railway layout.

After you have placed the vehicles or trains in the correct position, click on the **'Start contacts'** button and, if necessary, *"All OK!"* will be displayed as the result of the repeated check.

You can use the **'D***irections'* button to check whether all vehicles for the timetable are travelling in the correct direction. In the new list field that appears, all vehicles or trains in the timetable are displayed with the current directions of travel.

The **'Continue'** button takes you to the command centre of the automatic driving system.

16.17.3   The command centre of the tour-automatic system

Without the check option, you will be taken to the command centre of the tour-automatic. Your selected tour-automatic file is loaded (see the title bar of the dialogue window) and is on hold, so to speak, i.e. inactive.

You can recognise this status by the "red" symbol in the top symbol line of the command window. You can recognise an active automatic driving mode by the "green" symbol.

The top row of icons contains a few more settings, the meaning of which we still need to look at here.
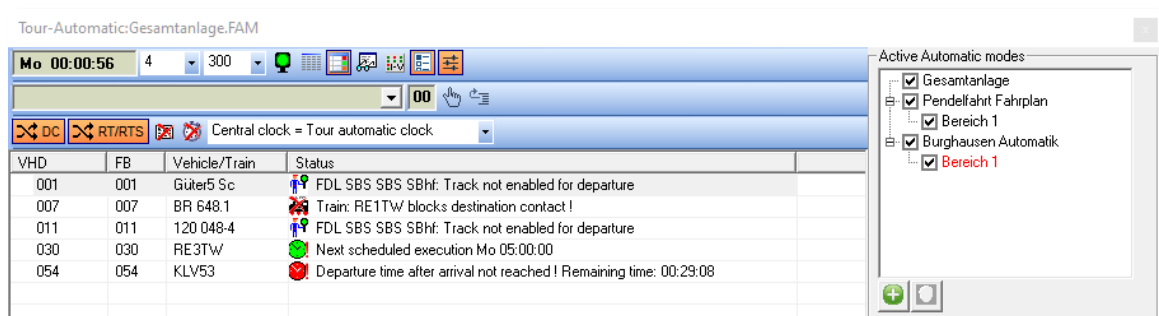
Fig. 16.86   The command centre of the tour-automatic system

The time of the automatic journey is shown on the left. After starting, it shows the value you have selected as the start time. You can use the small pen on the time display to change the time at any time when **the automatic system is stopped.**

During the time is run with the model railway factor, i.e. the clock runs faster than the real time by the set factor. In this example, this factor is set to the value 4. This means that one hour of model railway time elapses within 15 minutes of real time. The model railway factor can also be set to a value between 1 and 360 via a selection list during automatic operation.

The query time (time interval for querying the request contacts entered in the automatic journey) is displayed in the centre field. You can set a value between 100 msec and 1000 msec here.

The other symbols in the top row ![icons] mean from left to right:

Start/stop of the tour-automatic
(![green] =active, ![red] =inactive, ![yellow] =stopped, buffer lines still pending)

Show timetable display
The display of one or more timetable boards is only interesting in conjunction with a timetable. In addition to the settings in the automatic timetable editor, the configuration of "Timetable displays" is necessary.

Show automatic inspector
The automatic inspector shows a status list of all journeys pending execution with the respective vehicles or trains. (cf. Fig. 16.86). You can use this list to recognise why, for example, a vehicle or train cannot set off. If there are several entries in the "Status" field, these are displayed as a tool tip when you move the mouse over them.

Show tour inspector log
The tour inspector log records all messages about the start and end of journeys in a tour-automatic. Error statuses are also displayed here. The tour inspector log is available to you as long as the tour-automatic is not closed. You can save the log and process it further with a text editor if necessary. Functions for filtering entries are also provided.
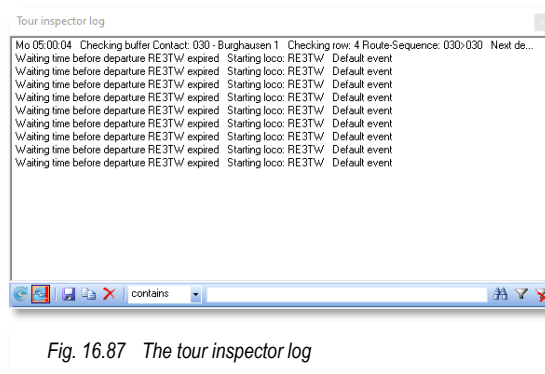
Fig. 16.87   The tour inspector log

The messages in the automatic journey log are largely self-explanatory. It is important that you always check which line of the tour-automatic is displaying an error message so that you can then carry out targeted root cause analysis. The messages from the automatic inspector described above will also help you with this.

Epoch
With this can be used during a running tour-automatic to specify that only vehicles of certain eras or criteria in the fourth matrix column may travel.

Areas
With This symbol can be used to show or hide the right-hand part of the automatic driving dialogue window. The loaded automatic system(s) and their defined areas can be found here in a tree structure.

Individual areas, as well as additionally loaded automations, can be specifically activated or deactivated during operation.

Setup/options

Some functions for the sequence control of an automatic journey are hidden here. [toolbar icons: DC | RT/RTS | ... | Central clock = Tour automatic clock]

The "DC" button activates the random generator for the contact request. If this is active, the contacts are queried at random and not in ascending order of numbering.

The RT/RTS button activates a random generator for querying routes or route sequences. If, for example, several routes in an automatic journey have the same request contact, it would never be possible to determine a fixed sequence when checking the entries if the random generator is switched on.

The symbol "with profiles" determines whether an automatic journey is executed with or without profiles for the entered routes or route sequences.

> The "*with profiles*" switch must be set if you also want to run with profiles in tour-automatic mode. If this option is not activated, the trains will run according to the respective route settings. An exception to this are the lines that are provided with the "Contact events" flow in the tour-automatic.

The option "With route sequence/follow-up timeout" is used if the automatic journeys are to be started with or without the waiting time (timeout) from the system settings. If the box is ticked, an affected route sequence or connecting journey is handled as follows...

- In an automatic journey **without activating** the *"With route sequence/follow-up timeout"*, the...

  - the route sequence/connecting journey is stopped

  - the route sequence/connecting journey in the tour event inspector is only marked red

  - the vehicle number or train name remains "GREEN"

  - there is no warning by means of a message or sound

- In an automatic journey **with activation of** the *"With route sequence/follow-up timeout"* **without an** alternative route with a **new** route/train journey by automatic journey, the...

  - the route sequence/connecting journey is stopped

- the vehicle number or train name is changed from "GREEN" to "BLACK"

- the train journey is marked with a red hourglass in the tour event inspector

- a warning is issued by means of a message and sound, unless switched off

- You must remove the obstacle for the stopped journey, mark the journey in the tour event inspector and start it again

- or you must continue the train by manually setting a route or route sequence, whereby the journey is automatically deleted in the tour event inspector.

🚂 In an automatic journey **with activation of** the *"With route sequence/follow-up timeout"* 🚫 **with** alternative route with **new** route/train journey by tour-automatic journey, the...

- the route sequence/connecting journey is stopped

- the vehicle number or train name is changed from "GREEN" to "BLACK"

- the journey is marked with a red hourglass in the tour event inspector

- A warning is issued by means of a message and sound, unless switched off

- the journey initially remains in the tour event inspector and is automatically deleted as soon as the tour-automatic journey has set the new route.

Finally, the setup/options offers several options for synchronising the times in an automatic journey. You can synchronise the tour-automatic clock with the central clock of **Win-Digipet** or with the system clock of your computer. However, you also have the option of not synchronising the tour-automatic with one of these options.

The middle row of symbols in the command centre of the automatic driving system contains the so-called buffer

| Mo 11:00:00: RE3 TW FSS:030>030 | ▼ | 01 | 🖑 | 📋 |

This buffer is used to temporarily store time-related journeys that cannot be executed at the specified time (e.g. destination of the route occupied). The buffered journeys are displayed with the departure time, train name and description of the journey. The small field in the centre shows the number of journeys in the buffer.

The journeys remain in the buffer until the maximum delay time is reached or they are manually deleted from the buffer here.

In the **Win-Digipet** system settings, you can also specify how many journeys are temporarily stored in the buffer before the automatic journeys are stopped .

16.17.4   Load additional tour-automatic files
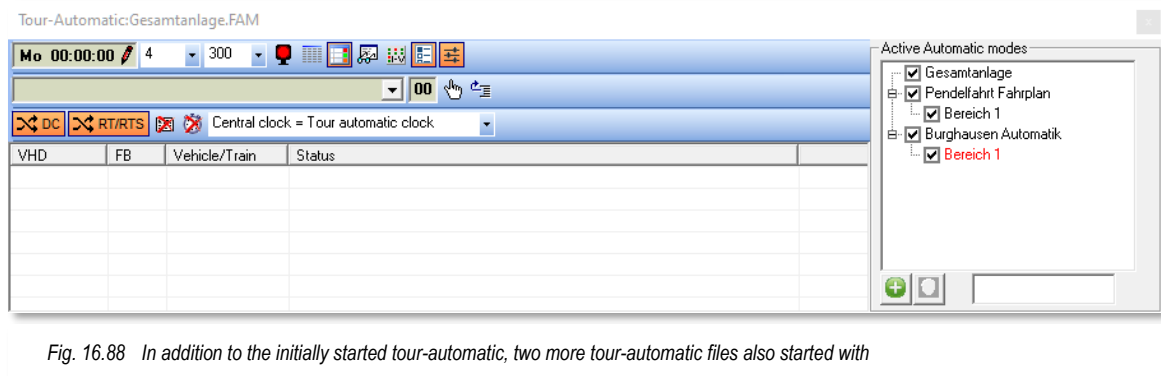
Fig. 16.88   In addition to the initially started tour-automatic, two more tour-automatic files also started with

In the Fig. 16.88 you can load and execute additional automatic modes.

A total of up to five tour-automatic journeys can be activated here at the same time. In the example here, two additional tour-automatic journeys with the names "Shuttle journey timetable" and "Burghausen automatic" are to be loaded in addition to the already loaded tour-automatic "Complete system".

To do this, click on the icon ⊕. In the *"Open TA file"* dialogue, select the desired file and click on the *'OK'* button.

The additionally loaded tour-automatic modes are displayed in a tree structure under the first tour-automatic function called up. All automatic areas of the second tour-automatic are also displayed here. In the example of the Fig. 10.56 you can recognise one of the areas marked in red. This is due to the activated switching this section by a solenoid device in the tour-automatic.

You can activate or deactivate the automatic areas and the complete automatic functions by ticking the boxes in front of the entries. Sections marked in "red" here can only being activated or deactivated by the assigned solenoid items.

With five loaded automatic movements, each with 12 automatic sections, you have a maximum of 60 sections available with which you can depict all conceivable scenarios on your model railway layout.

You can also remove an additionally loaded automatic journey using the symbol ⊖ . Please note that the tour-automatic file loaded **first** cannot be removed with this symbol.

The above settings are saved alongside the last start time in the <name_fam.dat> file in your project directory when the automatic journeys are ended and are automatically available again the next time the system is started.

You should not delete this file, as the names you have assigned to the twelve automatic areas are also saved in it.

16.17.5 Manual control of vehicles in active tour-automatic system

If you have activated the option "Drive vehicles also manually" in the system settings on the "Programme settings – Vehicles" tab (see section 3.8), an additional button will appear in the vehicle controls. By clicking on the button 🖐 in the large (Maxi) or small (Mini) vehicle controls, you can use **Win-Digipet** to move a vehicle or train manually on the system without computer control during tour-automatic operation or using the start/destination function.

The routes are set by **Win-Digipet** and you as the "driver" control the vehicle or train either via the controller of your digital system, with the help of the vehicle control unit or a mobile device.

So that you can see immediately which vehicle is being controlled manually, the vehicle appears in the vehicle bar with a red frame (any yellow frame if the maintenance interval has been exceeded is covered).

If you now want to control your vehicles manually in an automatic mode in certain areas of the system, there are various ways to do this.

- 🚃 With the first option, you define an automatic route and ignore the area that you can drive through manually. With this method, the vehicles or trains simply stop in front of this area, and you have to set the routes or route sequences using the start/destination function and run the set routes manually.
  If you have then manually controlled the vehicles or trains to the transfer points of the tour-automatic mode, the automatic system immediately takes over control of the trains again up to the transfer point of the manual control.

- 🚃 With the second option, you define an automatic journey for the entire system area, whereby the routes are set in a certain area, but the vehicles or trains are not to be controlled.
  You can achieve this with the help of switching actions in the automatic timetable or, for example, in the dispatcher. You can use these switching actions to set individual vehicles to the manual control status on certain vehicle displays or back to control by a tour-automatic system.

16.17.6 Accidents, manual intervention, end of operation

If you want to exit the operation of a tour-automatic due to an accident or for any other reason before the current journeys have been properly completed, click on the close icon ▣ in the command centre on the far right.

The tour-automatic mode is ended, but the tours that are still active are completed.

However, you can also stop the tour-automatic mode by clicking on the button 🔼 (it changes to red), the tour-automatic mode is stopped.

The system stores all routes or route sequences that could not be set as intended at the specified time because of delays or other operational faults in the route (seq.) buffer.

You can see the number of routes and which ones they are in the buffer display in the tour-automatic control centre. However, these journeys are only ever those for which you have entered a departure time with the green symbol 🟢 or the arrow symbol ↕ in the "*Time*" column.

Routes or route sequences with arrival times and the red symbol 🔴 are not stored in the route (Seq.) buffer.

You can then use the symbol 🖑 to carry out or initiate the necessary measures to empty the buffer. It is therefore up to you to decide how the tour-automatic mode is continued.

Routes set manually from the buffer using the 🖑 symbol are deleted from the buffer as soon as they have been set correctly. Any follow-up switching operations are also executed. If you want to delete routes from the buffer, use the ⬚ button to delete them. When manually setting or deleting routes from the buffer, you can also select individual lines and then set or delete them.

If routes or route sequences are still active at the end of the programme, you can interrupt them and continue them at the next programme start. An automatic journey that is active at the end of the programme can also be continued in this way.

At the end of the programme, you will be asked whether you want to interrupt and save or cancel the routes or route sequences or also the tour-automatic journeys or wait until the active routes and route sequences have been processed.

After restarting **Win-Digipet**, you will be asked whether you want to continue the saved journeys. If you decide not to, the saved journeys will be deleted from the temporary memory. In the positive case, the journeys will be continued.

> ⚠️ As long as there are cached journeys, no changes may be made to the data. This also prevents a data restore as well as starting the track diagram editor from the Start Centre.

> If your tour-automatic do not run as planned and there are repeated faults, use the tour event inspector to check the routes, profiles and macros.
>
> Start the tour event inspector with the powerful detail area by clicking on the 🔭 icon in the main toolbar or by pressing the **<F7>-key** (see section 16.8).
>
> Routes that have not yet been deleted from the track diagram must be deleted individually or as a whole using the tour event inspector.

16.17.7 Ending the tour-automatic

The tour-automatic movement is ended by first setting the current tour-automatic to inactive in the command centre 🔴. If there are still routes in the buffer, the icon is first shown in yellow 🟡.

Allow all vehicles or trains that are still travelling to complete their routes or route sequences before closing the command centre via the close icon ❎ in the window.

16.18 Virtual contacts & pulse generators

In the previous chapters of this manual, you have read a lot about conditions and switching actions to create a varied automatic operation. The switching actions and conditions are mainly used in conjunction with the automatic running system and the dispatcher to allow your vehicles and trains to run over the model railway layout in interesting operating sequences.

The "Virtual contacts & pulse generators" programme section brings two further components for automating your operating processes into play.

- 🚂 the pulse generators
- 🚂 the virtual feedback contacts
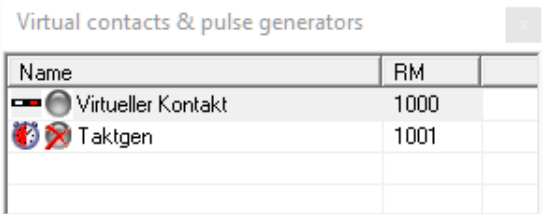
16.18.1   Pulse generators

The task of a pulse generator is already in its designation, namely, to generate a clock pulse. A cycle always consists of a switch-on phase and a switch-off phase. In **Win-Digipet,** these times can be of different durations, each between 100 msec and 30000 msec long. You can set the time values in steps of 100 msec using the arrow keys.

Open the configuration dialogue using the 🛑 icon from the "Editors" toolbar. The same command can be found in the menu under<File><Virtual contacts & pulse generators>.

As usual, right-clicking on a selected line opens a short menu in which you can create a new pulse generator or edit the parameters of an existing entry.

Each pulse generator created can generate its own clock. The cycles each control a virtual feedback contact, the number of which you must enter here in the dialogue field when creating a pulse generator.

Fig. 16.89   16 dialogue "Virtual contacts & pulse generators"

As soon as the data set has been created, the pulse generator works in the background. To set the parameters, open the <Edit parameters> item from the short menu of the clock generator entry, whereupon the configuration dialogue for the feedback contact of the clock generator is displayed.

You are already familiar with the dialogue window from the track diagram editor or from editing the properties of a feedback contact. In principle, the parameterisation of a pulse generator is no different to the configuration of a feedback contact.

The decisive entry on the tab is the "Detector source/behaviour". Here, the defined virtual feedback contact is set up as a clock generator and "activated" with a tick (see Fig. 16.90).

Optionally, you can drag and drop a solenoid item from the track image into the "Control" field to switch the pulse generator entry on or off.

The graphical representation in the lower part of the dialogue box shows the clock behaviour. In the example, the generator switches over after one second. The time behaviour for the switch-on or switch-off cycle can be influenced using the arrow buttons on the time values.

The example in the graphic shows a pulse generator from the WDP2021 demo project. The virtual feedback contact 1001 changes its status (F/O) once per second. In the dispatcher the contact is linked to a lettering that appears in red on the screen every two seconds. The pulse generator is switched on here with a virtual two-aspect solenoid device.

With this simple example, you have created a "flashing" hint in your track diagram.
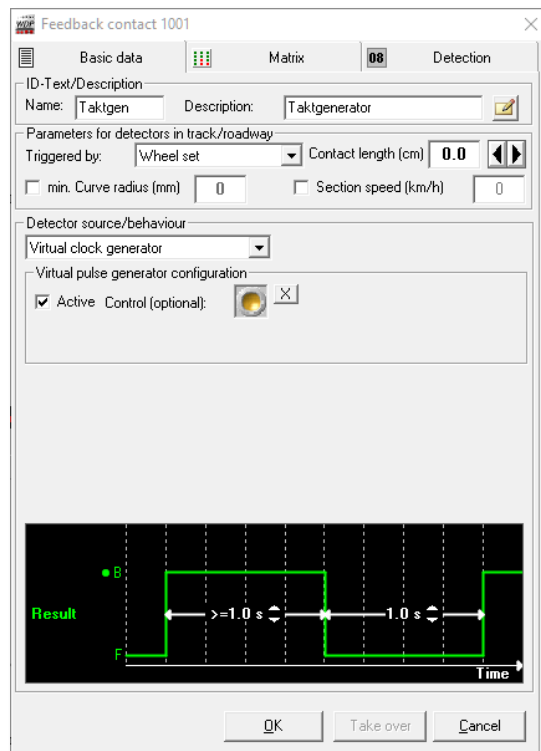
Fig. 16.90   The configuration of a virtual clock generator

16.18.2   Virtual contacts

In the dialogue window as for a pulse generator, enter the contact numbers for virtual contacts. In principle, virtual contacts work in exactly the same way as physically existing feedback contacts. They can also assume the states "free" or "occupied".

Virtual contacts must **not** be assigned to a digital system. It is advisable to create the contact numbers in an area that is higher than the physical contact numbers, for example.

As a virtual contact cannot be triggered (directly) by a vehicle, other mechanisms must be used to switch a virtual contact.
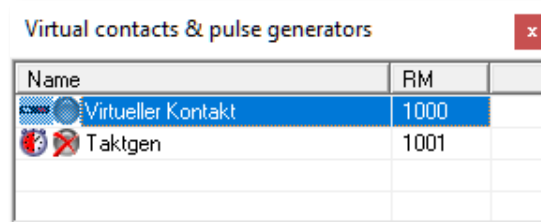
Fig. 16.91   Entry for a virtual feedback contact"

Call up the configuration dialogue using the ![icon] icon from the "Editors" toolbar. The same command can be found in the menu under<File><Virtual contacts and pulse generators>.

You can create a virtual contact manually via the short menu here in the dialogue or directly in the track diagram by right-clicking on a track symbol that is assigned to the virtual contact.

You can also switch the virtual contacts via a two-aspect solenoid device or automatically as a switching action. These switching actions can be used, for example, in the routes editor, tour-automatic editor or in the dispatcher.

<u>Right-click on</u> a selected line to display a short menu as usual (cf. Fig. 16.92) in which you can edit the parameters of the entry.

In the configuration dialogue of the feedback contact, simply enter that this is a "virtual contact " as the "Detector source/behaviour".

Optionally, you can also use a solenoid item here, which switches on the virtual contact at the position defined here.

It is advisable to give the individual contacts relevant designations.
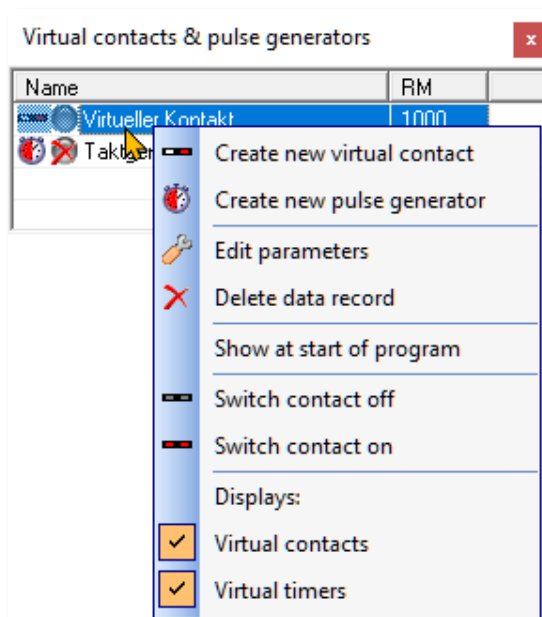
Fig. 16.92   Short menu for a virtual contact
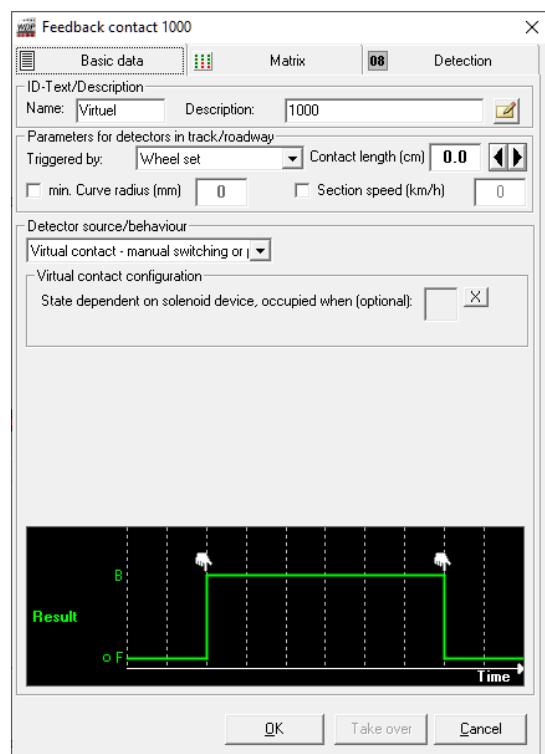
Fig. 16.93   17 configuration of a virtual feedback contact"

16.19 Screen configuration in Win-Digipet

16.19.1 Set and save the screen size for two monitors

If you are working with more than one monitor in **Win-Digipet,** you can define the screen size, save it and call it up again later.

The menu commands <Window> <Set screen size for 2nd monitor> and <Window> <Save image size for 2nd monitor> are available for this purpose.

With the set command, you can restore the screen size after restarting **Win-Digipet** with a single click, so to speak, and do not have to laboriously readjust the window.

You can also use the <Window> menu to

🚂 **Save main window state/size**

🚂 **Edit screen configurations/Reset windows**
The screen configurations with which you have used the project are saved for each project. For example, you have opened the project in the office version on a laptop with only one display, while you are using two screens on your model railway layout. The window and toolbar positions are saved in the screen configurations for all configurations.

Saved computer/screen configurations

Project name: WDP2021enbse

PC	Screen(s)	Resolutions/positions
ALDEBARAN	2 Display(s) Scale 100%	#1 1920x1080 @(0,0); #2 1920x1080 @(-1920,9)
ALDEBARAN	1 Display(s) Scale 100%	#1 1920x1080 @(0,0)
DIGIPET	1 Display(s) Scale 100%	#1 1920x1080 @(0,0)
GANYMED		Configuration from version 2018 or older
GANYMED	1 Display(s) Scale 100%	#1 1920x1200 @(0,0)
GANYMED	1 Display(s) Scale 100%	#1 1920x1080 @(0,0)
GANYMED	1 Display(s) Scale 100%	#1 3440x1440 @(0,0)
GANYMED	2 Display(s) Scale 100%	#1 3440x1440 @(0,0); #2 1080x1920 @(-1080,361)
GANYMED	2 Display(s) Scale 100%	#1 3440x1440 @(0,0); #2 1080x1920 @(-1080,-491)
MYPD	2 Display(s) Scale 100%	#1 1920x1080 @(1920,0); #2 1920x1080 @(0,0)
MYPD	1 Display(s) Scale 100%	#1 1920x1080 @(0,0)
NBF		Configuration from version 2018 or older
NBF-MOBIL		Configuration from version 2018 or older
NBF-MOBILE		Configuration from version 2018 or older
PETER-WIN8-1		Configuration from version 2018 or older

For selected configuration:
☐ Window positions ☐ Column configurations in tables ☐ All configuration-specific settings
☐ Window sizes ☐ Symbol and locomotive bar

Reset

Close

Fig. 16.94   18 saved screen configurations

🚂 **Fix the toolbars**
This saves the selection and the positions of your configuration

16.19.2 Show symbol info under mouse pointer

In the <Track diagram><Symbol information under mouse pointer> menu, you can select either <Addresses and feedback numbers only> or <Full symbol information> to display the symbol information in the track image.

Fig. 16.95 The symbol information for an iVHD

Depending on the option set, either only the addresses of the solenoid items and the numbers of the feedback contacts **or** all symbol information is displayed as "Quick info" with a yellow background when you move the mouse over the symbols.

16.19.3 Display of the solenoid device status

When you hover over a solenoid device with the mouse, various states are displayed:

🚂 The solenoid device has not yet been given an address. There is also a small hourglass on the adjusting hand. You can recognise the missing address in the quick info	
🚂 the solenoid item can be positioned, the positioning hand is displayed without further additions.	
🚂 The solenoid device is blocked by a set route, is switched and locked against being moved. There is also a small prohibition sign on the control hand.	

🖰 the solenoid item is set and has not yet reached the end position. There is also a small hourglass on the setting hand.	0000 Weiche 1. ESU ECoS 2 Adr.: 0052 Bergheim Booster SBhf-B und Bergheim RMK: 0038 Kontaktlänge 37.0 cm
🖰 The solenoid device is in a set route, is switched, but the position monitoring does not yet indicate the correct position. There is also a question mark on the control hand.	0000 Weiche 1. ESU ECoS 2 Adr.: 0052 Bergheim Booster SBhf-B und Bergheim RMK: 0038 Kontaktlänge 37.0 cm

16.19.4 Call up the feedback monitor

You can start the feedback monitor by clicking on the 🖥 icon in the "Monitor" toolbar or the command with the same name in the main menu. You can quickly see which feedback contacts are currently occupied (busy) and are therefore displayed in red in the feedback monitor.

This monitor can assist you in troubleshooting if, for example, individual contacts are not triggered during operation, and this causes malfunctions in the operating sequence.
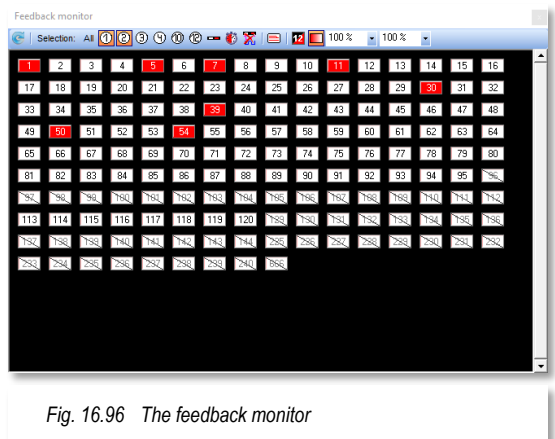
Fig. 16.96   The feedback monitor

The feedback contacts are displayed in the dialogue, numbered in ascending order. The display of the contacts can be faded in or out for each digital system. Various filter functions are available in the dialogue window for this purpose. In addition to the display per digital system, the aforementioned filters can also be limited to virtual feedback contacts, pulse generators or free feedback contacts.

The distances and thus the number of contacts listed in the window can be adjusted in various magnification levels.

The contact numbers can display four different statuses in this dialogue window.

- 🖰 White   The contact is free
- 🖰 Red   The contact is occupied
- 🖰 White/red   The contact is configured as a momentary contact or is displayed as a simulation contact in the simulation
- 🖰 crossed out   The contact is not assigned

16.19.5   Show all feedback numbers

You can display the assigned numbers of the feedback contacts in the track diagram. To do this, activate the <Track diagram><Display all feedback contacts> item in the menu.

Fig. 16.97   A magnifying glass enlarges the feedback numbers

Sometimes these numbers are difficult to read in the track image. However, as soon as you hold down the left mouse button on a number, this number is displayed enlarged in a magnifying glass.

> If you have switched on the function **before** setting a route with the start/destination function or the tour-automatic route function, **Win-Digipet** will switch off this function at the latest when.

16.19.6   Various status displays and printouts

In menu bar you will find two commands for querying the...

🚂 **Status of digital systems**
Click on the icon 🟢[37] in the toolbar to display the associated digital system with the current settings in a new window. This display varies depending on the digital system used.
If you are using several digital systems, you can switch between them using the lower left selection list.
By clicking on the '***Reset system'*** button, you can reinitialise the digital system **without having** to exit and restart **Win-Digipet.**

🚂 **Project name**
The area shows you the name of your project.

🚂 **Printing the track diagram**
The track diagram can also be printed from the main programme. The <File><Print track diagram> menu item starts the print routine. All setting options are self-explanatory and correspond to the print functions of the other parts of the programme.
In contrast to printing the track diagram in the track diagram editor, the current status

---

[37] Depending on the number of digital systems used, there may be several symbols of the same type

of the track diagram including the position of the solenoid items, counters and the assignment of the vehicle displays are displayed or printed here.

🚂 **Signal quality monitor**
In this window, the "quality" of the data packets received from the vehicles by the feedback decoders is visualized. This makes it possible to draw conclusions about dirty tracks in track areas with poor signal quality, for example. Please note that this functionality is currently only supported by very few protocols (e.g. BiDiB) or hardware.

16.19.7 Digital system status in the toolbar

If **Win-Digipet** detects that a connected digital system is not (or no longer) active, this is indicated by a red button in the "Digital systems" toolbar.

Fig. 16.98   19 digital systems

With click on this symbol to call up the status of the digital systems and immediately reactivate the digital system by clicking on the **'Init System'** button (it changes depending on the system status of the digital system with **'Reset System'**) without having to exit and restart **Win-Digipet**.

Digital systems that were (temporarily) deactivated in the Start Centre before **Win-Digipet** was started can be "switched on" in the same way during operation.

You must use the **'Terminate'** button if the connection to the digital system must be disconnected because settings are to be made on it (for example, the Intellibox from Uhlenbrock if settings are to be made on the LocoNet bus).

Fig. 16.99   This digital system is not active

16.20 Hardware - Booster management

The aim of booster management is to ensure that even on larger layouts with many boosters, fewer shutdowns of the entire layout caused by short circuits disrupt smooth model railway operation.

Modern boosters and digital systems now offer the option of switching off individual booster circuits in the event of a short circuit or overload, for example, and keeping unaffected areas in operation.

For safety reasons, booster management should only be used for boosters that switch off safely on their own in the event of a short circuit and are not dependent on being switched off by the control centre.

> ⚠ **It must <u>always</u> be ensured that the booster switches off <u>safely in the</u> event of a short circuit or overload, even without the influence of the control centre or PC!**

Examples of some boosters that support this functionality are		
Littfinski DB-4		www.ldt-infocenter.com
Bmbtechnik – G.Boll 3/5A	New version	www.bmbtechnik.de
Uhlenbrock Power 4		www.uhlenbrock.de
Tams B4		www.tams-online.de
Lenz LV 102		www.digital-plus.de
CAN Digitalbahn Modulbooster		www.can-digital-bahn.com
Open DCC Booster		www.opendcc.de
MüT Booster		www.muet-digirail.de
Stärz Power Pack		www.firma-staerz.de
BiDiB Booster		www.bidib.org
…		

Booster management is set up in **Win-Digipet** in the main programme and in the track diagram editor.

16.20.1 Booster management setup

The Booster Management is started in **Win-Digipet** by clicking on the "Booster Management" icon or by selecting the corresponding entry in the <Extras> menu of the main programme.

This call displays the configuration dialogue for booster management. <u>Right-clicking</u> in the window again displays a short menu. All booster management settings can be made in this menu. The familiar or self-explanatory menu entries from other parts of the programme, such as "Save data record", will not be repeated here. We will restrict ourselves here exclusively to the booster management functions.

16.20.2 Creating and deleting a booster

The first step in setting up booster management is to create a booster. To do this, select the "Create new booster" entry from the booster management menu.

A new entry with an automatically generated name and ID is then created in the "Booster Management" dialogue box. The proposed name can be edited by clicking in the "Description" column of the new entry.

In this way, further boosters can be created. For better differentiation, it is advisable to give the boosters names according to their functionality.

You can save each data record via the menu, or the programme will remind you to do so. If you make a mistake when setting up a booster, you can also delete this entry using the "Delete data record" menu item.
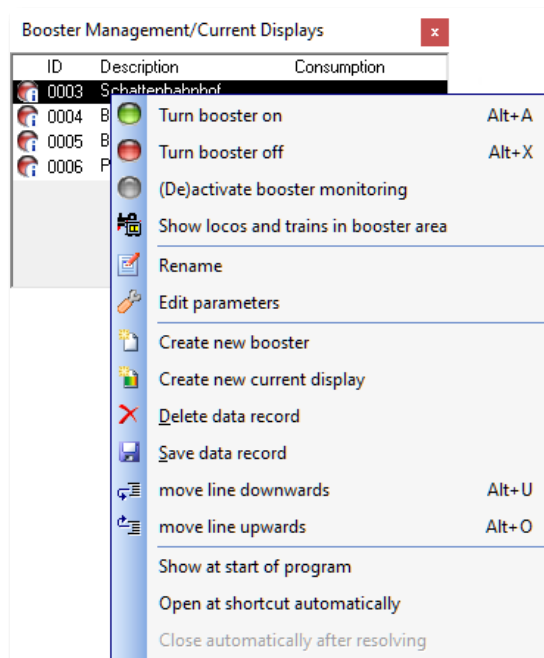
Fig. 16.100   The setup dialogue for booster management

16.20.3 Assignment to the booster circuits

After you have now successfully created one or more boosters, you can assign each feedback contact or solenoid device to the created booster circuits. These tasks are carried out in the **Win-Digipet** track diagram editor (see section 5.9).

16.20.4 Display of the booster circuits

You can display the assignment of the feedback contacts and solenoid items to the individual booster circuits at any time in the main programme.

For this function, select the desired entry in the booster management setup dialogue in the dialogue window while holding down the Shift key. As a result, the symbols associated with the selected booster circuit are highlighted in blue.
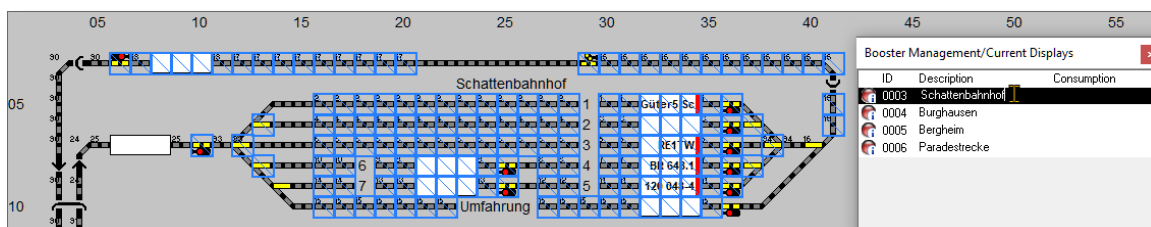
Fig. 16.101   The elements marked "blue" are assigned to the selected booster area

16.20.5   Setting the booster parameters

The dialogue shown here in Fig. 16.102 can be accessed via the <Edit booster parameters> menu item in the short menu (see Fig. 16.100). It offers the option of setting various parameters that determine the behaviour of your booster.
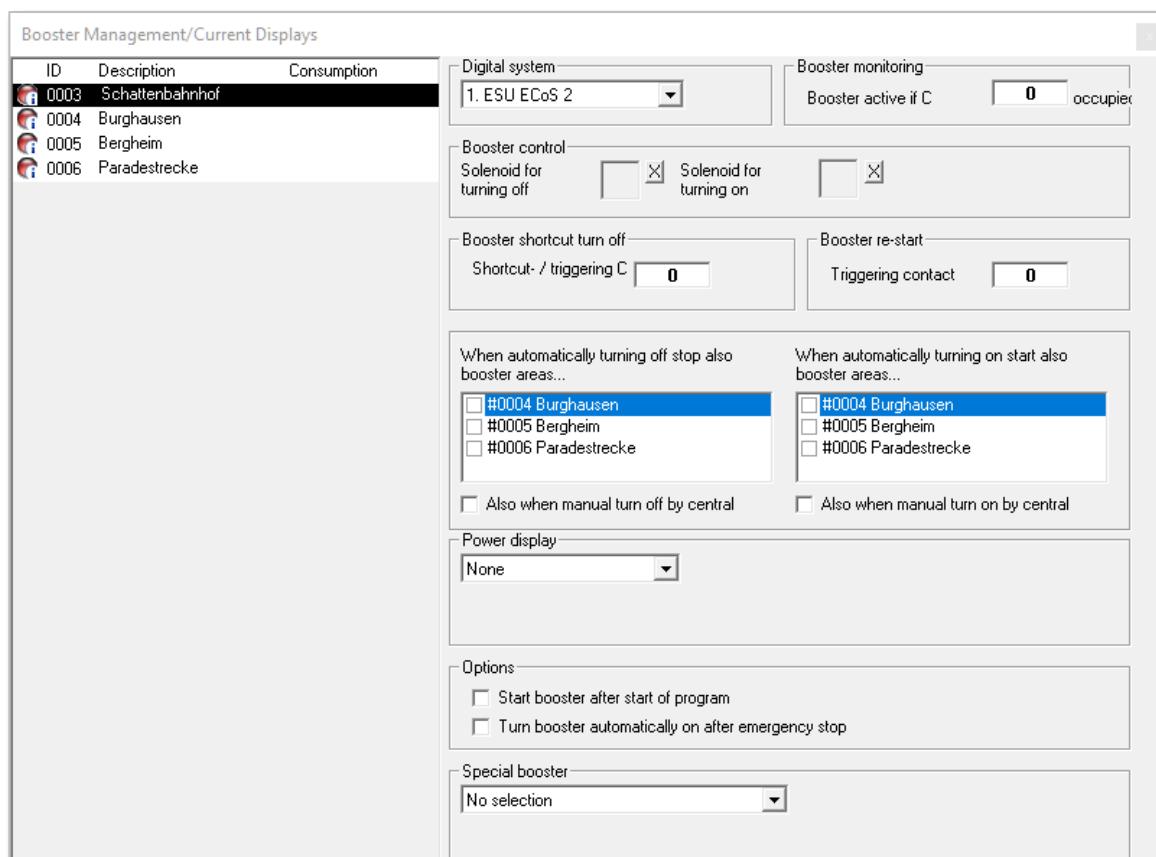
Fig. 16.102   Change booster management parameters

- Recording of feedback contacts that cause the short-circuit or restart of a booster

- Recording of solenoid devices (e.g. K84) that switch a booster area on or off.

- Integration of special boosters, such as a BiDiB booster or an Uhlenbrock booster, which reports its status via the LocoNet or BiDiB bus

- Detection of neighbouring booster areas that are to be switched off or switched on again when the system is switched off.

- Switch on the booster automatically when the programme starts or after an emergency stop

- Integration of power displays (e.g. from the manufacturer bmbtechnik) or feedback contacts that indicate a short circuit or overload of the booster areas.

16.20.6   Switching the booster on or off

With using the short menu described in detail in the previous sections (see Fig. 16.100), the booster circuits created can be switched on or off individually. The dialogue window for booster management marks this with a green or red dot, similar to what you are already familiar with from the interlocking attendant section of the program. These switch events are also logged in the **Win-Digipet** logbook.

The switching of boosters can also be initiated automatically via switching actions (e.g. within the dispatcher).

16.20.7   Deactivate booster monitoring

The menu item "(De-)activate booster monitoring", marked by a grey ball (see Fig. 16.100), offers the option of (temporarily) excluding individual areas from monitoring.

Please note that you must also select this menu item to reactivate monitoring.

16.20.8 Display of vehicles in a booster area

The selection of the menu item shows you all vehicles or trains that are entered on vehicle displays in the selected booster area. It is self-explanatory that you must have assigned your feedback contacts to the booster areas in the track diagram editor for this action. In the Fig. 16.103 all vehicles and trains in the "Staging yard" booster area are displayed with the respective name and digital address as an example.
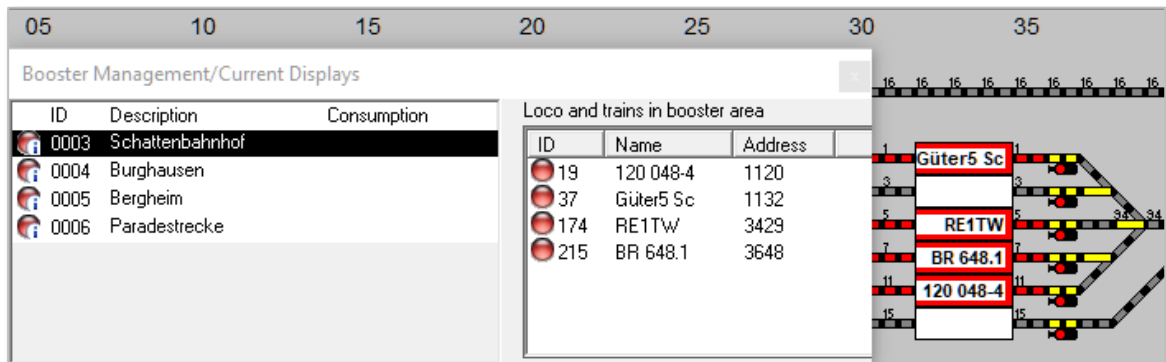
Fig. 16.103   Display of all vehicles and trains in a booster area

16.20.9 Effects of booster management on driving operation

Routes, which contain contacts or solenoid devices (if connected to the booster) in one (or more) **non-active** booster area(s) are **not** executed by **Win-Digipet.** The corresponding information is displayed in the "Start-/destination" dialogue or the tour event inspector.

16.21 Additional hardware

16.21.1 Power displays

If you know and use the power displays from Gerd Boll (www.bmbtechnik.de), you can also realise the display in the track diagram in conjunction with a so-called encoder.

Power displays can also be offered by different types of boosters. These are set up in Booster Management in the "Power displays" section (see Fig. 16.102). Select the necessary settings for your booster type here.

If you click on the <Create new power display> entry in the booster management short menu, you can also set up external current displays such as those mentioned above. To do this, select the manufacturer and enter the first feedback contact number of the current display in the empty field.

The feedback contacts must be connected with a cable to the corresponding connections of the power displays, otherwise the display will not work.

The tick "*Show at start of program"* causes the display to be constantly shown on the **Win-Digipet** screen.

You can now use the power displays to monitor the utilisation of the connected boosters very easily. You can also integrate these displays into the configuration dialogue for the booster parameters and determine there, which actions should be carried out from a certain load threshold value.

16.21.2 Watch-Dog

The so-called Watch-Dog from Gerd Boll (www.bmbtechnik.de) can also be integrated into **Win-Digipet** to monitor and secure your model railway layout.

Click on the ![icon] icon in the "External hardware" toolbar to open the "Watch-Dog" window. All created "Watch-Dog" are displayed in this window.

Fig. 16.104 The "Watch-Dog" configuration dialogue

A solenoid device must be set up in the track diagram for each watchdog, which takes over the control function. The solenoid item must be transferred to the Watch-Dog dialogue.

Ticking "*Active"* activates the watchdog. **Win-Digipet** now sends a "green" solenoid device switch command at the set interval time and the watchdog monitors this. If this command is not received after 5 seconds, the watchdog turn off all boosters of the monitored digital systems and the vehicles or trains come to an abrupt stop.

To ensure maximum safety, you should never use the digital system as a booster to control trains, as the watchdog cannot monitor this circuit. However, it will of course "notice" if the

control centre has gone "independent", because in this situation the command sequence is not sent within the 5 seconds and the watchdog switches off the booster.

However, you can connect all solenoid items to the power circuit of the digital system, as the watchdog is not activated for more than five seconds in the following events and therefore switches off:

- for "Execute basic position"
- at the "emergency stop"
- when calling up the "System settings"
- when calling up the "Track diagram editor"
- when calling up the "Vehicle database"
- and in the "solenoid device function test"

As soon as the programme parts/functions mentioned are finished/completed, the watchdog automatically switches the boosters back on.

When **Win-Digipet is** closed, the solenoid device address and "red" command will be sent so that you can also use the model railway layout without a PC.
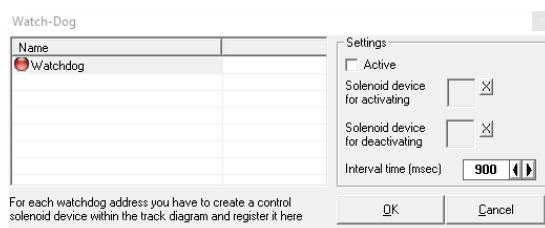

16.21.3   *Helmo vehicle number identification system*

The Helmo system can be accessed via the menu command <Extras><Helmo reading devices> and is activated as soon as you have ticked the "*Activate*" box on the "Hardware - Helmo reading devices" tab in the system settings. To be able to use the Helmo system, it must be activated from the toolbar. The "Helmo train number identification system" window opens.

The set COM interface with the HELMO system is only activated when you call it up. The number of readers that you specified in the system settings is displayed. In the example here, the entry was **eight** readers (01 to 08) out of a maximum of 30 possible.

The small white number to the left of the digital display is the sequential number of the reader. The black numbers in the grey input fields are freely definable and form the **link** between the vehicle display in your track diagram and the Helmo system. Enter the feedback contact number of the vehicle display from your track diagram for which the automatic transfer from the Helmo system is to take place.

When the Helmo system has recognised a vehicle address (max. 99 addresses are possible), the transfer is made immediately to this track diagram position in the corresponding vehicle display. The recognised vehicle addresses are displayed as red digital numbers. The feedback contacts in the grey input fields also have an additional function. The vehicle address in the display field of the Helmo system is only updated again when a **new** vehicle drives over the reader and is recognised.

To improve this, the Helmo address of the vehicle is deleted again by the program (grey digital **00**) when the corresponding contact of the vehicle display in the grey input field to the right of it on your model railway layout reports "FREE" again.

16.22 Joystick control in Win-Digipet

In **Win-Digipet** you can use your joystick(s) (up to 16 are possible) to control the vehicles and also the cranes very conveniently. To use and configure the joystick, click on the 🎮 icon in the toolbar.

After clicking on the icon, the "Joystick Status" window opens and displays the available joysticks in a list.

If you want to use or change the joystick control for the first time, you must click the **'Open configuration' button to expand** the window downwards to include a configuration dialogue. Here you can make the necessary settings, for example for the button and axis assignment of the device.

Fig. 16.105   The status window for joysticks

For your initial settings, you can use the image inserted here as a guide. You will also see this image if you click on the "Example" tab.

The illustration shows a stylised joystick from the manufacturer Logitech. However, you can also use any other joystick that has the required buttons and control functions.

On the four tabs, you make the entries for the joystick control of the vehicles or cranes.

Fig. 16.106   An example of the assignment of a joystick

16.22.1   Joystick control of a vehicle - Axles tab

After click on the **'Open configuration'** button (cf. Fig. 16.105)**,** the window opens downwards, and the "Axle" tab is displayed.

When you open this tab for the first time, the first mode shown in the image is preselected from the three possible control modes.

You can leave this as it is for the time being and now move the joystick.

The X-axle of the first control stick is preselected to control the speed of the vehicle. If you move this to the right, the speed is displayed in the Test field as in the quick control bar. If you move the control stick to the right or left, the speed is
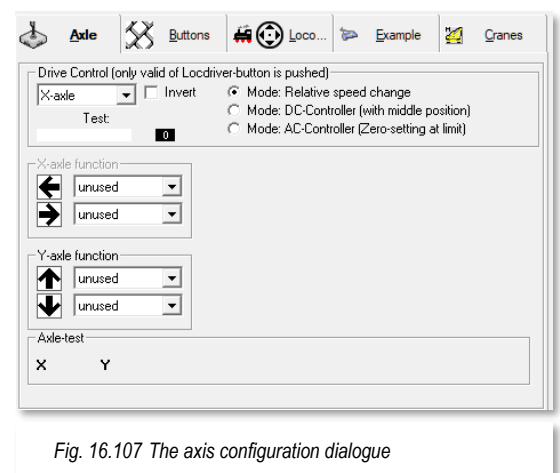
Fig. 16.107 The axis configuration dialogue

increased or decreased and maintained in the home position (centre position of the control stick).

If you now move the joystick(s) in different directions, the movement is also displayed on the three other axis functions (Y, Z and R axis) and you can see what options your joystick offers.

It is up to you which functions you then assign to the individual axes, but you should use the functions suggested in the example graphic to familiarise yourself with them.

Three different modes are available to control the speed of the vehicle:

- **Relative speed change**
  You should select this mode if you are used to controlling the vehicle with the Märklin digital system or the Intellibox in AC mode, for example, and the speed of the vehicle is to be maintained with the last control command. In this mode, it is not possible to change direction via the selected axis (usually the X-axis).

- **DC controller (with middle position)**
  You should select this mode if you want to determine the direction of travel of the vehicle via the selected axis function and the speed of the vehicle should always follow the movement of the control stick immediately. This means that the vehicle will stop when you release the joystick, regardless of which direction of travel was previously set. This is the mode suggested in the example graphic.

- **AC controller (zero setting at limit)**
  In this mode, you cannot determine the direction of travel of the vehicle via the selected axis function. The speed of the vehicle is always maintained at half the maximum speed of the vehicle when the control stick is released (in the home position). To brake and accelerate, you must move the control stick to the left or right so that the vehicle will only stop if you hold the control stick in the left end position.

To the right of the axis selection field for the speed controller is the "*Invert*" field. If you tick this box, the direction information of the joystick is reversed (inverted).

Next, you should define the axes for the "*Stop locomotive*" and "*Turn locomotive*" functions. Which of the three modes you have set above is irrelevant here, as the function is very important for an **emergency stop of the vehicle**, because both functions are executed immediately **without** the "*Driver*" function button.

	Without a defined button for the "*Train driver*" function, you will not be able to change the speed of the vehicle later.

16.22.2 Joystick control of a vehicle - Buttons tab

On tab, you can now define the required functions. The button for the aforementioned "*Train driver*" function is important here, as without this you cannot specify or change the speed of the vehicle. To select the vehicle to be controlled, you also need the button with the "*Locomotive selection*" function.

Depending on the joystick used, you have a corresponding number of buttons that you can assign functions to.

Simply press a button on the joystick (it is highlighted in red) and then select the desired function from the list box, e.g. "*manoeuvring*".

Fig. 16.108 The button configuration tab

So that you can also control your vehicle comfortably in manoeuvring mode, a field for specifying the maximum speed in manoeuvring mode has been added at the bottom right. You can use the arrow keys to select from a range of 1 to 200, with 60 km/h being the default setting.

16.22.3 Joystick control of a vehicle - Locomotive tab

On tab, you define the navigation in the vehicle/crane selection called up and in the open emergency stop window.

By ticking the appropriate box, you can also determine whether the vehicle control should open and close automatically at and whether the emergency stop window can be operated using the joystick. Confirm the selection in the emergency stop window with any button and the window will close again immediately.

You can assign further functions to the cross button, as shown in the image. Here too, press the desired button and then assign the function to the button highlighted in red on the tab.
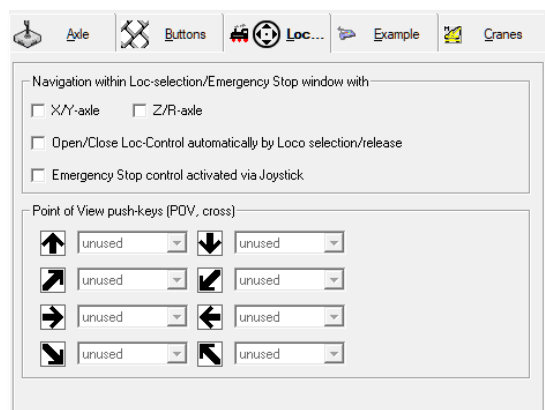
Fig. 16.109 The locomotive configuration tab

After this setting, you should tick the "*Joystick 1 active*" box (see Fig. 16.105), only then can the configured joystick be used in the programme.

Click on the '**Close configuration**' button to close the extended window and click on the '**Close**' button to return to the main programme.

16.22.4   Crane control - Cranes tab

If you also want to control a crane with the joystick, you must make the necessary settings on the "Cranes" tab. You can see which functions the individual cranes have on the right-hand side of the tab.

In this example the Märklin crane 46715 is to be controlled.

To do this, set the selection button for the three possible axis functions accordingly and make sure that you have selected different axes.

As you can see from the tab, the joystick used must have two control sticks so that all functions can be controlled.

Fig. 16.110 The cranes configuration tab

Click on the **'Close configuration'** button to close the extended window and click on the '**Close**' button to return to the main programme.

16.22.5   Control the vehicle/crane with the joystick

After the preparations made in the previous sections, you can immediately test the controls in the main programme using the joystick. To do this, click on the joystick button to which you have assigned the "*Locomotive selection*" function.

The "Locomotive selection for joystick 1" window opens immediately and displays all available vehicles and cranes in the vehicle database with the "Layout" location. The vehicle or crane with a green frame is shown enlarged at the bottom of the window so that you can recognise the vehicle even from a greater distance from the screen.

The digital address and model designation of the vehicle or crane are displayed below the image. You can use the buttons defined for navigation in the vehicle selection to select another vehicle or crane, whereby the green border always moves with it. Once you have selected a vehicle, simply click on any other button and the window will close.

You can now use the joystick to control the selected vehicle or crane on the model railway layout.

If you have ticked the opening/closing of the vehicle control of a selected vehicle on the "Vehicles" tab in the system settings, you will see the vehicle control with a green or yellow speed controller.

The green speed controller allows driving over the entire speed range, while the yellow controller indicates that the shunting gear is activated and therefore only half speed is used in the speed steps.

To change the speed of the vehicle, you must **always press** the defined "*Train driver"* button and the joystick at the same time. If you release the engine driver button earlier, the current speed of the vehicle will remain until the next speed change.

16.22.6 Further commands via the short menu in the Joystick status window

If you do not have enough buttons available on your joystick to switch the shunting gear and/or the ABV (deceleration delay) on or off, you can open a short menu in the "Joystick status" window by clicking the right mouse button.

You can then tick or untick the two commands. This is then also displayed visually in the open Vehicle Control.

You can also select the vehicle to be controlled or the desired crane using the short menu command <Select locomotive>. After this command, the vehicle selection window is displayed, and you can select the vehicle to be controlled by double-clicking on the image of the vehicle or crane. After double-clicking, the vehicle selection is closed, and you can control it with the joystick.

16.23 Control Win-Digipet with a mobile device

Essential **Win-Digipet** functions can also be controlled using a mobile device such as a smartphone, tablet or notebook. An application (colloquially: "app") is started on these devices, which establishes contact with your model railway PC via a Wi-Fi connection.

This app can then be used to run routes and route sequences, control vehicles or trains, switch solenoid items and display feedback contacts. You can also display your track diagram on these devices.

Markus Herzog has developed and programmed the necessary apps for the various operating systems and makes them available free of charge. However, they are not part of **Win-Digipet 2021**, but the **Win-Digipet** programme provides the network interface required for this.

> The **Win-Digipet** hotline does not offer support for problems with controlling **Win-Digipet** via mobile devices.
>
> Due to the large number of different device types with different operating systems, no functional guarantee is given for the mobile applications.
>
> Just try it out to see if it works with your mobile device.
>
> If the application does not work, you can report this in the **Win-Digipet** forum and there in the **Win-Digipet Mobile** subforum. However, there is no entitlement to customisation of the apps.

16.23.1 Requirements for control with a mobile device

To be able to control **Win-Digipet** via your mobile device, you must:

- Your model railway PC must be Wi-Fi-capable (e.g. with a Wi-Fi USB stick) or connected to a network that provides Wi-Fi on your model railway layout
- Your mobile device must also be Wi-Fi-capable and be in the same network

The mobile device must be equipped with one of the following operating systems:

- Windows Mobile
- Android
- Apple iOS

Finally, the app required for the respective device must be installed. You can generally obtain the apps via the software distribution platforms (e.g. Apple Store, Google Play Store or also in the Windows Store). Further information on sources of supply and versions etc. can also be found in the **Win-Digipet** user forum.

16.23.2   Establish connection between Win-Digipet and mobile device

At this point it is not possible to show all the steps for every type of mobile devices here, but the installation for a device on an Android platform is described as an example.

As soon as your model railway PC has access to a Wi-Fi network, you can click on the ![icon] icon in the "Extras" toolbar.

The "**Win-Digipet** Remote" dialogue window then opens and displays the IP address(es) of your model railway PC. The port address 15209 shown above is mandatory and must not be changed.

Click on the red "Network module inactive" area to turn it green and activate the network module.

In this example, more than one IP address is shown in the **Win-Digipet** network module. In this case, one of them is the PC's connection to the Wi-Fi. If several addresses are listed in the dialogue window, the IP address of the Wi-Fi interface must be selected, in the example this is 192.168.178.77.
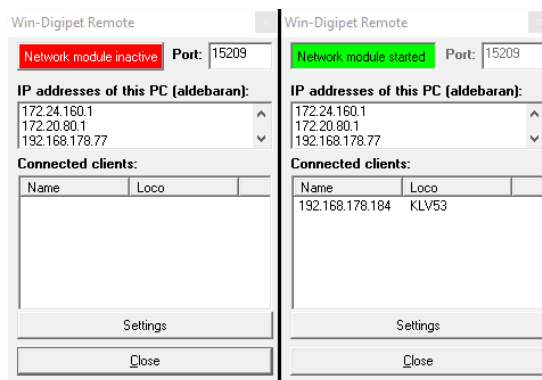
Fig. 16.111   The inactive or active network module

Once you have installed and started the app on the mobile device, you must enter the IP address of the model railway computer (e.g. 192.168.178.77) and then tap on '***Connect'.***

The two graphics below show the successful connection setup of a mobile phone with the Android 13 operating system. To use all functions of **Win-Digipet** 2021, at least app version 2.7.1 (or higher) is required on the mobile device.
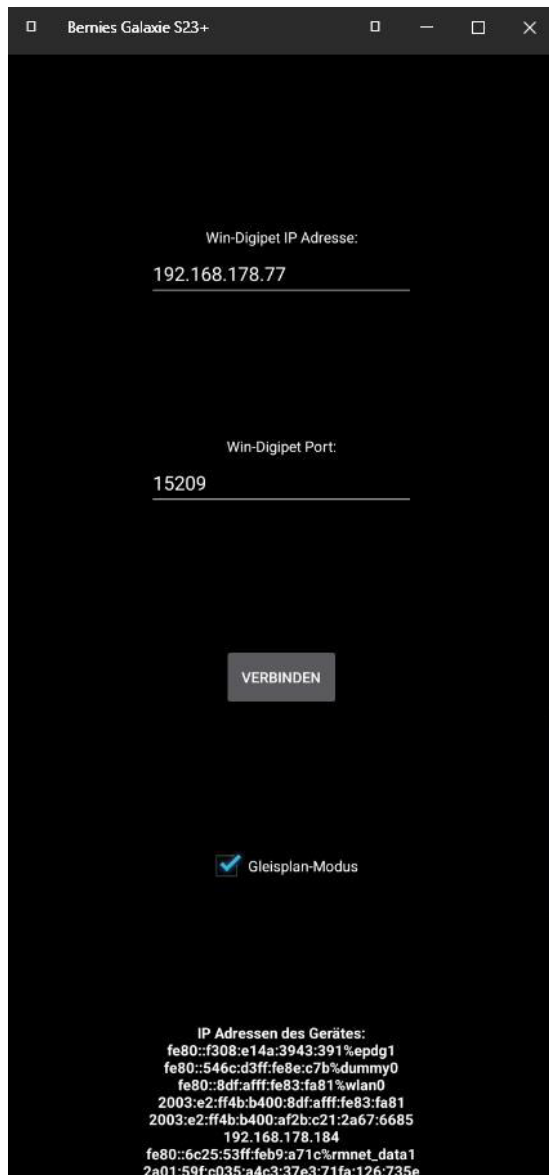
Fig. 16.112   The IP address of the PC is entered in the app
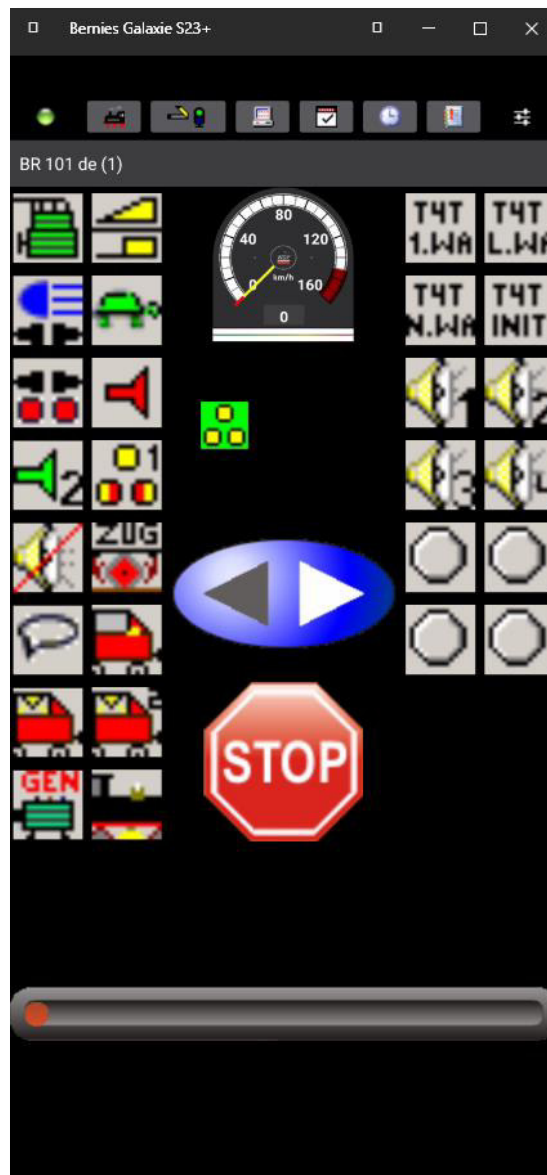
Fig. 16.113   The vehicle control in the mobile app

If the connection is established successfully, the IP address of the mobile device is displayed in the network module on the computer. Here you will also receive information about which vehicle is being controlled by the mobile device.

The dialogue is expanded using the **'Settings'** button and you can now assign or revoke rights to the control unit of your system for each individual mobile client. The rights can be defined differently for each client. For example, you can allow a guest to drive only a certain vehicle, while you can allow another guest to drive only in a certain part of your model railway layout.

A more detailed description of the apps is deliberately omitted here, as the apps are not part of the **Win-Digipet** product. **Win-Digipet** only provides the required network interface.

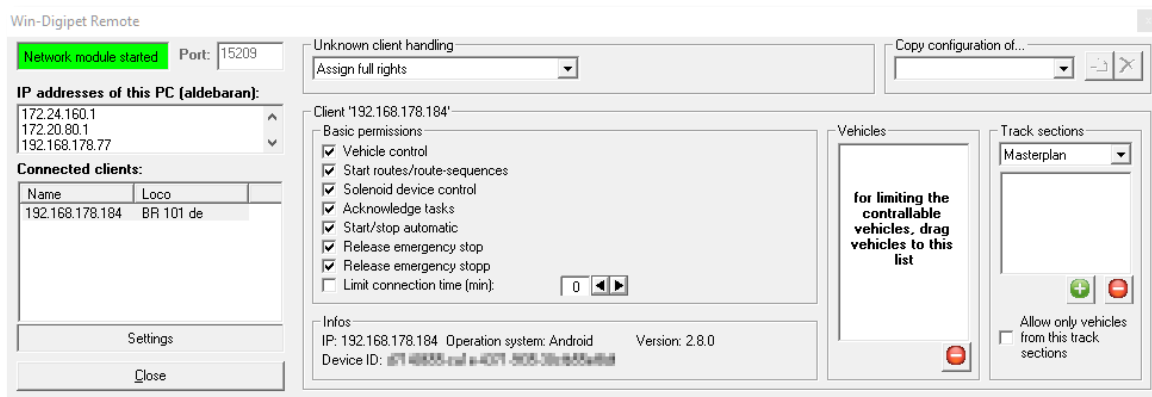The apps have a very simple structure (as is generally the case with apps) and are largely self-explanatory.

Fig. 16.114 20 client settings of the network module in Win-Digipet

16.24 End model railway operation with Win-Digipet

With click on the 🔳 icon in the toolbar to end model railway operation on your system.

All data is saved when **Win-Digipet** is closed and additionally backed up according to your specifications in the system settings.

> ⚠️ To prevent data loss, you should always use this data backup, whereby it is sufficient to only carry it out if you have actually changed data.
>
> Therefore, tick the boxes as described in the section **3.11**, whereby you can then decide for yourself whether a backup should be created or not by ticking the "*Security prompt for data backup*" box when you exit **Win-Digipet.**

16.25 Menu and keyboard commands in Win-Digipet

> In the main programme of **Win-Digipet,** all keyboard commands/key combinations are displayed in a new window via the menu command <Help> <Keyboard commands/key combinations>.

On the following page you will find all the keyboard shortcuts for printing.

Keyboard command and **key combinations** within the **main program** of **WIN-DIGIPET**

Pressing the function key...

➢	F1	calls the help function
➢	F2	minimizes all vehicle controls and arranges them at the top
➢	F3	minimizes all vehicle controls
➢	F4	closes all vehicle controls
➢	F5	increases the zoom factor (Zoom+)
➢	F6	decreases the zoom factor (Zoom-)
➢	F7	calls the train inspector
➢	F8	stops all vehicle(s) or (re-)accelerates them
➢	F9	will result in an emergency stop
➢	F11	jumps between program windows

Context menu with commands for start/dest. function, Blocking of routes/tracks, Changing the vehicle colors

➢ right mouse button on any train number display

For changing between

➢	RED 08	and BLACK 08		ALT + right mouse bitton
➢	BLUE 21	and BLACK 21		ALT- and Shift + right mouse button
➢	deletes vehicle number (also in the vehicle monitor)			Shift+ right mouse button

The key/key kombination **has to** be pressed always

Locking of tracks/routes

Click on an empty train number display with Shift + right mouse button an, then...

➢	after the first click	the vehicle display will switch to RED with white X	X
➢	after the second click	the vehicle display will switch to RED with white Z	Z
➢	after the third click	the vehicle display will be empty again	

Start-/Destination function for routes and tours

➢ click with middle mouse button on the **start** and on the **destination**.

➢ Shift + Drag & Drop from **start** to **destination** vehicle display

Start-/Destination function for route sequence navigator

➢ ALT + middle mouse button on the **start** vehicle display
➢ ALT + middle mouse button on the **destination** vehicle display

Semi-Automatic route recording

➢ click with Shift+left mouse button on the **start** and on the **destination.**

In an active locomotive control...

➢ the **UP-** or **RIGHT-**arrow increases the speed
➢ the **DOWN-** or **LEFT-**arrow decreases the speed
➢ the key **END** accelerates to maximum speed
➢ the key **HOME** or **SPACE BAR** stops the vehicle immediantely
➢ SHIFT + the **UP-** or **RIGHT-**arrow increases the speed by one decoder speed step
➢ SHIFT + the **DOWN- or LEFT-**arrow decreases the speed by one decoder speed step
➢ SHIFT+ the key **END** accelerates to half of maximum speed
➢ SHIFT + the key **HOME** or **SPACE BAR** sets the locomotive to decoder speed step 1
➢ the key „D" or „R" force a change of direction
➢ the key „F" switches F0 on/off
➢ the key „S" switches the vehicle sound on/off
➢ the key „1" to „8" switch F1-F8 on/off

If you click on a vehicle within the vehicle bar, a vehicle control or the vehicle monitor with on of the following key-combinations

➢	middle mouse button	the vehicle display containing the vehicle will be colored red
➢	Shift+middle mouse button	the vehicle display containing the vehicle will be colored red and the track diagram scrolled if necessary

Keyboard command and **key combinations** within the **track diagram-editor** of **Win-Digipet**

Automatic solenoid device registration in the track diagram

➢	Shift + left mouse button	in the virtual **Keyboard** and then on the **solenoid device**

Automatic feedback contact registration in the track diagram

➢	Shift + left mouse button	in the **feedback-contact-Monitor** & then on the **track-/turnout symbol**

16.26 Speed behaviour with route sequences

The following graphic illustrates the speed behaviour of **Win-Digipet** during the transition from route to route in route sequences or the automatic route .
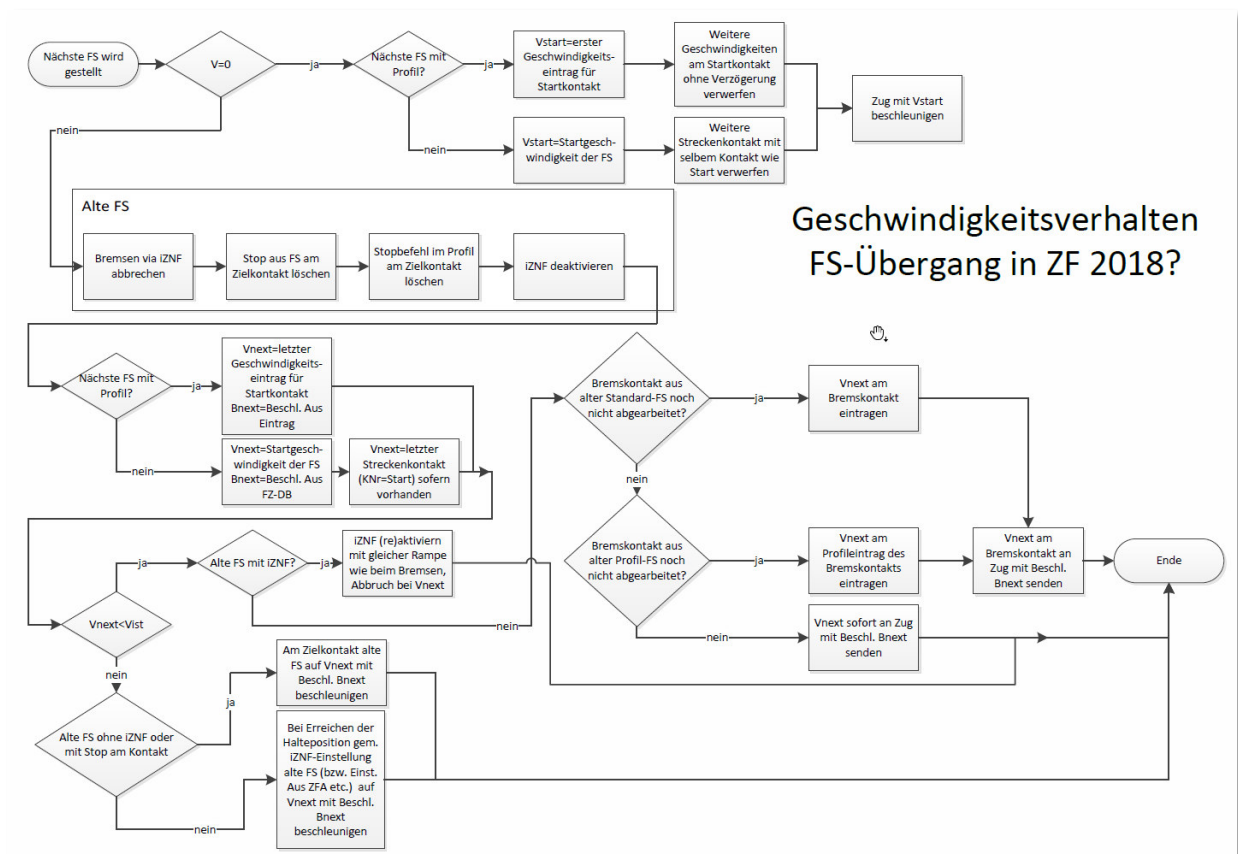

Fig. 16.21   Speed behaviour in train journeys (only available in German language)