Modell Stellwerk 10

vorbildorientierte Steuerung für digitale Modellbahnen

Handbuch Teil I
Einstellungen und Projektierung

Model switchboard

Version 10

Manual ModellStellwerk - Part 1
Settings and project planning
Edition from 01/01/2021

Changes from the previous version of this manual are indicated by a Edge line marked.

Manual model control unit - Part 1

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1 Preface

Modellstellwerk is a PC program for controlling a model railroad, for playing and for the ambitious model railroader. The image of a table in a signal box is drawn on the screen, on which the stations and routes are shown. Points and signals can be set, locomotives can be controlled and the trains running can be controlled.

The interlocking technology SpDrS 60, a development by Siemens for the Deutsche Bundesbahn in the 1960s, was the model for model interlocking. The symbols for tracks, switches, signals and much more were taken from the original building blocks on the table. The monitoring of the tracks, whether occupied, illuminated in red, or free is set up. Routes are set in analogy to the model from start to destination, the safety and permissibility of the route is checked before the signal is set to travel.

The trains identify themselves with their train number in the track sections and can therefore be followed from section to section; an important component for train tracking and an automatic operational sequence on the layout; then the trains find their way independently, depending on the type of train. Regular operation can be set up with the timetable and / or macro programs. Trains request the route themselves, as in large-scale operations, and relieve the model railroader / dispatcher. The locomotives are controlled by the program, stop in front of closed signals and start moving again when they are in the running position; this without signal modules or switchable track sections. Of course, it is always possible to control the stations, the routes, the locomotives and trains manually, as well as interventions in the automatic processes.

The adaptation of the prototype to the model railway and the display of a table on a screen require compromises in the visual implementation and programming of the processes. While a route is being set on the setting table with start and destination buttons that must be pressed simultaneously, the buttons on the screen must be clicked one after the other; this was also retained for operation with a touchscreen. Nevertheless, the SpDrS 60 has been implemented in such a practical way that dispatchers and technicians who are employed by the railway could work or play with the model signal box without instruction.

In expert mode, the model interlocking must be operated with start and destination buttons for the routes, external buttons and track buttons or with commands that are selected via menus - e.g. for turnouts. These commands are available after clicking on the symbol with the right mouse button. In this way, other model railroad-specific commands can also be used. If the expert mode is switched off, the menus are available for all commands.

On this basis, the screen display of ESTW was implemented in two operating forms for the control of eStw; For older interlockings that used tablet operation, the command fields were set up, for current ones the consistent control via menus, in expert mode with short commands. An order confirmation was not given here.

In a further step, the representation of the Swiss interlocking technology Domino 67 - a development by the company Integra, today Siemens - and the (remote) control system ILTIS added. The software has been expanded to include the command sequences that differ from SpDrS 60, for example the storage of routes.

Model signal box works with the Windows Technology. The program is divided into parallel executable sequences - so-called threads - so that the various tasks do not interfere with each other. The commands for the interface are stored internally and sent to the interface in a separate thread. This ensures that the program always reacts quickly to commands and at the same time is ready for the next jobs.

The DCC, MM, Mfx and Selectrix protocols are fully supported in the model interlocking. So it is possible to enter an absolute direction of travel (not with MM) and the addresses and speed steps from theDCCSystem to use. The model interlocking is synchronized with the different digital control centers, ie if turnouts are changed manually with the control devices of the control center, this is also displayed in the track diagram. If a locomotive is controlled by means of a rotary knob on the control center, the speed step in the locomotive window also changes, even if hand controls are used. This locomotive is stopped in good time before a signal indicating a stop, just like those controlled by the program.

Up to 4 central units can be controlled at the same time; these can be locomotive positions RailCom or CV values on the main track (POM).

Model signal box offers the possibility of controlling a model railway system via a PC network with up to 5 computers. Each station can be operated via its own table / screen. To do this, start the same model signal box program on each computer!

1.1 System requirements

Model signal box uses the 32-bit Windows operating system. You can use the program with all Windows versions from Windows 98 onwards.

ModellStellwerk requires approximately 200 MB of storage space and 40 MB of hard disk space. The minimum resolution of the screen should be 800x600 pixels, higher resolutions are an advantage because larger track systems can be displayed without scrolling the screen. PC workstations with multiple screens are supported.

1.2 License

The software model interlocking and all programs as well as the documentation are protected by copyright. The user only receives the right of use, the programs remain the property of Dipl. Ing. R. Helder. Although the model interlocking has been carefully programmed and extensively tested, no claims for damages can be made to the owner in the event of any damage caused by the program.

A separate license file is required for the light and full version of Modellstellwerk (ModellStw.lic9). If this file can be read in when the program is started, the light or full version of the model interlocking will be started. The license file determines how many turnouts and locomotives can be controlled on the layout:

Demo version (without license file): 4 turnouts and 4 locomotives

Light version: 16 turnouts and 4 locomotives

Full version: 1000 turnouts and 200 locomotives

The Swiss interlocking technologies Domino`67 and ILTIS are activated with an extra option in the license file and are therefore not always available.

Request license

The license is linked to your name and the computer ID of your computer.

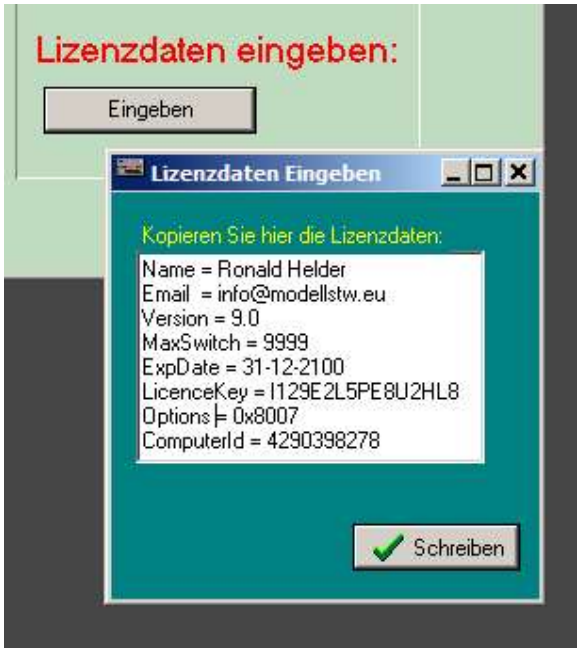
The required entries are specified via license in the operating line and in the 'Request license' field.

Name: your name
Email: Your email address Maximum
number of turnouts: 9999 Valid until:
31-12-2100
Options: 0x0001
My ComputerID: This field is filled in automatically

Copy this data or write it in an e-mail and send it to
info@modellstw.eu.
With the button below the field you can copy the text to the clipboard and from there with Ctrl-V into the e-mail.

Transfer license data

The license data with your name and the computer ID will be sent to you by
Mail sent.



Select the license data you received in the email and copy it with Ctrl-C and Ctrl-V into the field 'Enter license data' which opens after clicking on 'Enter'. With the button 'Write' the license file is written into the folder in which the program ModellStellwerk is set up. Alternatively, you can save the license file from the attachment to the email directly into this folder.

Without a valid license, the model interlocking can only be used as a demo or network version.

The license is personal and linked to this computer via the ComputerID. Changes make the license invalid. Distribution of the license is prohibited.

No additional license is required for additional computers in the network. You can

find more information about the program on the Internet:

http://www.modellstw.eu/

Send questions or suggestions by email:

mailto: info@modellstw.eu

1.3 Comments on the language

From version 8, the model signal box is only supplied in German.

1.4 additional Information

Changes made to the model interlocking after the manual was created can be found in the "versions.pdf" file on the USB storage device or in the ZIP file.

You can find more about interlocking technology on the Internet, for example at:
http://www.stellwerke.de/,

http://www.der-moba.de and

http://de.wikipedia.org/wiki/Relaisstellwerk.

http://www.can-digital-bahn.com In the forum under - Modellstellwerk - questions and suggestions can be exchanged with like-minded people.

1.5 Cooperation

I would like to thank the following helpers, without whose help the implementation and testing of the software and this German translation would not have been possible so quickly.

Matthias Seitz, Uwe Frömmgen, Bernhard Bilkenroth, Pascal le Gras.

Some images were taken from Wikimedia Commons: http://commons.wikimedia.org/wiki/File:Searchtool.svg.

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2 Brief description of the model signal box

2.1 Track plan signal box

Model signal box is a faithful replica of a Spurplan-Drpush button interlocking of the design SpDrS 60 of S.iemens, as they have been used by the Deutsche Bundesbahn since the 1960s and are still in use today, and the Swiss interlocking technology Domino `67 from Integra / Siemens. The table with the pushbuttons for operation is reproduced in the model switchboard on the screen, the "buttons" are operated with the mouse or - even better - with the fingers or a pen on a touchscreen. Routes can be set or individual operations of points etc. can be carried out.

Model signal box offers many functions that one can expect from a prototype-oriented model railway control. Settings make it possible to create an interlocking for the model railway that can be operated largely prototypically and that has many functions of the large model. Be with a click of the mouseRoutes set by entering start and destination; separateSwitches and the locomotives also respond to mouse commands. The signal and turnout positions are displayed in the track diagram, and the locations of the individual trains can also be traced in the track diagram, provided the model railway system is equipped with the appropriate track vacancy detection devices. In model railways, "feedback contacts" are used to detect whether a track is occupied by a vehicle. In the prototype operation, the occupancy of a track is withTrack vacancy detection devices detected. Although the model interlocking works with conventional feedback, this document speaks of track area reporting systems.

Some compromises had to be made compared to the original, e.g. the 2-button operation of the original with a mouse is not feasible, here the necessary keys have to be pressed one after the other in a certain order. You can also set how consistently the model signal box adheres to the functionality of the prototype. Consequent
- the expert mode is set - means, for example, that a signal cannot be set to travel by means of an operating command, but starts moving automatically after a route has been set as soon as the conditions for the route are met (all switches are in the correct position , the track sections are free, the edge protection conditions are met ...). In this mode, the signal aspects Hp1 and Hp2 or FB1 - FB5 (with Domino) cannot be distinguished on the table, true to the original.

A special feature of Domino is the possibility of displaying two different signal images on the table. Once the technically correct execution of the signal display with two lamps - red and green - and then an extended display in which the signal image of the external signals of the type L - stop and FB1 to FB5 - are displayed on the table.

Despite some compromises by displaying a table on a computer monitor, experienced signal technicians from the prototype company were able to take on the role of a dispatcher without further instruction and operate the model signal box immediately!

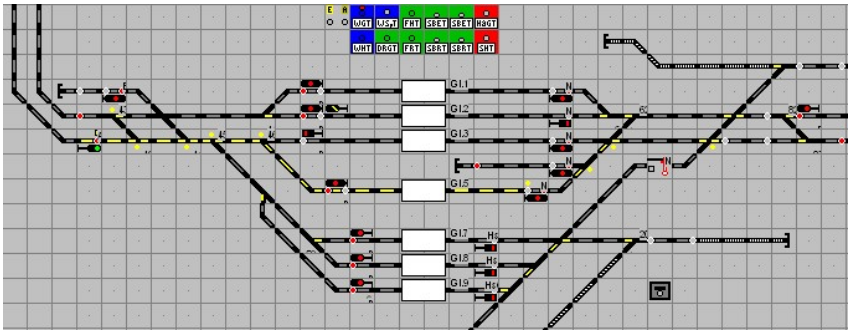
A functionality that is largely based on the prototype naturally requires prototypical operation on the model railroad as well. With the setting - expert mode switched off - a less restrictive reaction of the model interlocking can be selected, so that, for example, signals can also be set in motion by appropriate operation without routes. However, this also means that various safety devices are switched off.

Based on the interlocking functionality, which is largely based on the original, the option for manual and automatic train control is implemented in the model interlocking.

Different symbols are used in model interlocking to represent the table.

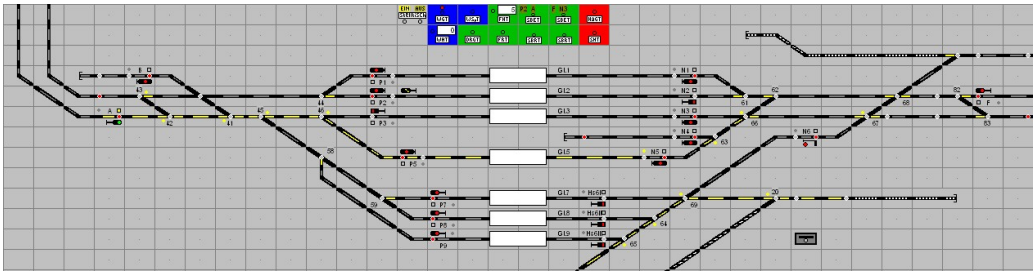
The smallest symbols or table fields are square and thus modeled on the interlockings of the Lorenz design (SpDrL60). The partially different operation of a Lorenz interlocking compared to the Siemens design was not implemented.

Table of the "Lorenz type"



The main distinguishing feature of the Lorenz-type setting table in lane plan signal boxes compared to the Siemens type is square table fields (20 x 20 pixels). This makes it possible in the model interlocking to display larger interlocking layouts even in a small space (monitor).

Table of the "Siemens design"



The symbols for a Siemens interlocking are larger (25 x 37 pixels) and easier to recognize, but they also require significantly more space on the screen, so that the screen has to be scrolled or distributed over several windows for larger system layouts.

"Siemens design" table - photo-realistic representation

Even more space (75 x 120 pixels) is required to display a table with table fields that were photographed from a prototype signal box. The screenshot shown shows the right part of the layout of the table shown above.

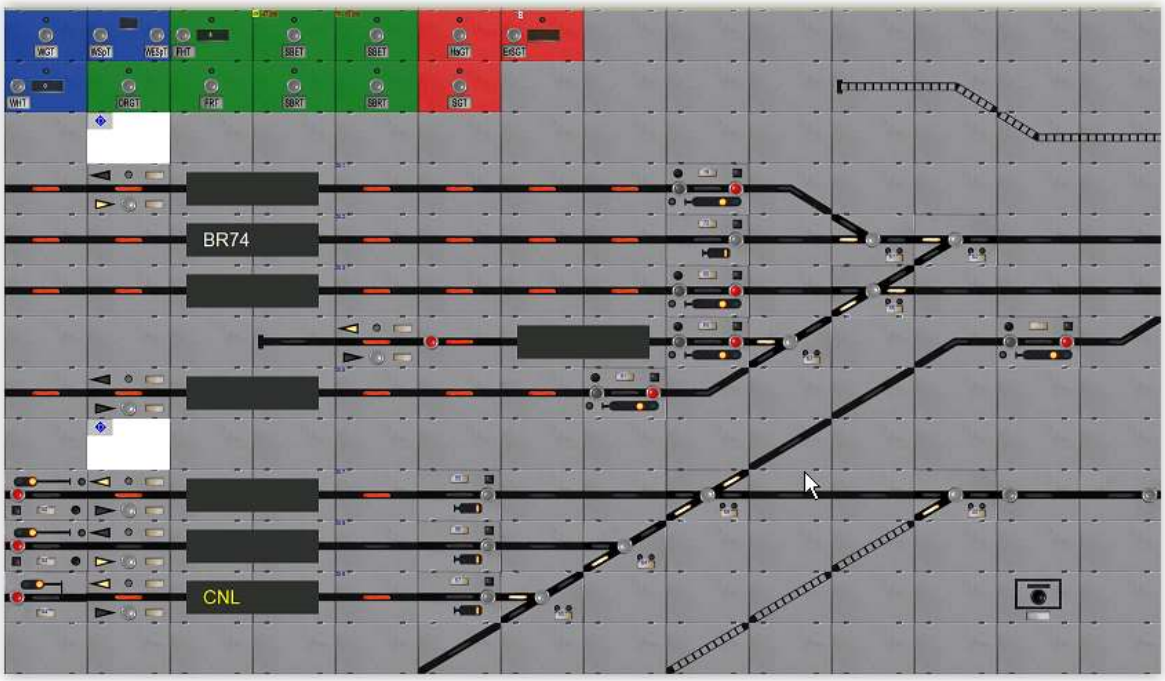
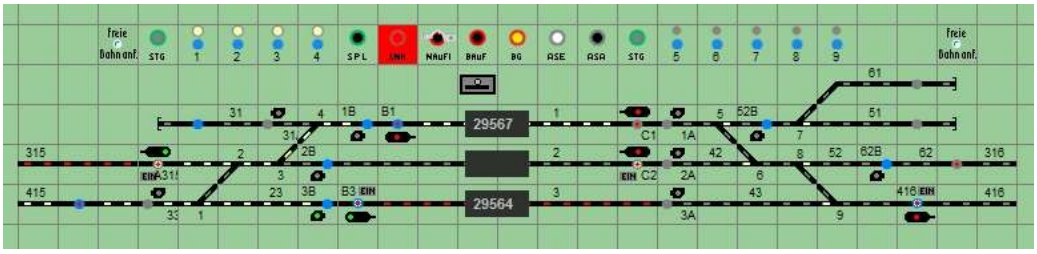


Table cutout with photographed fields

"Integra Dominò 67 SBB" table

Model interlocking also implements the Swiss interlocking technology "Integra Dominò 67".

Attention: this variant must be activated separately using a license file.



This signal box not only has different symbols (30 x 30 pixels), the operation is also different from the German control tables. For example, the turnouts are not controlled with a button in the turnout symbol but with a special button on the edge of the table.

2.2 Electronic signal box

ESTW

Based on the functionality of the track plan interlocking, a monitor display analogous to the currently most modern interlocking technology of Deutsche Bahn, the electronic interlocking (eStw), was another type of display (ESTW) in a model interlocking

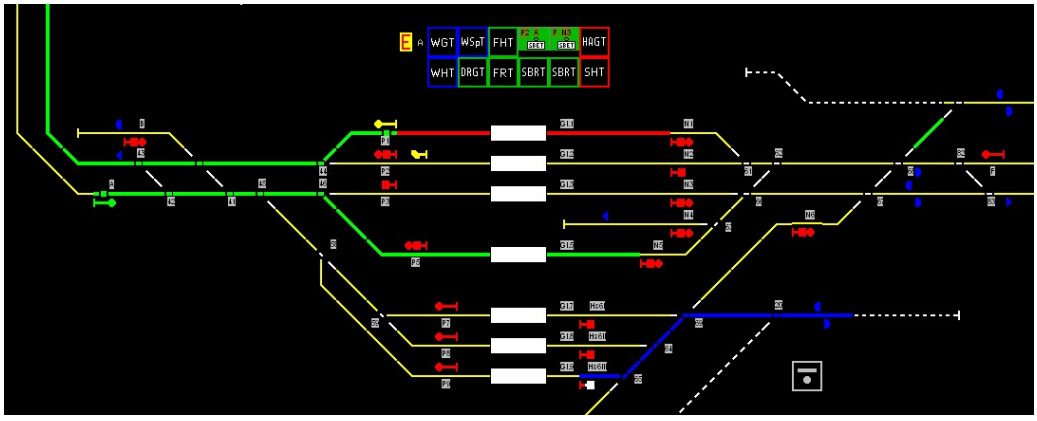
integrated. Due to the unchanged program structure in the model interlocking, the operation differs in some points from that of the ESTW model. As a result, for example, the display on the magnifying glass (the monitor with the display of the track diagram in the ESTW symbol size 32 x 32 pixels) is more compact, so that a larger system can be displayed on one screen without having to scroll the screen. Due to the program structure, the illumination approximates the model ESTW, but does not match 100%. However, we see this as an acceptable compromise in terms of model railroading.

On the screenshot shown, the same train station is shown again; What is striking is the different illumination of the set train routes (green) and shunting routes (blue). The so-called group keys (fields in the top center of the layout shown with the commands such as WGT, HaGT, ...) do not exist in the prototype ESTW with mouse operation; these commands are called up context-sensitive with the right mouse button. The model interlocking offers the option of performing these tasks partially with the fields or from a prototypical context menu as in the prototype, if the expert mode was selected.

In the first electronic interlockings, which went into operation in 1988, graphic tablets (digitizers) are used for operation, which are operated with a stylus. The group keys required for the ESTW operation are implemented on these graphics tablets similar to the solution implemented on the screen in the model interlocking. In this respect, the ESTW display in the model interlocking is a symbiosis between older and newer ESTWs.

Another compromise is the yellow display of a main signal showing Hp2. In the example, both Hp1 and Hp2 are shown in green for the signals on the monitor in the signal box! If the expert mode is marked in the settings, signals showing the journey are shown prototypically green, regardless of the activated signal aspect Hp1 or Hp2.

Regardless of the compromises mentioned, an experienced signal technician from the large company was also able to operate the model interlocking in the ESTW display without further instruction.



In the prototype's electronic interlockings, the signals are always displayed horizontally (pointing to the left or right), as in the example above; there is no vertical display. In the model interlocking, however, signals can also be projected vertically.

ILTIS

ILTIS is a software for the remote / control of relay interlockings and eStw as it is used by the Swiss railways. Model interlocking also implements this form for display and operation on the screen.

Attention: this variant must be activated separately using a license file.

The specification sheet for the prototype is very extensive. Model switchboard therefore only implements a part of the functions, only the magnifying glass (symbol size 32 x 32 pixels) was implemented. The selection of the functions is chosen so that realistic operation is possible. As with the ESTW, commands are called from a context menu.

3 Definitions and explanations

Various terms are defined below which will be used in the further course of this description.

3.1 Explanation of the illustrations in the manual

In the context of the description, different fonts and font colors are used for better identification.

(F4)	Pressing a key on the keyboard (framed with "round" brackets)
[OK]	Press the button labeled in this way (framed with "square" brackets)
menu	Calling up a menu or designation of a menu item
Track diagram	Reference to another chapter in the manual

3.2 Key labels

(Input) is identical to (Enter) (Ctrl)

is identical to (Ctrl) (PgUp) is

identical to (Image^) (PgDn) is

identical to (Picture)

3.3 Explanation of terms used in the manual

Track vacancy detection	Contrary to the terminology used in model railways, large-scale operations do not speak of a track occupancy report, but rather a track vacancy report. The background is the safety philosophy of the railway, which must ensure before a train journey that the section to be traveled is definitely free! This is ensured either by so-called track circuits or axle counting devices.
Project planning, project	The adaptation, ie the planning of an interlocking for a specific train station or route section, is usually referred to as project planning.
eStw / ESTW	Electronic interlocking - ESTW is a synonym for the user interface of an electronic interlocking
RSTW	Relay interlocking, the name is also used as an abbreviation for track plan interlocking

3.4 Other notes

In the current signal book Ril 301 of the Deutsche Bahn there is no longer the signal aspect Hp00, it has been replaced by Hp0.

4th The construction of model signal box

Before a model railway system can be controlled with the model signal box, the properties of the model railway system must first be entered or configured as data in the model signal box. To do this, first draw the track diagram.

In the section Track diagram describes how the symbols for the operation of tracks, switches and signals can be drawn in a track diagram. A grid of 200 by 100 symbols is available for this. The track diagram is compiled with the help of predefined symbols and provided with extras such as auxiliary buttons, train number fields and texts.

To edit the properties for turnouts and signals, an input window can be opened by double-clicking on the respective symbol, in which the respective data can be entered; the right mouse button shows a context menu in which the various actions can be selected. Alternatively, the editing window can be opened via theEdit solenoid items be called.

The properties of the turnouts, signals and locomotives must be created before use. Here you specify the type of turnouts and signals, the designation and the digital address as well as the dependencies on other turnouts and signals. This information determines the properties of the turnout or the signal. For locomotives you enter which decoder is installed, via which address the decoder is addressed, which name and which functions the locomotive has and how the speed steps are set in the vehicle decoder.

If track vacancy detection, route display or block protection is to be used, blocks must be created. In the track diagram, the track symbols belonging to a track section are assigned the block number. Feedback contacts can be assigned to the blocks in the input window. This is discussed in theblocks described.

As of version 9, ModellStellwerk can automatically set the required train and shunting routes during operation. Routes do not have to be planned first. These dynamic routes work when they are set by hand and in automatic mode.

There are train routes and shunting routes. These have different signaling and, as in the prototype, different protective devices.

A route can be defined in four different ways:

1. from the first signal of the section to the last signal,
2. from the first signal of the section to the destination button (e.g. on an open route)
3. from the start button to the last signal of the section,
4th from the start button to the destination button, but only for shunting routes.

In exceptional cases, however, it is always possible to plan routes. Routes you have planned yourself offer more flexibility and are required, for example, for timetable operation. The model interlocking can currently manage 512 routes, which in turn can contain up to 30 turnouts or signals (magnetic items). The existing routes in the project planning of your system, which were created with a previous version of ModellStellwerk, can still be used.

The model interlocking has an algorithm for train tracking. This can display the numbers of the trains in the train number fields in the track diagram based on the track occupancy. After entering the position of the trains once, the model switchboard always knows where the train is and shows this on the track diagram. Model signal box can then also send certain commands to the train to brake the train and stop it in front of signals or in stations, without power interruption or signal modules. Automatic mode too

is based on train tracking. Trains can run without additional interference, train tracking also works without predefined routes and also without routes.

As a prerequisite for using train tracking, feedback contacts for evaluating the track occupancy must be defined. More information is in the section
Train tracking contain.

The input of the system data is now completed and the model railroad can be controlled. Steering is in the sectionTaxes described in the second part of the manual.

For a better overview, the model railway system can be divided into different areas - signal boxes - be subdivided. The individual areas are displayed as tabs in the interlocking window. The properties for the display can be defined separately for each area.

When using feedback contacts, a macro program can be assigned to each of the 200 contacts. A macro program is executed when the feedback contact is triggered - switched on / occupied. The programming is in the sectionMacros
described. With the macros, the security of the train traffic can be additionally supported or the system can be controlled partially or fully automatically. Macros can be used to set points, control locomotives, set routes and monitor feedback contacts.

A fully automatic operating sequence is implemented in ModellStellwerk. The defined trains run completely automatically over your layout. For this purpose, a train is divided into one of 16 possible train types. Properties are assigned to the train types in the block data, for example whether a train type is allowed to enter a block, may stop or has to turn. A train then automatically searches for a route to a valid block and drives into it. The train can stop here, if necessary a route is set and used again. Trains can be changed, deleted or added in the model switchboard during operation. For the automatic operation it is imperative that locomotives, blocks and train tracking are set up.

Model signal box offers a control of the train traffic by means of automatic
Shadow stations. The control of the hidden yard automatically directs the incoming trains to the free track sections and allows other trains to leave the hidden yard again. In order to be able to use the shadow stations, the switches and routes must be defined beforehand. The entry of shadow stations is in the sectionShadow stations described.

Automatic operation can also be controlled by timetables. The timetable module has up to 64 tables with commands for 64 trains for time-based driving according to the model clock. Timetables are described in the sectionTimetables.

4.1 Starting the model signal box

Modellstellwerk can be started by clicking the file name (Modellstellwerk.exe) in Windows Explorer. It is also possible to use a shortcut (see also the Windows manual). If a shortcut is used, start options can also be entered. There are 5 possible start options. A combination of several options is also possible:

1. a file name with the ending .pcw with the data of the system,
2. a file name with the extension .stw with the configuration of the interlockings
3. a file name with the extension .prg with macro programs,
4. a file name with the ending .drg with timetables
5. a file name with the extension .zug with automatically moving trains

If the system data is specified as a start option (with), operation is started automatically when the system is started (GO mode).

Other start options:

- MS always starts the model signal box in STOP mode
- MG always starts the model signal box in GO mode
- L starts the model interlocking with the selected system file (* .pcw). At the same time, a log file is started in which all selected commands are recorded.

  Details are in "Logging" (Extra - logging) described.

If the model signal box is switched to STOP mode externally, or if you twice
If you click the STOP symbol, the window below opens.

The system file entered in the settings is opened with EDIT or GO and started in edit or game mode. If the window is deleted, an alternative system file can also be loaded. A window is opened with the magic wand in which the system can be set to the basic position in detail (initialization) - see 4.1.2.

If no system file is stored in the settings, an empty table window starts with EDIT and a new system can be drawn. The window is deleted with GO; a system file can be loaded via file - read system.

4.1.1 Game Status

With every change from "GO mode" to "STOP mode" or when the program is terminated from "GO mode", the model switchboard saves the following states of the model railroad in a file:

Positions of the switches,

occupancy reports of the blocks,

position of the trains,

Status of the macro programs,

status of the routes,

the current status of the processing of the timetable,

the speed of the locomotives

Position of the windows on the screen.

The file name for this current status (game status) is: "<Name of the system> .spl". The next time the program is started, the model switchboard will load the last status when the GO button is clicked and operation can continue.

When starting the operation, the switches and signals are first set to the basic position or the last status. During this process, no switches and signals can be set, the mouse pointer is displayed as an hourglass and the number of solenoid accessories still to be set is displayed in the status line. The initialization can be changed in the settings, so that starting the operation is quicker. It is then

however, it is not ensured that the position of the switches on the model railway layout corresponds to the position stored in the model signal box.

When the current status of the system is saved, the trains are also saved for the automatic operating sequence; the list with the trains and their status is saved in a file of the type * .zug. However, this only takes place if a file name has already been specified (either by reading an existing file after the data has been saved manually, or a file name was entered in the train window).

4.1.2 Initialize

The magic wand icon opens an extended window in which the parameters for the initialization can be set. With 'GO with initialization' the elements are put into their defined basic position.

Unmarked elements are skipped during initialization. This can be useful, for example, to isolate errors.

Switches	all solenoid items (turnouts, signals ...) and their status (locked, occupied, etc.)
Routes	Can only be deselected in connection with switches
blocks	are reset, the setting in the message monitor and the locomotive / train number are retained
Locomotive position	the locomotive / train number is deleted
Automatic mode	The status of the automatically moving trains is deleted. The
Track element	status of the track elements is deleted
Locomotives	The state of the locomotives will be
Feedback	deleted. The feedback will be reset.

4.1.3 Short circuit

If a short circuit is triggered on the system and reported by the control center to the model interlocking, the program stops and the current status is saved. The trigger control unit / booster is displayed on the screen.

The system can be switched on again with GO +. The trains continue to run at the set speed. With GO the system is switched on, the trains stop.

With STOP, the system is switched to stop mode. Close closes the window, but does not change the status. Depending on the control center, it is then possible to operate the turnouts. If, for example, a switch was the cause of the short circuit, it can

so be converted. If you point to the button twice, you  will press the window again can select the action.

4.1.4 Emergency stop with ESC

By pressing the ESC key on the keyboard, the control center sends a stop command to all traction vehicles.

If the model railway system is controlled via a Märklin interface, a STOP command is sent. If the system is controlled via another control center, an emergency stop is carried out: Motorola locomotives get speed “0”, DCC locomotives are sent speed step 1 (= emergency stop) via a “broadcast” command. The locomotives stop, but the functions remain switched on and the layout can still be operated.

STOP confirms the stop for all locomotives,

Another press on (ESC) or a click on GO will lift the Emergency stop open again and the locomotives continue to run. After GO, all locomotives accelerate to the previously set speed (depending on the control center, only with DCC).

4.2 Locomotive data - operating hours

The locomotive data and the operating hours are saved in separate files. The names of these files are determined automatically and is "<Name of the system> .lok / bst". When the system file is read in, both files are read automatically. Every time the system is switched from GO mode to STOP mode or the program is ended, the data is saved. The reason for this is that the locomotive speeds are automatically calibrated (Chapter 10.1.12) during operation; this data is saved.

Attention: if system data is read from another folder, the data of the locomotives, but also the settings and the game status, are saved in this folder.

4.3 Save the files

Depending on the situation, the files are saved:

Save files (with and without entries in the settings)							
		D.	I.	K	IT	B.	A.
Attachment file	*. pcw	X	X			(Y)	X
Locomotives	*. loc	X	X			(Y)	X
Games file / current data	*. spl			X	X	X	X
Operating hours	*. bst			X	X	X	X
Trains	*. train	X			X	X	
Signal box	*. stw	X				(Y)	
Timetable	*. drg	X				(Y)	
macro	*. prg	X				(Y)	
ModellStw configuration	ModellStw.cfg					X	X

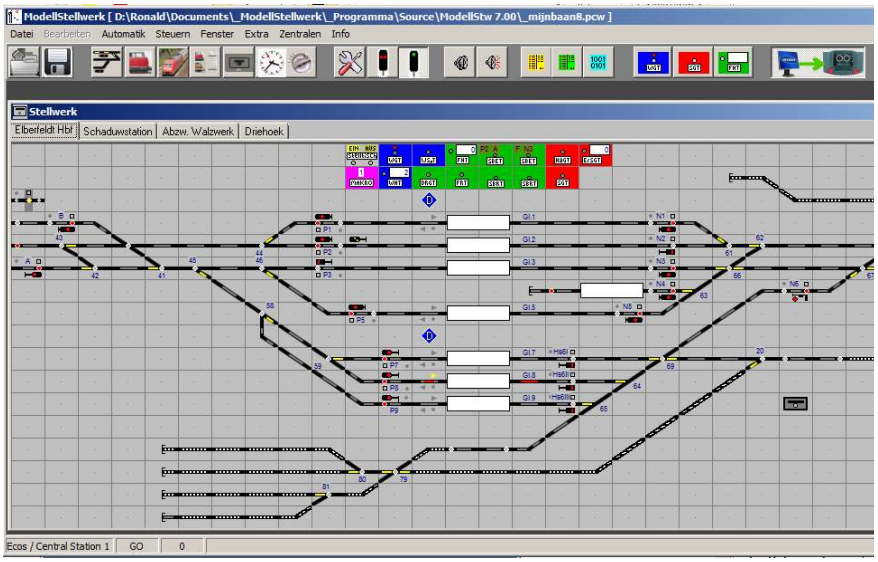
D.	Save via file menu Save via
I.	icon
K	Short circuit
IT	EDIT / STOP
B.	Exit - (Y) files are saved after changes - setting: never / questions / always
A.	Terminate - after a short circuit

In the settings you can tick whether the previous version has to be saved as a backup before saving the * .pcw file. If this option is checked, the * .pcw file is saved in the 'Backup' folder with the date and time as the name.

5 Main window

The main window of Modellstellwerk contains a main menu, an operating line, various windows for the track diagram and further windows and a status line. The menu is used to select the various functions of the program, such as loading, editing and controlling the system. The operating line allows quick access to frequently used functions. The system is operated in the windows, points, signals and routes can be set and locomotives can be controlled. Various

Information from model interlocking displayed.



Digital headquarters | operation mode

5.1 The main menu

In addition to the menus, there are buttons for direct access in the operating line for the most important or most frequently required menu items. These symbols are compared to the menus in the following list.

menu file	
Open the plant	Reads in the data from an existing system
Save plant	Saves the system data
Export	Saves solenoid accessories, locomotive and block data in csv text format for further processing in e.g. Excel.
Import locomotive	Reads the locomotive data from another layout (format: * .lok) the locomotive file is always saved with the layout file.
Read macros	Reads in macro programs (format: * .prg)

menu file	
Save macros	Saves the current macro programs
Read the timetable	Reads in timetables (format: * .drg)
Save the timetable	Saves the current timetables
Read signal boxes	Reads in the interlocking configuration (format: * .stw)
Save signal boxes	Saves the interlocking configuration
Read trains	Reads in the list of automatically moving trains (format: * .zug)
Save trains	Saves the list of trains and their status
Print track plan	Prints the track plan. Attention: since the track plan in ModellStellwerk is colored, it is not recommended to print it directly.
end	Terminates the program

menu To edit	
Magnetic items	Editing of the properties of turnouts and signals
Locomotives	Editing of the properties of the locomotives
Routes	Processing of routes
blocks	Editing of blocks
Feedback decoder	Configuration of the feedback decoder, feedback contacts and the assigned digital centers
Sounds	Selection of sound files that the model interlocking can use
Auxiliary keys	Editing of the auxiliary keys (group keys) placed in the track diagram
LDT TD-88	Enter the data for the Littfinski high-speed interface

RailCom	Assigns Tams RailCom detectors to blocks and programs the Tams detectors
Signal boxes	Divides the system into different control areas in order to be able to control the system from several PCs.
Texts	Edits the texts in the switchboard

menu Automatic

Timetable	Entering timetables
Shadow stations	Processing of shadow stations
Macros	Input of macro programs
Train compositions	Allocation of locomotives to trains and train types

menu Taxes

 GO playing position	Starts controlling the system from the last status.
GO basic position	Starts controlling the system from the home position
	in the menu Extra configuration it is selected whether the solenoid accessories are controlled in the position saved by the model interlocking when the system is started (change to GO mode), or whether all solenoid accessories are brought into the projected basic position.
 stop	Switches the system to STOP mode. The 2nd click opens the Edit program mode window
 To edit	Starts processing the system data

menu window

	The opened windows are listed in this menu. The selected window is displayed on the top level

menu extra	
Settings	Choice of various program options (e.g. the interface)
Logging	Selection of parameters and activation / deactivation of the recording of different program states - especially required for troubleshooting (partly in Dutch).
Search	Find out where solenoid accessories are not in use Find where a particular solenoid is in use.
Message monitor	Opens the window for displaying and controlling the feedback contacts and shows the status of the feedback contact that was last changed
Restore train number put	Copies the (automatically) saved locomotive and train positions into the blocks.
Overviews	Displays overviews of solenoid items (turnouts, signals, ...), blocks, routes and buttons
Programming locomotives	Reading out CV values from locomotives on the main track with RailCom from Tams, programming CV values
network	Display of the "model interlocking computers" that are connected to this server via the network

menu Central	
	Shows the extra data of the central unit and is the user interface for the special options and the possibilities of the central units (not for every central unit)

5.2 Keys in the operating line

	importance	Explanation
	Open track	Opens the data of an existing system. The system data includes all entered data such as the defined track diagram, switches, routes, blocks and locomotives. The macro programs and timetables are not part of the system data; they are in separate files with different File extension saved.
	Save course	Saves the data of a system that has been created, but without the score, macros and timetables.

importance	Explanation

	Open the track diagram window	Opens a window for the switchboard, several switchboard windows can be opened. In design mode, the menu with the editing tools opens.
	Open the locomotive window	Opens the window for locomotive control and editing; several windows can be opened
	Show signal boxes	Opens the signal box window
	Show locomotive list	The 'Locomotive List' button opens the window for selecting and controlling the locomotives. This window shows the images of the locomotives as well as the name, address and operating hours of all defined locomotives. In the edit mode, the traction vehicles to be edited can be selected Operating mode, the selected locomotive can be controlled directly.
	Open train window	Opens the window for the compilation and control of the automatically moving trains
	Open clock	Window for displaying the clock (model time)
	Open the turntable window	Opens the window for operating a turntable
	Open the message monitor	Opens and closes the window with the status of the feedback devices
	Open the message window	Opens and closes the window with the operating and error messages

The mode of the program for Edit, STOP and GO is selected with the following operating buttons.

	In the edit mode the data of the path are edited, the menu To edit is available and the switchboard can be changed.
	The processing of the model signal box is stopped, no commands are sent to the digital center, messages from the digital center are no longer processed. The track voltage is switched off
	The system is controlled in GO mode. During the first transition to GO mode after the program has started, all solenoid accessories (switches, etc.) are first put in the basic position or in the previous position. This procedure can be switched off in the settings. If a game status was saved, pressing this button will start in the previously saved status; if the game status is not saved, it will start in the initial position. No switches can be set during the initialization phase, the mouse cursor is displayed as an hourglass. The number of solenoid items to be set is shown in the status line.

In the settings you can choose that when this button is clicked, the start is always from the initial position.

In GO mode, these control buttons can be used to play sounds. Shows the

window for editing and playing sound files

Plays the last played sound again.

The buttons for timetable and macros are only active in GO mode.

This button opens the window for operating the timetables. Here one or all timetables can be started, paused or stopped and the progress of the timetable can be checked.

This button starts the fully automatic driving of the trains when the button is pressed. Switching off and on again resets the automatic train control

This button activates the macro programs. When the key is pressed, all macro programs are reset to the basic position.

The model signal box offers a prototypical operation, ie the control of the model railway system takes place by means of routes that are set by start and destination buttons in the track diagram. With the group buttons (also prototypically) special operating commands, the so-called auxiliary controls, are made possible.

With the turnout group key (WGT / SGT) pressed, individual turnouts can be switched with the mouse.

With the signal group key (SGT / SHT) in the operating line, train / shunting signals can also be switched without routes (Hp0 / Hp1 or Sh0 / Sh1). Each operation switches the next signal aspect.

The route auxiliary button (FHT / NAufl) is used to resolve set routes. To do this, first press the key and thenwithin 5 seconds to operate the start (signal) and the destination (signal) of the route, or to press the destination button for SBB signal boxes. Alternatively, a route can also be set by operating the start and destination while holding down (Shift) -Button to be resolved.

If the "Expert mode" option is switched on in the settings, a train route can only be closed according to the prototype if the covering signal has previously been stopped (see HaGT / SNH).

The group buttons can also be inserted into the track diagram as local group buttons. The turnout group key and the turnout lock key only apply to the turnouts that are assigned to the local key.

This button 'Connect to Central' connects the model interlocking with the selected digital centers or (in network operation) with the model interlocking server. If connected, this button can be used to break the connection. When you switch to GO mode, the connection will be established automatically.

5.3 Locomotive window

In GO mode, the selected locomotive can be controlled in the locomotive window. A locomotive is controlled in one window, but multiple windows can be opened. A picture of the locomotive and the name of the locomotive in the title can be shown in the window. Another locomotive is selected:

Use the cursor keys up and down on the arrow symbol

by dragging a locomotive from the track diagram (train tracking) or the timetable to this window,

with the (PgUp) - and (PgDn) -Keys when the focus is on the locomotive window or

by making a selection from the locomotive list.

If the focus is on the locomotive window, the locomotive can be controlled

The speed level, i.e. the speed, can be set using the slide bar, with the left / right arrow keys ( ) or can be set with the mouse wheel.

The V and R buttons that (Empty)-Button or tilt the mouse wheel switch the direction of travel.

With the (Input)-Button, the first function (light) can be switched on and off

without button: functions 1 - 8

With (Shift) Button: functions 9 - 16,

With (Old) Button: functions 17 - 24

With (Shift) + (Alt) Button: functions 25 - 31

Only the function keys that are activated in the properties of a locomotive are shown.

The number of possible speed steps depends on the locomotive decoder and the data format. Locomotives with Mfx decoders are controlled with 28 speed steps, locomotives with DCC decoder with 28 or 128 speed steps depending on the type, locomotives with decoders in MM format can be controlled with 14 or 27 speed steps, Selectrix decoders always have 32 speed steps.

In all central units, when the speed step is set on the central unit, the speed step, the direction of travel and the functions in the locomotive window are also changed.

This window is under the menu item window added to the window selection. The 'locomotive name' serves as a reference.

With  or a double click on the window opens the window for editing the locomotive data opened.

5.4 Status bar

Additional information is shown in the status bar:

System selection (1st interface), mode of the program, number of points still to be set and any other information.

In the Edit mode, the row / column of the selected cell and a note on the type of symbol are displayed.

5.5 Export

Text files (csv files) separated by commas can be output for documentation and troubleshooting:

Locomotive data

stored solenoids, turnouts, signals, etc., and

Block data.

This data can, for example, be evaluated and printed in Excel as required

Locomotive data file: ModellStw_LokExport.txt

Number, address, name, speed steps, protocol, start step, mass, function, image, light,

Solenoid item file: ModellStw_MagnetExport.txt

Internal number, type, the registered name, address1, output for 4 addresses, protocol, assigned central unit, basic position, same position as, is at / Vmax and position in the track diagram (y, x)

Block data file: ModellStw_BlockExport.txt

Number, type, name, length, busy L, busy R, brakes L, -, brakes R, -, hold L, -, hold R, -, signal L, signal R

Attention: The preset file names should be replaced as they will be overwritten with the next export.

5.6 Print track plan

The entire track diagram in the selected window is output on the preset system printer.

- Landscape format - should be set in the printer window via properties.

Since all elements have a base color, the output must be tested in monochrome or color.

6th Enter data / configuration

6.1 Track diagram

The track diagram can only be drawn when the model switchboard is in edit mode. When the button is pressed, an extra line appears in the operating line, with which the various actions for planning a model railway system can be selected. If no switchboard was displayed yet, a new switchboard window will open.

The following functions can be called up with the buttons:

	Edit mode of parameters for individual elements of the switchboard
	Creating and editing the switchboard. The symbols defined in the model interlocking are used for this.
	Allocation of numbers for turnouts, signals, buttons and connections
	Definition of routes
	Allocation of the track symbols to the individual blocks - track vacancy detection sections.

6.1.1 Enter symbols

The first task in the model switchboard is to transfer the track plan to the control table / screen. The layout of the layout is drawn with the symbols for track sections, switches, signals, buttons, etc. in the grid with a maximum of 200 x 100 fields. For reasons of space, it can make sense if only those areas are taken over that are necessary for the monitoring and control of train traffic. These are
Station / shadow station with tracks, switch connections and signals, plus sections of the route that must be observed and operated. As with the prototype, the exact course of the route can be dispensed with.

An example: The train station is a separate area that is shown on the screen from left to right, as is the shadow train station and the routes to and from the hidden train station if block sections that are to be monitored and served are set up. Connecting elements that are available in the model interlocking ensure the correct cooperation between these separately mapped areas. In order to improve the overview, individual areas can also be set up in separate windows if necessary. The window of the automatically operating staging yard is only called up when required.

	Clicking the button opens a window with the possible symbol groups, the desired symbol group and the required symbols can be selected become. The drawing mode is automatically selected.

In the window with the symbols, only symbols for Siemens large (SpDrS60), Integra-Domino and ILTIS are available, but not the photo-realistic, Lorenz (small) and ESTW. The

Symbols that are available are determined by the selection of the interlocking type SpDrS60S or Integra Domino / ILTIS.

A symbol is selected by clicking the mouse, and it is positioned by clicking on the desired position in the track diagram.

Tracks and points are available in different orientations; the signals of different designs and tasks have to be activated after positioning with the keyF5
be aligned if necessary. These and other symbols are explained below.

A symbol can be deleted (DEL button), With (Ctrl) C, (Ctrl) X and (Ctrl) V copied and pasted, the entered properties of the symbol such as turnout or block number are also copied. A group of symbols is selected with the (Shift) key.

Symbols can be overwritten by others. Caution: This can lead to malfunctions later, which have to be eliminated with great expenditure of time; For example, if a turnout was replaced by a piece of track, the turnout remains entered in the database (magnetic items) with all its properties. A check makes sense!

If the symbol for a turnout or a signal is placed, then after switching to the display mode with a double click on the symbol in the track diagram the properties window is opened
opened, in which, for example, the decoder address, designation etc. can be
entered. The internal number is assigned automatically.

Alternatively, from the Context menu, which is opened with the right mouse button, the number is changed, the properties are edited or routes are generated.

6.1.2 The symbols

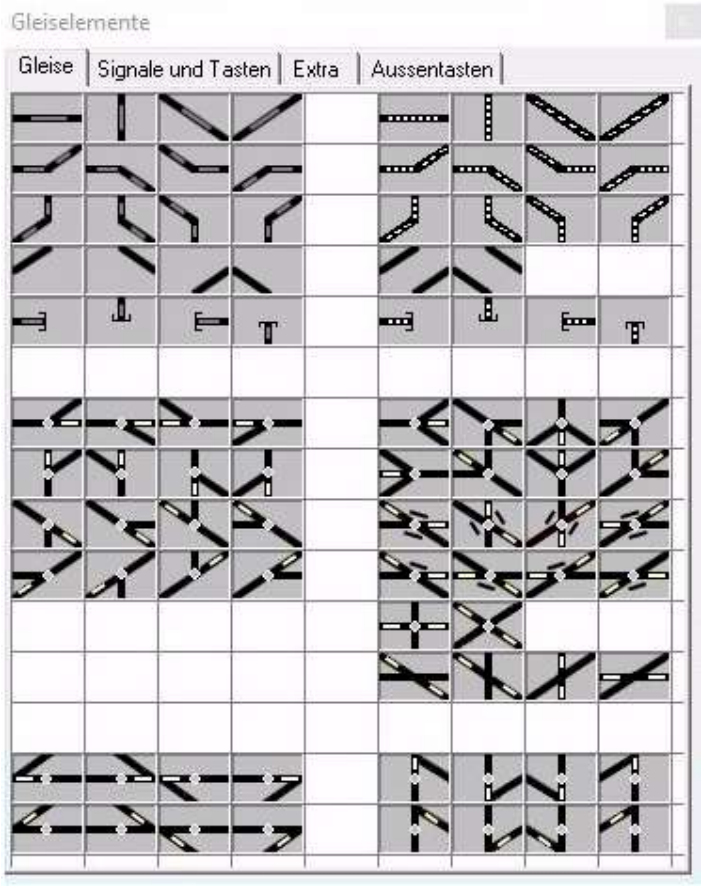
The predefined symbols for a track plan signal box and for ESTW are shown below. Many of the symbols are illuminated differently during operation and operation; the illumination is described in the chapter Operation (manual part 2).

Symbols that are typical for the Swiss representation are described separately.

The symbols are thematically grouped into the 4 groups of track elements, signals and buttons, extra and external buttons.

Attention: When setting up EKW and DKW, the symbol for the single or double cross turnout must be positioned first; a subsequent change via the turnout definition (only double cross turnout possible) is not intended. Only then will the program make the settings correctly.

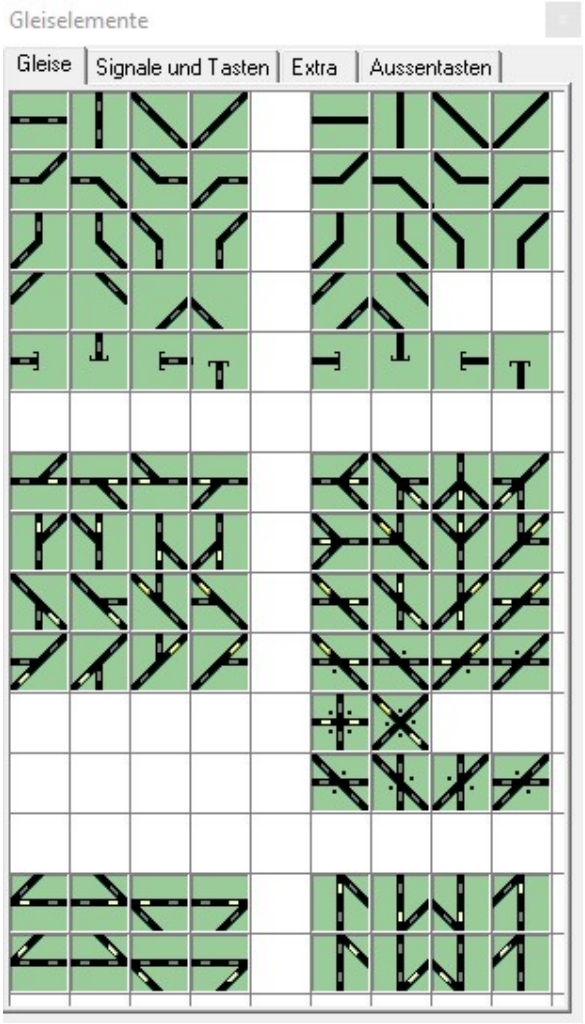
6.1.2.1 Tracks and switches - SpDr60 and ESTW - also for Lorenz, photo



SpDr60	ESTW	description
		Track with track vacancy detection
		Buffer stop
		Track without track vacancy detection - track not monitored
		Soft
		crossing
		Crossing switch DKW

SpDr60	ESTW	description
		Crossing switch EKW
		Three-way switch
		Double diagonal track connection in one symbol Note: When assigning to blocks, the lower track section must be clicked with the Shift key pressed.

Tracks and Switches - Domino and ILTIS



D`67	ILTIS	description
		Track with track vacancy detection
		Buffer stop
		Track without track vacancy detection - track not monitored
		Soft .
		Crossing switch DKW (without point)

D`67	ILTIS	description
		Crossing switch EKW (point shows nonexistent connection)
		Junction (points indicate nonexistent connections)
		Three-way switch
		Double diagonal track connection in one symbol Note: When assigning to blocks, the lower track section must be clicked with the Shift key pressed.
		Control panel for a turnout, crossing, EKW and DKW with display of the lock and turnout number

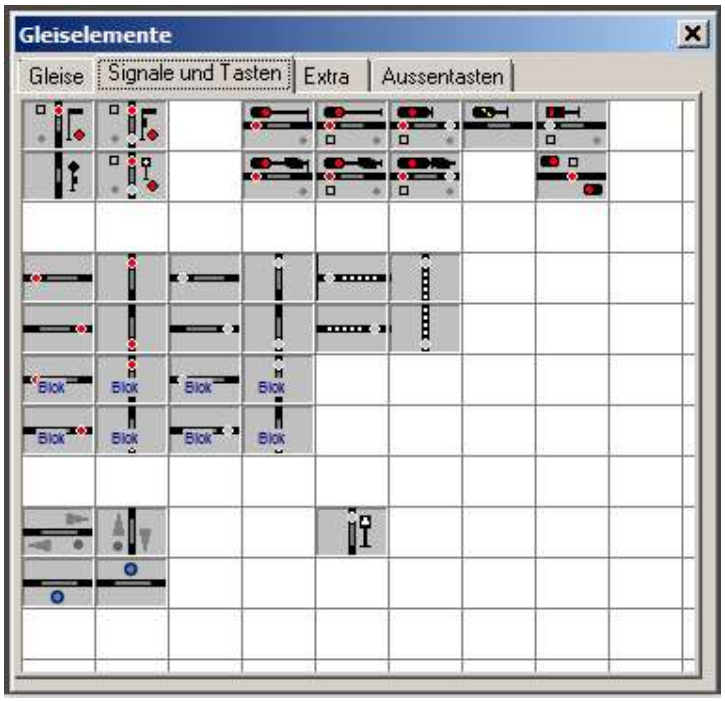
Steep turns

In the case of steep turnouts, the straight position can be seen from the symbol; this must be taken into account when planning. For the straight position is the line speed set.

SpDrS60	ESTW	Steep switch
		Straight horizontally
		Straight diagonally

domino	ILTIS	Steep switch
		Straight horizontally
		Straight diagonally

6.1.2.2 Signals and buttons - SpDr60 and ESTW - also for Lorenz, photo



The design of the signal (main signal, distant signal, blocking signal, ...) is determined by selecting the symbol. The selected symbol is displayed each time you press the (F5) -Button rotated by 90 ° each time.

The following signals can be selected: Row 1:

Form main signal (wing signal) with 2 positions (Hp0, Hp1)
Form main signal (wing signal) with 3 positions (Hp0, Hp1, Hp2)
Block signal (Hp0, Hp1)
Main signal (Hp0, Hp1, Hp2)
Main blocking signal (Hp0, Hp1, Hp2, Hp0 / Sh1)
Advance signal (Vr0, Vr1, Vr2)
Lock signal (Sh0, Sh1)

Row 2:

Form pre-signal with 2 or 3 positions (Vr0, Vr1, Vr2)
Form blocking signal (Sh0, Sh1)
Block signal with distant signal
Main signal with distant signal
Main blocking signal with distant signal
Cover signal

Row 4 - 7:

Keys for routes / shunting routes, with and without block names

Row 9:

Permission field for setting and displaying the direction of travel
Button for uncoupling track

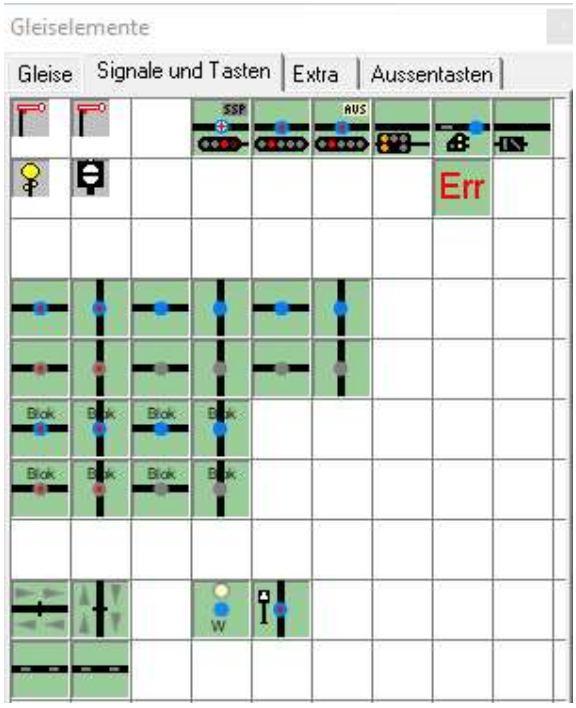
Row 10:

Exit lock for section block - see extra symbols

SpDr	ESTW	description
	nv	Main form signal - start and destination of train and shunting roads (form signals are not controlled by EStW and there is no corresponding display on the monitor. With configured form signals, the equivalent light signals are displayed when switching to ESTW)
	nv	Form signal as main signal (only start and finish of train routes - text see above)
	nv	Form signal (text see above)
	nv	Form lock signal (text see above)
		Block signal, button for the start or destination of a block route Displayable signal terms: Hp0 and Hp1
		Signal symbol for a main / blocking signal, at the same time a button for the start or end of a route or shunting route. Displayable signal aspects: Hp00, Hp1, Hp2
		Signal symbol for a main / blocking signal, at the same time a button for the start or end of a route or shunting route. Displayable signal aspects: Hp0, Hp1, Hp2, Hp0 / Sh1
	nv	Signal symbol with distant signal on the same mast. If the number of the main signal is specified in the field “is at” for the solenoid distant signal, then the distant signal is correct, including the blanking
		Distant signal Displayable signal aspects: Vr0, Vr1, Vr2
		Track blocking signal, button for the start or finish of a shunting route Displayable signal aspects: Hp0, Sh1
		Coverage signal Hp0 and Sh1 in both directions
		Uncoupling track (this symbol does not exist on the prototype!)
		Train route start or train route destination without signal After it has been placed in the switchboard, a number for the button is automatically requested. Signals normally form the start and destination of a route (hence the red control buttons in the signal symbol), but when the

SpDr	ESTW	description
		If the route leads out of the station to the free route, the exit is not stopped until the next signal, but up to a control button at the level of the entry signal (see also the chapter "Realistic system planning") If a train or shunting route ends in a dead end, then the target is realized with a button on the prototype. When setting train routes or shunting routes, there is no difference between start and / or destination on the signal or on a control button. If a dead end can be the destination of a train route as well as a shunting route, both buttons are configured.
		Shunting start or shunting destination without signal (for further explanations see train route)
		Shunting destination without a signal on a track without a vacancy signal
		Permission field - indicates the permitted direction of travel of the route, which is switched via the direction of travel permit issue can be
	nv	Exit lock (display) only for SpDrS

Signals and buttons - Domino and ILTIS



The following signals can be selected: Row 1:

Form main signal (leaf signal) with 2 positions (stop, FB1)
Form main signal (leaf signal) with 3 positions (Halt, FB1, FB2)
Block signal / combined signal (stop, warning, expect travel - FB1)
Main signal (Halt, FB1 - FB6) *
Main signal (Halt, FB1 - FB6) with automatic self-setting mode (aSB) *

* The possible driving terms FB1 - FB6 are set in the properties

Advance signal (stop, FB1`- FB5 *) not prototypical
Dwarf signal (stop, drive, caution)
Additional signal (occupied track, auxiliary signal)

Row 2:

Form pre-signal with 2 positions (expect stop, FB1 *)
Lock signal - also as a signal close to the ground for derailment facilities

Row 4 - 7:

2 blue buttons for train routes (with red dot), direction of travel from right to left, also for shunting routes (without red dot)
2 gray buttons for train routes (with red dot), direction of travel from left to right, also for shunting routes (without red dot)

Rich 97:

2 block mirrors for the display of the direction of travel and road block
Turnout key for operating a turnout
Button for uncoupling track

D`67	ILTIS	description
		Block signal / combined signal, button for the start or destination of a block route, displayable signal aspects: stop, warning, Fb1 *
		Main signal, button for the start or destination of a train route Displayable signal aspects: Stop and FB 1 to FB 6
		Main signal with automatic self-setting mode that can be switched off (aSB) Signal aspect: Halt and FB1 to FB 6
	nv	With Domino and ILTIS, advance signals are not displayed on the table / screen. If under 'Settings - Design' SBB signals drawn 'is marked, the pre-signals are displayed on the table with all signal images at Domino. If the entry is not marked and under ILTIS, distant signal symbols are replaced by track elements
		Dwarf signal with the terms stop, drive with caution and drive
		Domino: Additional signal, can signal the entrance to an occupied track when a main signal is set up. With ILTIS it is not a separate symbol but is included in the signal image.
	 	These symbol fields are destination and / or start buttons for train routes without external signals; They can usually be found on the main track to the next train station (upper symbol at ILTIS) or on stump / head tracks in a train station (lower. symbol at ILTIS). These buttons (also the lower symbol on ILTIS) can also be used as a start button for a Group exits can be used. Keys with a blue border are used for driving to the left, those with a gray border for driving to the right. When defining the routes, these buttons are used like signals. After it has been placed in the track diagram, a number for the button is requested (see also the section on "prototypical layout planning")
		Shunting destination without signal (for further explanations see train route) Blue buttons for direction of travel left, gray buttons for right
nv		Shunting destination without signal in a track without track vacancy detection
		Block mirror - shows the permitted direction of travel of the route, which can be switched via Request direction of travel
	nv	Switch button with lock indicator - absolutely necessary in expert mode
		Symbol for a decoupling track
	nv	Not relevant for Domino / ILTIS - exit lock (display) for SpDrS

Light pre-signals

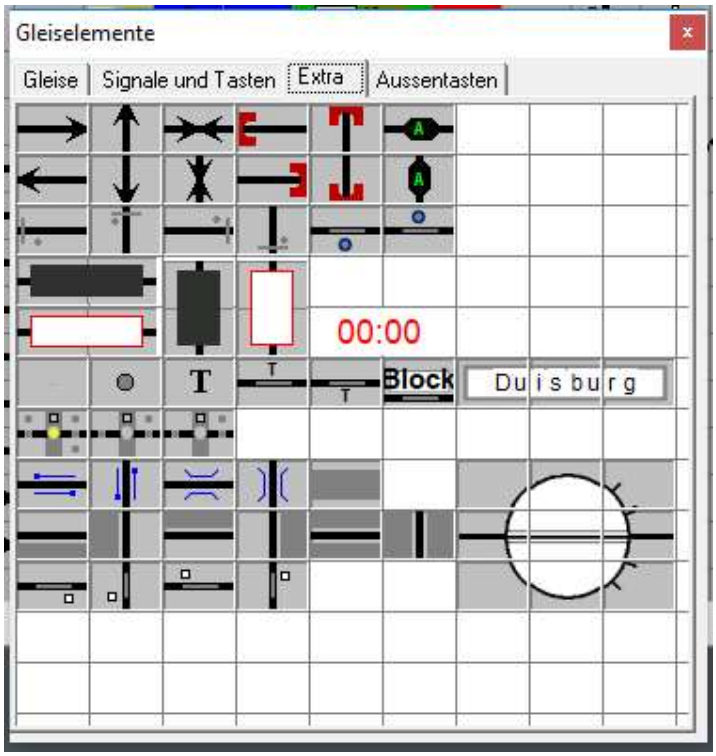
A distant signal in connection with a main signal is switched off when the main signal shows stop; this is implemented in the model interlocking and is shown on the monitor. This dependency must be set in the decoders on the model railway layout.

Advance signals are not displayed on the Domino table or the ILTIS screen. You can jump over Edit - Magnetic Articles can be set up without an icon.

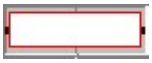
The Swiss signaling regulations stipulate that a distant signal at an entrance signal always shows a signal image; Always a warning when stopping at the main signal. If it is planned to set up the distant signals against the rules on the domino table, the control of the distant signals must be set up using macros.

If there are more than three entrance signals with pre-signals at the same height - in a relay, the pre-signals are also darkened in Switzerland for the sake of clarity.

6.1.2.3 Symbol group Extra - SpDr60 and ESTW - also for Lorenz, photo

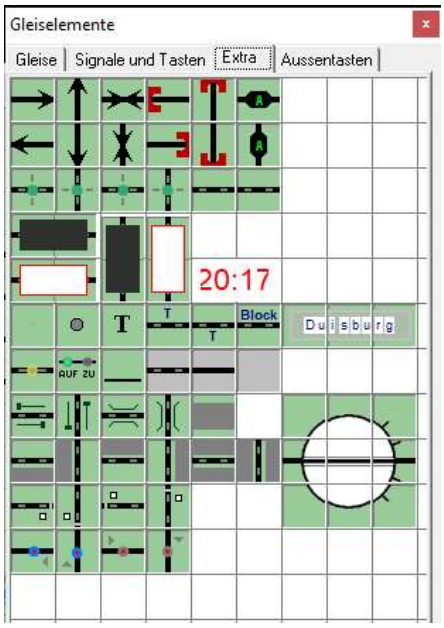


SpDr	ESTW	description
		Travel direction symbol - Travel is only possible in the specified direction These symbols indicate in which direction trains can travel on these tracks. The symbols help

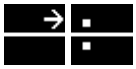
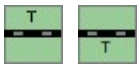
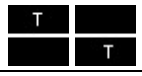
SpDr	ESTW	description
		Model signal box also when determining the direction of travel (see blocks). For each block you can also specify whether this symbol is really shown.
		Driving direction symbol - driving in both directions is possible
		Tunnel - also a connection between two points in the track plan. Tunnels do not have an internal number. For the assignment of the "portals" it is sufficient if both tunnel openings are horizontally or vertically opposite one another.
		Connection between two points in the track plan. Information for train tracking so that the model signal box knows where a route is going. Each connection has 2 connection symbols with the same letter. The internal number (1 = A, 2 = B etc.) is requested when placing. Fasteners are allowed to one ~~block~~~~Not be assigned~~
		Track closure (only used in the shadow station) If this symbol is inserted in a track in the shadow station, the track can be blocked, ie no train will travel to this track. This symbol is assigned to the block. Since the function is a special function for the model railroad, the symbols for track locks of the prototype have not been reproduced here
		Railroad crossing, main track The closing and opening of a level crossing can be triggered.
		Level crossing, 2nd track and further tracks The closing and opening of a level crossing can be triggered.
		Train number display - It is important to ensure that this symbol is displayed in 2 fields, but is only one field in size. A normal track symbol has to be placed in the right field. The easiest way is to first enter the entire system and define the blocks and then insert this symbol.
		Speed measurement field - As with the train number display field. Please note that this symbol is displayed on 2 fields, but only has one field. A normal track symbol has to be placed in the right field. The easiest way is to first enter the entire system and define the blocks and then insert this symbol.
		Detector - shows the status of a detector - the number of the detector is requested.
		With this, any single-line text can be positioned in the track diagram, but only in the size of one

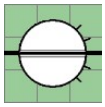
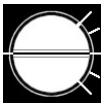
SpDr	ESTW	description
		Symbol, otherwise there is a risk that the texts will be overwritten again. The number of possible characters depends on the font size set.
		Track symbol with text - Here, for example, the name of a track.
		Symbol for track barrier (for interlockings with number buttons) to display the block name (track number) At ESTW, the symbol is a special solution for model signal boxes
		Level crossing - static representation without function
		Bridge - static representation without any further function
		Symbols for displaying a platform - static representation without any further function
		Button for detector With these symbols it is possible to simulate switching tracks or track occupancy detectors with the mouse. This can be used, for example, to check the effectiveness of the switching contacts (even without a connected digital center!). However, it is not necessary to use these symbols for the function of feedback contacts in tracks. When drawing the symbol in the track plan, the number of the associated detector is requested. The block is assigned by clicking on the symbol. If the block is to be occupied permanently, the mouse must be removed from the symbol while holding down the button. Another click releases the block again.
		3 fields for station names. The texts are saved in the symbol.
	nv	Exit lock for section block (display only); if the symbol lights up, no route can be set in the direction of the route.
		Turntable icon. When placing, all 9 symbols are automatically placed. When you click on that Symbol opens the turntable window.

Symbol group extra - Domino and ILTIS symbols



domino	ILTIS	description
		Travel direction symbol - Travel is only possible in the specified direction These symbols indicate in which direction trains can travel on these tracks. The symbols also help the model signal box to determine the direction of travel (seeblocks). For each block you can also specify whether this symbol is really shown.
		Driving direction symbol - driving in both directions is possible
		Tunnel - also a connection between two points in the track plan. Tunnels do not have an internal number. For the assignment of the "portals" it is sufficient if both tunnel openings are horizontally or vertically opposite one another.
		Connection between two points in the track plan. Information for train tracking so that the model signal box knows where a route is going. Each connection has 2 connection symbols with the same letter. The internal number (1 = A, 2 = B etc.) is asked for when placing.

domino	ILTIS	description
		Track closure in Switzerland (also for shadow station) If these symbols are included in a track, it can be blocked, ie no train will travel to this track. These symbols are assigned to a block.
 nv	 	Line tracks are blocked in Switzerland via the block mirror. This function has not yet been set up in the model interlocking. At ILTIS, the road block can be reproduced using these two symbols.
		A level crossing can be closed and opened manually or when setting a route.
		Train number display - It is important to ensure that this symbol is displayed in 2 fields, but is only one field in size. A normal track symbol has to be placed in the right field. The easiest it is when the entire system is entered first and the blocks are defined and then this symbol is inserted; two track symbols are overwritten.
		Speed measurement field - As with the train number display field. Please note that this symbol is displayed on 2 fields, but only has one field. A normal track symbol has to be placed in the right field. The easiest way is to first enter the entire system and define the blocks and then insert this symbol.
		Detector - shows the status of a detector
		With this, any text can be positioned in the track diagram, but only in the size of a symbol, otherwise there is a risk that the texts will be overwritten again. The number of possible characters depends on the font size set
		Track symbol with text - Here you can enter the name of a track, for example.
		Level crossing - static representation without function
		Bridge - static representation without any further function
		Platform on one side of the track - static display without any further function
		Platform on both sides of the track - static representation without any further function
		3 fields for station names. The texts are saved in the symbol.

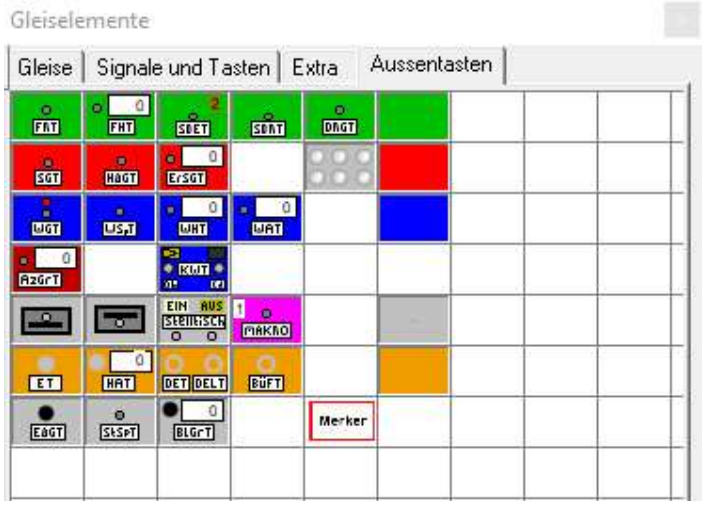
domino	ILTIS	description
		Button for detector With these symbols it is possible to simulate switching tracks or track occupancy detectors with the mouse. This can be used, for example, to reduce the effect of the switching contacts (even without a connected Digital center!). However, it is not necessary to use these symbols for the function of feedback contacts in tracks. When drawing the symbol in the track plan, the number of the associated detector is requested. The block is assigned by clicking on the symbol. If the block is to be occupied permanently, the mouse must be removed from the symbol while holding down the button. Another click releases the block again. Without this field, a detector can alternatively be switched on and off in the message monitor with the mouse.
		The block name (e.g. track number) is displayed here
	-	Hold button for direction of travel in the block
		Turntable icon. When placing, all 9 symbols are automatically placed. When you click on the symbol, the turntable window opens.

6.1.2.4 Icon group outside buttons

External buttons are, for example, local "turnout group buttons", "route auxiliary buttons", "turnout blocking buttons" and "signal stop group buttons". They have the same function as the buttons in the main window, but only affect a specific, assigned group of turnouts or routes. When a key is placed, a key number is requested first. Via - Edit - Auxiliary keys - and entering the key number or with a double click on the symbol the auxiliary key window opens, the function can be checked and the effective range of the key can be defined. If an '*' is entered in the list, the key affects all turnouts, for example, if only certain turnouts are to be controlled, their numbers must be entered - each in one line.

Turnouts can, for example, be assigned to an external button by dragging the turnouts to these symbols.

Symbols for DB table tables - SpDr60 and ESTW - also for Lorenz, photo

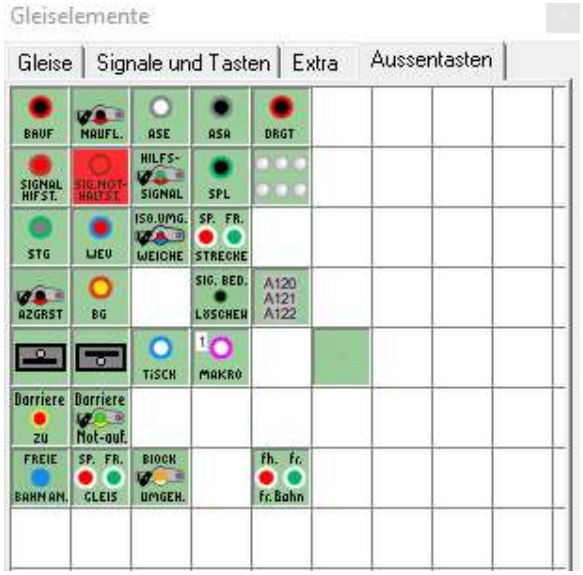


SpDr	ESTW	menu	description
		WUS / WUSA	Turnout lock button. The changeover of turnouts can be locked and unlocked again. In the ESTW this key is differently designated as WUS (switch switch lock) - unlocking takes place here with a separate command WUE
		WHU	Turnout auxiliary button. This means that a switch can be switched even though the vacancy reporting section of this switch is occupied In the ESTW with WHU (Switch auxiliary conversion)
		WU	Turnout group key. For the individual conversion of turnouts (instead of converting turnouts with routes). Designated with WU in the ESTW
	nv	AWU	Turnout opening button, enables a turnout again after it has been opened. Designated AWU in the ESTW
	nv	nv	Intersection turnout button. Determines which drive of an intersection switch is operated with the switch button. If this button is not available, both drives will switch one after the other. Two points are always set up in the ESTW.
		FHA	Route auxiliary release button. For dissolving routes In the ESTW FHA (route auxiliary resolution)

SpDr	ESTW	menu	description
		THERE	Slip reset group button. To resolve a D-way. To release, this button is pressed first, then the FRT and then the signal at which the D path begins. In the ESTW, the command DA (slip path resolution) in conjunction with the destination signal of the route is sufficient to resolve the slip path
		FA	Route reset button. To resolve shunting routes or non-defined train routes In ESTW FA (dissolve route)
		SBE	Self-setting mode switch-on button. Switching on the self-setting mode for the automatic entry of routes if the self-setting mode has been planned. In the ESTW SBE (switch on self-setting mode)
		SBA	Self-setting reset button. Switching off the automatic running-in of Routes In the ESTW SBA (switch off self-setting mode)
		HAGT	Signal stop button. Group key for holding signals (Holding group button)
		EE2	Substitute signal group button; Button for switching on the substitute signal Zs1
		SGT	Signal group key. On the prototype, the signal group button can be used to switch shunting signals that do not protect a route (Sh0 / Sh1). In the model interlocking, the function was implemented in such a way that blocking signals, regardless of whether there are shunting routes at this signal or not, are in motion (Sh1 - Shunting ban lifted) or stop (Sh0 stop for train and shunting trips) can be set.
		nv	Table illumination button. Switches the position indicators of the turnouts on and off. Only works if under Extra Settings - Design - the 'Always show turnout position' is not marked This key has no function in the ESTW, because the position indicators are always displayed here.

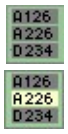
SpDr	ESTW	menu	description
		nv	Station button indicates the geographical location of the signal box. Right-click on this symbol to open the window for operating the shadow stations.
		AzG	Axle counting reset button This means that occupied track vacancy detection sections can be reported as vacant. In the ESTW AzG (basic axle counting position) This command does not make sense for contact routes, it is only useful for track vacancy reports based on momentary contacts.
	nv	nv	(Also other colors) Symbol to fill in the table
		nv	Macro key, key for starting a macro. The key is also shown in expert mode.
	nv	EA	Permission group button is used for two-button operation for issuing permits. See the corresponding Explanations in the manual. When you press this button and the permission button on the track, the permission (for the direction of travel) is always in (horizontal) direction to this external button is set. In the ESTW with EA - permission delivery - designated
	nv	Lock/ Unlock	Track lock button, locks / unlocks the track against train travel for use in the shadow station
	nv	nv	Block home key, brings a central block into the home position
	nv	nv	Storage for protective caps. Protective caps prevent the buttons from being operated and are attached to protect against accidental pressing during operation: e.g. track lock.
	nv	UDE / UDA	Permanent switch-on button, permanent switch-off button for level crossings.
	nv	HAS	Auxiliary resolution (opening) of level crossings
	nv	UE	Level crossing switch-on button Level crossing
	nv	UF	vacancy signal button - the release is triggered automatically - key has no direct function

Symbols for SBB tables - Domino and ILTIS



D`67	ILTIS	menu	description
		WVE / WVAU	Individual turnout lock on / off In the WVE menu and under critical WVAU
		WIUM	Switch isolation bypass: The turnout can also be changed when the section is occupied
		WU	Control - reversing points
		NAZ / NAR	Emergency resolution (route) train / shunting route
		THERE	Slip path reset groups button - is done with ILTIS by the route resolution
		BAZ / BAR	Operation dissolution of routes ZF / RF
		ABE	Automatic (self-setting) operation on
		ABA	Automatic (self-setting) operation off
		NHZ / NHR	Signal emergency stop train / shunting route
		SHT	Auxiliary key signal - not available with Domino / ILTIS. The dwarf signal can thus be switched without a route.

D`67	ILTIS	menu	description
		BES	Auxiliary key for entering an occupied track. After the route is set to an occupied track, the signal buttons flash. After pressing BG and the button on the destination signal, the route runs in and the main and additional signals light up. After the route has been saved, the ILTIS menu must be called up at the destination signal and 'Occupied entrance' - 'BES' selected.
	nv	SLZ / SLR	Delete route memory ILTIS only via menu - delete memory - train / shunting route
		nv	Domino only: table illumination - switches the position indicators of the turnouts on and off. Only works if under extra settings - Design - the 'Always show turnouts' is not marked.
		nv	Location of the control table / interlocking - is also displayed with ILTIS in expert mode. Currently only used for the operation of the shadow stations.
		AZNR	Axle counter basic position (block occupied / free report)
		nv	Execute model interlocking macro - is also displayed in ILTIS in expert mode
	nv	FBAN	Request free travel ILTIS: only menu block mirror - left / right
	nv	FBH / FBF	Hold on to the clear path ILTIS: Block mirror menu - lock / release
	nv	SPEG	Block / release track
	nv	Activate / deactivate the SPES / SPAUS route block	
	nv	FLOWER	Block bypass
	nv	HIST	Domino: Button to activate the auxiliary signal.
	nv	BZU	Close barrier
	nv	BNOF	Emergency barrier opening: after deleting a route or stopping the cover signals

D`67	ILTIS	menu	description
		nv	Domino only: This window shows the signals with aSB for which a subsequent route was triggered that could not be set - the signal number is highlighted in white. With ILTIS, the request is shown by the signal being framed with a green ring - only display on the screen.
	nv	SBL	The request to set a route is deleted with this key and the signal key.
	nv	nv	Keycaps - can be dragged onto keys and prevent them from being operated.

At ILTIS, the commands are usually selected via a menu. Is the expert modeNot is selected, the icons shown above are displayed. Not all commands can be entered using these symbols.

6.1.3 Assign number

By double-clicking on a new turnout or a new signal in the edit mode, this element is automatically assigned an internal number and the window with the Properties of the solenoid accessories (turnouts or signals) opened for editing.

With this function internal numbers can be assigned or changed to the turnouts, signals and control buttons. These numbers are required for identification in the model interlocking. By clicking on the icon for which the numbers were entered the numbers can be entered in a window that opens.

6.1.4 Define block

Already drawn track symbols can be assigned to a block in the track diagram. Blocks are used to divide the track plan into individual sections. Each block can be used for track vacancy detection and one or more blocks can form a route (blocks do not necessarily have to have an occupancy report, routes can also be formed from several small sections without feedback). Various data must be entered for blocks with a busy message, see sectionblocks.

A detector can be entered in up to 10 blocks or turnouts.

The button assigns the track symbols to a block. After entering a block number, the symbols that are to be assigned to this block are clicked. The block that is currently being processed becomes with red digits, all other blocks are given white digits.

You can also drag the mouse to assign several symbols to a block at the same time.

If symbols were already specified in the block, these are also added to the block. A symbol from the block can be deleted from the block association by clicking on the symbol again. However, it is important to ensure that in one

Block no gaps and spaces are created - a block is a closed series of symbols without switches!

The next block can be entered by clicking this button again; the number for the block is then requested again first.

The properties window of a block is opened in edit mode by double-clicking on one of the symbols of the block, after which the properties can be defined.

Double track connection

With the method described above, only the upper track can be assigned directly to a block in the case of a double track connection. The lower track is assigned to a block by pressing the <shift> key at the same time.

6.1.5 Enter routes

ModellStellwerk can automatically generate the required routes during operation. If, however, routes are required that cannot be generated automatically, you must define your own routes with the following description.

The button is used to switch to the mode for defining routes. After clicking the start (signal or button) and the target (also signal or button),
first asked whether a new route should be entered. After that, that will
Route window open. If a route has already been defined between the start and the destination, the route's properties are shown in the route window. The data can then be entered or changed.

If the start or the destination of the route is a track blocking signal (SBB: dwarf signal) or a blue or gray button, a shunting route is assigned, in the other cases a train route. If a shunting route is to be set up from an exit signal with shunting release (Sh1), this is done by simultaneously pressing the (Ctrl) -
Button reached.

With the help of an assistant, the route can be entered graphically step by step. This is discussed in theRoutes described in more detail.

6.1.6 Change and delete data

Most of the data can be changed in the same way as the data was entered. For example, symbols can be inserted or removed and the symbols assigned to a block.

in the Edit mode the properties of the symbols can be displayed and edited. With a single click on the symbol, the
Coordinates, the internal number and the type of symbol are displayed.

The data of a certain turnout or a certain signal can be changed after a double click on the respective symbol. The editing window forPoints and signals is opened and the properties of these turnouts or signals are displayed.

The data for the blocks can be changed in the same way: a double click opens the editing window for the Blocke open.

The data of a certain route can be changed if the start button is clicked first and then the destination button

With some symbols, a menu can be called up with the right mouse button, which enables further selection.

If you change data, all entries relating to the changed element must be checked. If this does not happen, unintended reactions can occur.

Check the entries in:

Turnouts and signals - solenoid blocks

Routes

Macros

The results can then be checked in 'Overview'.

Only delete entries for solenoid accessories and routes via 'Edit' and confirm with OK. Simply deleting the symbol on the table / screen is not enough!

When deleting, you will be asked whether the corresponding entries should also be deleted. If this is confirmed, the entries in solenoid accessories, blocks, routes and stations are deleted. Only the data from this switch or this signal are deleted or set to 0. The data is retained in macros.

An extra confirmation is then requested and a message is given.

If the deletion of the corresponding entries is rejected, the data is retained.

The deletion of routes and blocks always requires a check in the possibly dependent elements.

A new system should always be started via 'File - New System' and the deletion query should be answered with 'YES'. This ensures that no old entries are dormant somewhere.

6.1.7 Shift rows and columns, copy symbols

Lines and columns can be inserted or deleted in the switchboard. This is selected from the menu that is displayed when you right-click on an empty icon. The row or column in which the blank symbol is located is removed or a row or column is inserted.

The row or column is inserted in the entire track diagram and it is important to ensure that holes created in the track sections are filled with the correct symbols. The added symbols must be reassigned to the correct blocks.

Please note: A deleted row or column cannot be undone! If in doubt, save the file or make a copy of it before doing this!

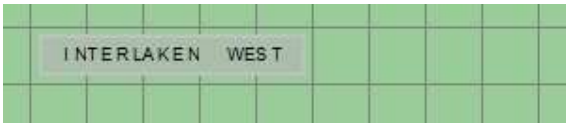
Selecting, copying and deleting symbols is carried out as known from Windows: The symbol is selected by clicking on the symbol, several symbols can be selected together by clicking the (Shift) -Button is pressed. Then you can use (Ctrl) (C) the symbol or symbols copied or with

(Del) or. (Ctrl) (X) to be deleted (Warning: this cannot be reversed).

To insert the copied or cut symbols, click on the new space and mark the symbols with (Ctrl) (V) inserted.

6.1.8 Free text on the table (tip)

With a suitable graphics program, for example, the station name can be created in shape and color according to the wishes - here as an example for a Domino table.



The execution provided in Domino

and here the wishful thinking.

If the individual symbol elements, with Domino 32 x 32 pixels, are saved as * .bmp files in the symbol folder, they can be built into the table using 'own definition'.

The desired name is written with the chosen font - here Ariel, white with 12 points. The original SBB typography would have to be licensed - I cannot say whether it is available for private use. This defines the number of symbols required.

The writing must be underlaid - as prescribed by the SBB - with a blue background - R / G / B: 45/50/125.
All elements aligned and displayed as individual symbols (32 x 32 in Domino) in the Symbol folder saved:  W_1,  W_2,  W_3 and  W_4.
Any 4 turnout symbols - there is no 'own definition' - are inserted, a number is assigned and edited on the table.
Instead of turnout 'own definition' is selected, the number of the position is 1 and the path to the symbol is entered.

The Swiss Federal Railways publishes all boundary conditions under the corporate design.

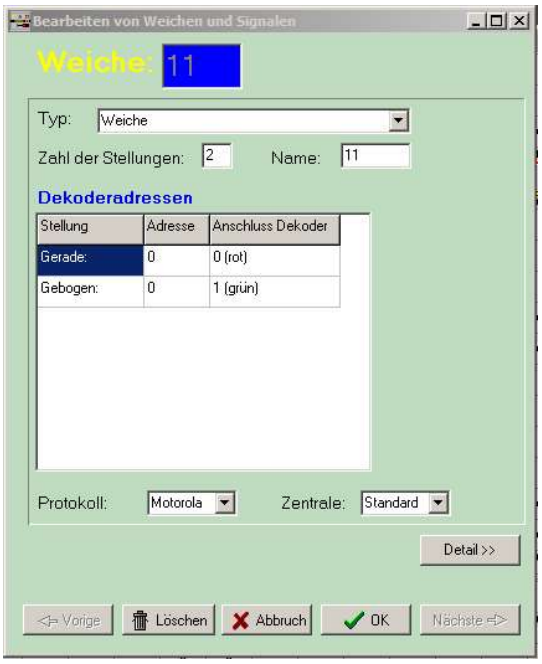
6.2 Points and signals

Turnouts, signals and other magnetic items must be defined for use in the model interlocking. This is done in the editing window for turnouts and signals. This window can be accessed in 3 ways when the model switchboard is in edit mode:

from the main menu with Edit - Magnetic Articles,

from the context menu of the respective symbol, or

by double-clicking on a turnout or signal symbol in the track diagram.



Not all input fields are always shown, the input fields for the special tasks are shown with the button [Detail >>].

6.2.1 Intern number

Up to 1000 solenoid items can be managed in the model interlocking. All solenoid items are identified by an internal number, each solenoid item is given a number between 1 and 1000. This number is independent of the decoder address. If the editing window has been opened from the switchboard and the turnout does not yet have a number, a number is automatically assigned. This internal number can be changed via the menu that is opened by right-clicking.

Danger: This internal number is used:

1. in the properties of switches and signals,
2. when defining routes,
3. for blocks and
4. in macro programs

Every magnetic article belongs to a certain type (see below). This type determines the properties of the solenoid accessory and the symbol that is displayed in the track diagram. After selecting the type, the corresponding input fields are displayed depending on this. The input fields can be selected with the mouse or with the (Tab)-Key to jump from field to field.

The properties of the input fields are described below.

6.2.2 Type

In this field the type of the respective solenoid is indicated. This selection determines both the properties of the solenoid and the symbol that is displayed in the track diagram on the screen.

Type from the list	description
Soft	Simple switch
3-way switch	3-way switch
crossing	3 positions - neutral, intersection ad and bc. Address for frog polarization in Two-rail / two-wire operation
Crossing switch, 2 coils	Crossing switch with one drive (4 positions) for EKW and DKW
Crossing switch, 4 coils	Crossing switch with two drives (4 positions) for EKW and DKW
Block signal (Hp0 / Hp1)	Simple signal with "red" and "green"
Entry signal (Hp0 / Hp1 / Hp2)	Signal with "red", "green" and "green / yellow" (slow travel), extra position for beacon (Zs1)
Exit signal (Hp0 / Hp1 / Hp2 / Sh1)	Signal with “red”, “green”, “green / yellow” and “maneuvering” allowed ", extra position for beacon (Zs1)
Exit signal (Hp0 / Hp2)	Signal with “red” and “green / yellow” (slow travel), extra position for beacon (Zs1)
Lock signal (Sh0, Sh1)	Signal for maneuvering
Uncoupling track	Uncoupling track
Magnetic items	Universal magnetic article
Advance signal (Vr0, Vr1, Vr2)	Advance signal with 2 or 3 positions
Railroad Crossing	Railroad Crossing
Extra signal	Signal for extra tasks, freely definable

Type from the list	description
SBB - block signal	Signal with stop, warning and drive
SBB - main signal	Signal of the SBB with 7 driving terms
SBB - distant signal	Advance signal of the SBB with 5 terms
SBB - dwarf signal	Dwarf signal of the SBB with 3 driving terms
Own definition	Symbol for display with your own design

Attention: The symbol for the single or double cross turnout must first be selected, a subsequent change in the turnout definition (only double cross turnout possible) is not intended. Only then will the program make the settings correctly.

6.2.3 Surname

A name can be assigned to each solenoid accessory. With the appropriate setting, this name is displayed as a designation for the element on the table / screen.

6.2.4 Number of addresses

The number of positions (addresses) can be entered here for a self-defined solenoid accessory. In combination with certain hardware (CAN digital train), up to 99 positions are possible.

6.2.5 Decoder addresses

The table shows a line with 3 columns for each position (Selectrix decoder: 4 columns). The position is given in the left column; The address of the decoder must be entered for each position of the solenoid. In the right column the color of the connection on the decoder is given, or for certain central units, the position on the central unit (for ECOS, up to 4 positions).

The address is between:

1. 1 and 256 or 320 (Motorola), 1
2. and 2040 (DCC),
3. 1 and 111 (Selectrix Sx0 bus), if a Selectrix control center has been selected as the control center, the bus and the output can also be specified here.

The first line can be reached with <TAB>, further lines can be reached with Cursor keys.

In addition to the main address, the connection to the decoder (1-8) to enter.

Entry and exit signals also have an address for the substitute signal (Zs1) / auxiliary signal and short travel.

If 0 is entered as the address, no command is sent to the interface for this position. This can be used, for example, for signals that are not available on the system or for manual switches.

For solenoid items of your own definition, you can enter your own addresses up to the specified positions; if more positions are required, the addresses required for this are counted from the first address.

If the system is controlled with the Ecos or CS1 in "Extended" mode, the first address is used for synchronization between the control center and the model interlocking. Solenoid items that are controlled at the control center are only reported back if this address in the model interlocking matches the address in the solenoid item database of the Ecos (CS1).

If the system is controlled with the Ecos and the turnout is controlled with the Ecos protocol, the "connection decoder" is sent to the control center as a position, values 0-4 can be entered here depending on the type of solenoid. For an intersection switch with two drives, the numbers 0 - 3 - 2 - 1 must be entered here:

Junction, EKW and DKW

Dekoderadressen

Stellung	Adresse	Anschluss Dekoder
DKW ad	0	1 (grün)
DKW ac	0	0 (rot)
DKW bd	0	1 (grün)
DKW bc	0	0 (rot)

The driving options with these switch constructions are designated with letters from the top left (a), bottom left (b), top right (c) and bottom right (d),

Possible positions:  ac  ad  bc  bd

A crossing switch can be seen like 2 individual switches. What is often confusing is that the left turnout in the crossing turnout then represents the right drive, and vice versa. If the position of the crossing switch on the layout does not correspond to the picture in the track diagram, then the drives or the connections of the drives must be swapped. You can do this conveniently in the software with the settings of the solenoid, here you can select the decoder address and output of the decoder via connection.

6.2.6 protocol

Here it is specified whether the address mentioned is addressed via DCC, Motorola, Ecos or Selectrix. This entry is important for the central Ecos, Märklin CS1 and Selectrix. This entry is also important for "accessories" and "switching functions" in the BiDiB OpenDCC system. See the manual, part 3.

If you want to operate the turnouts on the control center yourself with an ECOS control center, then you have to use the protocol Ecos to get voted. The turnout or the signal must then also be defined in the Ecos database. When changing to GO mode, the turnouts are read out from the Ecos and linked using a digital address. The control then takes place via the Ecos-ID.

The changes in the positions of the solenoid items in the control center can only be followed by the model interlocking if “Follow point control on the control center” is checked in the configuration under the properties of the control center.

6.2.7 Headquarters

If the control center that is specified as the control center for the turnouts in the settings is not responsible for controlling this solenoid, another control center can be specified here.

In the BiDiB system, different decoders can be used to control the turnouts. These decoders are addressed via the UniqueID. The link between decoder and address is described in part 3 of the manual.

6.2.8 detail

The editing window can thus be expanded to define additional data.

6.2.9 Illustration

For self-defined solenoid accessories, the symbol that is displayed in the track diagram can be selected here. See also paragraphFout! Verwijzingsbron not gevonden.

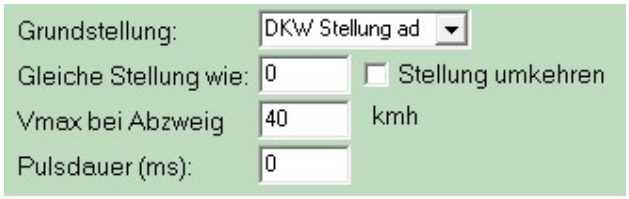
6.2.10 Basic position

The position of the solenoid when starting operation is selected here. The selection options depend on the type. The basic position cannot be entered for signals, here the basic position is always Hp0 ("Halt").

Single and double cross turnouts (EKW / DKW):

The driving options with these switch constructions are designated with letters from the top left (a), bottom left (b), top right (c) and bottom right (d),

There are four additional positions: 'Just - ac, bd, ad and bc '. The double cross switch is then locked in this position; this is indicated by a red glowing indicator.



At the intersections, in addition to a neutral position, the branches are not illuminated, only two positions ad and bc are possible.

6.2.11 Same position as

In this field the internal Number (not the decoder address) of a turnout or a signal can be entered, which should always have the same position as this turnout or this signal, e.g. in the case of a turnout connection or a distant signal with the associated main signal. You can only enter one accessory of the same type (it is not checked). A value of 0 (zero) means that no other turnout will be coupled to this turnout. The coupling of the magnetic items works in both directions - e.g. from switch 41 to switch 42 and vice versa, even if there is no entry in switch 42.

By checking Turning back, if the position is reversed, when the first switch is straight, the second switch is in the deflection and vice versa.

Danger: The turnout with the internal number 256 cannot be entered.

6.2.12 SBB additional signal

If an SBB main signal is provided with an additional signal, the additional signal is given its own number. 'SBB main signal' is also selected as the signal type for the additional signal, and this number is entered in the "Same position as" field for the associated main signal.

6.2.13 Depending on

This field can only be entered for 3-aspect signals (Zs1 not included).

If this field is used, however, the basic position can no longer be entered. If a value of 0 (zero) is entered, the signal is not dependent on a switch. The signal shows all 3 positions in sequence: Hp0 - Hp1 - Hp2.

Danger: The turnout with number 256 cannot be entered.

Annotation: If the interlocking functionality is implemented as in a large company, then the dependencies in the route are planned and based on the parameter Depending on can be dispensed with.

6.2.14 Is next to a signal

This field is only shown for blocking, dwarf and distant signals.

Shape lock signal

If the DB has a (form) blocking signal at the main signal, the blocking signal "Shunting ban canceled" (Sh1) will show when the main signal is on "Drive" (Hp1 or Hp2). If the blocking signal is set to "No maneuvering" (Sh0), the main signal will show Hp0 (no driving).

The number of the main signal on which the blocking signal is located is specified in this field. The model signal box will now carry out the dependency described above: If the main signal is set to "Drive", the blocking signal changes to Sh1. If the locking signal is set to Sh0, the main signal changes to Hp0.

Light blocking signal / dwarf signal

If separate main and blocking / dwarf signals are set up at the end of a block, this is always the case with SBB because the main and shunting signals are not integrated in one signal, then the blocking / dwarf signal is entered in this field with the main signal . The entry ensures that a train also departs if only the blocking / dwarf signal is in the running position. In this case, the main signal is entered in the block form.

Distant signal

If there is a pre-signal at a main signal, the pre-signal will always show “expect stop” (Vr0) when the main signal is at “stop” (Hp0), regardless of the signal from which the pre-signal is showing the position. If the main signal is set to "drive" (Hp1 or Hp2), the distant signal will show the position of the main signal to be displayed (Vr0, Vr1 or Vr2).

If the number of a main signal is specified in this field, this dependency on the model signal box is implemented

If the distant signal is at the beginning of a route, it is automatically coupled with the main signal at the end of the route, ie the distant signal shows the position of the signal at the destination of the route if the route is defined. An entry under - Same position as - is prohibited in this case.

Light pre-signals

A distant signal in connection with a main signal is switched off when the main signal shows stop; this is implemented in the model interlocking and is displayed like this on the monitor

shown. This dependency must be set in the decoders on the model railway layout.

Advance signals are not displayed on the Domino table or the ILTIS screen. You can jump over Edit - Magnetic Articles can be set up without an icon.

The Swiss signaling regulations stipulate that a distant signal at an entrance signal always shows a signal image; Always a warning when stopping at the main signal. If it is planned to set up the distant signals against the rules on the domino table, the control of the distant signals must be set up using macros.

If there are more than three entrance signals with pre-signals at the same height - in a relay, the pre-signals are also darkened in Switzerland for the sake of clarity.

6.2.15 Vmax at branch

Here it is specified how fast a train can drive on the turnout in the junction. This specification determines the signal aspect and the speed of the train in routes. With dynamic routes, dominoes and 'SBB signals drawn', the signal image shows the correct driving terms for 40, 60 and 90 km / h.

6.2.16 pulse duration

Here it is specified how long the turnout coil must be switched on. This can be used when turnouts or signals do not switch fast enough.

Specifying the pulse duration only makes sense in cases where the solenoid accessory decoder does not generate the time for the connection itself (regardless of the selected pulse duration).

6.2.17 Changeover without WGT (turnout group key)

If this field is marked, this turnout (contrary to the prototype!) Can be changed with the mouse without pressing the turnout group key.

6.2.18 Target for SSB / aSB (self-setting operation)

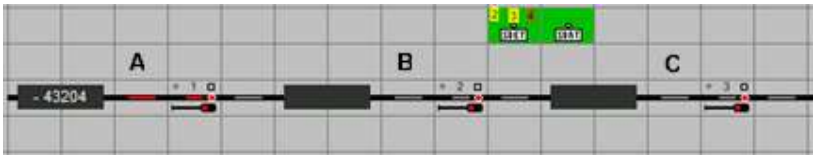
The internal number of a destination signal or a destination key is entered in this field. A route is automatically set from this signal to the target signal if the self-setting mode is switched on for this signal.

The self-setting mode is at

SpDrS60	switched on with the SBET (self-setting mode switch-on button) and the signal button, and switched off again with the SBRT (self-setting mode reset button) and the signal button.
EWST	via the menu command of the signal symbol field - SBE / SBA with
domino	the external buttons ASE / ASA and the signal button via the menu
ILTIS	command of the signal symbol - ABE / ABA

in the Expert mode only the menu commands are available for ESTW and ILTIS. If this is switched off, the alternative command input is possible with the external buttons.

Example:



If the self-setting mode is switched on - recognizable by the yellow highlighted signal numbers in the external keypad SBET - and a route from signal 1 to signal 2 is set and the block before block A is occupied, the SSB / aSB automatically sets the route from signal 2 to signal 3 . If it was not possible to set the route, further attempts will be made.

If the track section is divided into more than one block between two signals, the route is triggered when the first block is occupied.

6.2.19 Busy report

Enter the number of the feedback contact (detector) with which the turnout is to be reported as occupied. If a turnout is occupied, it cannot be changed, it can no longer be set in a new route and the turnout is shown in red in the track diagram when it is occupied. With On or Off it is indicated whether the turnout is reported as occupied when the detector is switched on or off.

It is possible to report several turnouts in a turnout field with only one detector occupied. A turnout is then only illuminated in red if it is included in a route.

6.2.20 Position monitoring

If, for example, feedback contacts are to be used to monitor the position of the turnouts, the type of feedback can be specified here.

No	no feedback is used. Feedback takes place via
With detectors	feedback contacts.
Ecos feedback	for Ecos feedback-capable decoders. From the control center The control center takes over the setting of the points from the return message e.g. from the CdB WeichenChef, or the OpenDCC system.

Under Just and Bent the number of the feedback contact must be given, which reports the corresponding position back to ModellStellwerk. If the turnout does not reach the end position during operation, the position indicator of the turnout flashes.

6.2.21 Detector for button

A feedback contact can be entered here, if this contact is switched on an external track diagram control panel, then the switch button is pressed.

6.2.22 Own definition

As a final choice of the solenoid type, you can enter your own definition. For this purpose, the type -Own definition - selected. in The FieldNumber of positions enter the number of addresses required. A solenoid can have up to 99 different positions and addresses. If 1-4 positions are specified, the addresses 1-4

can be entered. If the solenoid has more than 4 positions, counting continues from the first address. If the solenoid is connected to the CS1 via the CAN bus (and the extended protocol for switch control of the Ecos is checked in the options), then all positions are controlled via the first address.

in The Field Illustration the file name of a bitmap file (* .bmp) is entered; this figure is then shown in the symbol field according to the position. Such a file can be created with MS-Paint, for example, and has a defined height and width (in pixels). The file must have a symbol image for each position, which are arranged in a row.

Depending on the interlocking design, the symbol on the table (monitor) has a fixed size; there is a separate symbol part for each individual position. The file is as wide as the symbol size multiplied by the number of positions.

Design	Symbol height (in pixels)	Symbol width (in pixels)
Lorenz track plan signal box (small design) Siemens	20th	20th
track plan signal box (large design)	25th	37
Track plan signal box type Siemens (photo-realistic symbols)	75	120
Electronic signal box	32	32
Domino `67	30th	30th
ILTIS	32	32

6.3 Feedback contacts

Before feedback contacts are defined in blocks, under To edit - Feedback decoder enter the number of feedback decoders. It must be ensured that the number of feedback decoders connected to it must be entered in all central units.

The model interlocking can read in the feedback information from 2 central units. For each feedback bus the following must be specified:

1. The headquarters,
2. The number of connected feedback decoders, with addressable feedback decoders the "gaps" must also be counted.
3. Indication of whether feedback decoders with 8 or 16 connections are used,
4. the first detector contact in the model interlocking (internal number) that is read in by this control center,
5. the address of the first decoder (for Selectrix, Lenz, and Loconet, other decoders have consecutive addresses) and
6. Distribution via the connections (left-center-right) only for the LDT-High Speed Interface.

The feedback number is calculated as follows when reporting:

Feedback number = reported number - (start address-1) * 8 + start detector - 1; The start indicator is calculated in steps of 16.

If the feedback modules are used for block assignment, a feedback module in maximum 10 blocks can be read.

Attention: If the number of feedbacks is not entered correctly, it can happen that feedbacks are no longer reported free.

Feedback can also be inserted, all indicators in blocks, loaded macros, etc. are adapted.

If on the Eco's headquarters Both S88 feedbacks as Ecos detector feedbacks are connected and / or are defined in the configuration of the Ecos, then the first Ecos detector is automatically assigned an internal number immediately following the S88 feedbacks. If you have defined 3 S88 detectors in the Ecos, then the first Ecos detector with contact (3 * 16) = 49 is reported. As the number of feedbacks, you must also consider the S88 feedbacks, the number of feedbacks in the model interlocking with an Ecos detector is 4 in this example.

in the Lenzsystem, at Loconet feedback decoders are addressed individually. ModellStellwerk assumes that the feedbacks are then addressed consecutively. But if you use addresses 66, 67 and 72 here, ModellStellwerk assumes that addresses 68 - 71 are also occupied; they are also read in. However, this should not be a problem, your feedback contacts then have the numbers 1..8, 9..16, 49..56, the number of feedback decoders is then 7.

If on an IntelliBox (II, COM) the trans Loconet communicates pure Loconet feedbacks are connected, ie decoders that are addressed individually, then the correct decoder type ("Loconet") must be specified, for decoders that are connected as S88, this is not necessary. Feedback units connected as S88 decoders always start with contact number 1.

The CS2 sends 2 different responses when the program starts if the feedbacks are read; one answer for the feedback on the S88 bus and one answer for the feedback on the CAN bus, e.g. the CdB track reporter. In order to be able to differentiate between the two, the number of feedback decoders must be entered on the S88 bus.

If at the Roco Z21 Both Roco feedbacks and Loconet feedbacks are connected, then the feedbacks work in the same address range, it is advisable to address the Loconet feedbacks so that they have a higher address than the highest Roco address. In this case “Loconet” is entered as the decoder type.

Feedback at a control center that trans Loconet communicates like the Intelliboxes (except IB I) and the Z21 cannot be queried when starting the program due to the protocol. However, all decoder suppliers offer the possibility of sending a command to the feedback decoder so that they are requested to send the data. The address used for this, for Uhlenbrocks 63320 is the report address 1017, can be entered here.

in the OpenDCC / BiDiB System, only the number of feedback decoders is given. Other settings are entered in the panel data, see manual part 3.

6.3.1 Debounce times

The button [Debounce times] opens a separate window in which a debounce time can be entered for each feedback contact. In steps of 100 ms, it is specified here how long a feedback contact on the system must be switched off before the model interlocking processes the switch-off. The contact switches again within this time
on, then switching off and on is not processed. This time is shown eldemonitor becomes the process in yellow in the M.

-

6.4 Block (track vacancy detection sections)

In the model interlocking, the block has different tasks:

In the simplest case, the block only has the task of defining a track section for the program; If this track section is connected to a vacancy reporting device, its occupancy is displayed on the table.

As with the prototype, the main or central block is responsible for securing train traffic between stations.

A very important task of the block in the model interlocking is to control the locomotives and trains. This function is the basis for train tracking and the automatic operation of the model railroad.

In any case, a track vacancy report / occupancy report is required for these functions.

In the simplest case, a block is just a section of track; For example, a platform or shed track whose occupancy status should be visible on the table. This track section / block can be planned in routes. The set route is illuminated in white and red when it is occupied.

The station, route and central blocks are given special attention.

The station block has no security function for the train journey like the route or central block. If a signal is set up at the end of the block and at least one document detector is entered, locomotives or trains can be controlled by the program in this section; they automatically decelerate, stop or accelerate. If this station block is, for example, a stump track in a terminal station, then instead of a signal at the end of the block there is a track button as a destination.

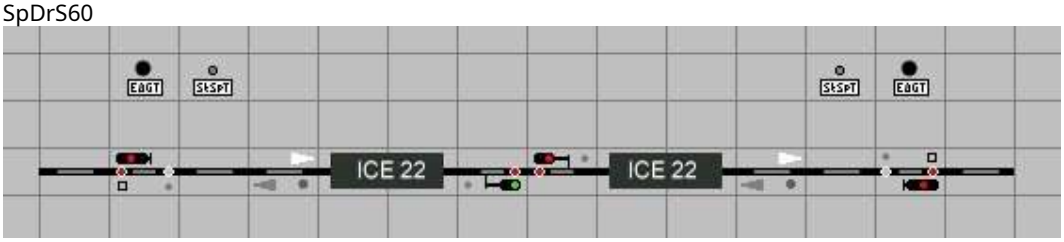
Block technology is used between train stations to secure train traffic. A train may only leave station A if the route is free, if no train route is set in the opposite direction or if a train is already on its way and if the dispatcher at station B has given permission. If these conditions are not met, technical facilities prevent the dispatcher of station A from setting the exit signal to drive.

Two block systems are implemented in the model interlocking, the route block and the more modern version, the central block. In the case of a section block, the basic position of the signals is drive. It shows hold when the block section to be protected is occupied. The direction between the stations must be set manually. The signals in a central block section, on the other hand, show a stop in the basic position, even if the section / block section to be protected is free. The signal is only put into motion by the approaching train when it has reached the trigger point. The direction is automatically set after checking the criteria - route free, no train journey or set route in the opposite direction.

When planning the model railway system, a permission field / block mirror must therefore also be set up in the route between two train stations in addition to the two entry signals and the route buttons. These fields show the set, permitted direction of travel; with Domino 67 / ILTIS also the pre-allocation (pre-blocking) of the route and the allocation by the train.

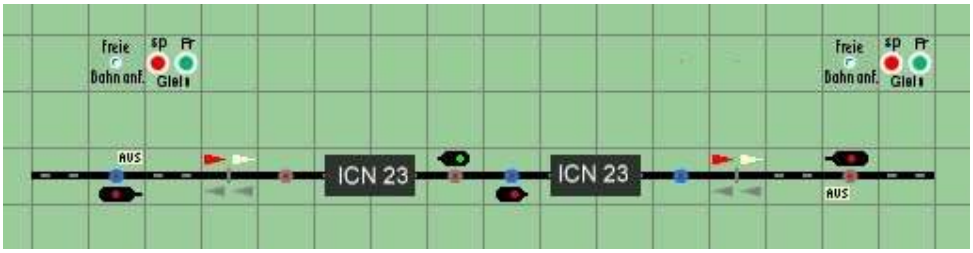
Example: Distance between two train stations with a block and with the entrance signals on the right and left, the permission field (SpDr60) and block mirror (Domino). The permission field shows the set direction of travel with the arrows. The train number fields are optional. If no block is planned, track buttons are to be provided so that the exit roads can be set. The train number field can be omitted.

SpDrS60



With Domino, the track buttons must be planned in any case, as the direction of travel is set with the 'Request free travel' button and the track button. The block mirror shows with the arrows next to the direction of travel whether a train journey is set - arrows red and white - and whether the track section is occupied - red arrow.

domino



6.4.1 Description in detail

In the model signal box, the block is a little wider. It is firstan independent component in the track plan, a track section that is called

'Station block',

Route or central block is planned.

In the station area, all track sections are set up as a 'station block', the routes between stations as a 'line or central block'. A block must not contain any switches, crossings or double cross switches and can be part of a route.

6.4.2 Information in the track diagram

After the track diagram consisting of track elements, signals,

Buttons and other track symbols can be reached via  ,Blocks show 'a dialog window in which a block number is specified. This number is assigned to the track symbols that are to be combined into a block, they

are clicked and the number is displayed. Will be a symbol again 

if clicked, it is removed from the block and the number is deleted.

This must be repeated for all symbols in track sections that are to be integrated into routes or routes.

For all other track sections that have already been assigned to a block, the number is highlighted in white.

Be sure to note:

All symbols of a block form a continuous track section without gaps

No turnouts, crossings, single or double turnouts may be set up in a block.

If gaps cannot be avoided, connecting elements with identical numbers must be set up at the separation points within the block.
If a track crossing is planned without a track connection or overpass, one of the two routes can be connected with tunnel portals.

The window for configuring or changing a block can be reached by:

click on a track symbol with the right mouse button and select 'block to edit,

the selection in Main menu - Edit - Blocks or

in edit mode with a double click on a track element.

6.4.3 Block and track vacancy detection

In simple systems that are operated and operated manually, clearance reporting devices are only required if the track diagram on the table is to show occupied sections. Routes can be set up or dynamically set directly.

For train tracking, partially or fully automatic train traffic, block protection and in the shadow station, the blocks must be set up with track vacancy detectors. In this case a block can be divided into up to three sections, one in which the block is occupied, one in which the train is delayed and one as a stopping section.

There are two different options for evaluating the vacancy report:

point-by-point reporting via switching tracks, (reed) contacts or light barriers,

Contact route, i.e. continuous evaluation of the track occupancy via wheel sets (Märklin system) or current measurement (2-wire systems)

Contact sections are recommended for use with a model signal box, as this means that if the vehicles are appropriately equipped, each axle can be used for track vacancy detection.

If the block is equipped with a track vacancy detection device, in addition to the illumination in a set route, it can also display the occupancy by a vehicle. If the route is to be illuminated true to the original, the turnouts must also be configured with detectors; it can be useful to enter the same detector from an adjacent block.

Short track sections, such as between an exit signal and the next butt operated switch, can display the occupancy with the same detector depending on the switch position. How to proceed in such cases during configuration is described in chapter
6.4.5.7.

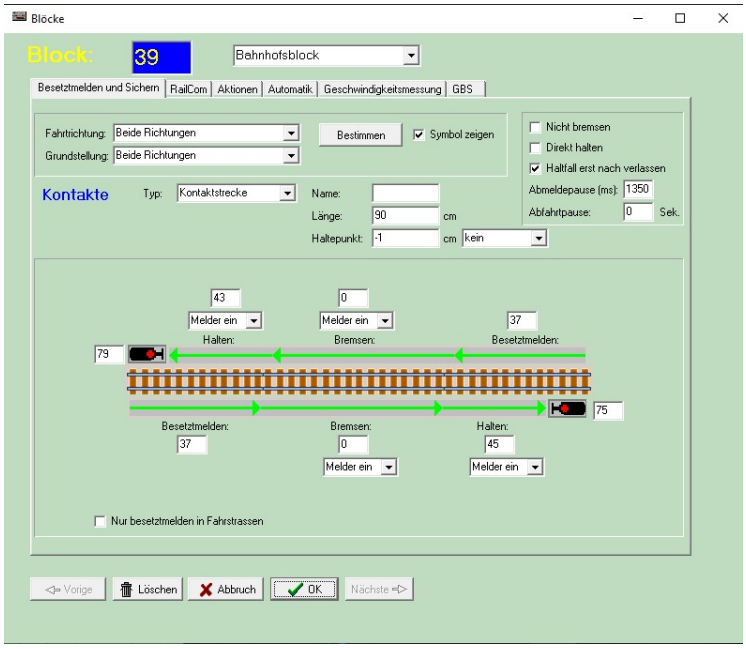
With automatic block operation, the model signal box automatically sets the signal covering the block to 'Halt' when it is occupied. The signal is only set to 'drive' in the section block when this block is free again. 'Stop only after leaving' is preset in the block window; this means that the signal is only stopped when the train has completely left the block. If 'Stop only after leaving' is not marked, the model signal box sets the signal to stop if the track section is occupied after the signal.

If a signal is set up at the end of a block with a detector and train tracking is used, the model interlocking can control the train in front of the stop signal without interrupting the power supply

brake and stop. If the signal is set to 'run' and the automatic departure is set, the locomotive accelerates again. The basic requirement for this is that the locomotive and its properties have been defined in the system and are known in the block; The name / number of the locomotive or train is displayed in the train number field.

Model interlocking can manage up to 1000 blocks, each block is given an internal number between 1 and 1000.

6.4.4 The block window



6.4.4.1 Station block - central block - route block

In the model interlocking, a distinction can be made between a station block, a central block and a route block.

In contrast to the station block, the block protection is integrated at the same time in the central and route block. In the case of a track between two train stations consisting of several individual blocks, this means that the same direction is set in all blocks when an exit route is set. Furthermore, all signals come into motion if the sections protected by block signals allow this - for example in the case of a section block.

In the case of the section block, the basic position of the signals is 'drive', in the case of the central block it is 'stop'; in the latter case, the signals go to 'drive' when a route is placed on the route. (see also the next section 'Direction of travel').

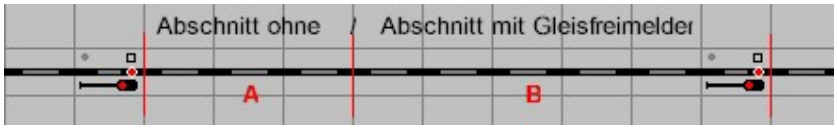
In the case of the central block, the blocks are cleared by the train. If a track section is reported as being occupied, the signal at hand drops to halt and the block that has been cleared is logged off from the route.

However, if there are other blocks without track vacancy between blocks with track vacancies, then the latter are both logged off the route when the new section is driven on. In order for this function to work properly, the signals in between must be correctly entered in the blocks with track vacancy detection.

The route (block section) between two signals must have a block with track vacancy detectors at the end so that automatic operation is possible. In the beginning you can

a block without track vacancy detectors can be inserted. The block section with the detectors controls the function - occupying the block - decelerating the train - stopping before the 'stop' and accelerating at the signal indicating 'running'. The signals at the beginning and end of the route section must be entered in block B (block with the detectors).

Example:



Danger: Blocks in the central block are only illuminated in routes in ESTW and ILTIS.

6.4.4.2 Direction of travel

If a block is only driven in one direction, the direction of travel must be entered. A correctly specified direction supports train tracking. If no direction is selected ("both directions"), trains can travel on the block in both directions. When using train tracking, the direction of travel must always be clear - either through the correct selection, or through the direction of travel in the previous block or by defining it with switching tracks or track vacancy detection sections.

Each table field has a number that is displayed in the status bar in edit mode, for example (8.27). That means row 8, column 27; another representation for this is number 0827. A trip in a block from a field with a lower number to a field with a higher number is with "up to down" or "left to right", a trip from a field with a higher number defined for a field with a lower number with "bottom to top" or "right to left".

You can simplify the search for the definition if you insert a direction arrow from the track elements in the block, call up the block and click on the "Determine" button. This is transferred to the "Direction of travel" field in the block window. You can then delete the arrow again in the track diagram, or check that the arrow does not have to be shown during operation; But don't forget to check whether the block entries have all been entered.

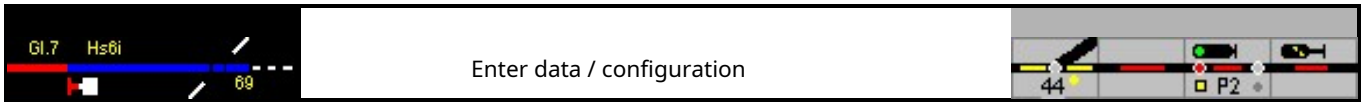
The model switchboard can automatically determine the direction of travel if the symbols for the direction of travel are drawn in the track diagram. If now the buttonDetermine is clicked, then this symbol is used to indicate the direction of travel.

With the option 'Show symbol ' indicates whether the travel direction symbol should be displayed in the block during operation.

If a block is reported as occupied, the model signal box will try to determine the direction of travel based on the occupied contacts. During operation, the direction of travel is also passed on by moving trains.

The direction of travel is determined by the contacts or contact routes that are responsible for setting signals and for influencing the train, i.e. braking and stopping.

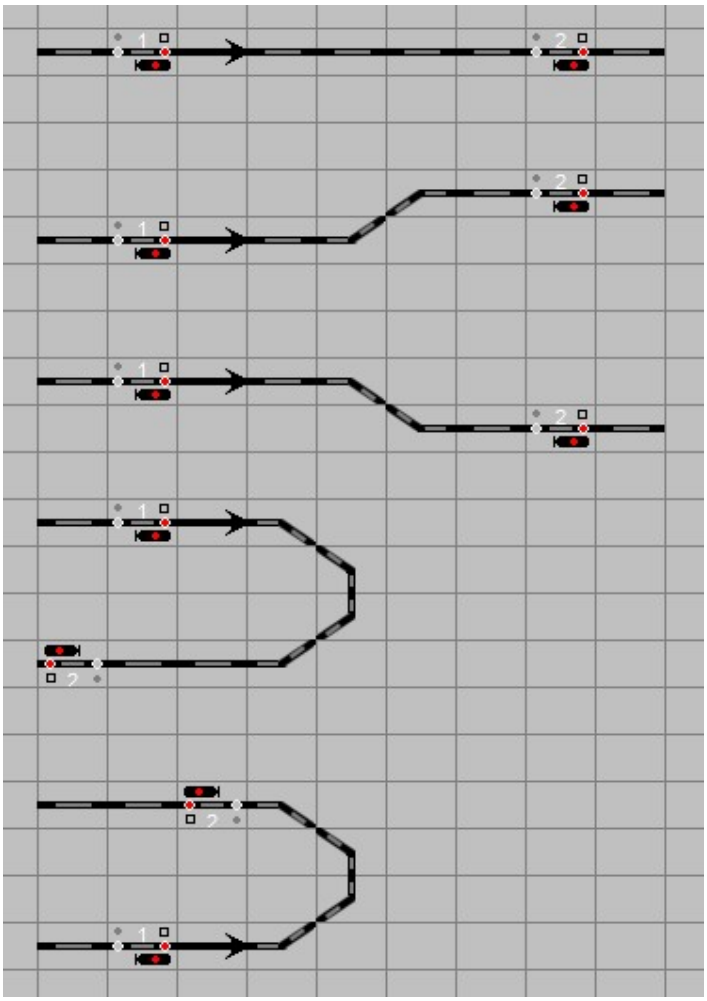
If a block is driven in both directions, the direction of travel of the central block is automatically changed (prototypically) when a route is placed on the route. In the case of a route block, the direction of travel must be set manually in expert mode by issuing the permit.



If the block ends at a buffer stop, then “dead end to the left” or “dead end to the right” must be selected for the direction of travel. This setting ensures that the locomotive is ahead the buffer stop at the stop indicator is stopped without a signal.

6.4.4.3 Examples of the direction of travel

These examples show the direction of travel in a block from signal 1 to signal 2.



Direction of travel to the right

Signal 2 is above signal 1, therefore direction of travel to the left

Signal 2 is below signal 1, therefore direction of travel to the right

Signal 2 is below signal 1, therefore direction of travel to the right

Signal 2 is above signal 1, therefore direction of travel to the left

6.4.4.4 Contacts type

First of all it has to be determined how the block is reported as occupied. This is possible with momentary contacts (e.g. with Märklin with switching tracks or reed contacts) or as a contact path for reporting via the wheelsets of the train or by measuring the current. In this case, a block can consist of up to 3 contact sections: signaling section, braking section and stopping section.

The option is for momentary contacts Individual contacts, for a stretch Contact route to choose.

> The occupancy report with individual contacts is not recommended as the occupancy report cannot be guaranteed and the occupancy report only applies to the trigger (the locomotive).

6.4.4.5 length

For precise braking and stopping, it is necessary to specify the total length of the block. The information is given in model cm.

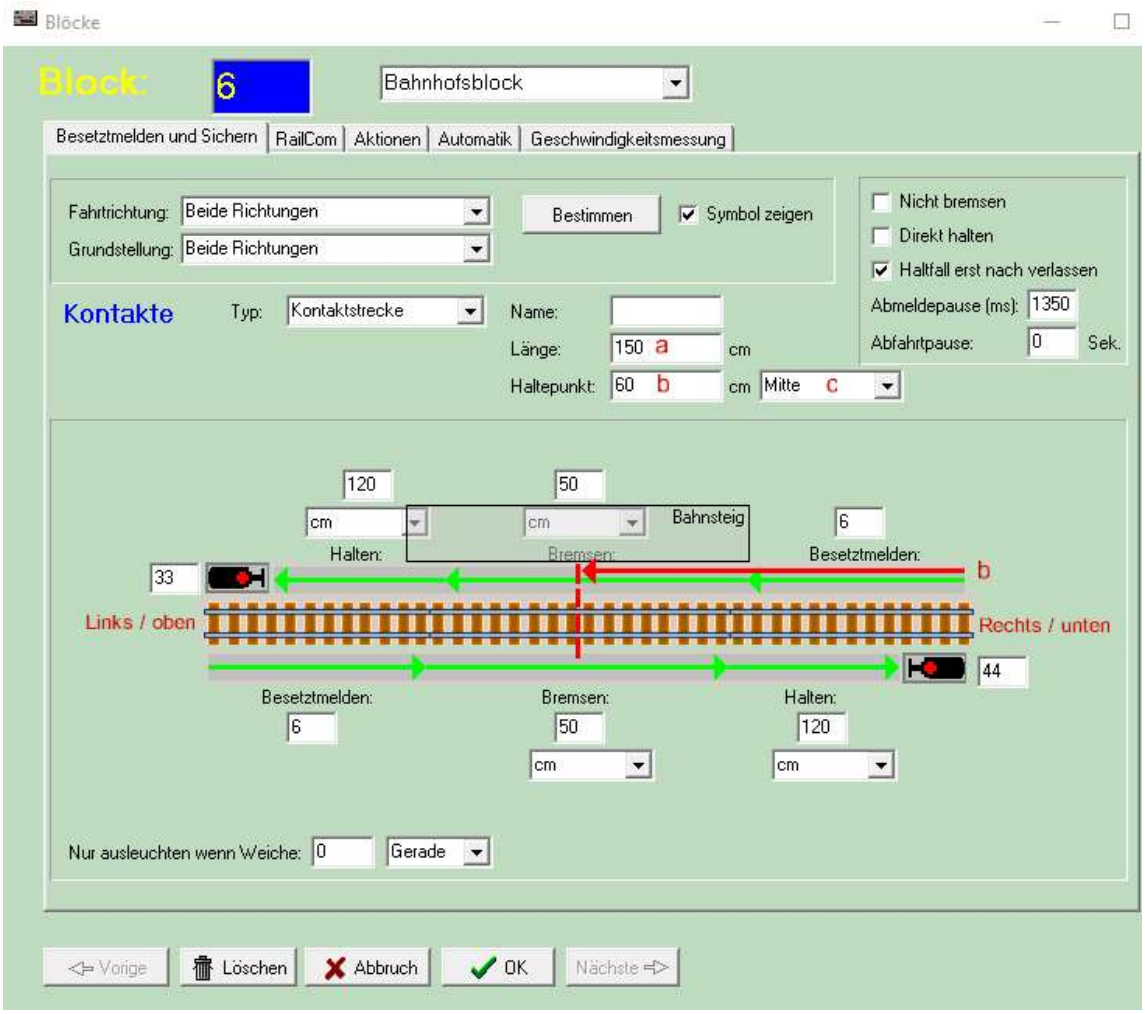
6.4.4.6 Breakpoint

If there is a stopping point in a block or the platform and thus the stopping point does not end at a signal, in automatic mode (the train length must be known) it can be determined for all train types with the exception of freight trains whether the train is on the left, in the middle or should keep right. So the train can always stop correctly on the platform.

Freight trains always stop at the signal, i.e. the position that is specified (depending on the direction of travel) under Stop in cm or, if a detector is used, at the stop detector.

Important: In order for the trains to stop correctly, the locomotives must be calibrated and the train number reported in the block.

If a breakpoint is set up, additional information must be given in the block window.



a Length of the block

b Distance from the right end of the block (b), here to the middle of the platform

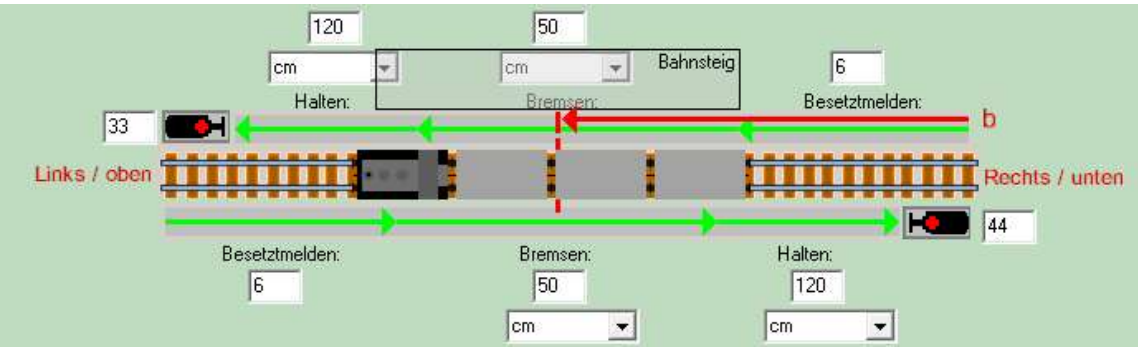
c stop position - left - middle - right

Passenger trains stop at the stop if the value (b)> = 0. The stopping point of the train is calculated based on the distance from the right end of the block to the stopping point (b), the setting for the stopping point (c), the length of the train and the direction of travel. It will always be a
Keep a distance of 10 cm from the beginning of the

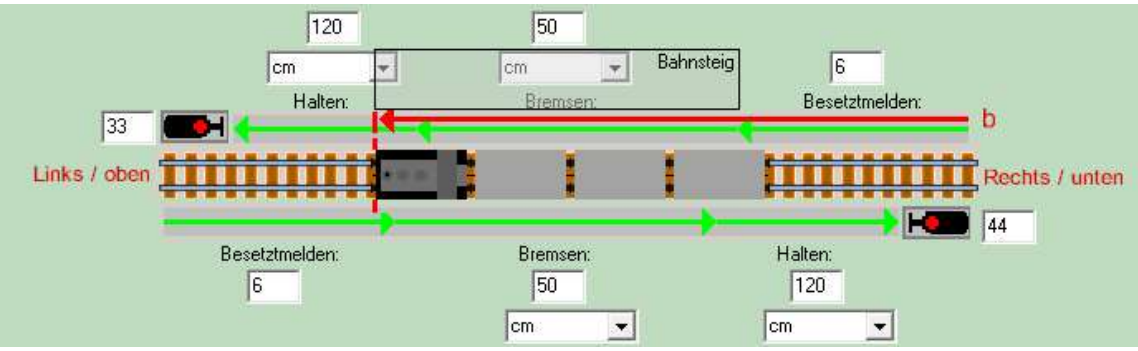
block. Position (b) is measured from the right.

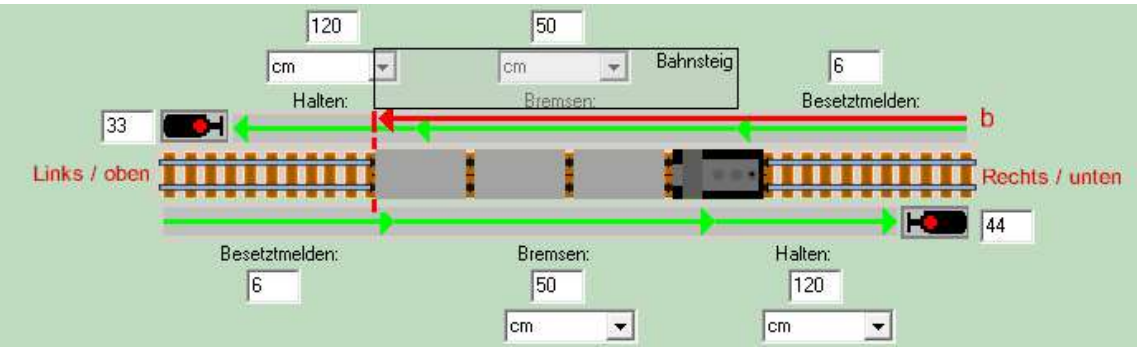
Examples:

Breakpoint setting: center

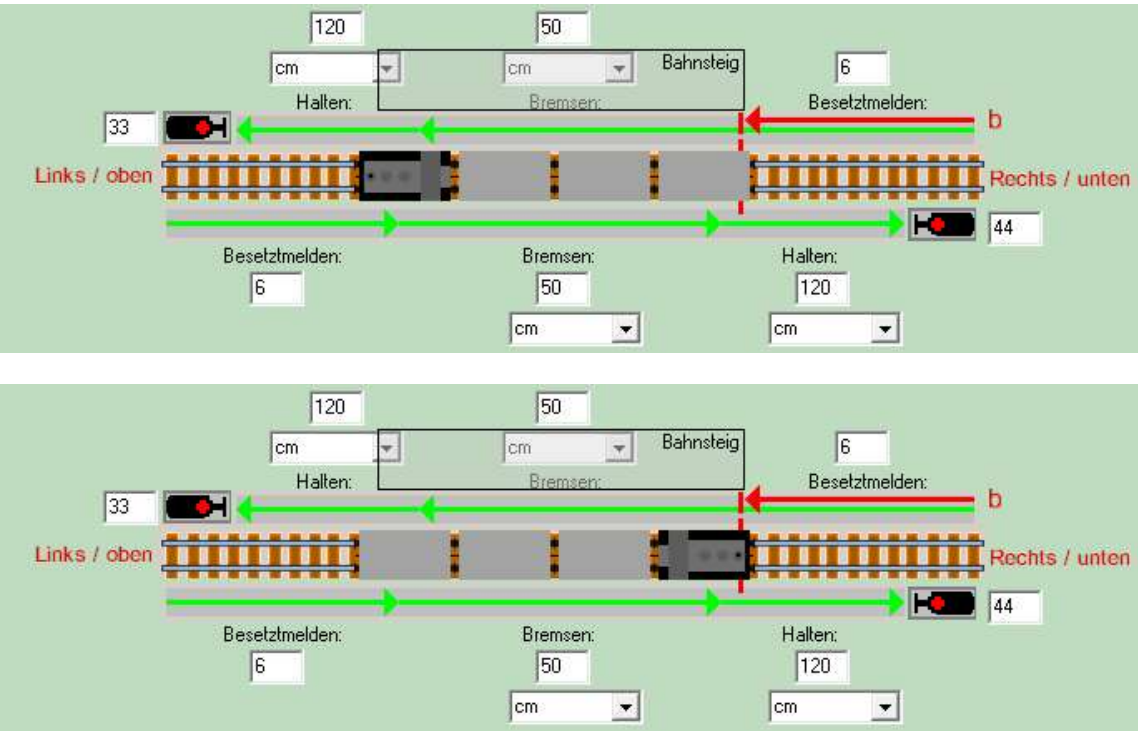


Breakpoint setting: Left

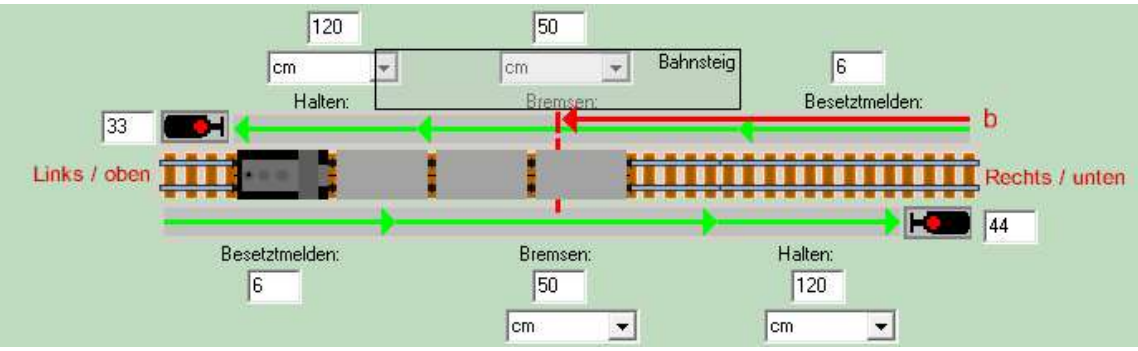




Breakpoint setting: Right



Breakpoint setting: Right - The train is longer than the available space on the platform



For example, a train drives into the block from the right and should stop 'left'. The remaining length of the platform from the stopping point to the end of the platform is shorter than the length of the train, then the train drives beyond the end of the platform until the end car has reached the stopping point, up to the left signal / end of the block at the most.

6.4.4.7 Don't brake

If this option is activated, the train will not brake gently when entering the block and will only stop at the signal.

6.4.4.8 Stop right away

This option causes the train to be braked directly to a standstill when it reaches the stop indicator without the braking delay set in the model interlocking. However, the braking delay set in the vehicle decoder remains in effect.

6.4.4.9 Stop only after leaving

The start signal is only stopped when the start section is cleared.

If 'Stop only after leaving' is not checked and this block is the start of a route, the signal is set to stop when one of the blocks in the route is reported as being occupied.

6.4.4.10 Logout break

If a contact section is used as an occupancy signal, if the tracks are dirty it can happen that the status changes to "Block free" even though the train is still in the block, ie the block is accidentally reported free. To improve this, a logout pause is provided, which is set to a duration of 500 ms by default: The block is only released when all contacts remain switched off for at least 500 ms. If the contact is switched on again within 500 ms, the model interlocking assumes that there is a contact problem and the block remains occupied. If this time is not sufficient, the specified 500 ms in this field can be increased and adapted to the respective situation.

6.4.4.11 Departure break

A time in seconds can be entered in the Departure pause field. The train waits for this pause before it departs after the signal is set to travel (only when the train is tracking).

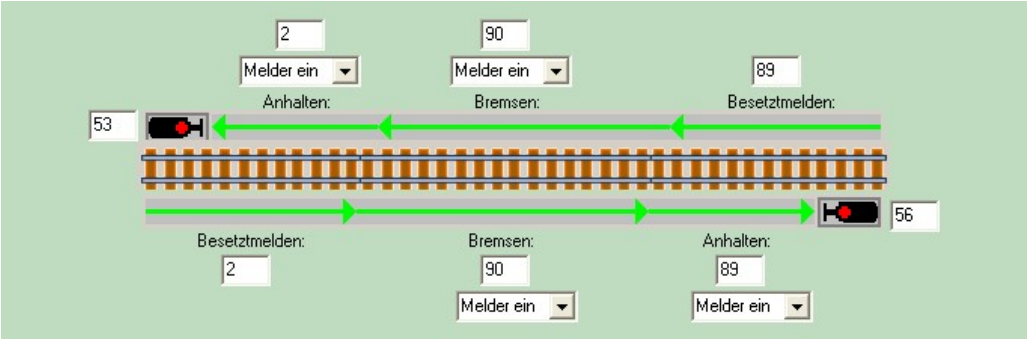
6.4.5 Definition of a block with contact paths

If the blocks are configured accordingly, precise braking and stopping is possible without additional detectors. The braking point and stopping point can be specified in a block for each direction of travel not only as a detector, but also as a distance. The values are entered in cm from the beginning of the block in the direction of travel.

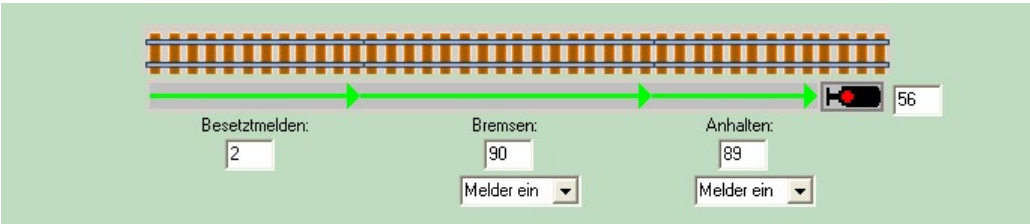
The relevant window is displayed based on the information on the direction of travel and the type. In the case of a contact route, one of the following windows is displayed depending on whether the route is to be traveled in one or both directions.

6.4.5.1 Contact route

Both directions



Direction of travel from top to bottom



In the following, both explanations and configuration options are shown using typical examples for both contact paths and the use of momentary contacts.

A detector can be entered in up to 10 blocks.

6.4.5.2 Definitions

Braking point in cm:

When the locomotive has been calibrated, the train is braked depending on its current speed so that the crawling speed (or another specified speed) is reached 20 cm before the end of the block.

Uncalibrated locomotives are braked up to 20 km / h speed when driving on the block with the mass simulation.

Braking point as a detector

The locomotive is braked with the set mass simulation up to a speed of 20 km / h.

No braking point:

When the locomotive is calibrated, the train is braked from the beginning of the block so that the train has reached crawling speed 20 cm before the end of the block. If the locomotive is not calibrated, the locomotive is braked from the beginning of the block with the mass simulation up to 20 km / h speed level.

Stop point in cm:

When the locomotive is calibrated, the train is braked from the braking point so that the train stops at the specified point. If the locomotive is not calibrated, it will stop from the braking point with the specified mass simulation.

Breakpoint as a detector:

When the detector switches, the locomotive is stopped with its mass simulation.

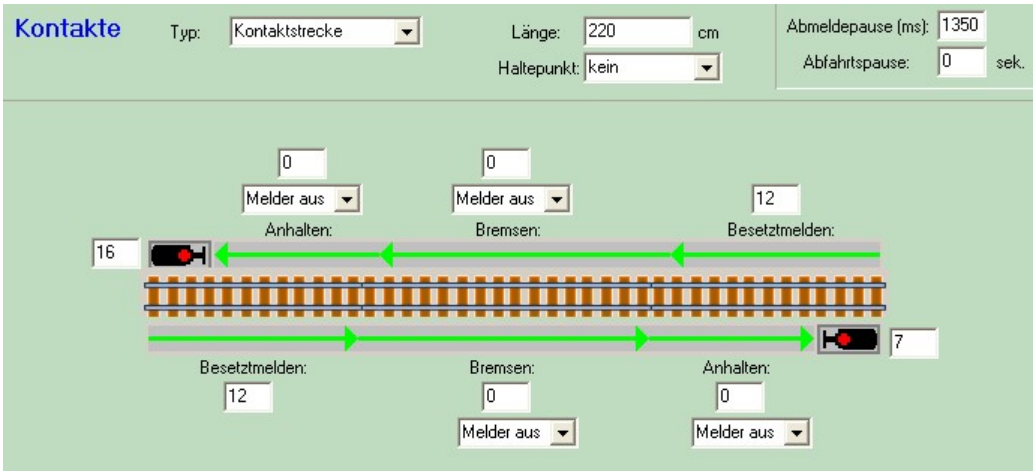
6.4.5.3 Typical situation on the model railway

The braking point is specified in cm, the stopping point as a detector. The locomotive will then safely stop at the specified point.

Note: For a model signal box, a locomotive is calibrated when at least one speed step has been calibrated. The more speed steps are measured, the more precisely the train will stop at the specified point.

6.4.5.4 Block with an occupancy detector

If the entire block is equipped with only one occupancy detector, the associated feedback address is only entered in the field Occupied report. For routes that can be traveled in both directions, the feedback must be entered for each direction.

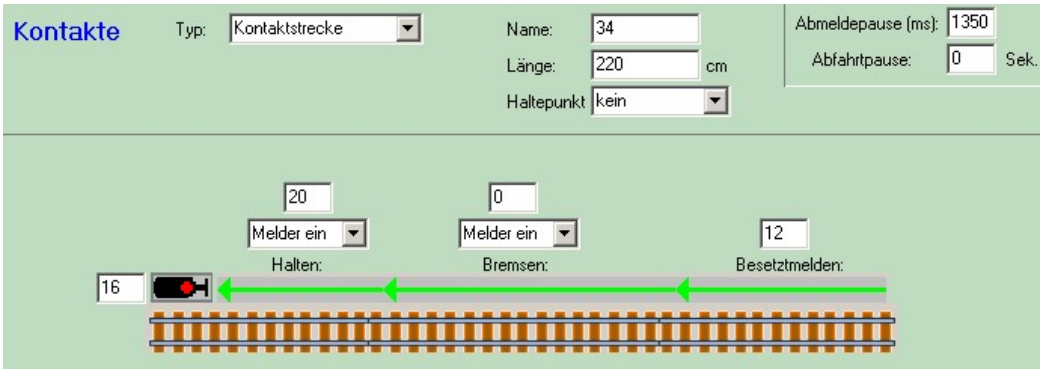


Calibrated vehicles: The point at which the brakes are applied depends on the current speed. The locomotive is then braked with the calculated braking deceleration so that it comes to a stop approx. 20 cm before the end of the block.

Uncalibrated vehicles: The braking process begins when the section is driven on the set braking delay. The stop of the vehicle depends on the speed and the
Braking deceleration, ie a precise stop is not possible in this constellation

6.4.5.5 Block with 2 occupancy message no

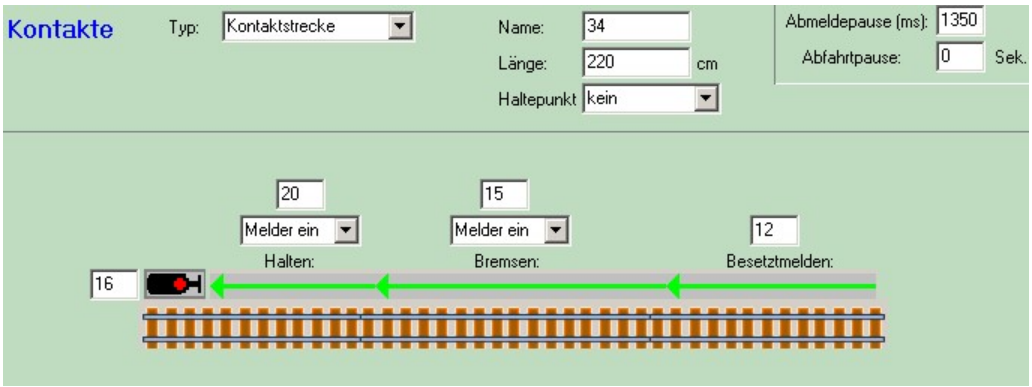
A block with 2 occupancy detectors and very different monitoring lengths makes little sense in 2-directional operation. An example is a typical constellation for tracks that are only used in one direction.



Calibrated vehicles: The point at which the brakes are applied depends on the current speed. The locomotive is then braked with the set braking delay so that it has reduced its speed to approx. 20 km / h by the beginning of the stop section. When the stop section is traveled, the speed is decelerated to a standstill.

Uncalibrated vehicles: When the block is driven over, the braking process begins with the set braking delay, the speed is reduced to the creeping speed. When the stop section is traveled, the speed is reduced to a standstill.

6.4.5.6 Block with 3 occupancy detectors



Calibrated vehicles: The braking application point is calculated from the currently driven speed. The traction vehicle is then braked in the braking section with the calculated braking deceleration so that it is the

Has reduced speed to approx. 20 km / h. When driving over the stop section, the speed is reduced to a standstill.

Uncalibrated vehicles: The occupancy occurs when the block is driven on. The
The braking process begins when the braking section is occupied with the set braking delay; the speed is increased, taking the braking delay into account, up to
Crawl speed reduced. With Drive on of
Stopping section, the standstill speed is further to to the
reduced.

6.4.5.7 Illumination

Normally a block is illuminated as occupied if at least one of the
Occupancy detector reports busy. In certain situations, however, the blocks that border a turnout have the same occupancy indicator as the turnout itself. In the example below, blocks A, BC and the turnout can have the same occupancy indicator. Depending on the set route, block B or C is then illuminated. To do this, the field “Only report busy in routes” is checked.

6.4.6 Momentary contacts

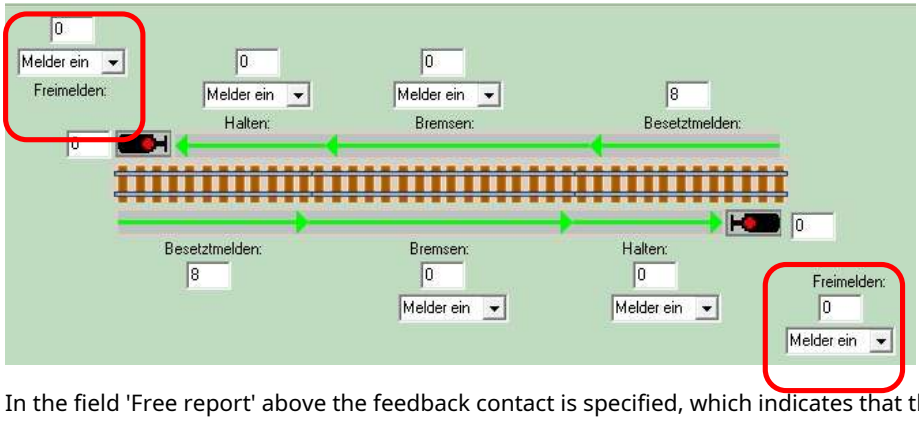
The occupancy message with momentary contacts is a holdover from older versions of the model control system, an occupancy message only with momentary contacts is not recommended and support is no longer offered.

In general, it should be considered whether the use of momentary contacts makes sense. A really reliable safeguarding of the train operation is not possible because, for example, individual, broken-down wagons cannot be recognized under certain conditions.

In the case of momentary contacts, contacts Feedback contacts entered with which the block is reported as occupied and cleared. The number must be entered for each contact and it must be selected whether the contact is activated when it is switched on or off.

in The Field Busy message is the feedback contact number with which the block is reported as busy - this contact is at the beginning of the block. In the right field it is indicated whether the busy message is given when the contact is switched on (probably always the case) or off.

In the fields Left up and Left below are the feedback contacts with which the block is released again. If train tracking remains deactivated, entries can be made in any of the two fields. However, if train tracking is used, entries must be made in both fields:



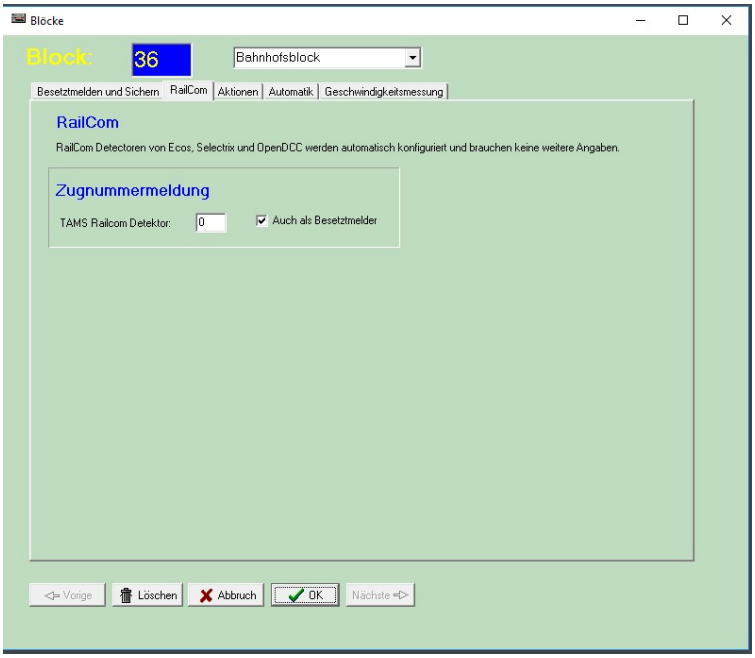
In the field 'Free report' above the feedback contact is specified, which indicates that the block is on the Top is left; with the field 'Free report'below the feedback contact is specified, which indicates that the block is on the bottom is left. Above and Below
is determined in the track plan: The end that is highest in the track diagram is called Oben. If a block is exactly horizontal in the switchboard, then the left end is called Oben. If the train only travels in one direction, only this direction should be entered.

Contacts in this part of the window can be used multiple times and do not necessarily have to be unique: the field for pause can also be used, for example, for the
Busy message in the other direction of travel. 3 contacts or contact sections are sufficient if the block is driven on in both directions and there is an occupancy signal as well as a braking section and a stop section in both directions. In this case the contact is forreport busy to the top also the contact for stop down, the contacts for braking and the contact are the same ahold up resembles that
Contact busy report down.

6.4.7 Properties of RailCom

Enter the address of a Railcom detector that monitors this block. When the Railcom detector detects a locomotive, this locomotive number is assigned to this block.

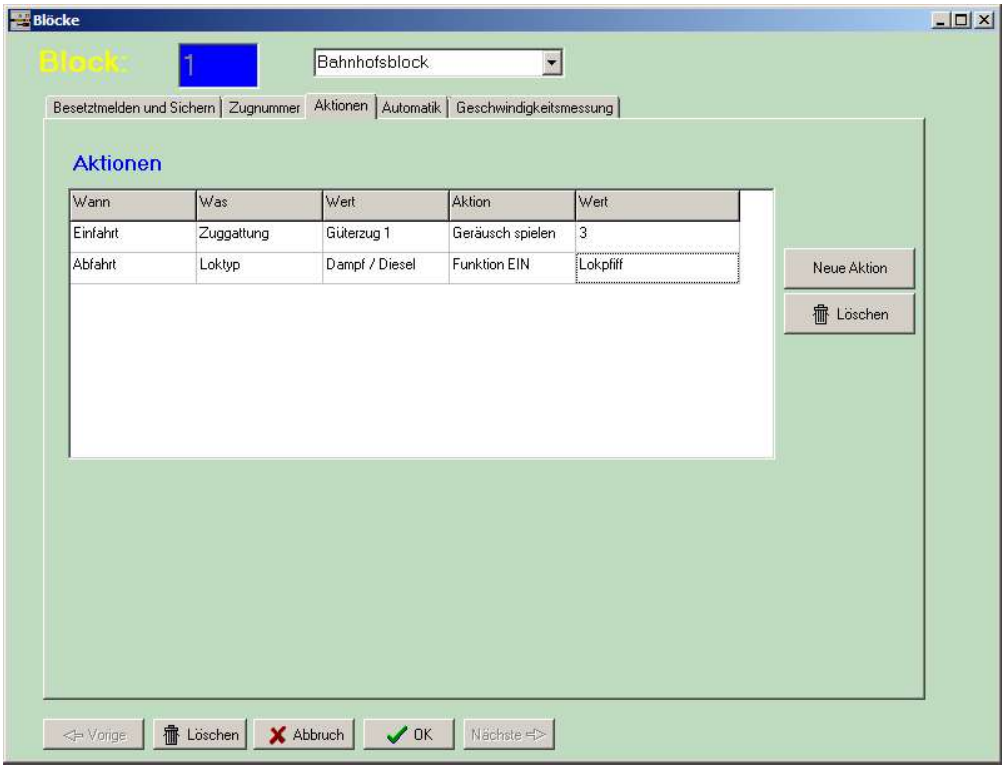
This field is also used in the same way for the feedback decoder 8i from MÜT for the registration of Selectrix locomotive decoders. The base address of the MÜT 8i feedback decoder is then entered here.



When RailCom detects a locomotive, it is registered in the model control room. ModellStellwerk will then show and control the locomotive in the block. However, if the locomotive pulls an automatically moving train, it is not the locomotive that is registered in the block, but the train. But this is only the case when the train is active (button is green). In the train properties you can set whether a locomotive is always registered as a train.

6.4.8 Actions

Actions can be defined for different events in a block. Any number of actions can be defined in a table.



For example, sound files for the acoustic background of the model railway operation can be played, locomotive functions and points can be switched or macros can be started. The execution of an action depends on the type of train or locomotive, train or locomotive.

When
When indicates when the action must be carried out:

1. when a train arrives, when
2. braking,
3. when stopping,
4th when leaving, the signal is on drive or when
5. leaving the block.

direction
Direction specifies in which direction of travel in the block the action is carried out.

What

What triggers an action.
1. All
2. Train type
3rd move
4. Locomotive type
5th locomotive

value
A value for the train type or locomotive type, train or locomotive number is specified here.
Train type:

1. ICE,
2. IC,
3. RegionalExpress,

4. RegionalBahn1,
5. RegionalBahn2,
6. S-Bahn,
7. Freight train 1
8. Freight train 2.
9. Interregio
10. GmP
11. Freight train 3
12. Freight train 4
13. Locomotive
14. Museum train
15. Measurement train
16. Construction train

Locomotive type -

1. Steam / diesel
2. Electric.

Train or locomotive - the internal number of the train or locomotive is entered - see locomotive / train window.

action
Here the action is selected from the selection menu. Possibilities are:

1. Play sound,
2. Switch on function - a logical function is switched on, e.g. light, switch off function - a
3. logical function is switched off, e.g. light, switch on direct function - a function number
4th is switched on, e.g. 0 for light,

5. Switch off direct function - a function number is switched off, e.g. 0 for light or

6th Start macro - a macro is started. Switch
7th on solenoid accessories
8th. Switch off solenoid accessories

Note: If you want a different position for a solenoid or if you want to set a route, you can do this using a macro.

value

Here is the number

1. a noise,
2. a function,
3. a direct function,
4. a macro or
5. registered a solenoid.

As part of the definition, each sound file to be used must be assigned a number (see menu line - Edit - select sounds).

In this part of the window, the sound files to be used in the model interlocking are defined and automatically assigned a number. This number must be specified if a sound file is to be played.

6.4.9 GBS switchboard

In the GBS tab, addresses for solenoid items can be specified that are switched when the block is occupied or is included in a route. These solenoid items can then switch the lighting in an external switchboard.

6.5 External keys, auxiliary keys

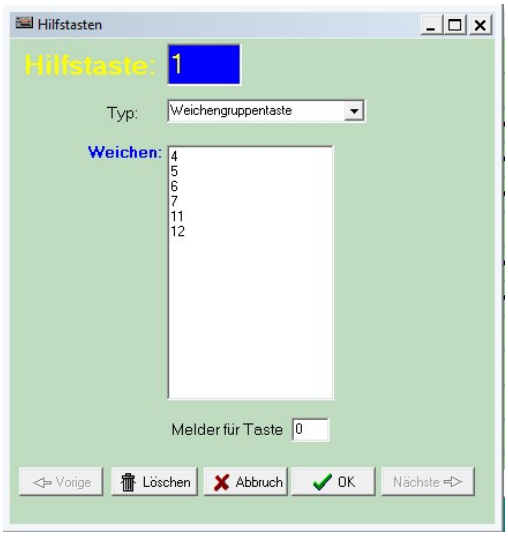
Normally, train journeys are set and secured in track plan signal boxes with the help of train and shunting routes. For special operator actions that are not required in regular operation, the so-called external buttons are available in the track plan pushbutton interlocking outside the track diagram, e.g.

1. With the help of the turnout group key it is possible to change an individual turnout
2. An occupied turnout can be changed with a turnout auxiliary key (WHT / WHU)
3. With the route reset button (FRT / BAuf) a shunting route or a route that has not been completely run in is canceled.
4. the SBET and SBRT / ASE and ASB buttons switch the self-setting mode on and off.

The keys are described and illustrated in Chapter 6.1.2 Symbols.

6.5.1 Auxiliary keys

	After pressing this button in the control panel, each click on a signal switches to the next possible signal aspect. There will be stop and ride and the others with youAddresses stored driving terms switched through. In contrast to the button of the same name in the track diagram, the SGT / SNH. Button in the control panel affects all signals. Caution: To avoid incorrect operation, the button must be switched off again.
	The 2 keys shown in the control panel can be used for all turnouts and routes. 'Turnout group buttons' / 'Control' and 'Route auxiliary buttons' / 'Emergency resolution' As local auxiliary keys, they have the same function as the keys in the control panel, but their effect can be restricted to a specific (assigned) group of turnouts and routes. If a key is positioned, an internal number is requested first. The effective range of the key can then be defined. By dragging, for example, turnouts onto the respective symbol, they are then assigned to this WGT / SGT. With a double click on the symbol or by entering in the menu Edit - auxiliary buttons you come to the input window. In this window, for example, all turnouts in the effective range are then listed. The symbol '*', on the other hand, means that this auxiliary key affects all turnouts; if neither an '*' nor a number is entered, the key hasno Function. There are other types for the local auxiliary keys.



The auxiliary keys are shown in paragraph 6.1.2, the second part of the manual explains how to use the external keys.

The following can be entered:

The internal numbers of the objects (turnouts, signals ...) '*'

for all objects

Space - no function

Attention: There must be no double assignment of the numbers for the outer / auxiliary keys.

You can check the number in edit mode by double-clicking the button. In the window that opens, the task of the key is displayed under Type.

In the main menu - Edit - auxiliary buttons you can check all buttons as well. The function can also be deleted here. The key itself is not deleted on the table and it retains the number. When a new external button is set up, the number is then assigned again. That leads to misconduct; the key must therefore also be deleted on the table.

6.6 Signal boxes

The system can be divided into individual sub-areas with interlockings. When the complete system has been configured, individual interlocking areas can be created.

When drawing the track diagram, make sure that every planned interlocking can be delimited by a rectangle.

A part of the system can be controlled with each interlocking.

Under "part of the system" you have to enter which part of the system is operated by this interlocking; Row Up / Down and Column Left / Right. The desired symbol type for this interlocking can be selected under Symbols, under Turnout and signal number it can be specified whether turnout numbers should be displayed and in what font and size. The field Exclusive has no meaning yet. Zoom determines how big the symbols are shown; a value between 10% and 200% can be set here.

If Multitouch is checked, then the two buttons of the two-button operation actually have to be used for this interlocking at the same time to be printed. Of course, this can only be achieved with a touchscreen that allows multi-touch operation. Whether your touchscreen has this option is shown in the information window. If you want to operate the interlocking with an external switchboard with real buttons, you can also tick the multi-touch option here, the real buttons on the external GBS then have to be printed at the same time.

Danger: If "Multitouch operation" is checked, operation with the mouse is only possible to a limited extent.

6.7 Texts

In the model switchboard, texts can be placed in the track diagram as part of a track symbol. The texts are not saved in the track symbol, but separately. The assignment takes place via an internal number. in the menuTo edit there is the point Texts; only here can the displayed texts be edited. Change overTrack elements - extra creates a new text field. The old text will not be overwritten or deleted. A maximum of 200 texts can be entered.