

SATCOS -

CATALOGUE OF INDICATIONS FOR PRASA

INTERLOCKING USER INTERFACE

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1 PREFACE

1.1 PURPOSE AND SCOPE

The objective of the document is to provide an overview of all indications used by the Interlocking on central as well as on the local user interface. The focus is laid on the monitor representation of all relevant indications for each existing element type. Message structure and content are not subject of this document.

Chapter 1 provides an overview of the objective and set-up of this document. In Chapter 2 the colours usage, the general layout and the different views and pictures respectively are described in a general way. In Chapter 3 a detailed description of interlocking element indications is given. All figures of screens are examples and the real monitor representation may differ slightly.

1.2 STANDARDS, TERMS AND ABBREVIATIONS

1.2.1 Standards

Table 1 – Standards

Ref.	Document Number	Document Title
[1]	EN50121-4	Railway applications - Electromagnetic compatibility (EMC) - Signalling and Telecommunication
[2]	EN50125-3	Railway applications - Environmental conditions for equipment
[3]	EN50126	Railway applications - Specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)
[4]	EN50128	Railway applications - Software for railway control and protection systems
[5]	EN50129	Railway applications - Safety related electronic systems for signalling
[6]	EN50159-1	Railway applications - Signalling and communications – Safety-related communication in closed transmission systems
[7]	EN50159-2	Railway applications - Signalling and communications – Safety-related communication in open transmission systems

1.2.2 Terms and Definitions

Table 2 – Terms and definitions

Term	Definition
Berth track section	It refers to the track section immediately on the approach side of a signal.
Block	Open line between stations: the WCRP block technique allows the setting of normal main routes inside the open line depending on the Overall Block.
Block route	A main route inside the block area with a dependency on the overall block direction lock.
Crank handle	Tool that can be used by authorised persons to manually move the points' blades when the electrical operation of the point machine is not possible.
Dispatcher	Officer in RM&TCC responsible for the correct train routing and keep to the planned arrival and departure times of trains.

Term	Definition
Downstream (element)	Next track section, as seen from the train movement direction, i.e. the track section or route the train will enter, the track section or signal at the front of the train.
Emergency signal	Used when some restrictions prevent the normal signal from being operated. Also referred to as a replacement signal.
Entry route	A route from the first station signal – either the Intermediate Home Signal (IHS) or Home Signal (HS) when no IHS is available – into the station.
Exit route	A route starting from the station's Starter Signal (SS) towards the block with a dependency or affecting the overall block direction lock.
Yellow route	A normal route that has been set but not called for main or shunt aspect (Not AG or BG on the starter signal)
First Define state	A route that has been called (AG or BG the starter signal) and its berth track is occupied or a route that has its feeder route called (AG or BG)
Final Define state	A route that is entered or its berth track has been occupied and picked
Interlocking	System (electrical, electronic or mechanical) that controls all safety critical signalling functions
Level 0	Commands issued by the TCO requiring no confirmation
Level 1	Commands issued by the TCO requiring one confirmation
Level 2	Commands issued by the TCO requiring confirmation in two steps: password right reason and final confirmation). This family of commands is used for emergency commands.
N1 cancellation	Command issued by the TCO to normalise a route in first define state (A time delay of 90" is applicable), or a yellow route (A time delay of 90" is not applicable).
N2 cancellation	Command issued by the TCO to normalise a route or overlap section are in final define state. A time delay of 90" is applicable.
N3 cancellation	Automatic cancellation of an overlap, initiated by the train occupying the berth track section of the signal at the start of the overlap, which has to be at danger. A time delay of 90" is applicable.
Overall lock	Block directional (lock).
Relay room	Building in which the interlocking is housed. Also referred to as a signal equipment room.
Signalling element	Line side / track side signalling equipment, including signals, points and track sections.
Station	A specific area in the total rail network, usually where commuters embark and disembark trains, which will be controlled by a specific interlocking.
Train Control Officer	Person who is responsible for planning, organising and controlling all train services in accordance with the timetable and train priorities.
Train Control Operator	Train Control Officer who operates the signalling system

Term	Definition
Train Supervisor	Chief Train Control Officer in RM&TCC who supervises the Train Control Operators
Upstream (element)	Previous element of the route, as seen from train movement direction, i.e. the track section or route the train has left, or the track section or the signal at the back of the train.
Zero overlap	No overlap distance is available for the train movement being authorised by the signal being operated.

1.2.3 Abbreviations

The following abbreviations are used in this document.

Table 3 – Abbreviations

Abbreviation	Description
AC	Axle Counter
ATR	Automatic Train Routing
CTC	Centralized Traffic Control
EMC	Electro Magnetic Compatibility
FEC	Field Element Controller
HMI	Human Machine Interface
IM	Interlocking Module
PRASA	Passenger Rail Agency of South Africa
MCE	Maintenance Centre
RAMS	Risk Analysis Management System
RGB	Red, Green, Blue (colour model)
RM&TCC	Rail Management & Train Control Centre
SCM	Safe Communication Module
SOC	Statement Of Compliance
SPAD	Signal Passed At Danger
TCO	Train Control Operator
TFT	Thin-Film Transistor (flat screen display)

<i>Abbreviation</i>	<i>Description</i>
URD	User Requirements Documentation
SATCOS	South Africa Train Control Office System
WFK	Preferred position

1.3 ASSUMPTIONS, DEPENDENCIES & CAVEATS











This could serve as discussion paper for the further technical clarification. In parallel we need to prepare the commercial/contractual documents to embed the technical clarification results in the contractual context.

2 GENERAL

The colours on the paper may slightly differ from the real colours on the screen. Therefore, the RGB Values were added, both hexadecimal and decimal triples.

The grey background colour has RGB Value #8A8A8A (138,138,138).





Table 4 – Colour definitions

	Black: RGB Value: #000000 (0,0,0)
	Red: RGB Value: #FF0000 (255,0,0)
	Yellow: RGB Value: #FFFF00 (255,255,0)
	Green: RGB Value: #00CD00 (0,205,0)
	Blue: RGB Value: #0080FF (0,128,255)
	Magenta: RGB Value: #FF00FF (255,0,255)
	White: RGB Value: #FFFFFF (255,255,255)
	Grey: RGB Value: #505050 (80,80,80)
	Silver: RGB Value: #D5D5D5 (213,213,213)
	Cyan: RGB Value: #99D9E9 (153,217,233)

In order to indicate flashing symbols, the following colour code is used:

Table 5 – Flashing colour definitions

	<p>Black flashing: The shown element is flashing with black as the 1st flashing colour and background grey as the 2nd flashing colour. Black: RGB Value: #000000 (0,0,0) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Red flashing: The shown element is flashing with red as the 1st flashing colour and background grey as the 2nd flashing colour. Red: RGB Value: #FF0000 (255,0,0) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Red flashing on black: The shown element is flashing with red as the 1st flashing colour and black as the 2nd flashing colour. Red: RGB Value: #FF0000 (255,0,0) Black: RGB Value: #000000 (0,0,0)</p>
	<p>Yellow flashing: The shown element is flashing with yellow as the 1st flashing colour and background grey as the 2nd flashing colour. Yellow: RGB Value: #FFFF00 (255,255,0) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Green flashing: The shown element is flashing with green as the 1st flashing colour and background grey as the 2nd flashing colour. Green: RGB Value: #00CD00 (0,205,0) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Blue flashing: The shown element is flashing with blue as the 1st flashing colour and background grey as the 2nd flashing colour. Blue: RGB Value: #0080FF (0,128,255) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Magenta flashing: The shown element is flashing with magenta as the 1st flashing colour and background grey as the 2nd flashing colour. Magenta: RGB Value: #FF00FF (255,0,255) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>White flashing: The shown element is flashing with white as the 1st flashing colour and background grey as the 2nd flashing colour. White: RGB Value #FFFFFF (255,255,255) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>

	<p>White flashing on black: The shown element is flashing with white as the 1st flashing colour and black as the 2nd flashing colour. White: RGB Value #FFFFFF (255,255,255) Black: RGB Value: #000000 (0,0,0)</p>
	<p>Grey flashing: The shown element is flashing with grey as the 1st flashing colour and background grey as the 2nd flashing colour. Grey: RGB Value: #505050 (80,80,80) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Silver flashing: The shown element is flashing with silver as the 1st flashing colour and background grey as the 2nd flashing colour. Silver: RGB Value: #D5D5D5 (213,213,213) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>
	<p>Cyan flashing: The shown highlight is flashing with cyan as the 1st flashing colour and background grey as the 2nd flashing colour. Cyan: RGB Value: #99D9E9 (153,217,233) Background Grey: RGB Value: #8A8A8A (138,138,138)</p>

General rules:

- Grey indications (RGB Value: #505050) are only used for some failure indications concerning the station related indicators, and during HMI initialization for all elements, when no connection with the interlocking is yet established. For the remaining cases, grey colour is only used as a default substitution indication for any other valid and plausible element indication, not relevant for the case being described.
- Silver indications (RGB Value: #D5D5D5) are only used for tracks without track free detection or other static elements, for the points' heart opposite position indicator and for the dotted border line between station areas.
- Cyan indications (RGB Value: #99D9E9) are only used for element highlighting.

The colour priority definitions used on this document have the form "Colour A > Colour B", meaning "Colour A overrides Colour B". They are used to resolve the colour display conflicts arising from simultaneous concurrent indications for the same element.

The fonts used in the HMI are:

- “Andale Mono”, for text elements on the track layout picture / view.
- “Andale Sans”, for text on other user interface elements such as windows and tables on the header and footer of the monitor pictures.

2.1 GENERAL LAYOUT

Every monitor picture is divided in the following 3 subsections:

Header

- Pull down menus, Monitor and workplace indication and Date and Time.

Content of the current picture / view

- Graphical visualization on the window showing the operational state of the field elements, the permission states, version and connection information.

Footer

- Context dependent: command buttons, Input / Acknowledgement lines, Diagnosis message indicator line, Picture indication, Diagnosis lines and Element inhibitions.

2.2 PICTURE INDICATION TYPES

The picture indication types are used to indicate all the different available information on separated monitor pictures (or views) such as:

- Zoom pictures
- Overview pictures
- Message and alarm picture
- Version information picture

- Element recovery picture
- Permission overview pictures

The contents of all these different picture types are explained in the following chapters.

2.2.1 “Operator” window for interlocking operation

2.2.1.1 Display types

The display is possible to be used in two ways:

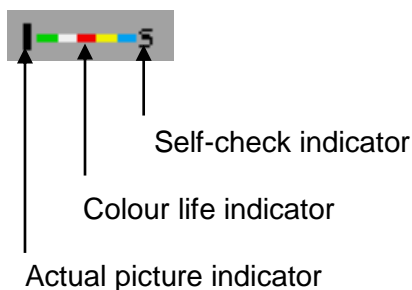
- Zoom pictures: detailed layout of a specific signalling area
- Overview pictures: global layout of a wider signalling area

Both types of pictures will use the same symbols and indications. They will differ in size and/or layout arrangement, allowing for each overview picture to cover a wider signalling area.

2.2.1.2 Life indicator

In the lower left side of the graphical visualization area there is a life indicator which gives information about the status of the operating place as a result of the continuous self-testing. This life indicator consists of three single indicators:

Figure 1 – Life indicator layout



Actual picture indicator

A black dash changes in 45°-steps clockwise if the HMI is displaying an actual monitor picture.

Colour life indicator

With this indicator the operator can identify colour irregularities of a specific monitor. It displays the fundamental colours only. The colour indicator itself is split into a static upper part and a flashing lower part. This flashing part is used as a visible life signal from the HMI to the operator.

Self-check indicator

The self-check indicator can display three states:

- A black “S”-indicator means normal operation. No HMI internal checks or critical command watchdog have failed.
- An orange “S”-indicator means that one of the HMI internal checks has temporarily failed (e.g. critical command communication signature key has not yet been inserted by maintenance).
- A red “S”-indicator means that the connection to the critical command watchdog has been lost, or one of the HMI internal checks (e.g. wrong installation checksum) has failed, or one of the checks done by the critical command watchdog has failed.

In the case of orange or red “S”-indicators, only standard commands can be executed. Commands with level 1 or 2 will be rejected.

2.2.2 Message and alarm picture

The message related windows of the HMI are arranged in one screen and then in different tabs:

- Message tab: event logging in chronological order, received events are displayed directly here, events can be alarms, documented commands, log on or log off logs
- Alarm status tab: All active alarms (defects, failures and information) are displayed here

The “Alarm” tab as well as the “Message” tab shows all information which is related to the current permission state and user role, i.e. only information for the actual logged in user is displayed.

Alarms and error messages (from field elements or inside equipment) create a text message in the alarm list.

The messages are classified (column “state”) and marked with a coloured dot (column “class”) as follows:

- “Defects” are indicated as state “D” and are marked with a red dot.
- “Failures” are shown as state “F” and have a dot with yellow colour.
- “OK messages” are displayed with the original state “D” of the element but highlighted with a green dot.
- “Information messages” have the state “I” and no coloured dot.

All other information is not marked.

The error states overview shows the last 500 diagnosis messages.

To acknowledge element-related alarms, the user has to activate the track view, where the alarm/element belongs to. General alarms can be acknowledged directly within the alarm tab.

Each new alarm (failure or defect) has to be acknowledged and then the related diagnosis message indicator will change from flashing to static display. All still not acknowledged alarms will be acknowledged by one single confirmation action. For some diagnosis messages there will be an additional alarm sound that will also be cancelled by acknowledging this alarm message.

An active alarm (acknowledged or not) is visible in the message tab and in the alarm tab. If the problem is fixed, the alarm will disappear from alarm tab and an OK message will appear in the message tab.

2.2.3 Version information picture

The version information of a specific station is used to indicate the installed software version of each component which is available at the current location or for the whole line at the RM&TCC. Also the interface status to a component can be seen. If the interface is ok, the state information is 'connected' and will be displayed in green whereas if the interface to a specific component is down, the state information is 'not connected' and will be displayed in red. If the interface to a specific component is ok but the data are not updated yet (after interface reconnected) or a component sends no version information, the state information is 'connected' and will be displayed in black and if applicable the version information will be displayed with default values (XXXX).

2.2.4 Element recovery picture

The element recovery picture shows active diagnosis messages for the field elements according to the current operating permission of the workplace. The elements are grouped according to the different stations. This information is used to recover field elements after a failure. Analogue to the marking of diagnosis messages in the alarm list:

- "Defects" are coloured red,
- "Failures" are coloured yellow.

If the FEC detects a defect in a field element, e.g. a shortcut in a signal wiring, this element is regarded as defective and is logically taken out of the system. This means that even after that defect is solved, the interlocking system does not automatically reactivate that element. The user has to activate it manually by first clicking the corresponding element in the element recovery picture and then executing the corresponding command "GRE – Recover element", e.g. for shortcut in a signal lamp circuit.

Additionally all other active diagnose information for each element is shown in this picture.

"+" indicates that more than one diagnosis message is active for the current element. The user can display with a command all actual existing error states for the element.

2.2.5 Permission overview picture

The permission overview picture gives a quick overview about which user has the authorization to operate which station or permission zone.

Stations or zones for which the current user has the authorization are marked in green. Those zones where a different operator is authorized are marked in red. Stations with more than one area whose permission is split between different users are marked in yellow.

The operator can change the permission by clicking the correspondent station or zone and executing the relevant commands.

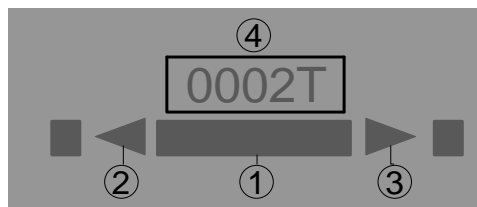
From the permission overview, also the different zoom pictures can be selected by clicking the station names.

3 DETAILED DESCRIPTION OF INDICATIONS

3.1 TRACK SECTION

The element indication of a track section is composed of the track element (1), the direction and lock indicators (2, 3) and the track name (4), also used to display failure and passivation messages and to identify tracks from neighbouring stations.

Figure 2 – Track section element layout



The colour priority in case of concurrent indications for the track element (1) is: Red Flashing > Red > Green/Blue > Yellow > Black¹. The colour priority in case of concurrent indications for the direction and lock indicators (2, 3) is: Red > White/Yellow².





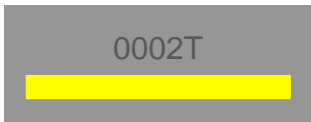
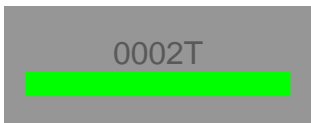
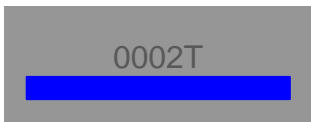


When a track section is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the track element (1) and the direction and lock indicators (2, 3).

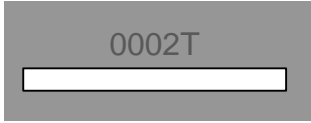
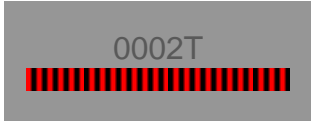
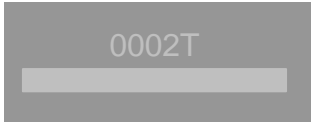
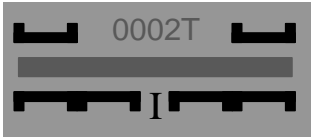
¹ Passivated–Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

² Inhibited against route traversal > Locked route entered/Route locked.

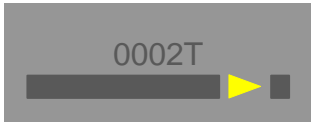
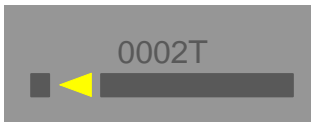
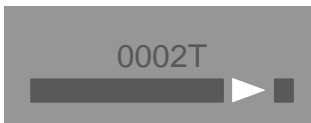
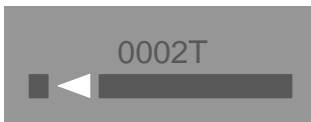
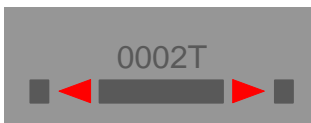
3.1.1 Element indication

3.1.1.1 Track element

No.	Symbol	Description
[TR-1]		Track free, no route set
[TR-2]		Track occupied, no route set Reset Restriction Inactive, last axle count was out of the section
[TR-3]		Track occupied, no route set Reset Restriction Active, last axle count was in the section
[TR-4]		Track occupied, route set Reset Restriction Active because of the route lock
[TR-5]		Track free, route set / overlap
[TR-6]		Track free, main route (A-route, C-route or U-route)
[TR-7]		Track free, shunt route (B-route)
[TR-8]		Emergency route (N-route)
[TR-9]		Route selection / Alternative route preview




No.	Symbol	Description
[TR-10]		Alternative Route (Is used to show alternative routes during the route selection process.)
[TR-11]		Passivated - Track section failed
[TR-12]		Track without track free detection – Static track section
[TR-13]		Track with platform, where: 0002T = track section identification I = platform name

3.1.1.2 Direction and lock indicators


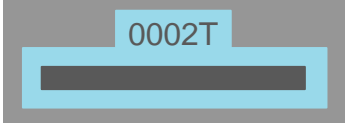
No.	Symbol	Description
[TR-14]		Track route locked, route direction (A-B)
[TR-15]		Track route locked, route direction (B-A)
[TR-16]		Locked route entered, route direction (A-B)
[TR-17]		Locked route entered, route direction (B-A)
[TR-18]		Track block against route traversal, independently of any other concurrent indications for route locked or locked route entered

Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

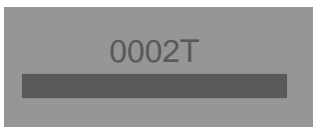
3.1.1.3 Track name

No.	Symbol	Description
[TR-19]		Track normal and available
[TR-20]		Hardware fault external to interlocking. Includes the following faults: Track disturbed
[TR-21]		Hardware fault in interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.1.1.4 Track highlight

No.	Symbol	Description
[TR-22]		Special operator commands for track. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[TR-23]		Track 0002T selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

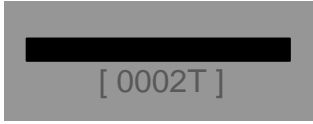


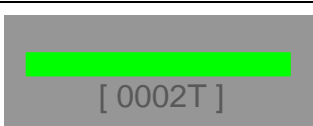
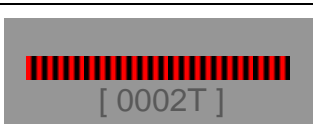
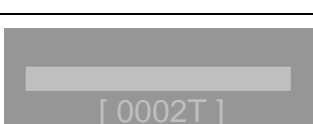
3.1.1.5 Missing status information

No.	Symbol	Description
[TR-24]		Track without status information (Interface error between HMI and Logic Module)

Note: A track section without status information is displayed in steady grey.

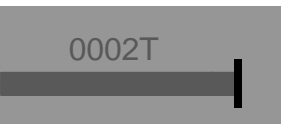
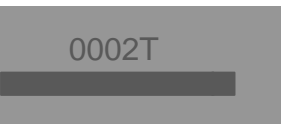
3.1.2 Track from neighbour station

These tracks are only displayed for information purposes. No commands can be executed on these tracks.

No.	Symbol	Description
[TR-25]		Track free, no block route set
[TR-26]		Track occupied Reset Restriction/ In-count Inhibit inactive The last in the section was an out count
[TR-27]		Track occupied Reset Restriction/ In-count Inhibit active The last count in the section was in count
[TR-28]		Track free, block route or overlap
[TR-29]		Passivated – Track section failed
[TR-30]		Track without track free detection – Static track section

3.1.3 Buffer stop

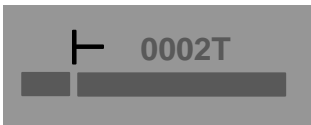
The track indications of an end of track element are realized in the same way like the track indications of a normal track section. Only the buffer stop is added, if applicable, indicated always in static black.

No.	Symbol	Description
[TR-31]		End of track with buffer stop
[TR-32]		End of track without buffer stop

3.1.4 Track down shunting

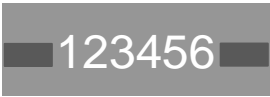





A track allowed to be occupied for track down shunting is identifiable by a dummy signal in front of the track down shunt track section.

The track indications of a track allowed to be occupied for track down shunting are realized in the same way like the track indications of a normal track section.

No.	Symbol	Description
[TR-33]		Track 0002T is allowed to be occupied for track down shunting


3.1.5 Track section with train numbering


3.1.5.1 Train numbering

No.	Symbol	Description
[TR-34]		Train number is set, interface failure between HMI and ATR system
[TR-35]		Train number is set, train number not known by the ATR system, or ATR switched off for this train number
[TR-36]		Train number is set, train number known by the ATR system
[TR-37]		Train number set, train known by the ATR system The following route cannot be set automatically by ATR system or the following route is not engineered for ATR
[TR-38]		Train number set, train known by the ATR system ATR not possible for this train (e.g. the following route was set automatically by ATR system but the route still not supervised after more than 30 sec)
[TR-39]		Train number set, train involved in a detected SPAD event

Note: The indication of the train number can be combined with all other track element indications, so it must not cover or hide any of those indications.

3.1.5.2 Track highlight

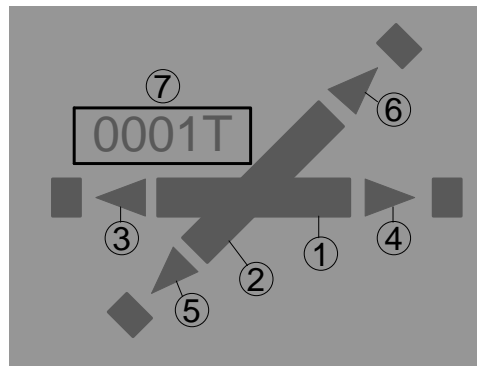
No.	Symbol	Description
[TR-40]		Special operator commands for track with train numbering. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting

No.	Symbol	Description
[TR-41]		Track with train numbering selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.2 CROSSING

The element indication of a crossing is composed of the crossing element (1, 2), the direction and lock indicators (3, 4, 5, 6) and the crossing name (7), also used to display failure and passivation messages.

Figure 3 – Crossing element layout



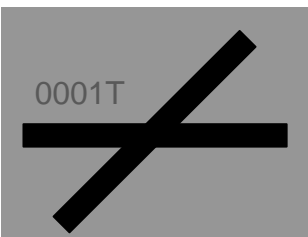
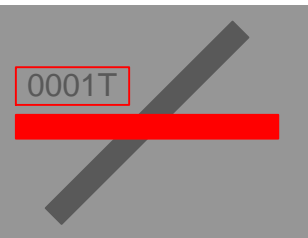
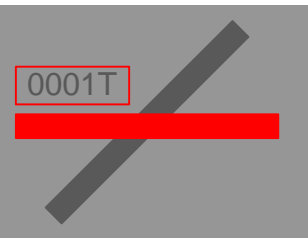
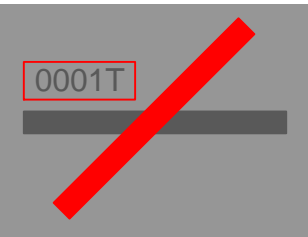
The colour priority in case of concurrent indications for the crossing track element (1, 2) is: Red Flashing > Red > Green/Blue > Yellow > Black³. The colour priority in case of concurrent indications for the direction and lock indicators (3, 4, 5, 6) is: Red > White/Yellow⁴.

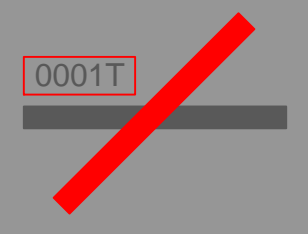
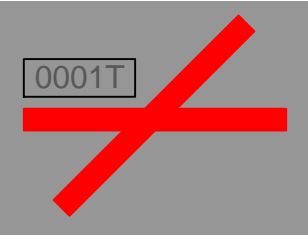
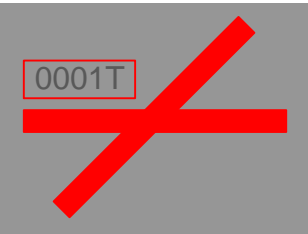
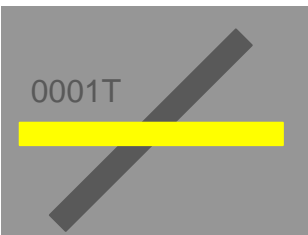
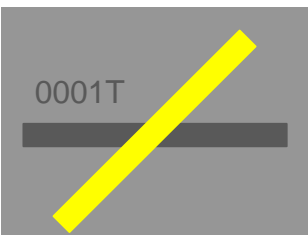
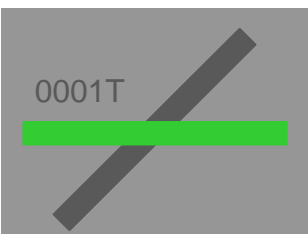
³ Passivated – Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

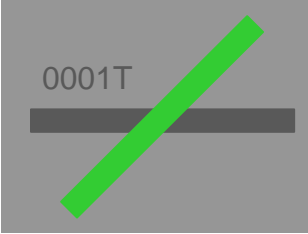
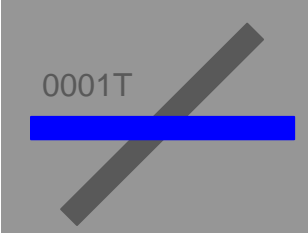
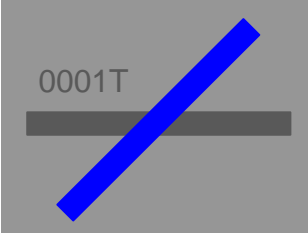
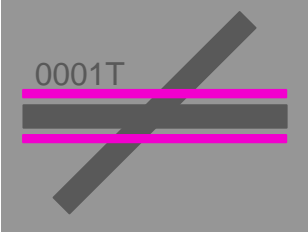
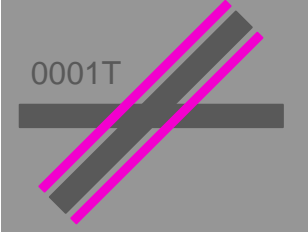
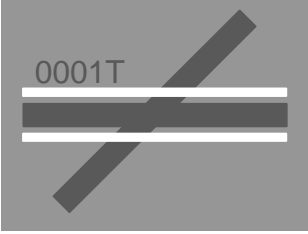
⁴ Inhibited against route traversal > Locked route entered/Route locked.

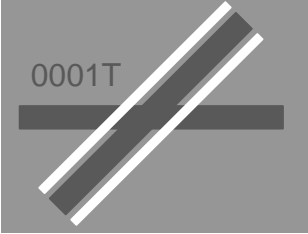
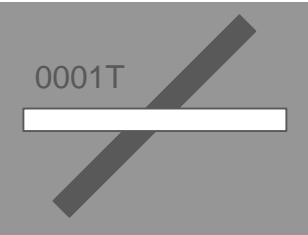
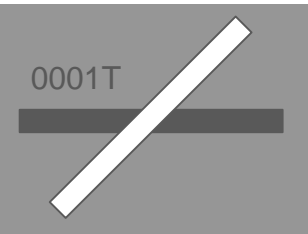
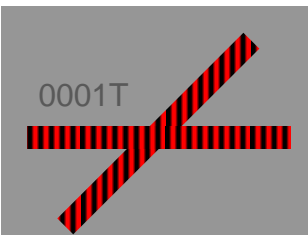
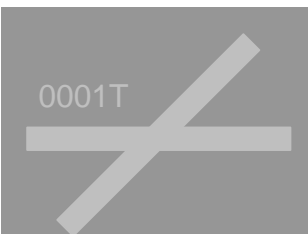
When a crossing is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the crossing element (1, 2) and the direction and lock indicators (3, 4, 5, 6).

3.2.1 Crossing element

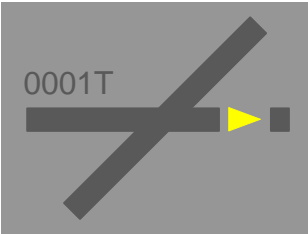
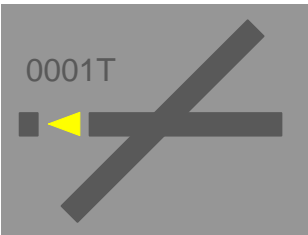
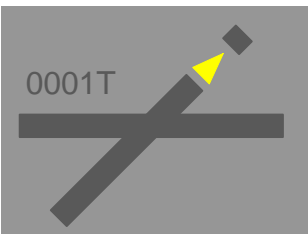
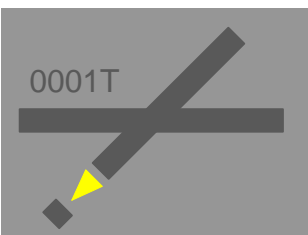
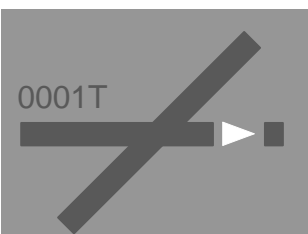
No.	Symbol	Description
[CR-1]		Crossing free
[CR-2]		Crossing occupied with route, horizontal track Reset Restriction Active because of route lock (out count / in-count won't affect the Reset Restriction as long as its locked by the route)
[CR-3]		Crossing occupied with route, horizontal track Reset Restriction Active
[CR-4]		Crossing occupied with route, diagonal track Reset Restriction Active

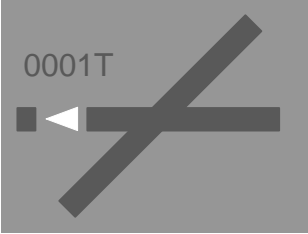
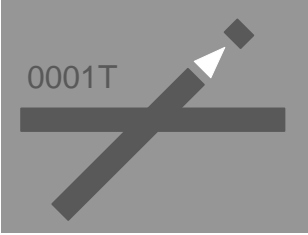
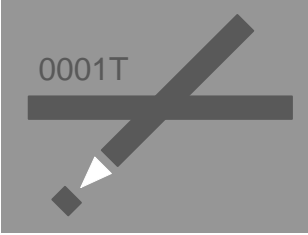
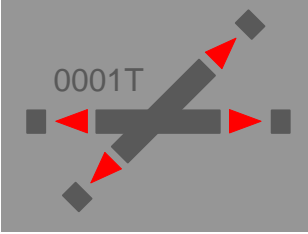
No.	Symbol	Description
[CR-5]		Crossing occupied with route, diagonal track Reset Restriction Active
[CR-6]		Crossing occupied, no route Reset Restriction Inactive, last count in the section was out.
[CR-7]		Crossing occupied, no route Reset Restriction Active, last count in the section was out.
[CR-8]		Route set / Overlap, horizontal track
[CR-9]		Route set / Overlap, diagonal track
[CR-10]		Main route (A-route, C-route or U-route), horizontal track

No.	Symbol	Description
[CR-11]		Main route (A-route, C-route or U-route), diagonal track
[CR-12]		Shunt route (B-route), horizontal track
[CR-13]		Shunt route (B-route), diagonal track
[CR-14]		Emergency route (N-route), horizontal track
[CR-15]		Emergency route (N-route), diagonal track
[CR-16]		Route selection / Alternative route preview, horizontal track

No.	Symbol	Description
[CR-17]		Route selection / Alternative route preview, diagonal track
[CR-18]		Alternative Route
[CR-19]		Alternative Route
[CR-20]		Passivated – Track section failed
[CR-21]		Crossing without track free detection – Static crossing

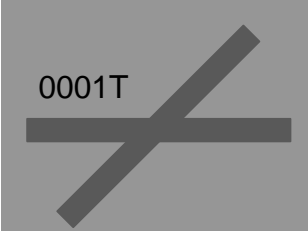
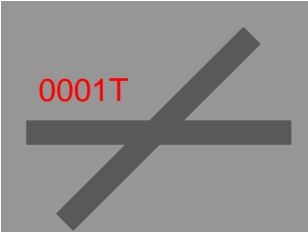
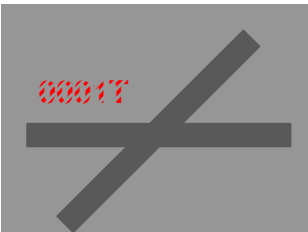
3.2.2 Direction and lock indicators

No.	Symbol	Description
[CR-22]		Route locked, route direction (A-B), horizontal track
[CR-23]		Route locked, route direction (B-A), horizontal track
[CR-24]		Route locked, route direction (A-B), diagonal track
[CR-25]		Route locked, route direction (B-A), diagonal track
[CR-26]		Locked route entered, route direction (A-B), horizontal track


No.	Symbol	Description
[CR-27]		Locked route entered, route direction (B-A), horizontal track
[CR-28]		Locked route entered, route direction (A-B), diagonal track
[CR-29]		Locked route entered, route direction (B-A), diagonal track
[CR-30]		Crossing inhibited against route traversal, independently of any other concurrent indications for route locked or locked route entered

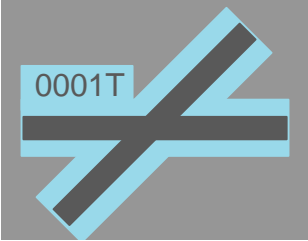
Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

3.2.3 Crossing name

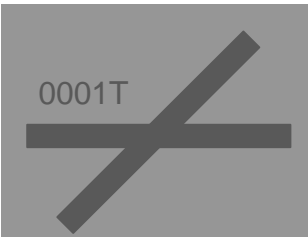
No.	Symbol	Description
[CR-31]		Crossing normal and available
[CR-32]		Hardware fault external to interlocking. Includes the following faults: Crossing track disturbed
[CR-33]		Hardware fault in interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.2.4 Crossing highlight

No.	Symbol	Description
[CR-34]		Special operator commands for crossing. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting

No.	Symbol	Description
[CR-35]		Crossing selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.2.5 Missing status information

No.	Symbol	Description
[CR-36]		Crossing without status information (all grey) (Interface error between HMI and Logic Module)

Note: A crossing without status information is displayed in steady grey.

3.3 SIGNAL

The element indication and the element command of a signal depend on the signal element type.
The following signal types are indicated:

- Main signals with shunt
- Main signals without shunt
- Permanent red signals
- Shunt signals
- Dummy signals

The general element indication of a signal can be composed of various parts:

Main signal aspect (1), C-/U-/emergency-aspect / white light (2), shunt signal aspect / distant signal board (3), ATR and SPAD indicator (4), origin lock and inhibition indicator / protection indicator (5), destination lock and inhibition indicator (6) and signal name / failure and passivation messages (7).

Figure 4 – Main signal element layout

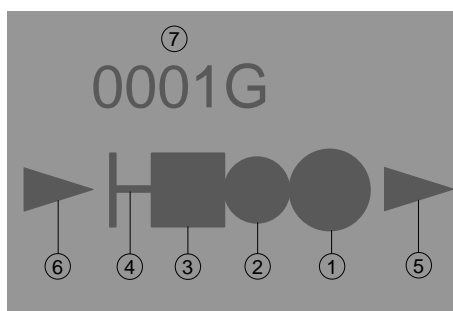


Figure 5 – Permanent red signal element layout

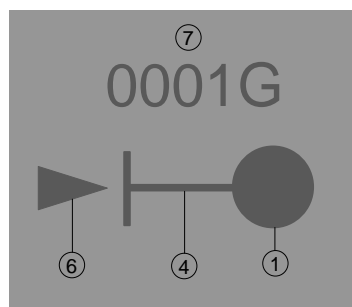


Figure 6 – Shunt signal element layout

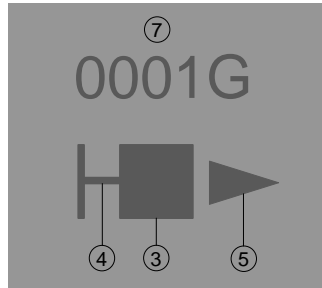
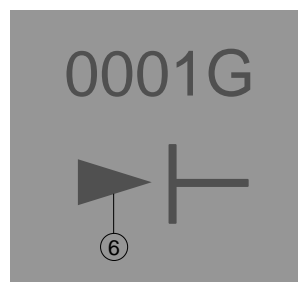


Figure 7 – Dummy signal element layout



The signal aspect indications show the real status of the signal.

The colour priority in case of concurrent indications for the origin lock and inhibition indicator / protection indicator (5) is: Yellow flashing > Blue > Red⁵. The colour priority in case of concurrent indications for the destination lock and inhibition indicator (6) is: White flashing > White > Yellow flashing > Yellow/Yellow frame > Red⁶. The colour priority in case of concurrent indications for the ATR and SPAD indicator (4) is: Red flashing > White/Black⁷.


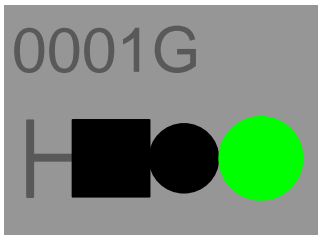
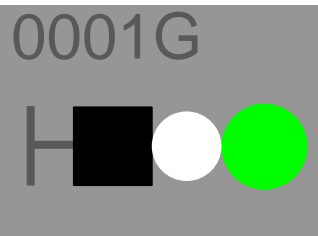
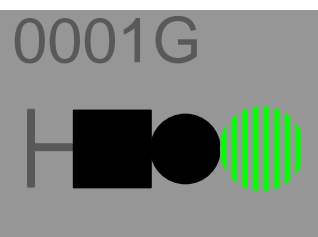
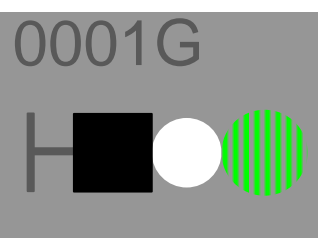
⁵ Zero overlap route timer running > Flank/Head protection > Inhibition as route start.

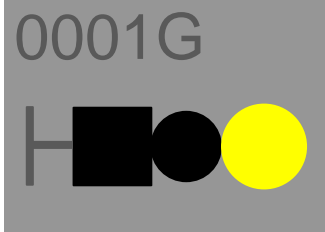
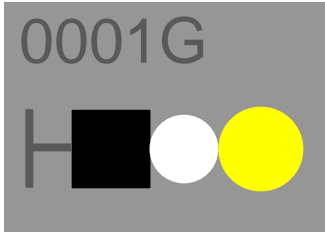
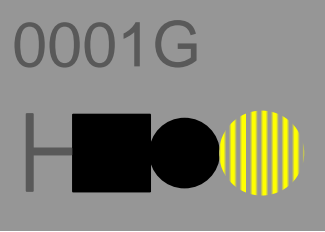
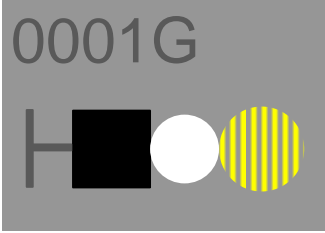
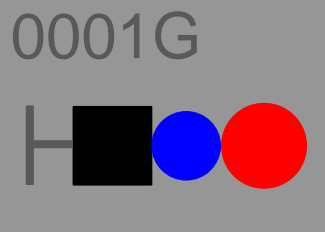
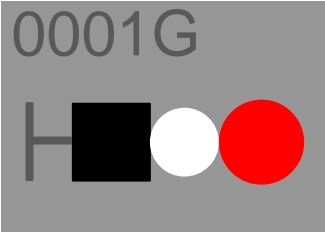
⁶ Release of route in final defined state > Route in final defined state > Release of route in first defined state > Route in first defined state/Unapproached route > Inhibition as route destination.

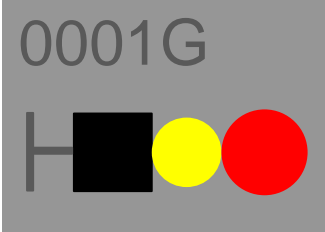
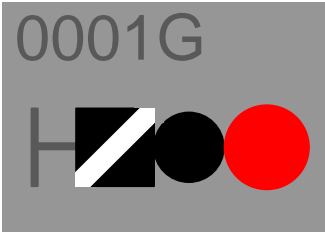

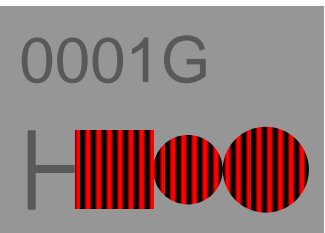

⁷ SPAD detected > ATR on/ATR off.

3.3.1 Main signal with shunt








3.3.1.1 Signal aspects

No.	Symbol	Description
[SI-1]		Stop aspect / RGK (Signal called but not cleared or authorisation retracted)
[SI-2]		Green / AG
[SI-3]		Green-white
[SI-4]		Flashing green
[SI-5]		Flashing green-white

No.	Symbol	Description
[SI-6]		Yellow
[SI-7]		Yellow-white
[SI-8]		Flashing yellow
[SI-9]		Flashing yellow-white
[SI-10]		Emergency aspect / NG
[SI-11]		U-signal


No.	Symbol	Description
[SI-12]		C-signal
[SI-13]		Shunt aspect / BG
[SI-14]		Signal not marked in a locked route
[SI-15]		Dark signal / Passivated (Flashing: red-to-black)
[SI-16]		Static signal




3.3.1.2 Lock and inhibition indicator / Protection indicator

No.	Symbol	Description
[SI-17]		Route Ok
[SI-18]		Head protection / Flank protection
[SI-19]		Signal called for zero overlap route, timer running
[SI-20]		Destination signal of an unapproached route See also chapter 3.11 for further details about the usage of this indication
[SI-21]		Destination signal of an approach locked route (Thales) Destination Signal of an approach locked or unapproach locked route (Siemens) (route in first defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-22]		Release timer of an approach locked route is running (route in first defined state)
[SI-23]		Destination signal of a locked route entered (route in final defined state)




No.	Symbol	Description
[SI-24]		Release timer of a locked route entered or an overlap is running (route in final defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-25]		Signal blocked as Destination (Route setting to this signal is prohibited)
[SI-26]		Signal blocked as start (Route setting from this signal is prohibited)
[SI-27]		Zero overlap configured
[SI-28]		Zero overlap active The start signal has been called, the route not entered
[SI-29]		Zero overlap active for an entered route

3.3.1.3 Signal name



No.	Symbol	Description
[SI-30]		Signal normal and available

No.	Symbol	Description
[SI-31]		Degradation fault. Signal lamp failure
[SI-32]		Hardware fault external to interlocking. Signal failed
[SI-33]		Hardware fault in interlocking. (Flashing red-to-black) Includes the remaining faults, not covered by the degradation fault neither by the hardware fault external to interlocking


3.3.1.4 ATR and SPAD indicator

No.	Symbol	Description
[SI-34]		ATR off
[SI-35]		ATR on
[SI-36]		SPAD detected (red flashing)

3.3.1.5 Signal highlight

No.	Symbol	Description
[SI-37]		<p>Special operator commands for main signal.</p> <p>The highlighting for special commands can be combined with all other element indications.</p> <p>The element highlighting for special commands has priority over other element highlighting.</p>
[SI-38]		<p>Main signal selected for command execution via mouse.</p> <p>The highlighting for element selection can be combined with all other element indications.</p>


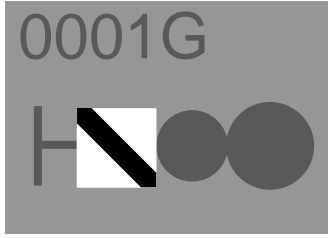



3.3.1.6 Missing status information

No.	Symbol	Description
[SI-39]		<p>Main signal without status information (Interface error between HMI and Logic Module)</p>

Note: A main signal without status information is displayed in steady grey.

3.3.2 Main signal without shunt

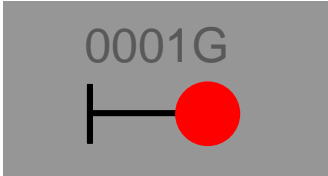
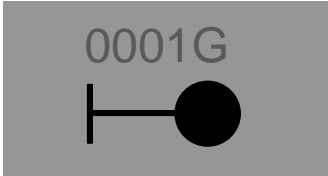
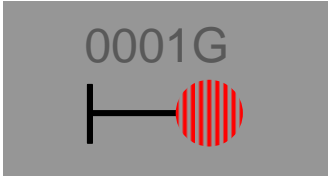

All indications from chapter 3.3.1 are applicable for main signals without shunt, with the exception of “Shunt aspect / BG”. This chapter provides some illustrative indications, besides the own specific indication for “Distant signal”.

No.	Symbol	Description
[SI-40]		Stop aspect / RGK, Signal called but not cleared or authorisation retracted
[SI-41]		Distant signal
[SI-42]		Special operator commands for main signal. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting.
[SI-43]		Element without status information (Interface error between HMI and Logic Module)
[SI-44]		Static signal

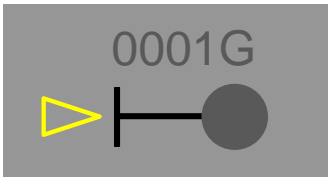
Note: A main signal without status information is displayed in steady grey.

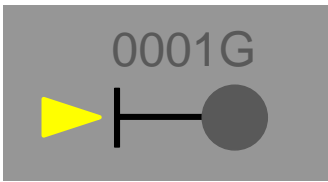
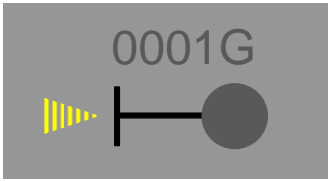
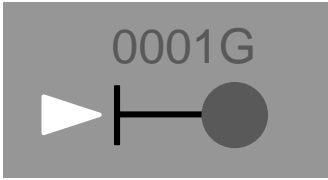
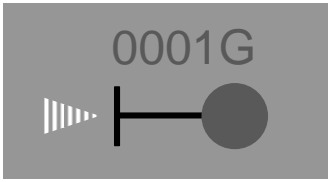
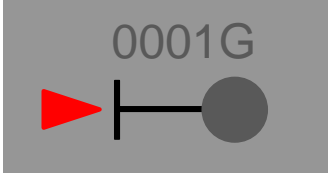
3.3.3 Permanent red signal

3.3.3.1 Signal aspects

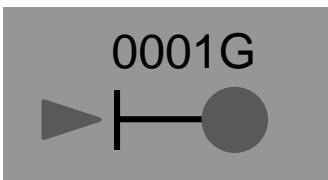
No.	Symbol	Description
[SI-45]		Stop aspect / RG
[SI-46]		Signal not marked in a locked route
[SI-47]		Dark signal / Passivated
[SI-71]		Static signal

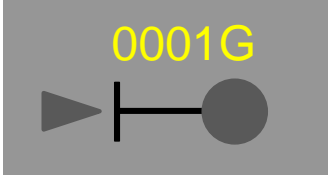
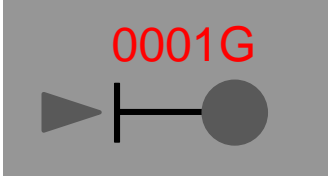
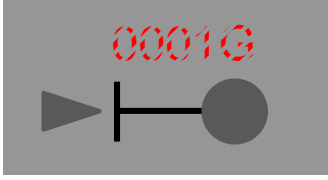
3.3.3.2 Lock and inhibition indicator

No.	Symbol	Description
[SI-48]		Destination signal of an unapproached route (Thales) See also chapter 3.11 for further details about the usage of this indication

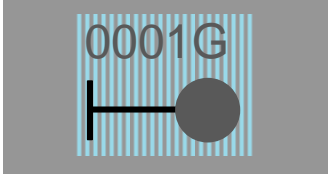
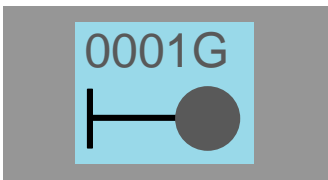
No.	Symbol	Description
[SI-49]		Destination signal of an approach locked route (Thales) Destination Signal of an approach locked or unapproach locked route (Siemens) (route in first defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-50]		Release timer of an approach locked route is running (route in first defined state)
[SI-51]		Destination signal of a locked route entered (route in final defined state)
[SI-52]		Release timer of a locked route entered or an overlap is running (route in final defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-53]		Signal blocked as Destination (Route setting to this signal is prohibited)

3.3.3.3 Signal name

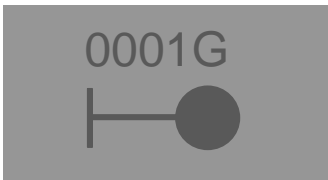
No.	Symbol	Description
[SI-54]		Signal normal and available

No.	Symbol	Description
[SI-55]		Degradation fault. Signal lamp failure
[SI-56]		Hardware fault external to interlocking. Signal failed
[SI-57]		Hardware fault in interlocking. (Flashing red-to-black) Includes the remaining faults, not covered by the degradation fault neither by the hardware fault external to interlocking

3.3.3.4 Signal highlight

No.	Symbol	Description
[SI-58]		Special operator commands for permanent red signal. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting.
[SI-59]		Permanent red signal selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

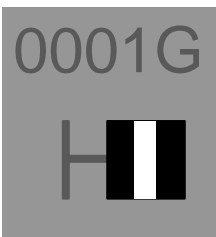
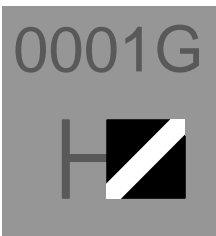
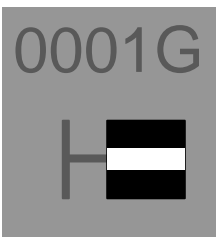
3.3.3.5 Missing status information

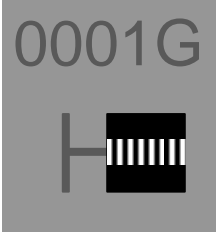
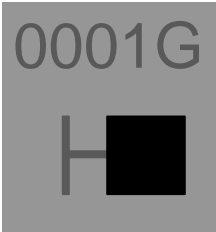
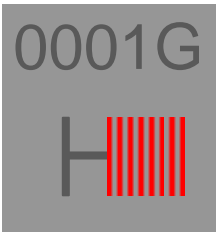
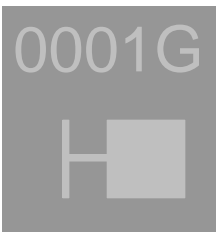
No.	Symbol	Description
[SI-60]		Permanent red signal without status information (Interface error between HMI and Logic Module)

Note: A permanent red signal without status information is displayed in steady grey.

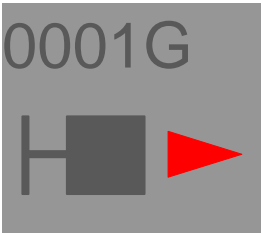
3.3.4 Shunt signal

3.3.4.1 Signal aspects

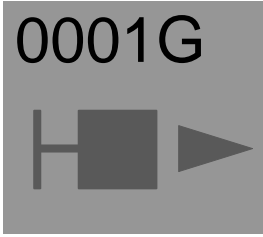
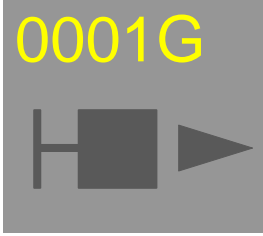
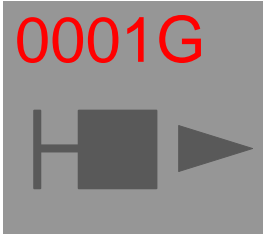
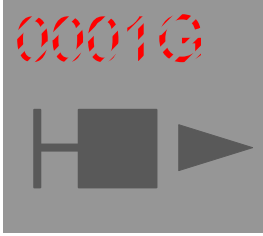
No.	Symbol	Description
[SI-61]		Stop aspect
[SI-70]		Shunt aspect / BG
[SI-71]		Running shunt aspect

No.	Symbol	Description
[SI-72]		Intermediate shunt / Running shunt lamp failure
[SI-73]		Signal not used in a route
[SI-74]		Dark signal / Passivated
[SI-75]		Static signal

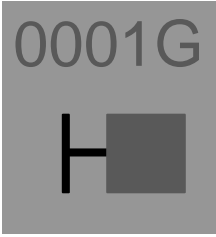
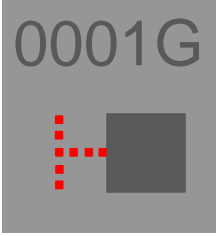
3.3.4.2 Lock and inhibition indicator

No.	Symbol	Description
[SI-76]		Signal blocked as start (Route setting from this signal is prohibited)

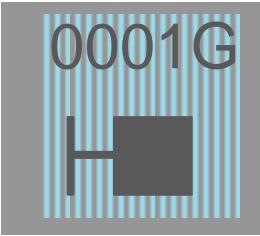
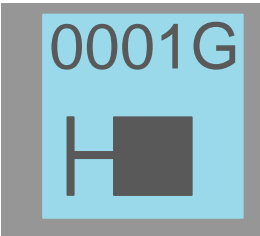
3.3.4.3 Signal name

No.	Symbol	Description
[SI-77]		Signal normal and available
[SI-78]		Degradation fault. Signal lamp failure
[SI-79]		Hardware fault external to interlocking. Signal failed
[SI-80]		Hardware fault in interlocking (Flashing red-to-black) Includes the remaining faults, not covered by the degradation fault neither by the hardware fault external to interlocking


3.3.4.4 SPAD indicator

No.	Symbol	Description
[SI-81]		SPAD not detected
[SI-82]		SPAD detected (red flashing)

3.3.4.5 Signal highlight

No.	Symbol	Description
[SI-82]		Special operator commands for shunt signal. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[SI-83]		Shunt signal selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

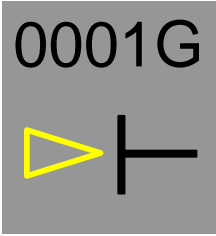
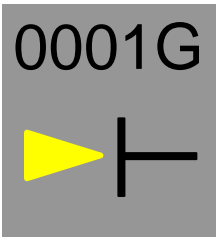
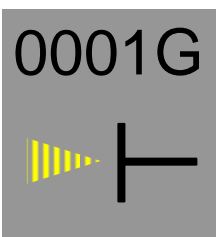
3.3.4.6 Missing status information

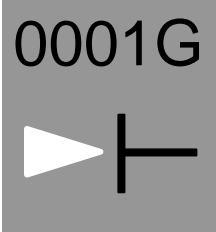
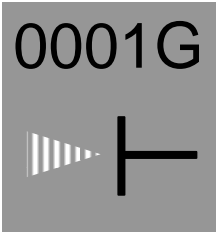
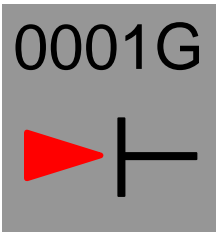

No.	Symbol	Description
[SI-84]		Shunt signal without status information (Interface error between HMI and Logic Module)

Note: A shunt signal without status information is displayed in steady grey.

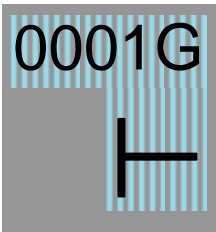
3.3.5 Dummy signal

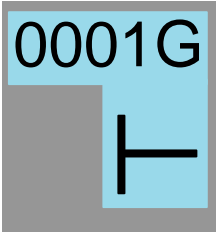
3.3.5.1 Lock and inhibition indicator

No.	Symbol	Description
[SI-85]		Destination signal of an unapproached route (Thales) See also chapter 3.11 for further details about the usage of this indication
[SI-86]		Destination signal of an approach locked route (Thales) Destination Signal of an approach locked or unapproach locked route (Siemens) (route in first defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-87]		Release timer of an approach locked route is running (route in first defined state)

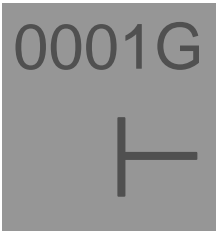
No.	Symbol	Description
[SI-88]		Destination signal of a locked route entered (route in final defined state)
[SI-89]		Release timer of a locked route entered or an overlap is running (route in final defined state) See also chapter 3.11 for further details about the usage of this indication
[SI-90]		Signal blocked as Destination (Route setting to this signal is prohibited)
[SI-91]		Static signal

3.3.5.2 Signal highlight

No.	Symbol	Description
[SI-92]		Special operator commands for dummy signal. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting.

No.	Symbol	Description
[SI-93]		Dummy signal selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.3.5.3 Missing status information

No.	Symbol	Description
[SI-94]		Dummy signal without status information (Interface error between HMI and Logic Module)

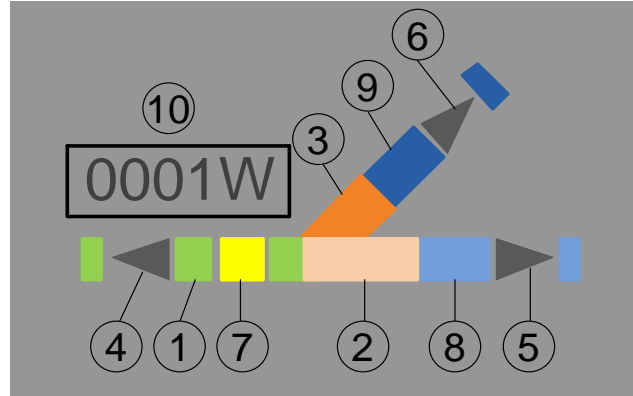
Note: A dummy signal without status information is displayed in steady grey.

3.4 POINT

The general element indication of a point can be composed of various parts:

Tip element (1), position indicators (2, 3), inhibition and protection / crank handle and power failure indicators (4, 5, 6), lock indicator (7), WFK indicators (8, 9) and point name / failure and passivation messages (10).

Figure 8 – Point element layout



The colour priority in case of concurrent indications for the tip element (1), position indicators (2, 3) and WFK indicators (8, 9) is: Red Flashing > Red Flashing on Black > Red > Green/Blue > Yellow > Black⁸.

The inhibition and protection/crank handle and power failure indicators (4, 5, 6) are used to display the inhibited against throwing and inhibited against route traversal indications as well as the protection indications and the crank handle and power failure indications. The colour priority in case of concurrent indications for the inhibition and protection / crank handle and power failure indicators at the point's legs (5, 6) is: Yellow > White > Blue/Green > Red⁹. The colour priority in case of concurrent indications for the inhibition and protection / crank handle and power failure indicators at the point's tip (4) is: Yellow > White > Red > Green¹⁰.

The lock indicator (7) is used to display the route lock indications and also the switching request indication. The colour priority in case of concurrent indications for the lock indicator (7) is: Yellow flashing > Yellow/White¹¹.

The WFK indicators (8, 9) are used to display the configured WFK information. The WFK information (red flashing) has the highest colour priority in case of concurrent indications for the

⁸ Passivated / WFK > Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

⁹ Crank handle > Power failure > Flank protection/Inhibited against throwing > Inhibited against route traversal.


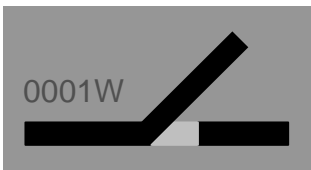
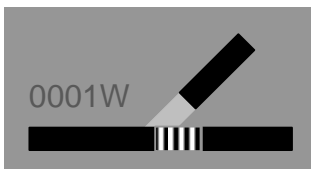
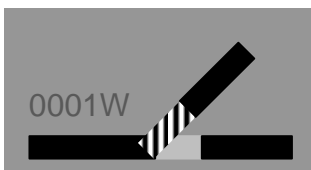

¹⁰ Crank handle > Power failure > Inhibited against route traversal > Inhibited against throwing.


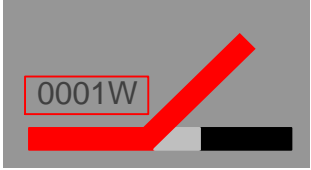

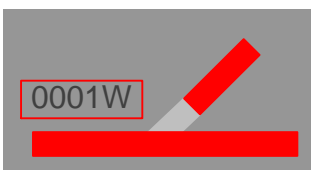

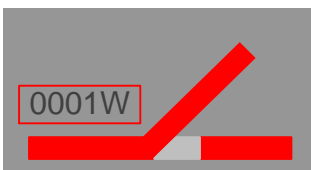
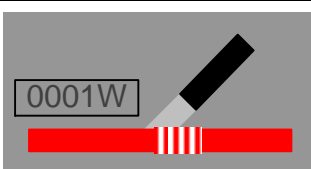
¹¹ Request for switching > Route locked/Locked route entered.

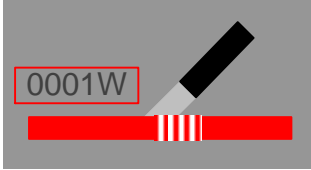
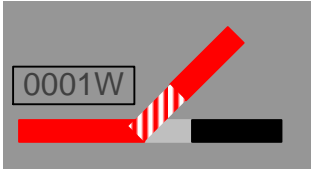
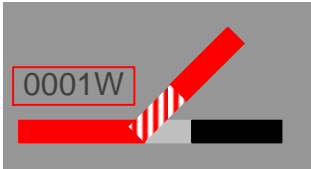
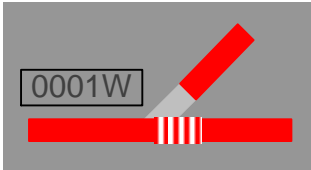
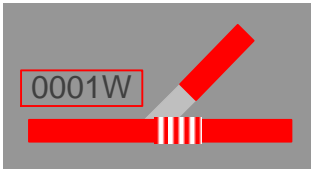


WFK indicators (8, 9). The WFK information doesn't override any indication for the inhibition and protection / crank handle and power failure indicators at the point's legs (5, 6).

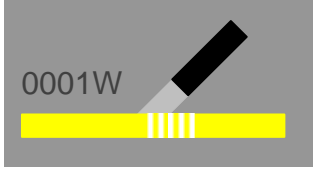
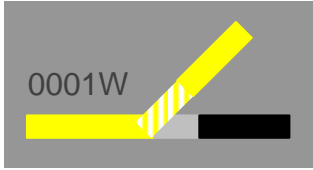

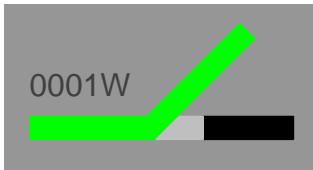
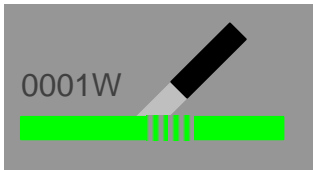
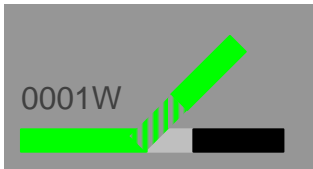
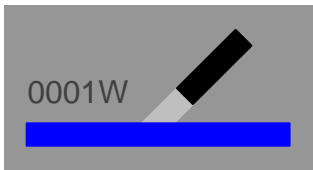
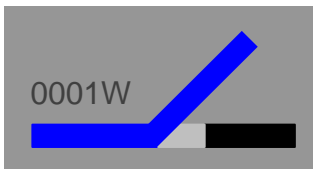
When a point is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the tip element (1), position indicators (2, 3), lock indicator (7) and WFK indicators (8, 9).

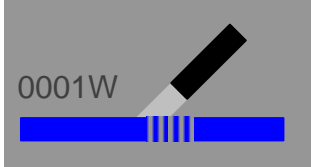
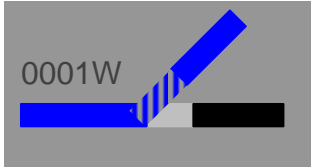
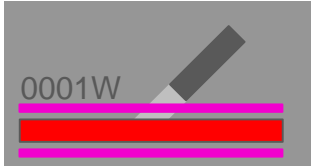
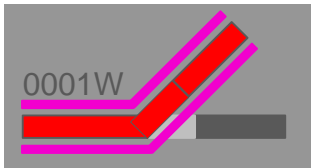

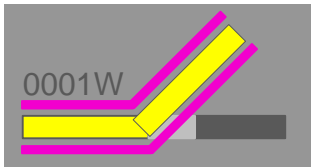
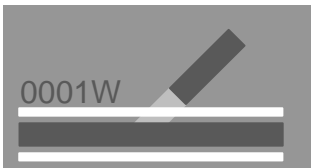
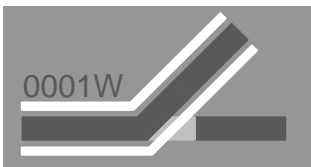
3.4.1 Point element

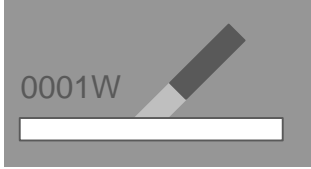
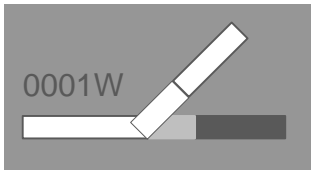
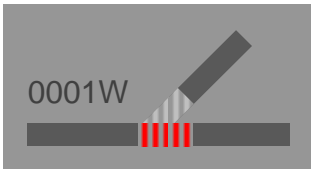
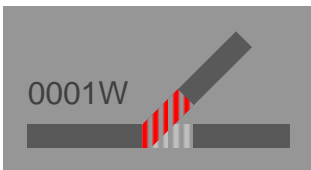


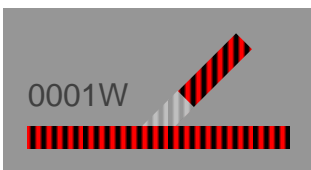
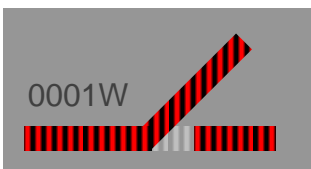
No.	Symbol	Description
[PT-1]		Point free in right position, no route set
[PT-2]		Point free in left position, no route set
[PT-3]		Point free, last call right position, lost detection or moving, no route set (Flash black-to-white)
[PT-4]		Point free, last call left position, lost detection or moving, no route set (Flash black-to-white)
[PT-5]		Point occupied with route set, right position Reset Restriction active because of route lock. (The last axle could be in or out of the section)

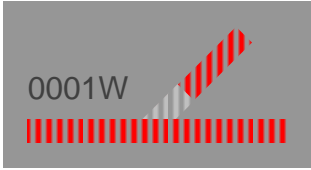
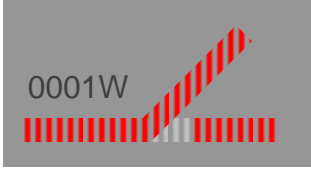

No.	Symbol	Description
[PT-6]		Point occupied with route set, right position Reset Restriction active because of route lock. (The last axle could be in or out of the section)
[PT-7]		Point occupied with route set, left position Reset Restriction active because of route lock. (The last axle could be in or out of the section)
[PT-8]		Point occupied in right position, no route set Reset Restriction inactive last axle was in the section was an out count.
[PT-9]		Point occupied in right position, no route set Reset Restriction active last axle was in the section was an in-count.
[PT-10]		Point occupied in left position, no route set
[PT-11]		Point occupied in left position, no route set Reset Restriction active last axle was in the section was an in-count.
[PT-12]		Point occupied with route set, last call right position, lost detection or moving Reset Restriction inactive last axle was in the section was an out count.

No.	Symbol	Description
[PT-13]		Point occupied with route set, last call right position, lost detection or moving Reset Restriction active last axle was in the section was an in count.
[PT-14]		Point occupied with route set, last call left position, lost detection or moving Reset Restriction inactive last axle was in the section was an out count.
[PT-15]		Point occupied with route set, last call left position, lost detection or moving Reset Restriction active last axle was in the section was an in count.
[PT-16]		Point occupied, last call right position, lost detection or moving, no route set Reset Restriction inactive last axle was in the section was an out count.
[PT-17]		Point occupied, last call left position, lost detection or moving, no route set Reset Restriction active last axle was in the section was an in count.
[PT-18]		Point free in right position, route set / overlap
[PT-19]		Point free in left position, route set / overlap

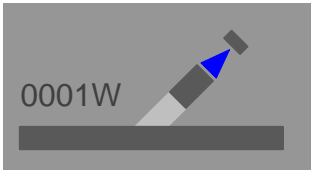

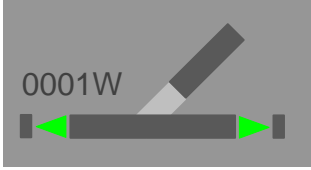
No.	Symbol	Description
[PT-20]		Point free, last call right position, lost detection or moving, route set / overlap
[PT-21]		Point free, last call left position, lost detection or moving, route set / overlap
[PT-22]		Point free in right position, main route (A-route, C-route or U-route)
[PT-23]		Point free in left position, main route (A-route, C-route or U-route)
[PT-24]		Point free, last call right position, lost detection or moving, main route (A-route, C-route or U-route)
[PT-25]		Point free, last call left position, lost detection or moving, main route (A-route, C-route or U-route)
[PT-26]		Point free in right position, shunt route (B-route)
[PT-27]		Point free in left position, shunt route (B-route)

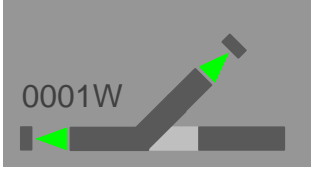
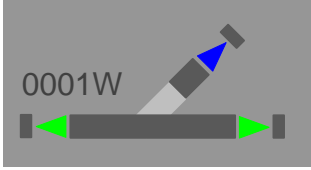
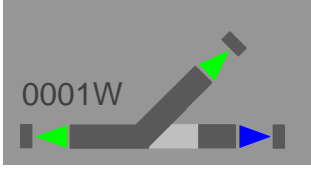
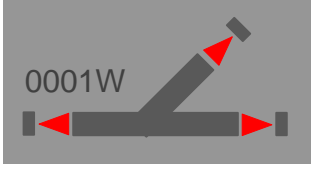
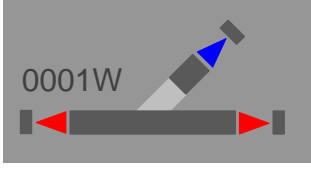
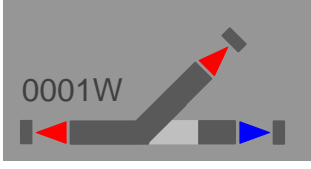
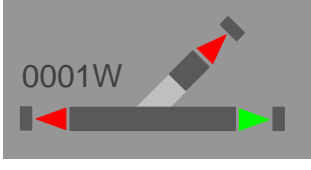
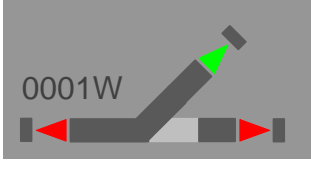
No.	Symbol	Description
[PT-28]		Point free, last call right position, lost detection or moving, shunt route (B-route)
[PT-29]		Point free, last call left position, lost detection or moving, shunt route (B-route)
[PT-30]		Emergency Route occupied Point in right position, emergency route (N-route)
[PT-31]		Emergency Route occupied Point in left position, emergency route (N-route)
[PT-32]		Emergency Route locked Point in right position, emergency route (N-route)
[PT-33]		Emergency Route locked Point in left position, emergency route (N-route)
[PT-34]		Point in right position, route selection / alternative route preview
[PT-35]		Point in left position, route selection / alternative route preview

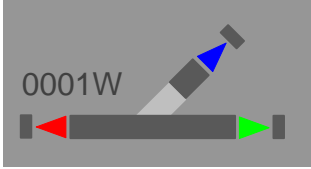
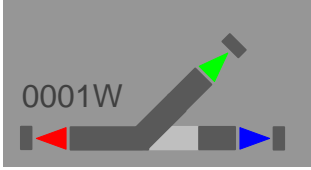
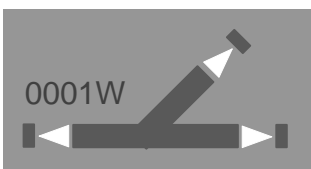
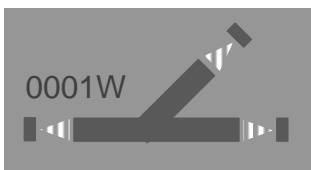
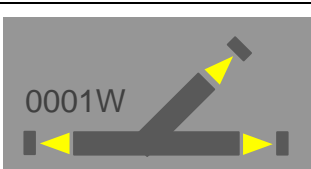
No.	Symbol	Description
[PT-36]		Alternative Routes (used to present options to the operator)
[PT-37]		Alternative Routes (used to present options to the operator)
[PT-39]		Point trailed, last call right position, e.g. point was in right position as it became "trailed" or was called to the right position by the first switch trailed point command
[PT-40]		Point trailed, last call left position, e.g. point was in left position as it became "trailed" or was called to the left position by the first switch trailed point command
[PT-41] Second option of [PT-39]		Points Passivated , last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
[PT-42] Second option of [PT-40]		Points Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
[PT-42]		Point track section failed, point in right position
[PT-43]		Point track section failed, point in left position

No.	Symbol	Description
[PT-44]		Point passivated, last call right position
[PT-45]		Point passivated, last call left position
[PT-46]		Point without track free detection – Static point

3.4.2 Inhibition and protection indicators / Crank handle and power failure indicators

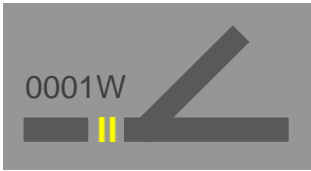
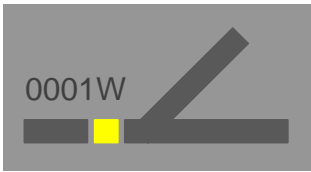
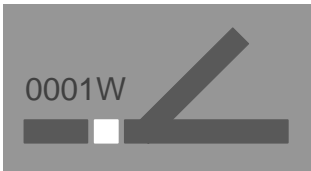
No.	Symbol	Description
[PT-47]		Point in right position, flank protection over left leg
[PT-48]		Point in left position, flank protection over right leg
[PT-49]		Point in right position, inhibited against throwing

No.	Symbol	Description
[PT-50]		Point in left position, inhibited against throwing
[PT-51]		Point in right position, inhibited against throwing, flank protection over left leg
[PT-52]		Point in left position, inhibited against throwing, flank protection over right leg
[PT-53]		Point inhibited against route traversal
[PT-54]		Point in right position, inhibited against route traversal, flank protection over left leg
[PT-55]		Point in left position, inhibited against route traversal, flank protection over right leg
[PT-56]		Point in right position, inhibited against route traversal and against throwing
[PT-57]		Point in left position, inhibited against route traversal and against throwing

No.	Symbol	Description
[PT-58]		Point in right position, inhibited against route traversal and against throwing, flank protection over left leg
[PT-59]		Point in left position, inhibited against route traversal and against throwing, flank protection over right leg
[PT-60]		Power failure not reset, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal
[PT-61]		Points power failure reset, timer running, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal
[PT-62]		Crank handle release mode, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal

Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

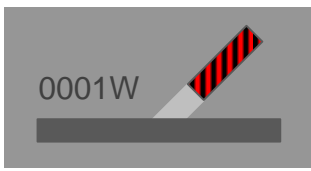

3.4.3 Lock indicator

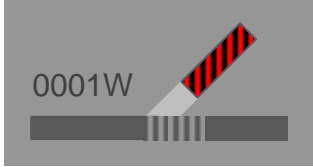
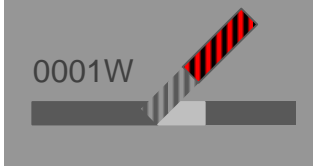
No.	Symbol	Description
[PT-63]		Point requested for switching
[PT-64]		Point part of the running path or overlap of a route locked
[PT-65]		Point part of the running path or overlap of a route entered.

3.4.4 WFK indicators


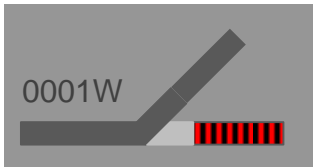
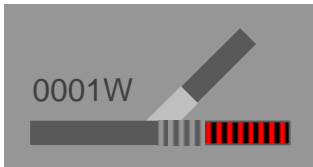
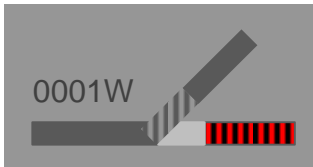
The WFK information is only displayed for configured points when the element is not used by a route or overlap.

3.4.4.1 Default position is left




No.	Symbol	Description
[PT-66]		WFK Configured, default position is left. Point in right position
[PT-67]		WFK Configured, default position is left. Point in left position

No.	Symbol	Description
[PT-68]		WFK Configured, default position is left. Last call right position, lost detection or moving
[PT-69]		WFK Configured, default position is left. Last call left position, lost detection or moving



3.4.4.2 Default position is right

No.	Symbol	Description
[PT-70]		WFK Configured, default position is right. Point in right position
[PT-71]		WFK Configured, default position is right. Point in left position
[PT-72]		WFK Configured, default position is right. Last call right position, lost detection or moving
[PT-73]		WFK Configured, default position is right. Last call left position, lost detection or moving


3.4.5 Point name

No.	Symbol	Description
[PT-74]		Point normal and available
[PT-75]		Hardware fault external to interlocking. Includes the following faults: Point trailed or Point not supervised / lost detection
[PT-76]		Hardware fault in Interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.4.6 Point highlight

No.	Symbol	Description
[PT-77]		Special operator commands for point. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[PT-78]		Point selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.4.7 Missing status information

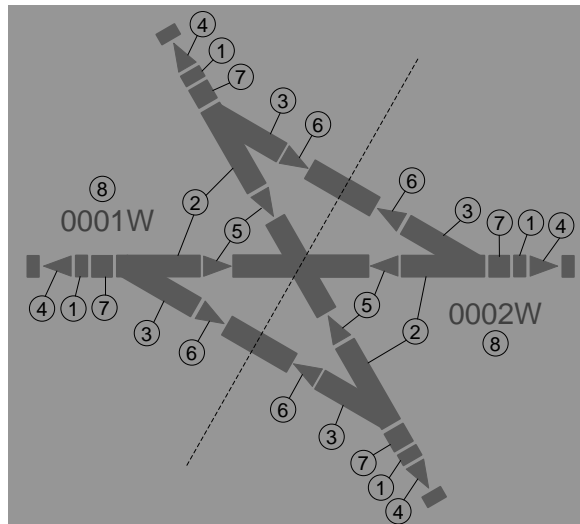
No.	Symbol	Description
[PT-79]		Point without status information (Interface error between HMI and Logic Module)

Note: A point without status information is displayed in steady grey.

3.5 DOUBLE SLIP

A double slip is made up of 2 elements; each element comprises of a pair of points. The 2 elements have 3 connection points in between. The detection and the movement are coupled per pair of points.

Figure 9 – Double slip element layout



As for the single points, the general element indication of a double slip can be composed of various parts:

Tip elements (1), position indicators (2, 3), inhibition and protection/crank handle and power failure indicators (4, 5, 6), lock indicators (7) and point names/failure and passivation messages (8).

The colour priority in case of concurrent indications for the tip elements (1) and position indicators (2, 3) is: Red Flashing > Red Flashing on Black > Red > Green/Blue > Yellow > Black¹².

The inhibition and protection/crank handle and power failure indicators (4, 5, 6) are used to display the inhibited against throwing and inhibited against route traversal indications as well as the protection indications and the crank handle and power failure indications. The colour priority in case of concurrent indications for the inhibition and protection/crank handle and power failure indicators at the point's tip (4) is: Yellow > White > Red > Green¹³.

The lock indicators (7) are used to display the route lock indications and also the switching request indications. The colour priority in case of concurrent indications for the lock indicators (7) is: Yellow flashing > Yellow/White¹⁴.

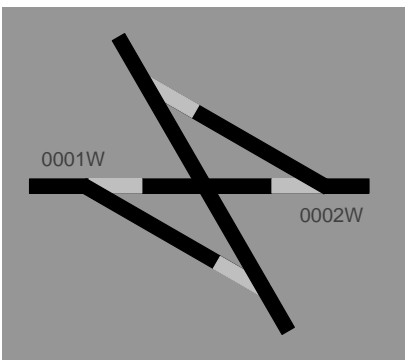
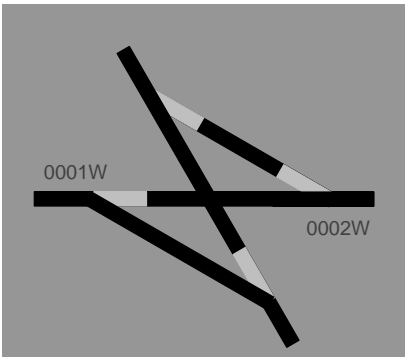
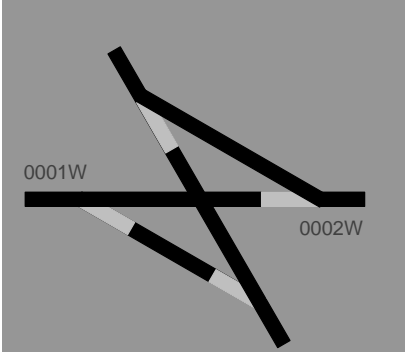
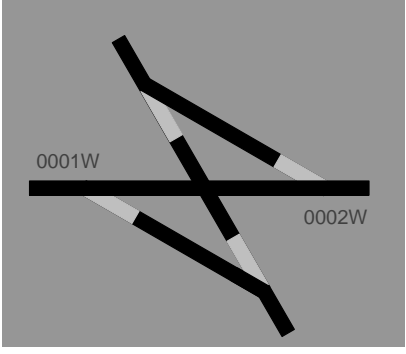
When a double slip is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the tip elements (1), position indicators (2, 3) and lock indicators (7).

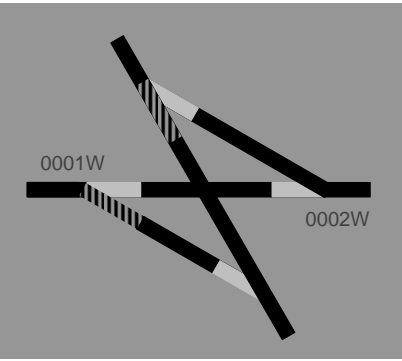
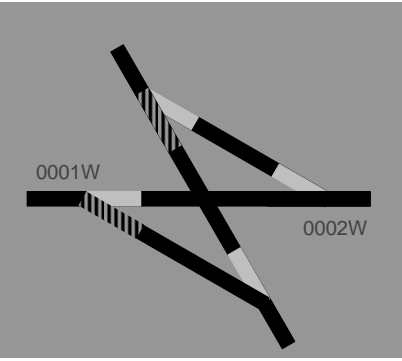
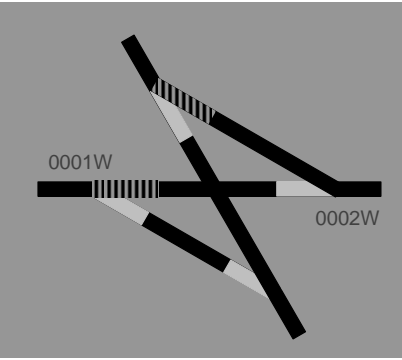
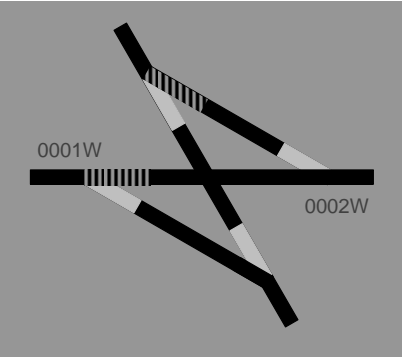
¹² Passivated > Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

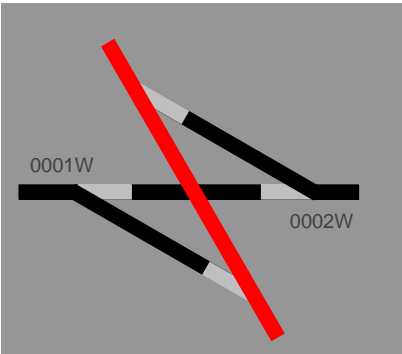
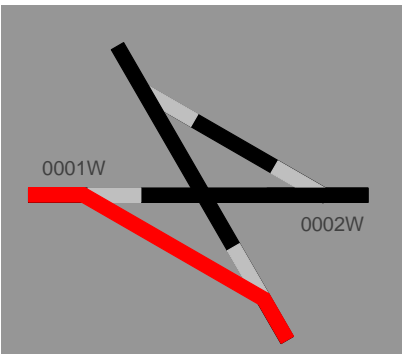
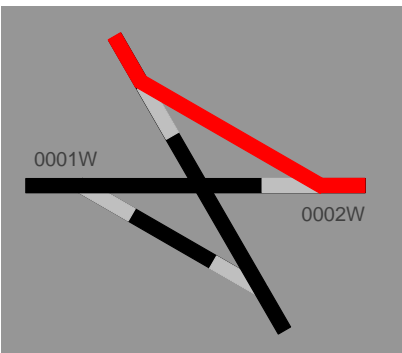
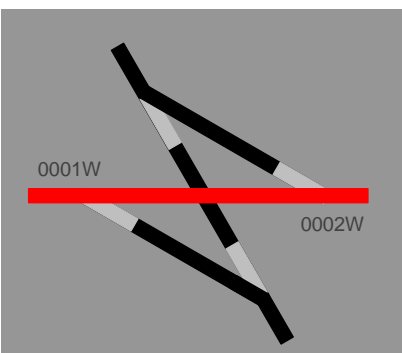
¹³ Crank handle > Power failure > Inhibited against route traversal > Inhibited against throwing.

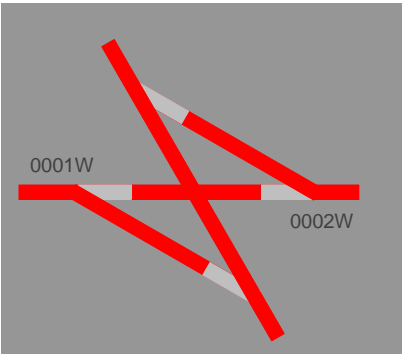
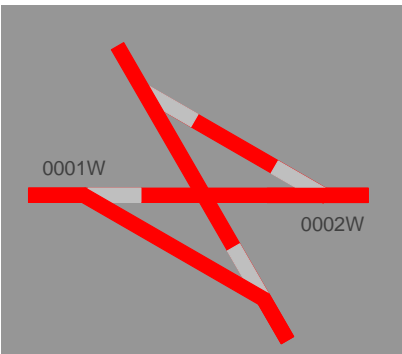
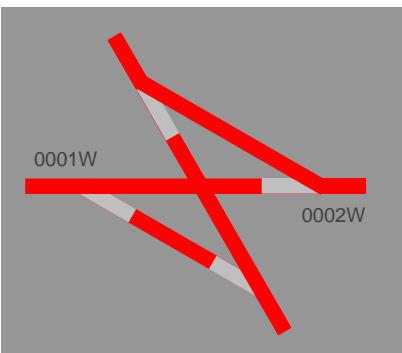
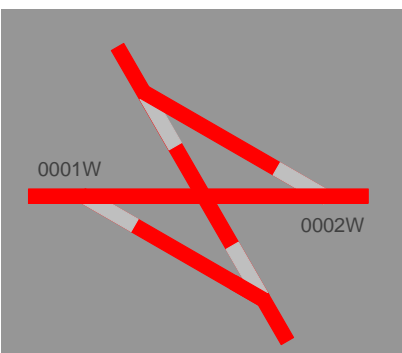
¹⁴ Request for switching > Route locked/Locked route entered.

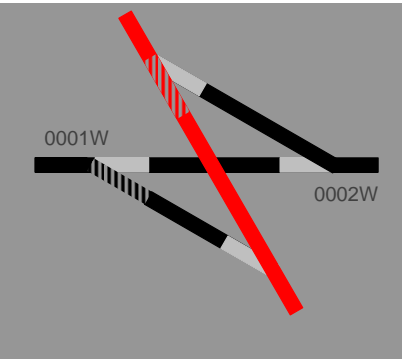
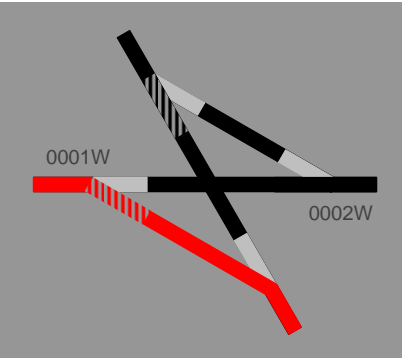
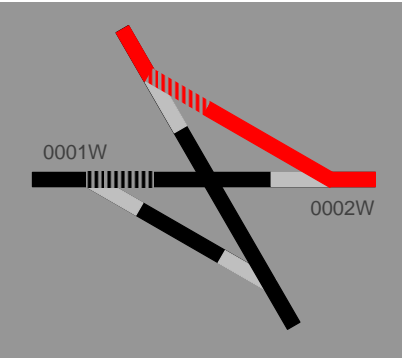
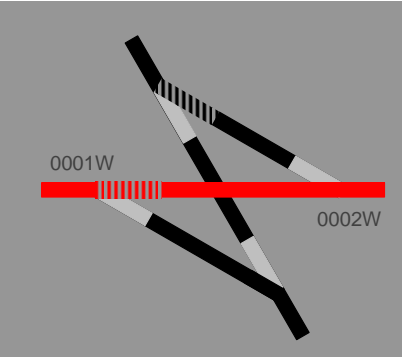
3.5.1 Double slip element

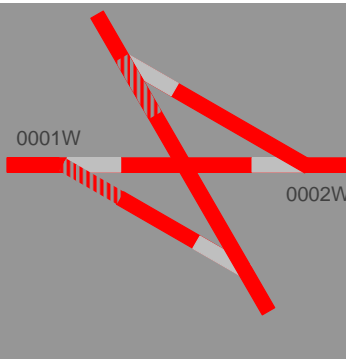
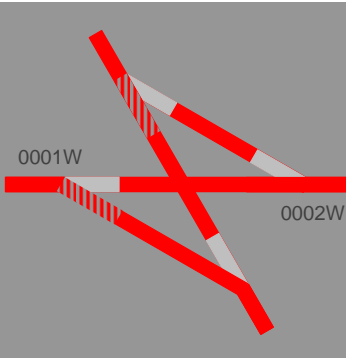
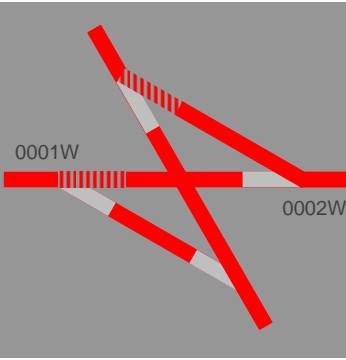
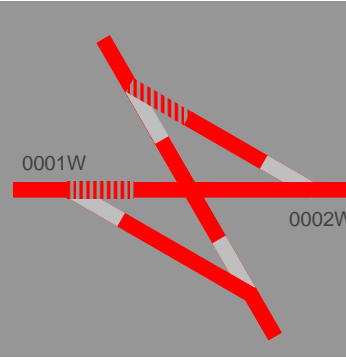
No.	Symbol	Description
[DS-1]		Points free, 0001W and 0002W in right position, no route set
[DS-2]		Points free, 0001W in right position and 0002W in left position, no route set
[DS-3]		Points free, 0001W in left position and 0002W in right position, no route set
[DS-4]		Points free, 0001W and 0002W in left position, no route set

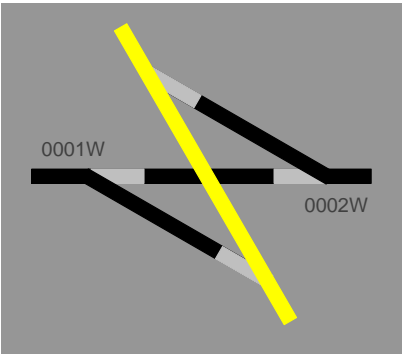
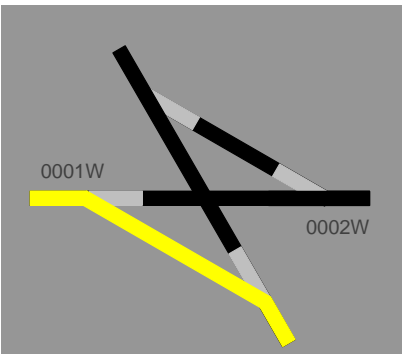
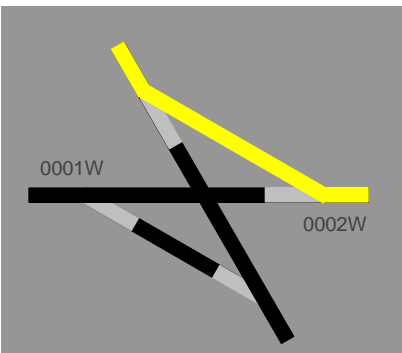
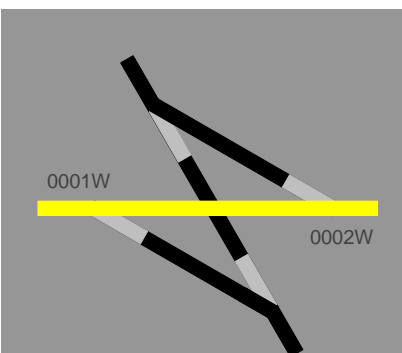
No.	Symbol	Description
[DS-5]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, no route set
[DS-6]		Points free, 0001W last call right position, lost detection or moving, and 0002W in left position, no route set
[DS-7]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, no route set
[DS-8]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, no route set

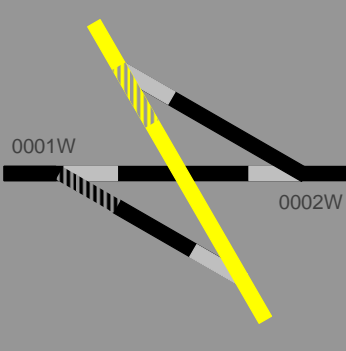
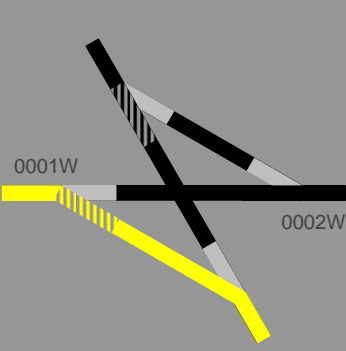
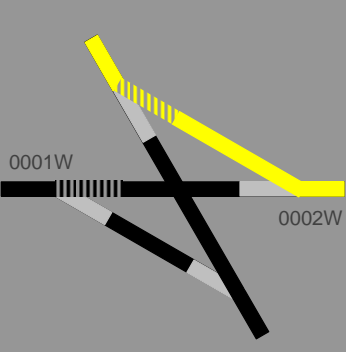
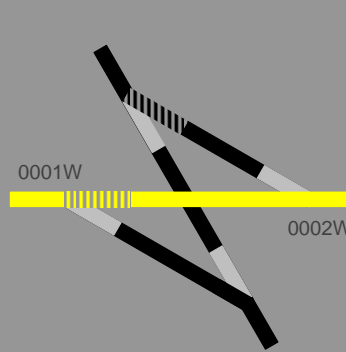
No.	Symbol	Description
[DS-9]		Points occupied with route set, 0001W and 0002W in right position
[DS-10]		Points occupied with route set, 0001W in right position and 0002W in left position
[DS-11]		Points occupied with route set, 0001W in left position and 0002W in right position
[DS-12]		Points occupied with route set, 0001W and 0002W in left position

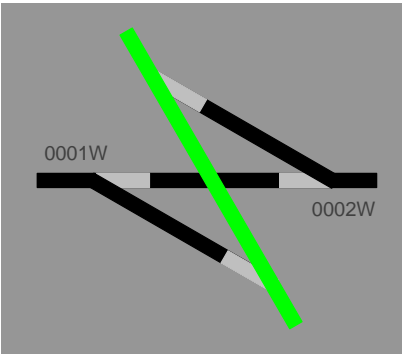
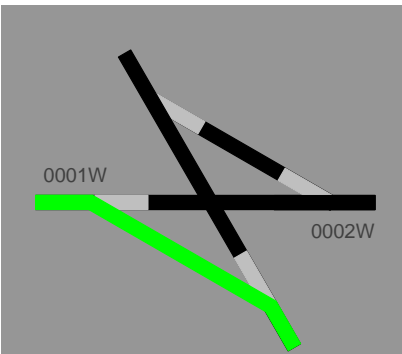
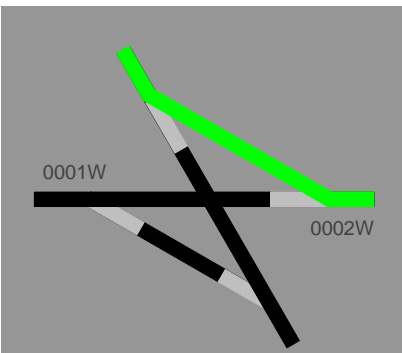
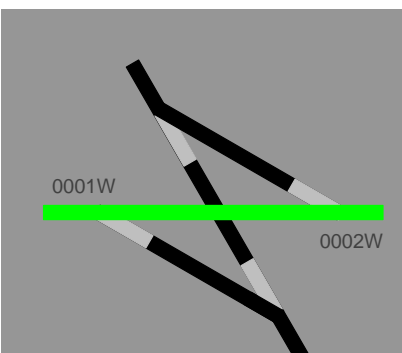
No.	Symbol	Description
[DS-13]		Points occupied, 0001W and 0002W in right position, no route set
[DS-14]		Points occupied, 0001W in right position and 0002W in left position, no route set
[DS-15]		Points occupied, 0001W in left position and 0002W in right position, no route set
[DS-16]		Points occupied, 0001W and 0002W in left position, no route set

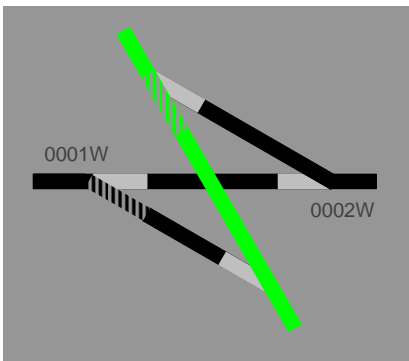
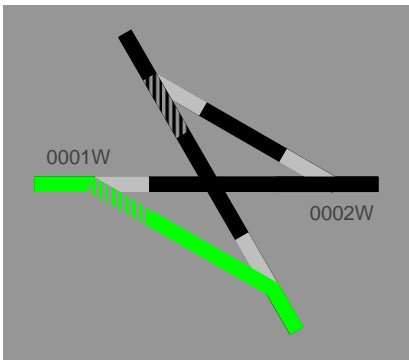
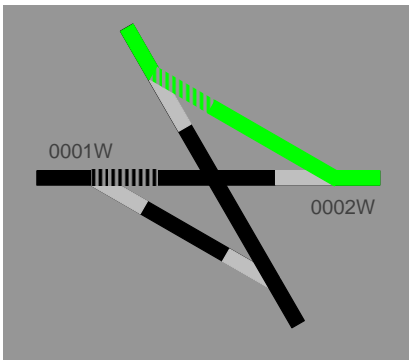
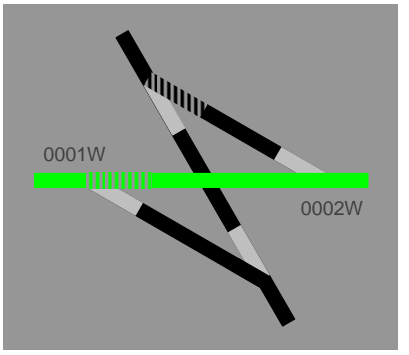
No.	Symbol	Description
[DS-17]		Points occupied with route set, 0001W last call right position, lost detection or moving, and 0002W in right position
[DS-18]		Points occupied with route set, 0001W last call right position, lost detection or moving, and 0002W in left position
[DS-19]		Points occupied with route set, 0001W last call left position, lost detection or moving, and 0002W in right position
[DS-20]		Points occupied with route set, 0001W last call left position, lost detection or moving, and 0002W in left position

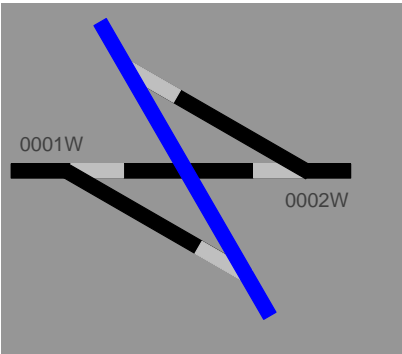
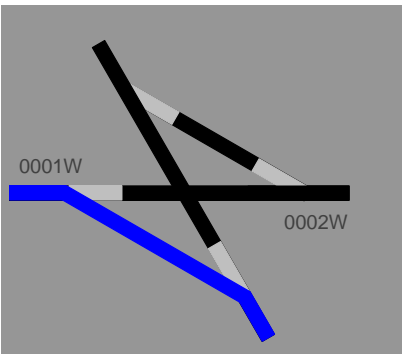
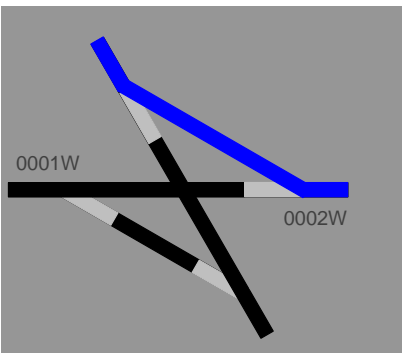
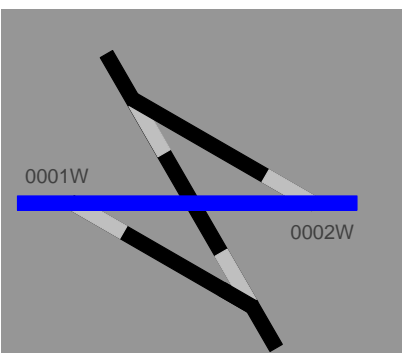
No.	Symbol	Description
[DS-21]		Points occupied, 0001W last call right position, lost detection or moving, and 0002W in right position, no route set
[DS-22]		Points occupied, 0001W last call right position, lost detection or moving, and 0002W in left position, no route set
[DS-23]		Points occupied, 0001W last call left position, lost detection or moving, and 0002W in right position, no route set
[DS-24]		Points occupied, 0001W last call left position, lost detection or moving, and 0002W in left position, no route set

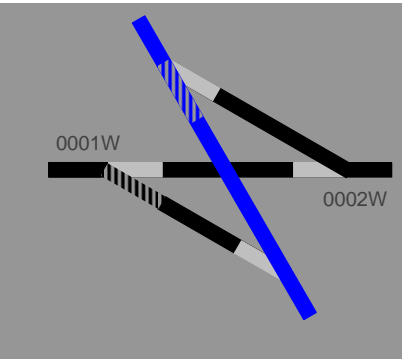
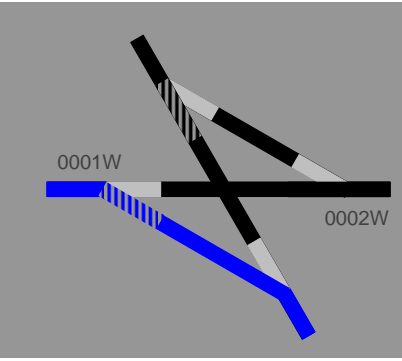
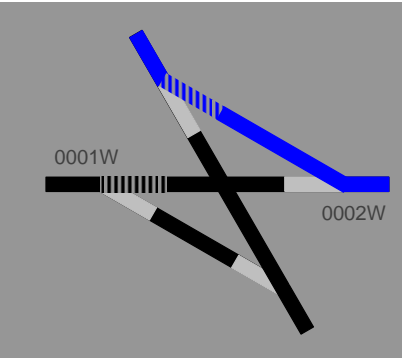
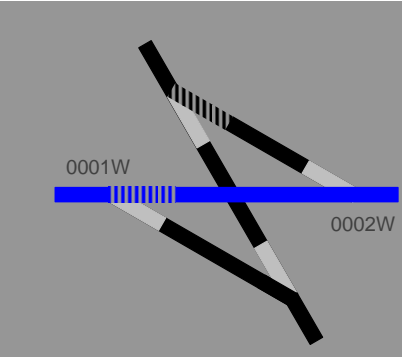
No.	Symbol	Description
[DS-25]		Points free, 0001W and 0002W in right position, route set / overlap
[DS-26]		Points free, 0001W in right position and 0002W in left position, route set / overlap
[DS-27]		Points free, 0001W in left position and 0002W in right position, route set / overlap
[DS-28]		Points free, 0001W and 0002W in left position, route set / overlap

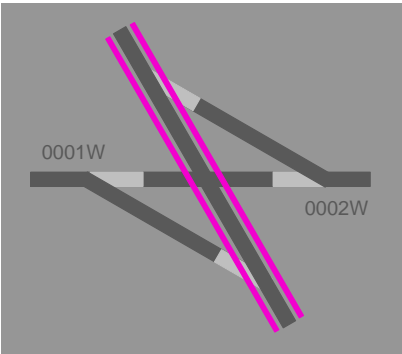
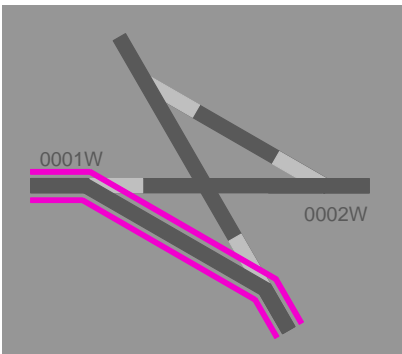
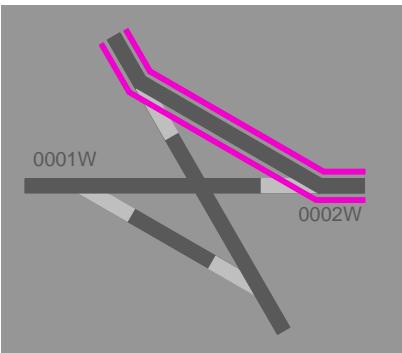
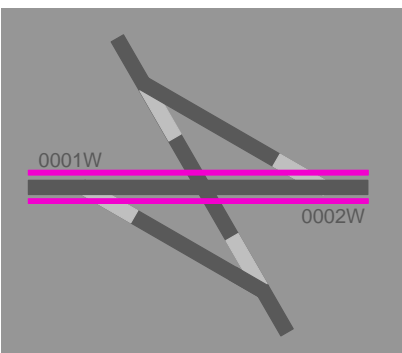
No.	Symbol	Description
[DS-29]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, route set / overlap
[DS-30]		Points free, 0001W last call right position, lost detection or moving, and 0002W in left position, route set / overlap
[DS-31]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, route set / overlap
[DS-32]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, route set / overlap

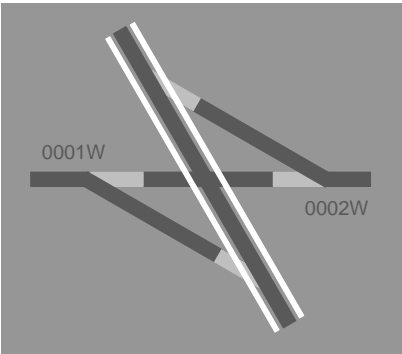
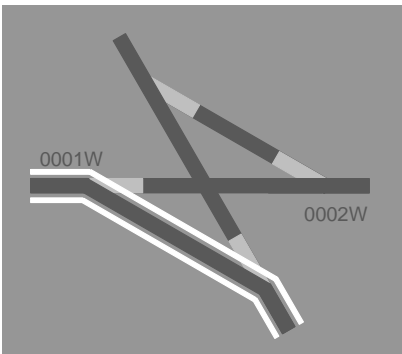
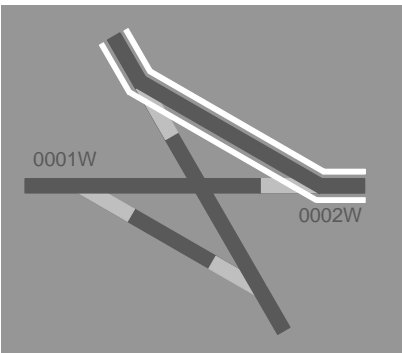
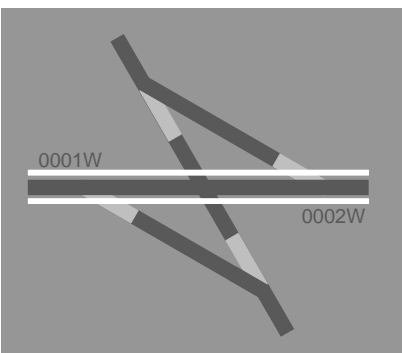
No.	Symbol	Description
[DS-33]		Points free, 0001W and 0002W in right position, main route (A-route, C-route or U-route)
[DS-34]		Points free, 0001W in right position and 0002W in left position, main route (A-route, C-route or U-route)
[DS-35]		Points free, 0001W in left position and 0002W in right position, main route (A-route, C-route or U-route)
[DS-36]		Points free, 0001W and 0002W in left position, main route (A-route, C-route or U-route)

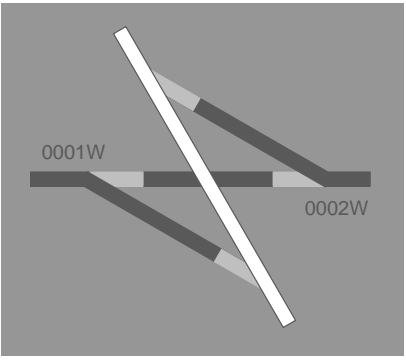
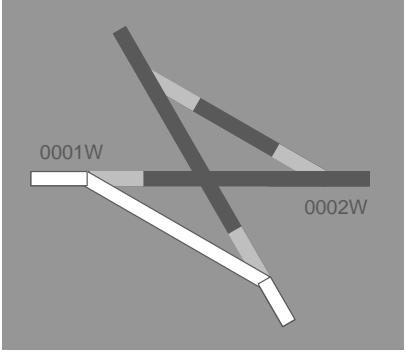
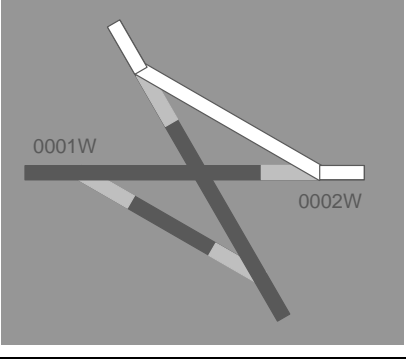
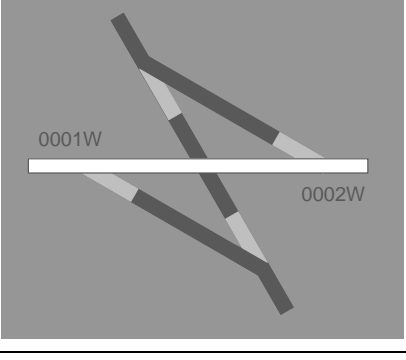
No.	Symbol	Description
[DS-37]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, main route (A-route, C-route or U-route)
[DS-38]		Points free, 0001W last call right position, lost detection or moving, and 0002W in left position, main route (A-route, C-route or U-route)
[DS-39]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, main route (A-route, C-route or U-route)
[DS-40]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, main route (A-route, C-route or U-route)

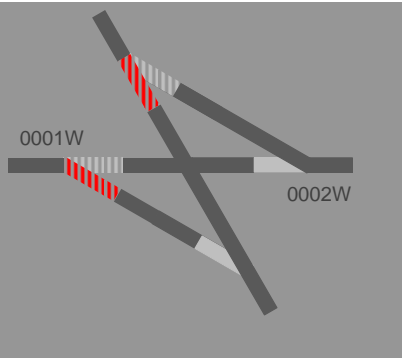
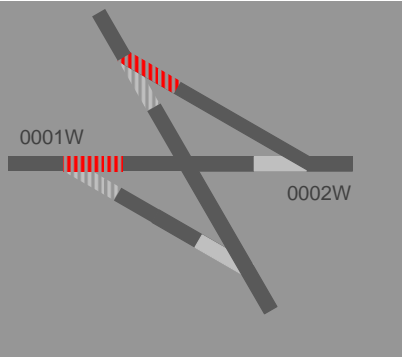
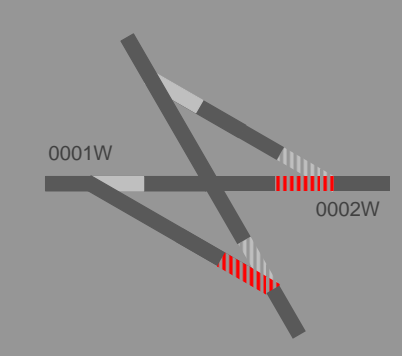
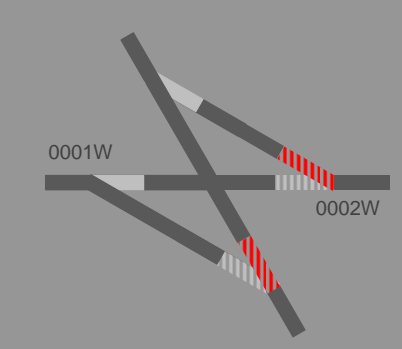
No.	Symbol	Description
[DS-41]		Points free, 0001W and 0002W in right position, shunt route (B-route)
[DS-42]		Points free, 0001W in right position and 0002W in left position, shunt route (B-route)
[DS-43]		Points free, 0001W in left position and 0002W in right position, shunt route (B-route)
[DS-44]		Points free, 0001W and 0002W in left position, shunt route (B-route)

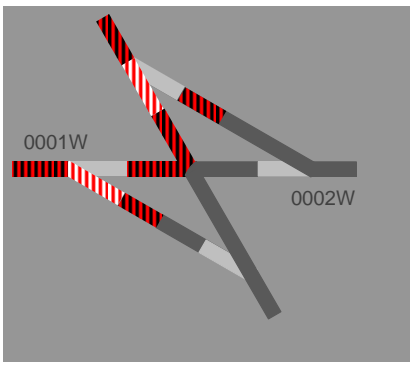
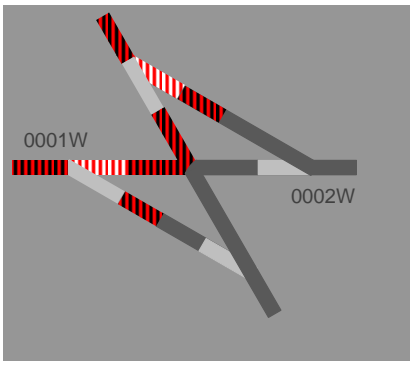
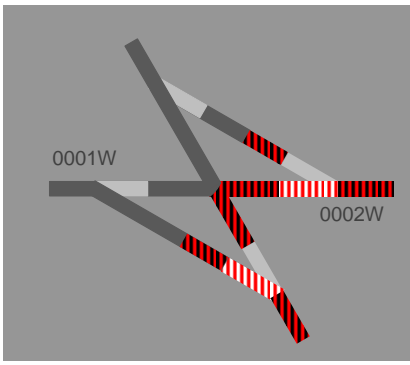
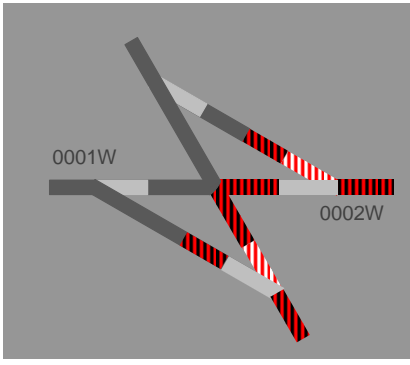
No.	Symbol	Description
[DS-45]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, shunt route (B-route)
[DS-46]		Points free, 0001W last call right position, lost detection or moving, and 0002W in left position, shunt route (B-route)
[DS-47]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, shunt route (B-route)
[DS-48]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, shunt route (B-route)

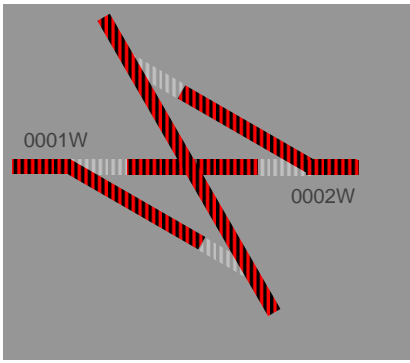
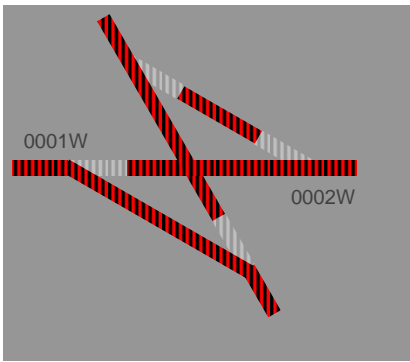
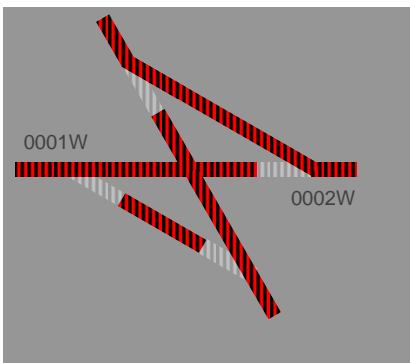
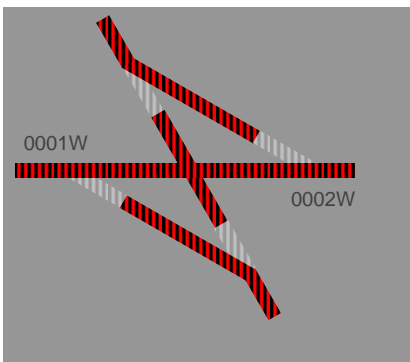
No.	Symbol	Description
[DS-49]		Points 0001W and 0002W in right position, emergency route (N-route)
[DS-50]		Point 0001W in right position and 0002W in left position, emergency route (N-route)
[DS-51]		Point 0001W in left position and 0002W in right position, emergency route (N-route)
[DS-52]		Points 0001W and 0002W in left position, emergency route (N-route)

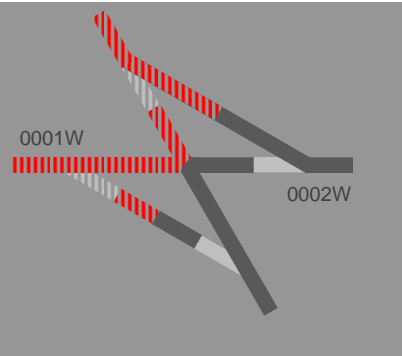
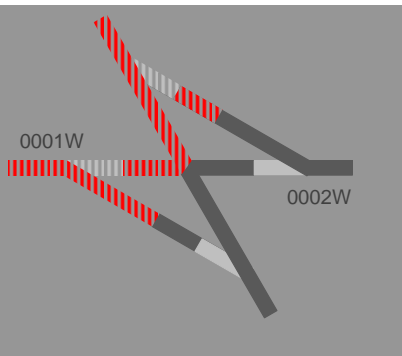
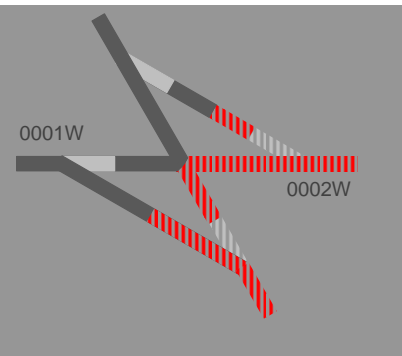
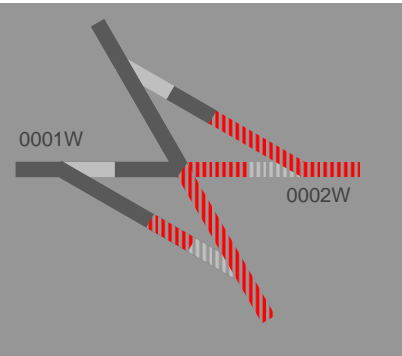
No.	Symbol	Description
[DS-53]		Points 0001W and 0002W in right position, route selection / alternative route preview
[DS-54]		Point 0001W in right position and 0002W in left position, route selection / alternative route preview
[DS-55]		Point 0001W in left position and 0002W in right position, route selection / alternative route preview
[DS-56]		Points 0001W and 0002W in left position, route selection / alternative route preview

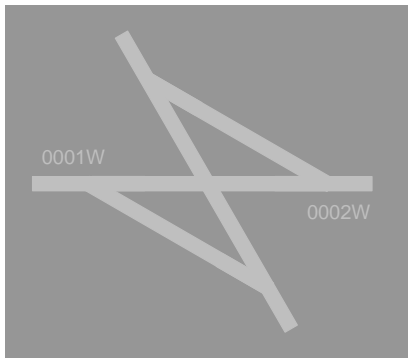
No.	Symbol	Description
Siemens		Alternative Route Points 0001W and 0002W in right position, alternative route preview
Siemens		Alternative Route Point 0001W in right position and 0002W in left position, alternative route preview
Siemens		Alternative Route Point 0001W in left position and 0002W in right position, alternative route preview
Siemens		Alternative Route Points 0001W and 0002W in left position, alternative route preview

No.	Symbol	Description
[DS-57]		<p>Point 0001W trailed, last call right position, e.g. point was in right position when it became “trailed” or was called to the right position by the first switch trailed point command</p>
[DS-58]		<p>Point 0001W trailed, last call left position, e.g. point was in left position when it became “trailed” or was called to the left position by the first switch trailed point command</p>
[DS-59]		<p>Point 0002W trailed, last call left position, e.g. point was in left position when it became “trailed” or was called to the left position by the first switch trailed point command</p>
[DS-60]		<p>Point 0002W trailed, last call right position, e.g. point was in right position when it became “trailed” or was called to the right position by the first switch trailed point command</p>

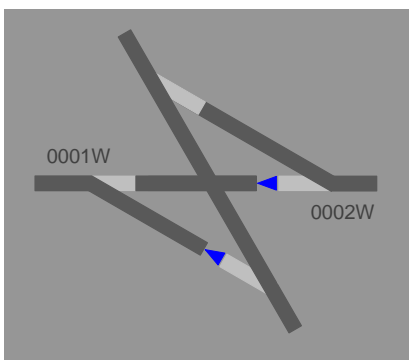
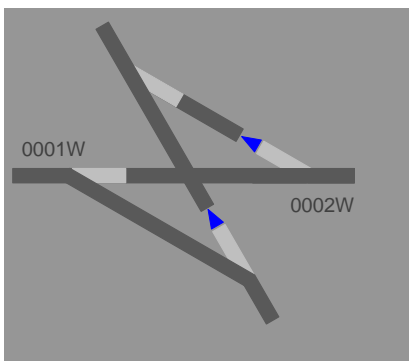
No.	Symbol	Description
Siemens		Points 0001W Passivated, last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
Siemens		Points 0001W Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
Siemens		Points 0002W Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
Siemens		Points 0002W Passivated, last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated

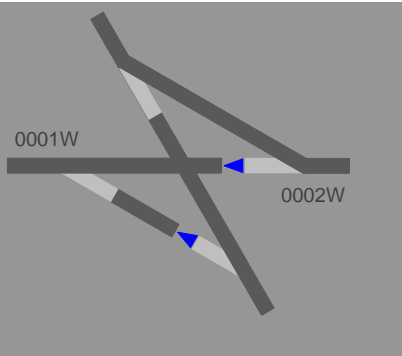
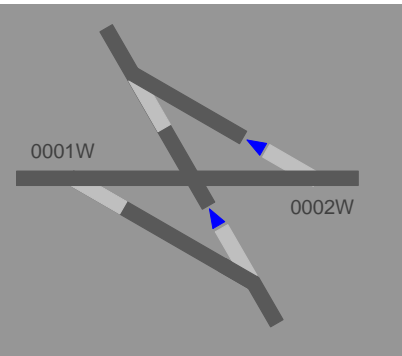
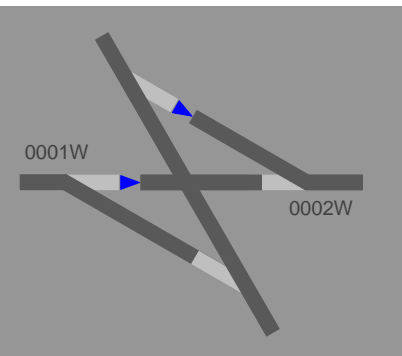
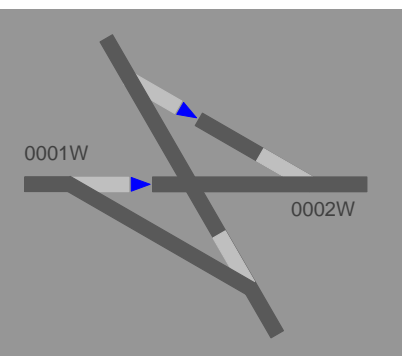
No.	Symbol	Description
[DS-61]		Points track section failed, points 0001W and 0002W in right position
[DS-62]		Points track section failed, point 0001W in right position and point 0002W in left position
[DS-63]		Points track section failed, point 0001W in left position and point 0002W in right position
[DS-64]		Points track section failed, points 0001W and 0002W in left position

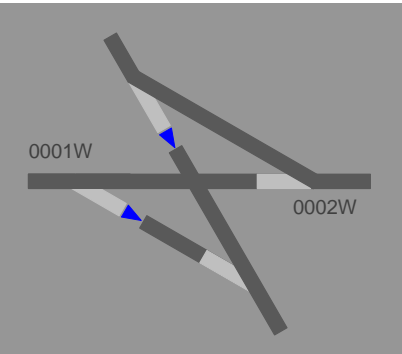
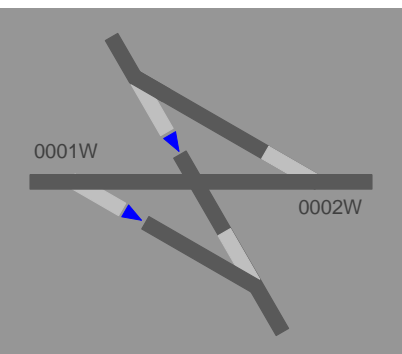
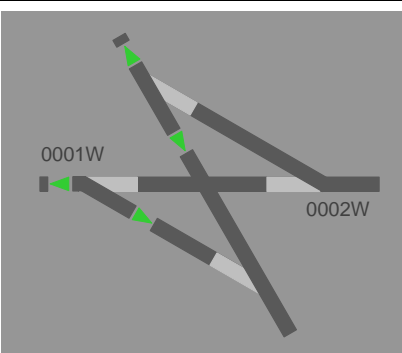
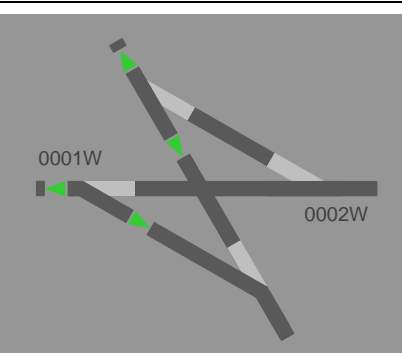
No.	Symbol	Description
[DS-65]		Point 0001W passivated, last call left position
[DS-66]		Point 0001W passivated, last call right position
[DS-67]		Point 0002W passivated, last call left position
[DS-68]		Point 0002W passivated, last call right position

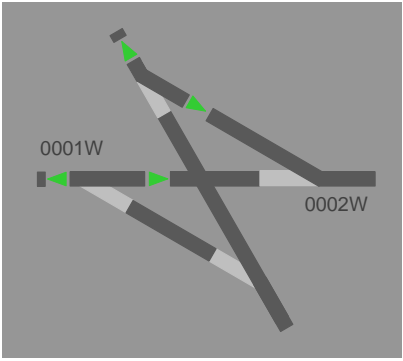
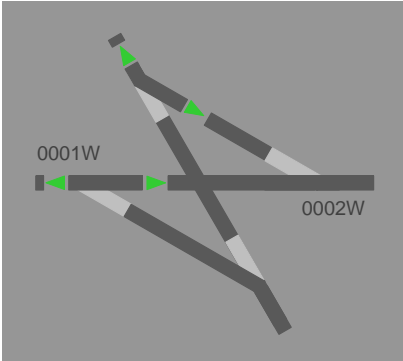
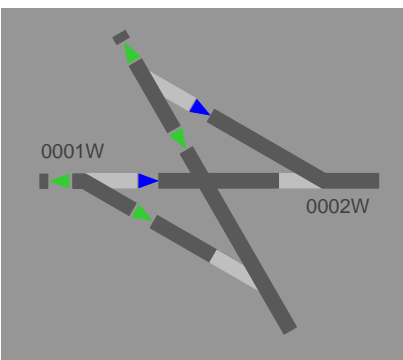
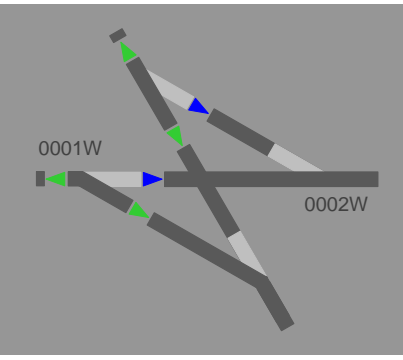
No.	Symbol	Description
[DS-69]		Points 0001W and 0002W without track free detection – Static points

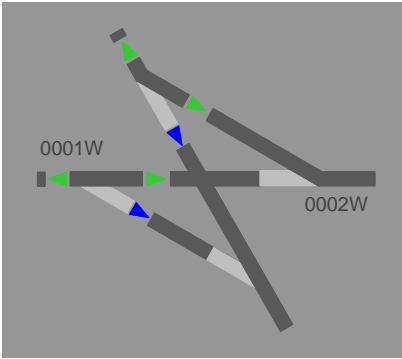
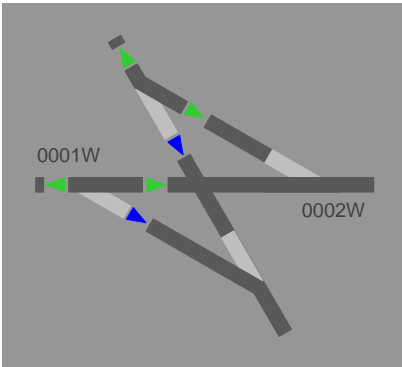
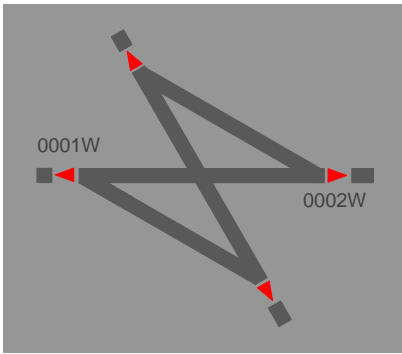
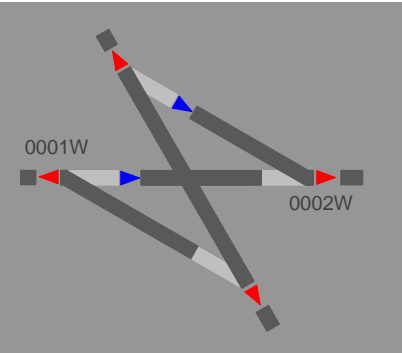
3.5.2 Inhibition and protection indicators / Crank handle and power failure indicators

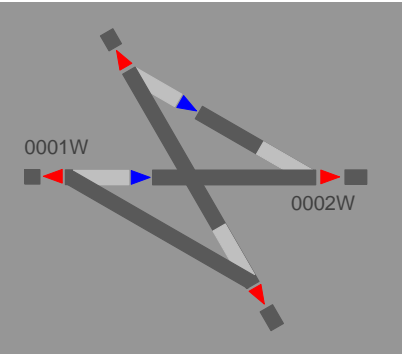
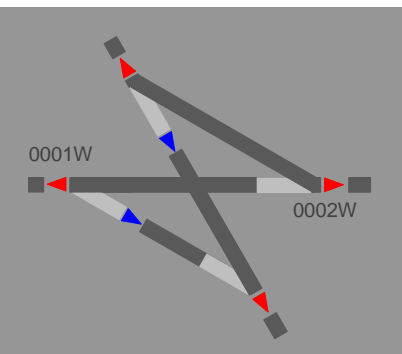
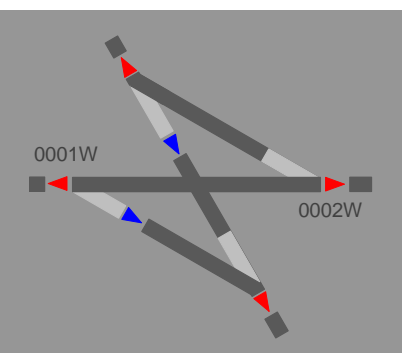
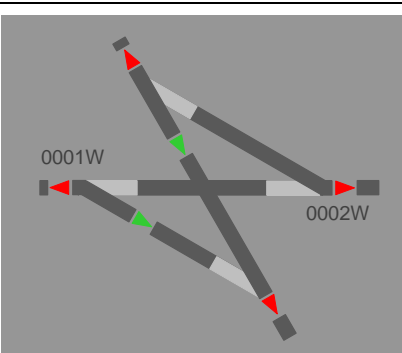
No.	Symbol	Description
[DS-70]		Points 0001W and 0002W in right position, flank protection over 0002W left legs
[DS-71]		Points 0001W in right position and 0002W in left position, flank protection over 0002W right legs

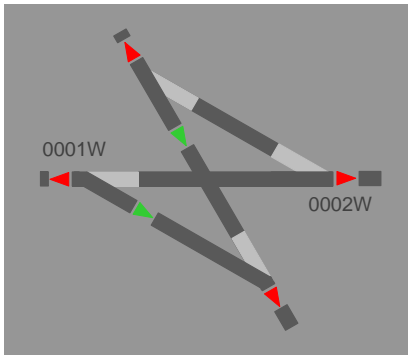
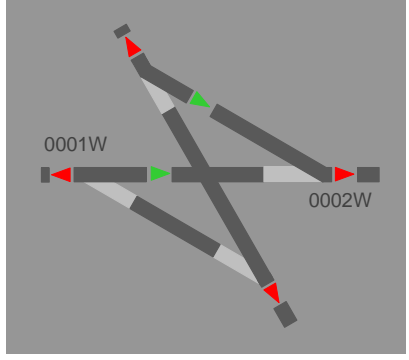
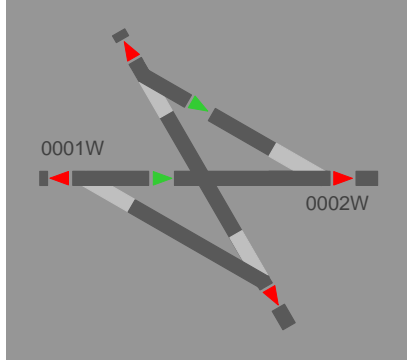
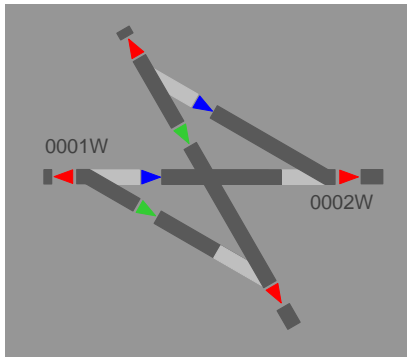
No.	Symbol	Description
[DS-72]		Points 0001W in left position and 0002W in right position, flank protection over 0002W left legs
[DS-73]		Points 0001W and 0002W in left position, flank protection over 0002W right legs
[DS-74]		Points 0001W and 0002W in right position, flank protection over 0001W left legs
[DS-75]		Points 0001W in right position and 0002W in left position, flank protection over 0001W left legs

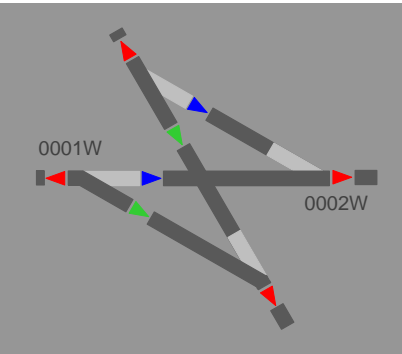
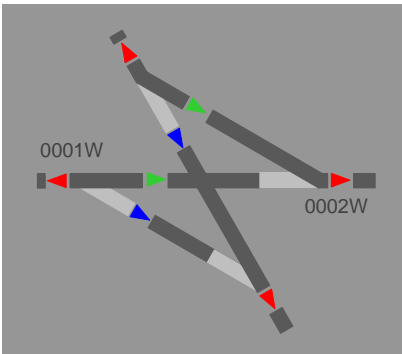
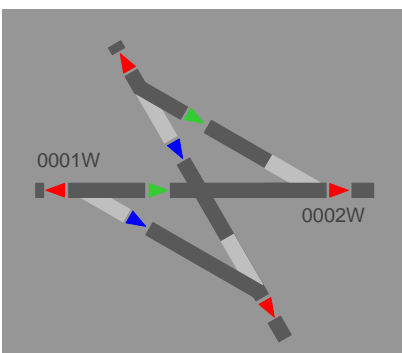
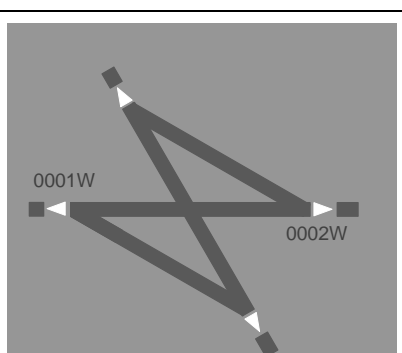
No.	Symbol	Description
[DS-76]		Points 0001W in left position and 0002W in right position, flank protection over 0001W right legs
[DS-77]		Points 0001W and 0002W in left position, flank protection over 0001W right legs
[DS-78]		Points 0001W and 0002W in right position, 0001W inhibited against throwing
[DS-79]		Points 0001W in right position and 0002W in left position, 0001W inhibited against throwing

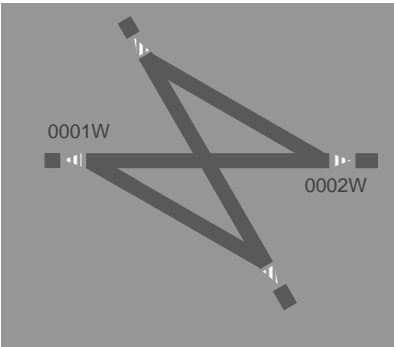
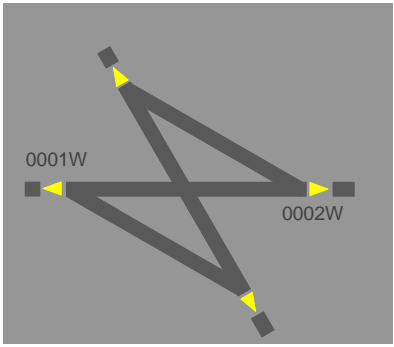
No.	Symbol	Description
[DS-80]		Points 0001W in left position and 0002W in right position, 0001W inhibited against throwing
[DS-81]		Points 0001W and 0002W in left position, 0001W inhibited against throwing
[DS-82]		Points 0001W and 0002W in right position, 0001W inhibited against throwing, flank protection over 0001W left legs
[DS-83]		Points 0001W in right position and 0002W in left position, 0001W inhibited against throwing, flank protection over 0001W left legs

No.	Symbol	Description
[DS-84]		Points 0001W in left position and 0002W in right position, 0001W inhibited against throwing, flank protection over 0001W right legs
[DS-85]		Points 0001W and 0002W in left position, 0001W inhibited against throwing, flank protection over 0001W right legs
[DS-86]		Points inhibited against route traversal
[DS-87]		Points 0001W and 0002W in right position, inhibited against route traversal, flank protection over 0001W left legs

No.	Symbol	Description
[DS-88]		Points 0001W in right position and 0002W in left position, points inhibited against route traversal, flank protection over 0001W left legs
[DS-89]		Points 0001W in left position and 0002W in right position, points inhibited against route traversal, flank protection over 0001W right legs
[DS-90]		Points 0001W and 0002W in left position, points inhibited against route traversal, flank protection over 0001W right legs
[DS-91]		Points 0001W and 0002W in right position, points inhibited against route traversal, point 0001W inhibited against throwing

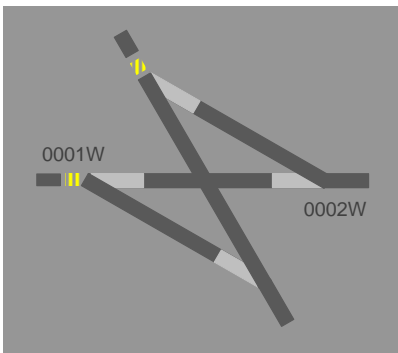
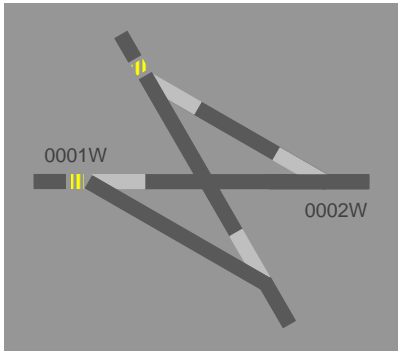
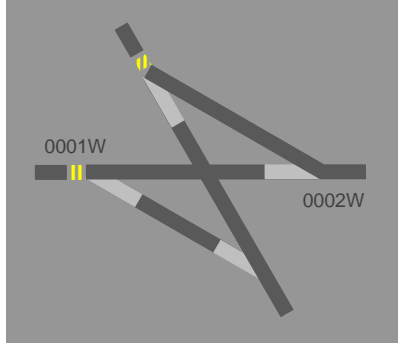
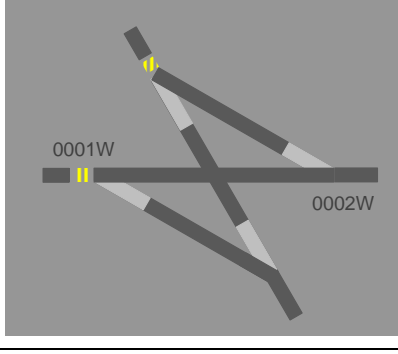
No.	Symbol	Description
[DS-92]		Points 0001W in right position and 0002W in left position, points inhibited against route traversal, point 0001W inhibited against throwing
[DS-93]		Points 0001W in left position and 0002W in right position, points inhibited against route traversal, 0001W inhibited against throwing
[DS-94]		Points 0001W and 0002W in left position, points inhibited against route traversal, 0001W inhibited against throwing
[DS-95]		Points 0001W and 0002W in right position, points inhibited against route traversal, point 0001W inhibited against throwing, flank protection over 0001W left legs

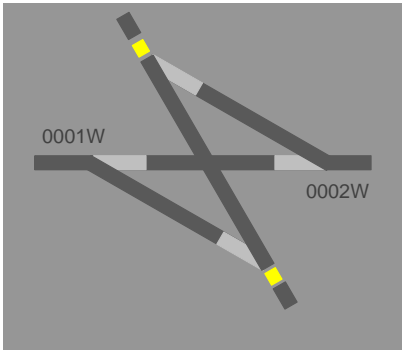
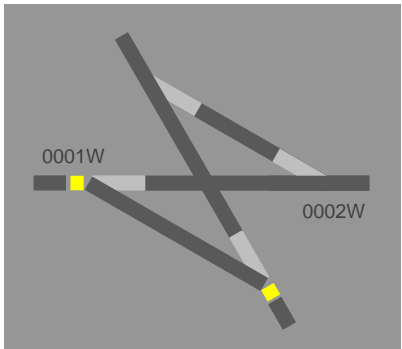
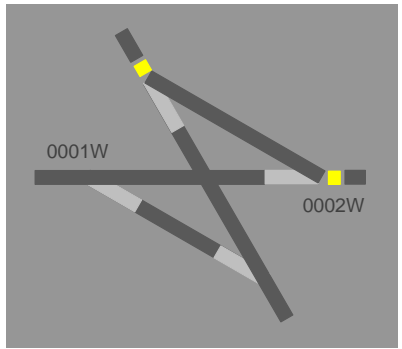
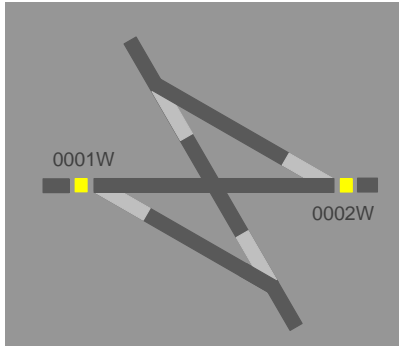
No.	Symbol	Description
[DS-96]		<p>Points 0001W in right position and 0002W in left position, points inhibited against route traversal, point 0001W inhibited against throwing, flank protection over 0001W left legs</p>
[DS-97]		<p>Points 0001W in left position and 0002W in right position, points inhibited against route traversal, 0001W inhibited against throwing, flank protection over 0001W right legs</p>
[DS-98]		<p>Points 0001W and 0002W in left position, points inhibited against route traversal, 0001W inhibited against throwing, flank protection over 0001W right legs</p>
[DS-99]		<p>Power failure not reset, independently of any other concurrent indications for protection, inhibited against throwing or inhibited against route traversal</p>

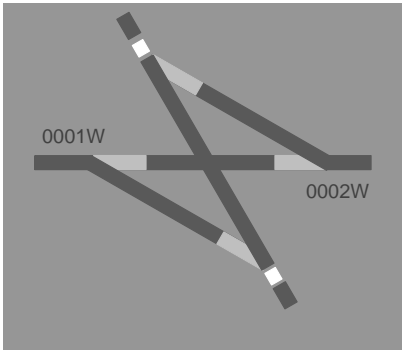
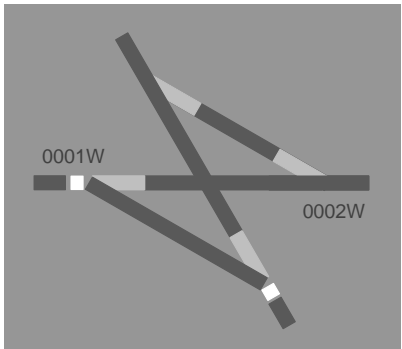
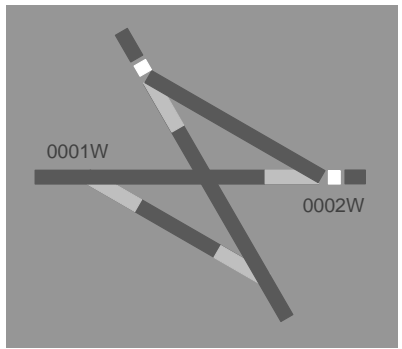
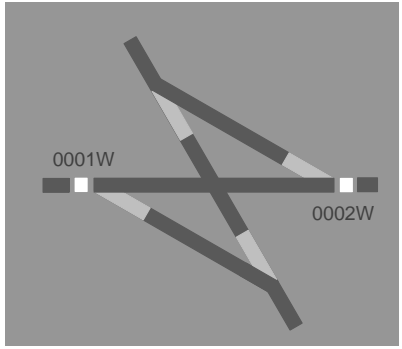
No.	Symbol	Description
[DS-100]		<p>Points power failure reset, timer running,</p> <p>independently of any other concurrent indications for protection, inhibited against throwing or inhibited against route traversal</p>
[DS-101]		<p>Crank handle release mode,</p> <p>independently of any other concurrent indications for protection, inhibited against throwing or inhibited against route traversal</p>

Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

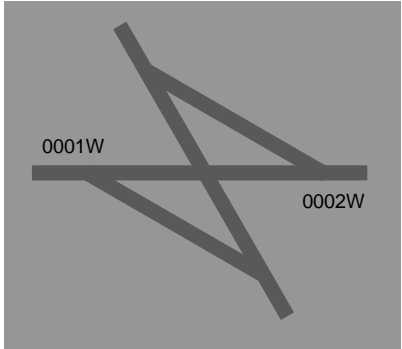
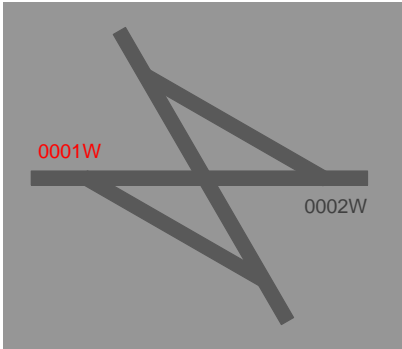
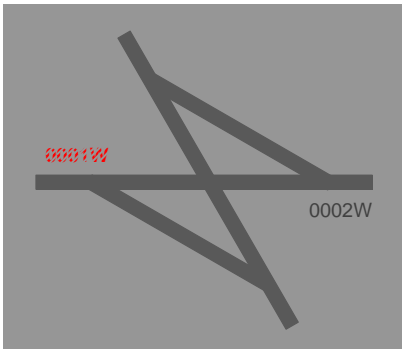
3.5.3 Lock indicator

No.	Symbol	Description
[DS-102]		Points 0001W and 0002W in right position, 0001W requested for switching
[DS-103]		Points 0001W in right position and 0002W in left position, 0001W requested for switching
[DS-104]		Points 0001W in left position and 0002W in right position, 0001W requested for switching
[DS-105]		Points 0001W and 0002W in left position, 0001W requested for switching

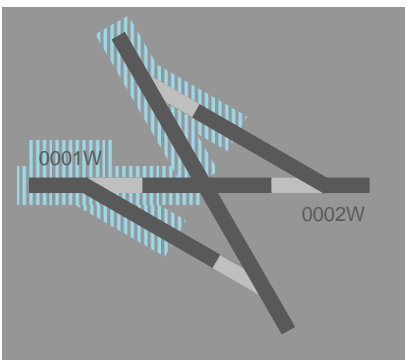
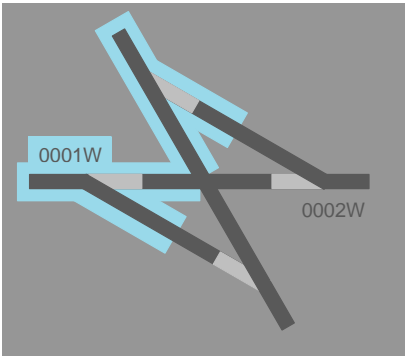
No.	Symbol	Description
[DS-106]		Points 0001W and 0002W in right position, part of the running path or overlap of a route locked
[DS-107]		Points 0001W in right position and 0002W in left position, part of the running path or overlap of a route locked
[DS-108]		Points 0001W in left position and 0002W in right position, part of the running path or overlap of a route locked
[DS-109]		Points 0001W and 0002W in left position, part of the running path or overlap of a route locked

No.	Symbol	Description
[DS-110]		Points 0001W and 0002W in right position, part of the running path or overlap of a route entered
[DS-111]		Points 0001W in right position and 0002W in left position, part of the running path or overlap of a route entered
[DS-112]		Points 0001W in left position and 0002W in right position, part of the running path or overlap of a route entered
[DS-113]		Points 0001W and 0002W in left position, part of the running path or overlap of a route entered

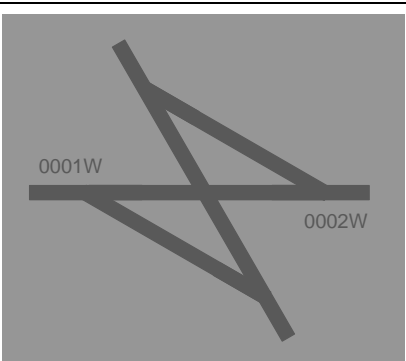
3.5.4 Double slip name

No.	Symbol	Description
[DS-114]		Points normal and available
[DS-115]		Point 0001W with hardware fault external to the interlocking. Includes the following faults: Point trailed or Point not supervised / lost detection
[DS-116]		Point 0001W with hardware fault in interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.5.5 Double slip highlight

No.	Symbol	Description
[DS-117]		Point 0001W highlighted for special operator commands. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[DS-118]		Point 0001W selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.5.6 Missing status information

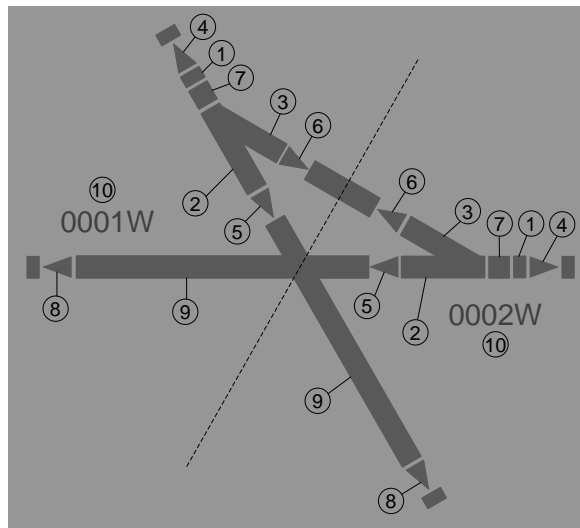
No.	Symbol	Description
[DS-119]		Points 0001W and 0002W without status information (Interface error between HMI and Logic Module)

Note: A double slip without status information is displayed in steady grey.

3.6 SINGLE SLIP

A single slip is made up of 2 elements; each element comprises of a point. The 2 elements have 2 connection points in between, one of them forming a crossing. The detection and the movement are individual per point.

Figure 10 – Single slip element layout



Similarly to the double slip, the general element indication of a single slip can be composed of various parts:

Tip elements (1), position indicators (2, 3), inhibition and protection/crank handle and power failure indicators (4, 5, 6), lock indicators (7), route inhibition/crank handle and power failure indicators (8), crossing elements (9) and point names/failure and passivation messages (10).

The colour priority in case of concurrent indications for the tip elements (1), position indicators (2, 3) and crossing elements (9) is: Red Flashing > Red Flashing on Black > Red > Green/Blue > Yellow > Black¹⁵.

¹⁵ Passivated > Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

The inhibition and protection/crank handle and power failure indicators (4, 5, 6) are used to display the inhibited against throwing and inhibited against route traversal indications as well as the protection indications and the crank handle and power failure indications. The colour priority in case of concurrent indications for the inhibition and protection/crank handle and power failure indicators at the point's tip (4) is: Yellow > White > Red > Green¹⁶.

The lock indicators (7) are used to display the route lock indications and also the switching request indication. The colour priority in case of concurrent indications for the lock indicators (7) is: Yellow flashing > Yellow/White¹⁷.

The route inhibition/crank handle and power failure indicators (8) are used in conjunction with the inhibition and protection/crank handle and power failure indicators at the point's tip (4) to display the inhibited against route traversal indication, as well as the crank handle and power failure indications. The colour priority in case of concurrent indications for the route inhibition/crank handle and power failure indicators (8) is: Yellow > White > Red¹⁸.

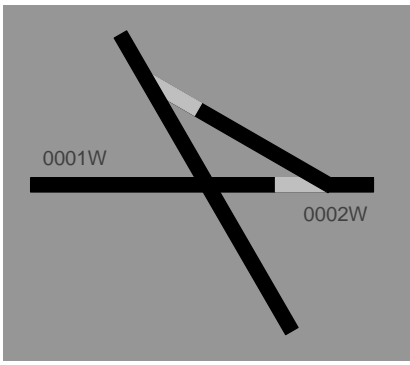
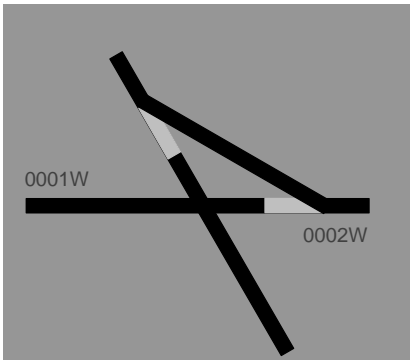
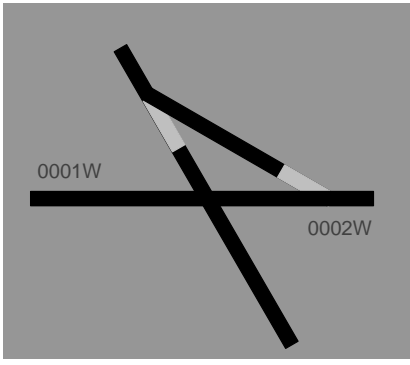
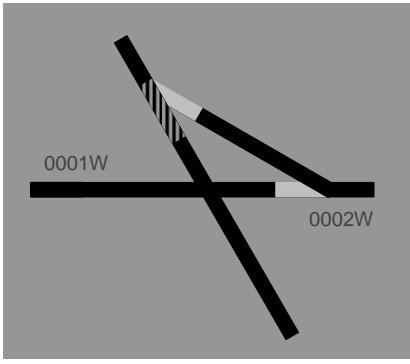
When a single slip is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the tip elements (1), position indicators (2, 3), lock indicators (7) and crossing elements (9).

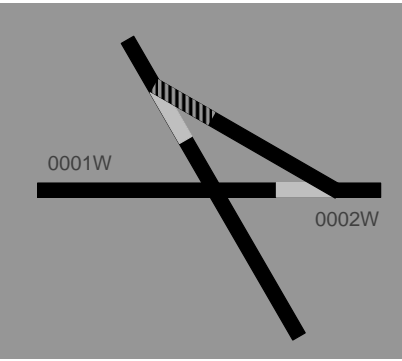
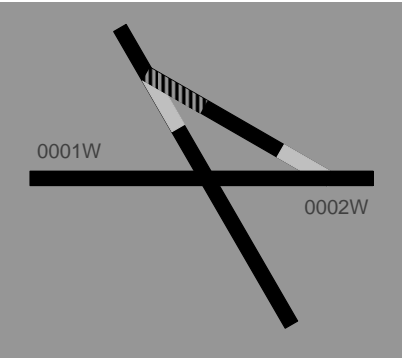
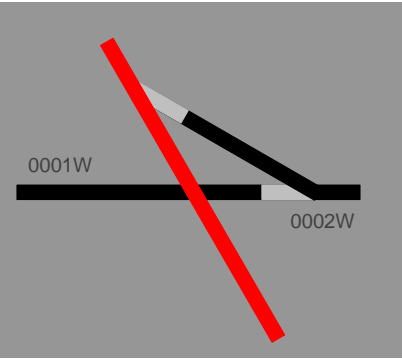
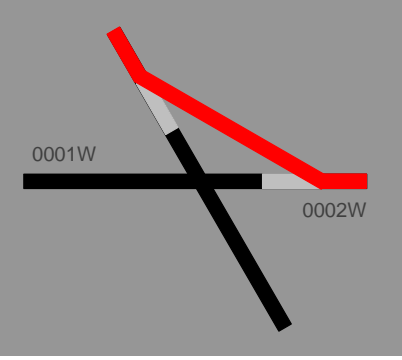
¹⁶ Crank handle > Power failure > Inhibited against route traversal > Inhibited against throwing.

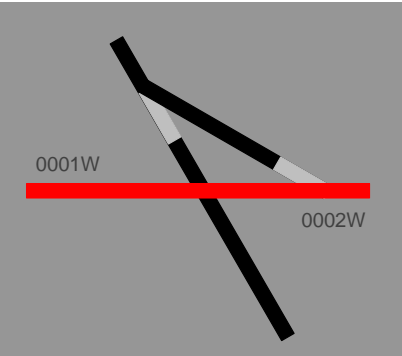
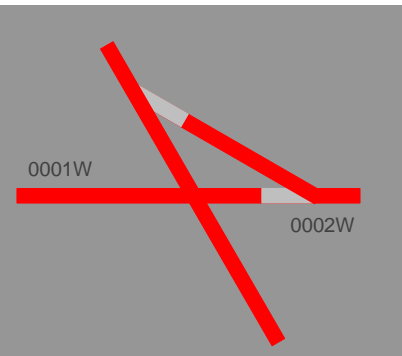
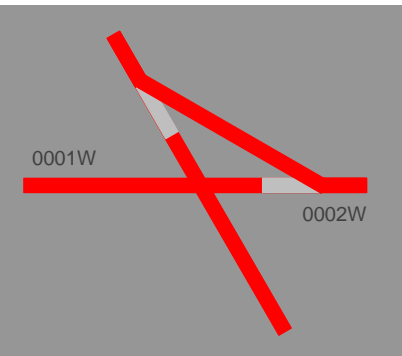
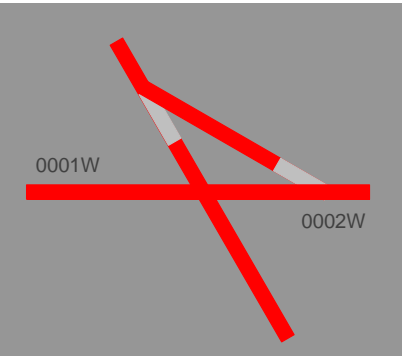
¹⁷ Request for switching > Route locked/Locked route entered.

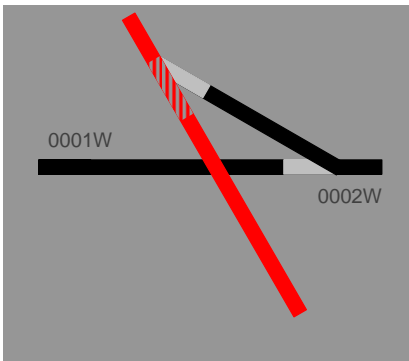
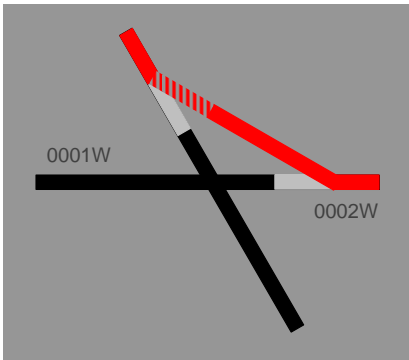
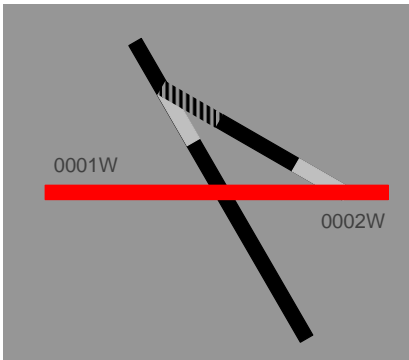
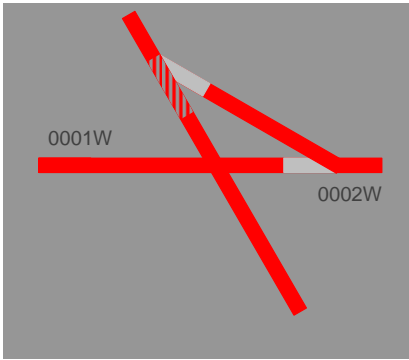
¹⁸ Crank handle > Power failure > Inhibited against route traversal.

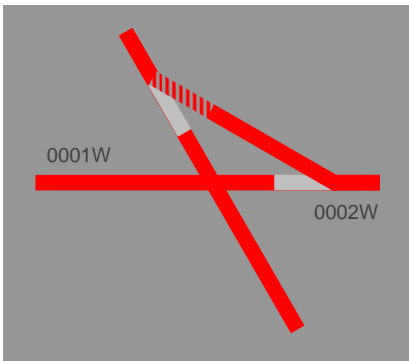
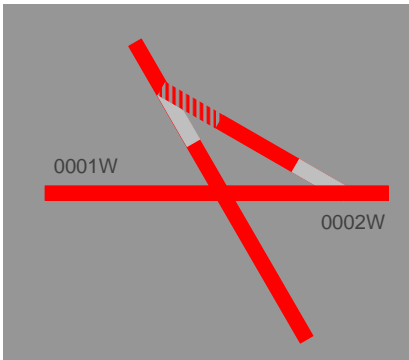
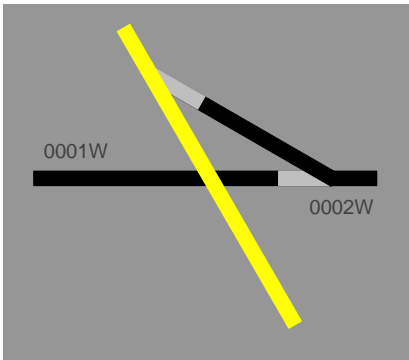
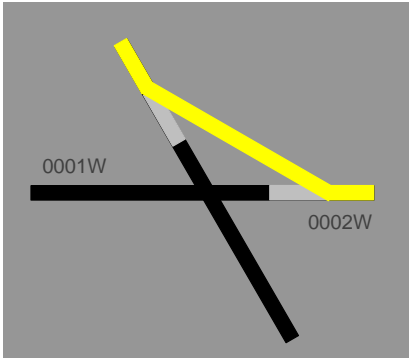
3.6.1 Single slip element

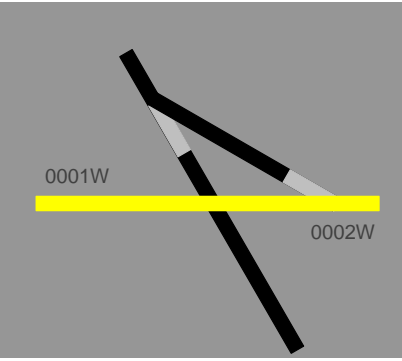
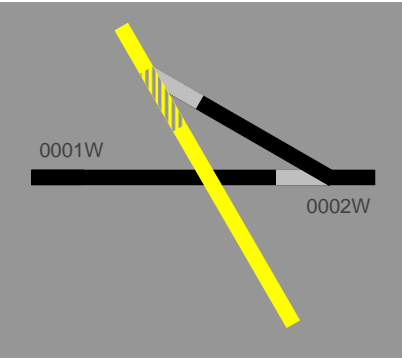
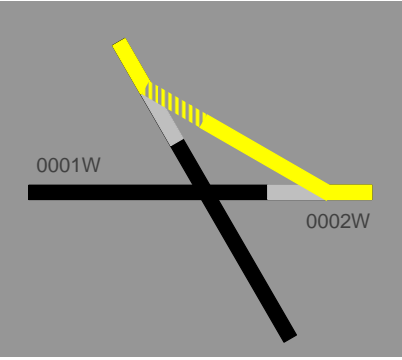
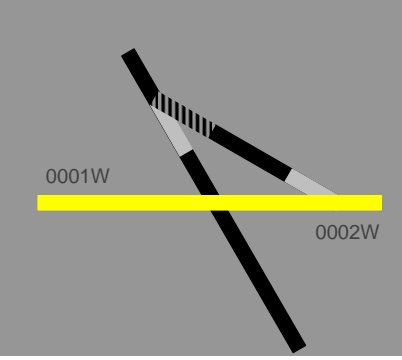
No.	Symbol	Description
[SS-1]		Points free, 0001W and 0002W in right position, no route set
[SS-2]		Points free, 0001W in left position and 0002W in right position, no route set
[SS-3]		Points free, 0001W and 0002W in left position, no route set
[SS-4]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, no route set

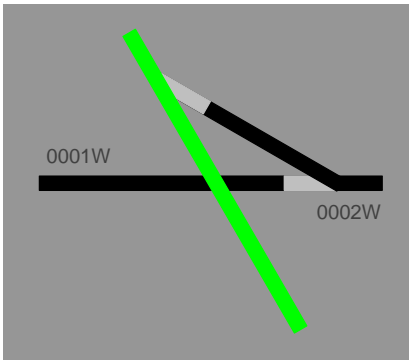
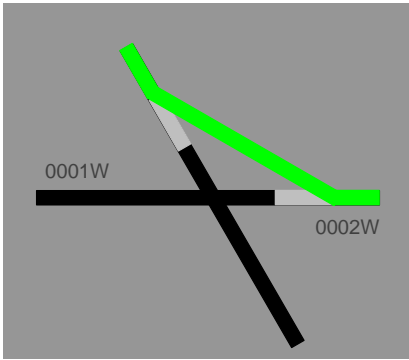
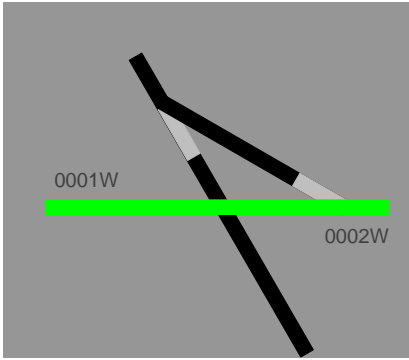
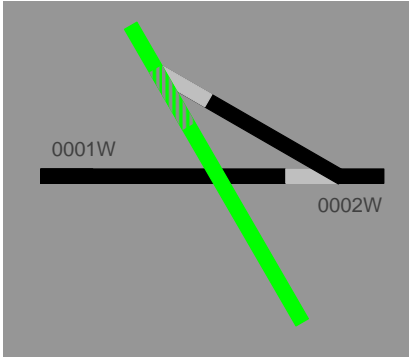
No.	Symbol	Description
[SS-5]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, no route set
[SS-6]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, no route set
[SS-7]		Points occupied with route set, 0001W and 0002W in right position
[SS-8]		Points occupied with route set, 0001W in left position and 0002W in right position

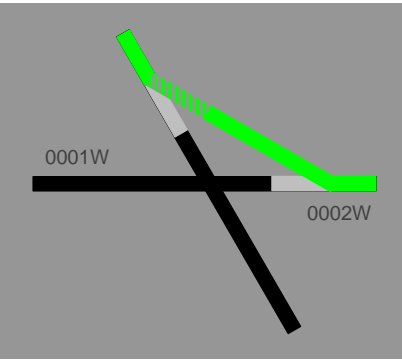
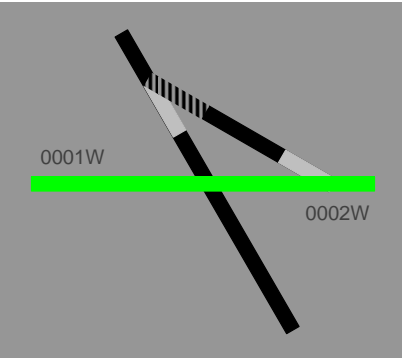
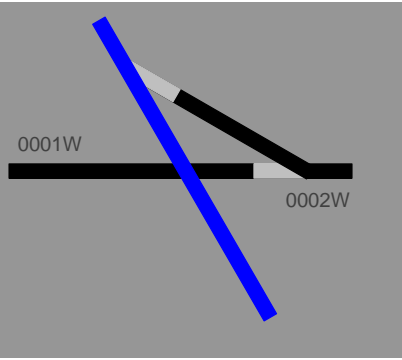
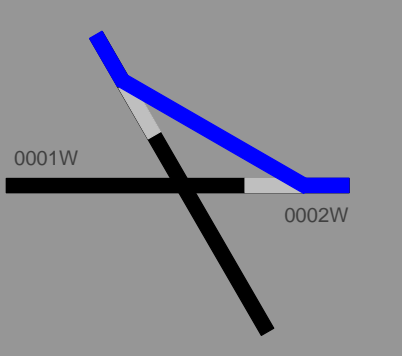
No.	Symbol	Description
[SS-9]		Points occupied with route set, 0001W and 0002W in left position
[SS-10]		Points occupied, 0001W and 0002W in right position, no route set
[SS-11]		Points occupied, 0001W in left position and 0002W in right position, no route set
[SS-12]		Points occupied, 0001W and 0002W in left position, no route set

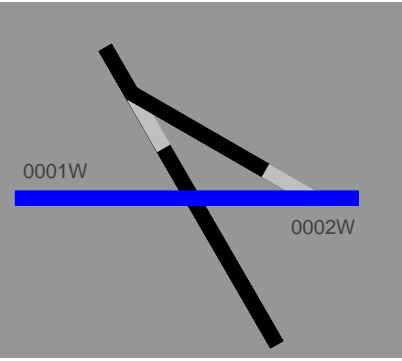
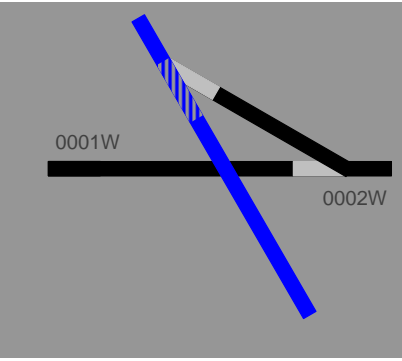
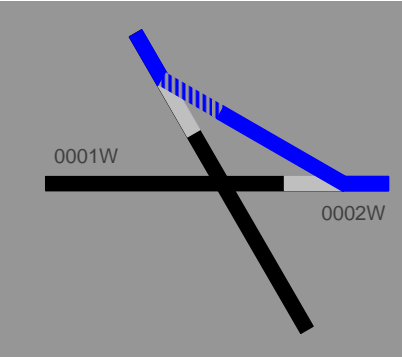
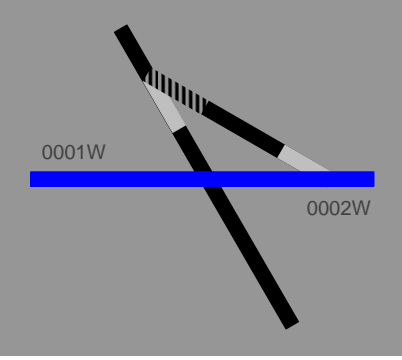
No.	Symbol	Description
[SS-13]		Points occupied with route set, 0001W last call right position, lost detection or moving, and 0002W in right position
[SS-14]		Points occupied with route set, 0001W last call left position, lost detection or moving, and 0002W in right position
[SS-15]		Points occupied with route set, 0001W last call left position, lost detection or moving, and 0002W in left position
[SS-16]		Points occupied, 0001W last call right position, lost detection or moving, and 0002W in right position, no route set

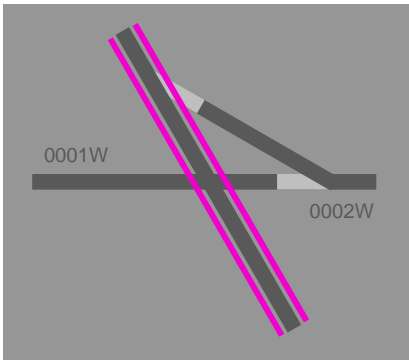
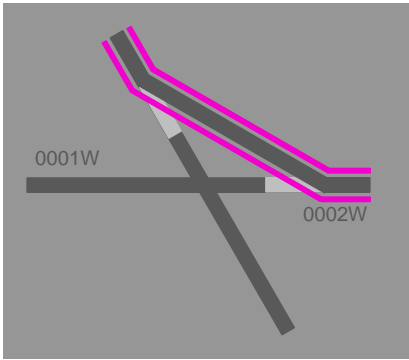
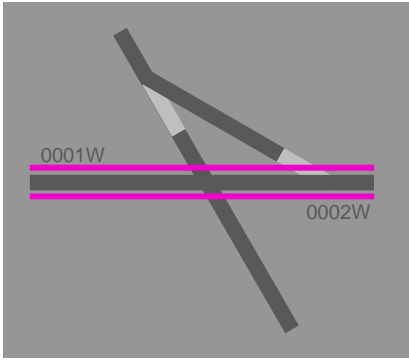
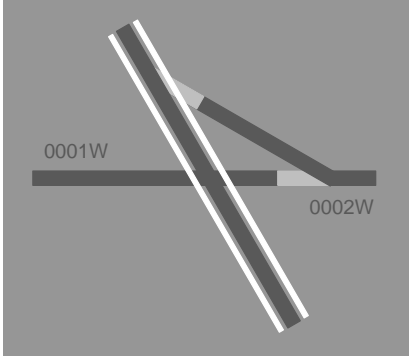
No.	Symbol	Description
[SS-17]		Points occupied, 0001W last call left position, lost detection or moving, and 0002W in right position, no route set
[SS-18]		Points occupied, 0001W last call left position, lost detection or moving, and 0002W in left position, no route set
[SS-19]		Points free, 0001W and 0002W in right position, route set / overlap
[SS-20]		Points free, 0001W in left position and 0002W in right position, route set / overlap

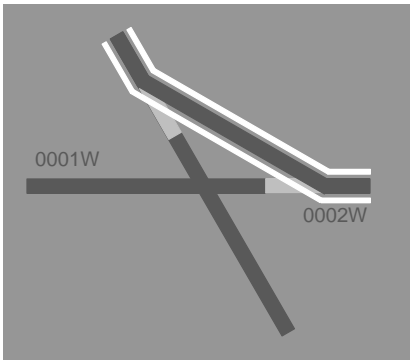
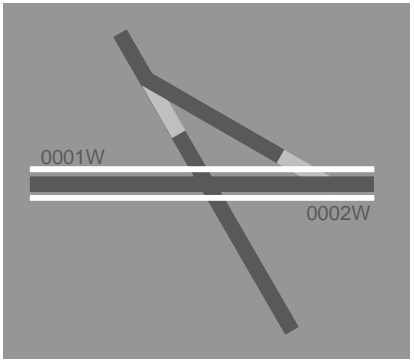
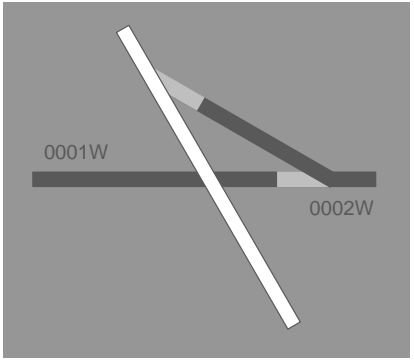
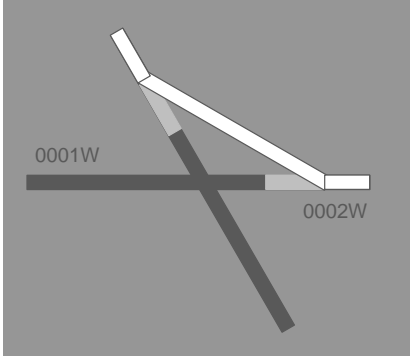
No.	Symbol	Description
[SS-21]		Points free, 0001W and 0002W in left position, route set / overlap
[SS-22]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, route set / overlap
[SS-23]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, route set / overlap
[SS-24]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, route set / overlap

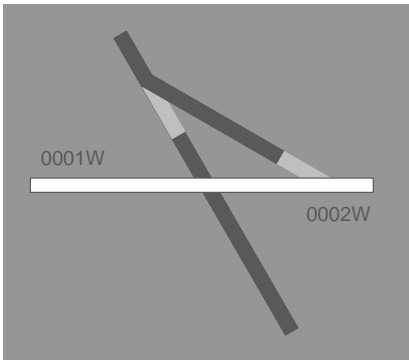
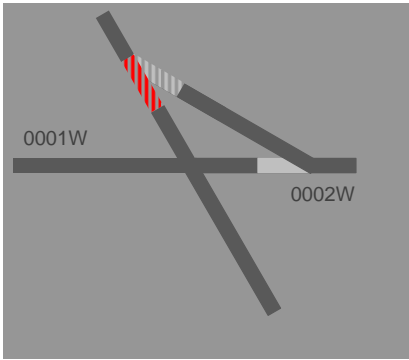
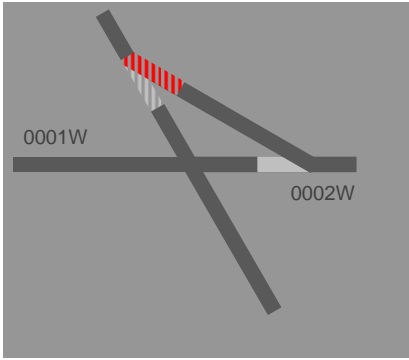
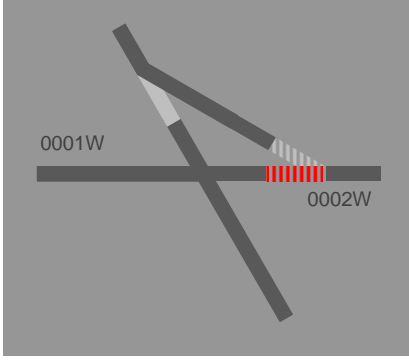
No.	Symbol	Description
[SS-25]		Points free, 0001W and 0002W in right position, main route (A-route, C-route or U-route)
[SS-26]		Points free, 0001W in left position and 0002W in right position, main route (A-route, C-route or U-route)
[SS-27]		Points free, 0001W and 0002W in left position, main route (A-route, C-route or U-route)
[SS-28]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, main route (A-route, C-route or U-route)

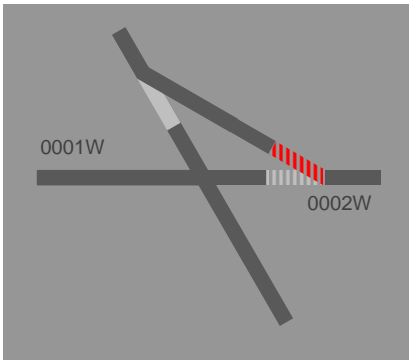
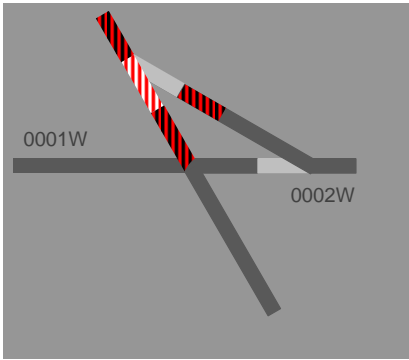
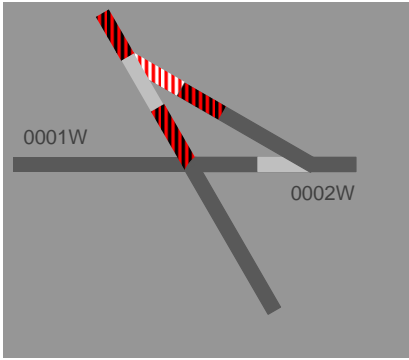
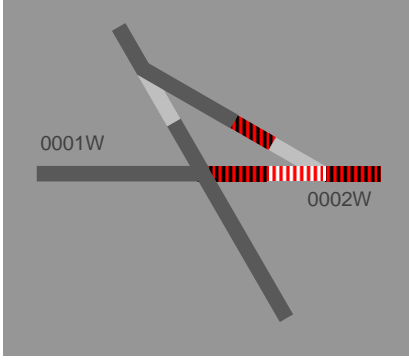
No.	Symbol	Description
[SS-29]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, main route (A-route, C-route or U-route)
[SS-30]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, main route (A-route, C-route or U-route)
[SS-31]		Points free, 0001W and 0002W in right position, shunt route (B-route)
[SS-32]		Points free, 0001W in left position and 0002W in right position, shunt route (B-route)

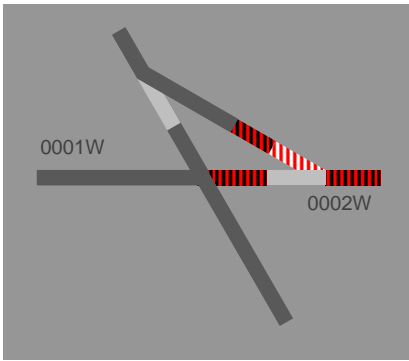
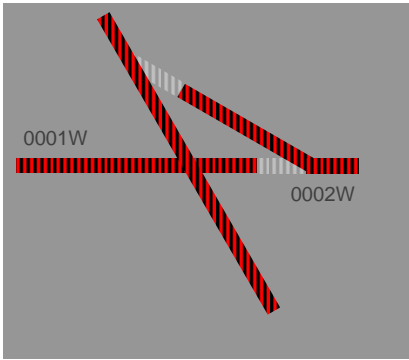
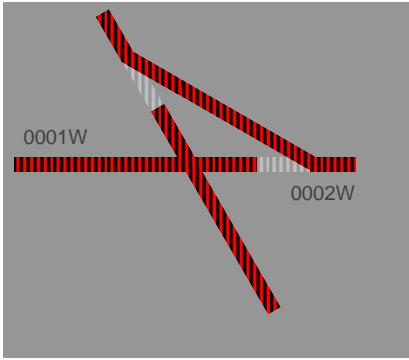
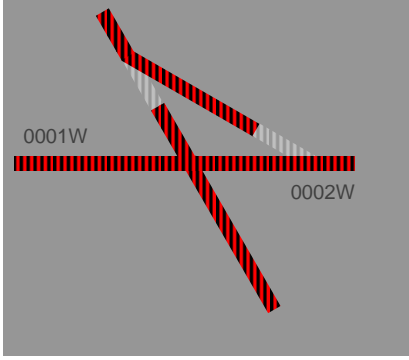
No.	Symbol	Description
[SS-33]		Points free, 0001W and 0002W in left position, shunt route (B-route)
[SS-34]		Points free, 0001W last call right position, lost detection or moving, and 0002W in right position, shunt route (B-route)
[SS-35]		Points free, 0001W last call left position, lost detection or moving, and 0002W in right position, shunt route (B-route)
[SS-36]		Points free, 0001W last call left position, lost detection or moving, and 0002W in left position, shunt route (B-route)

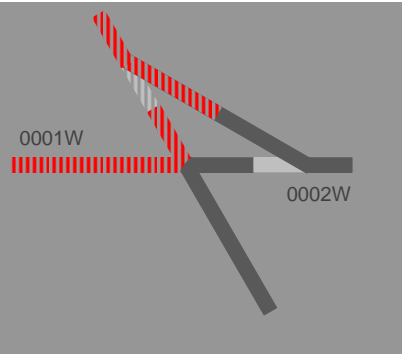
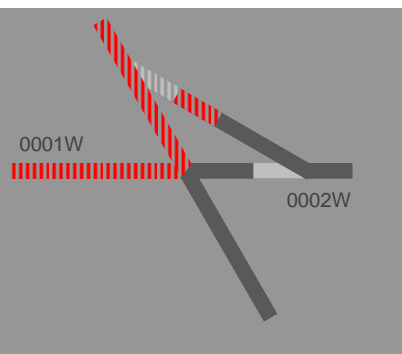
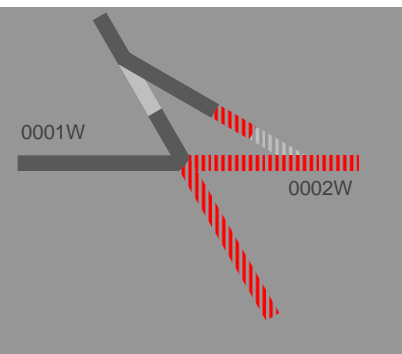
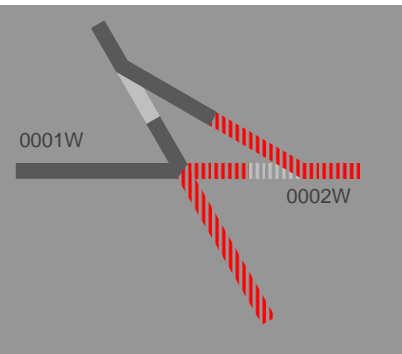
No.	Symbol	Description
[SS-37]		Points 0001W and 0002W in right position, emergency route (N-route)
[SS-38]		Point 0001W in left position and 0002W in right position, emergency route (N-route)
[SS-39]		Points 0001W and 0002W in left position, emergency route (N-route)
[SS-40]		Points 0001W and 0002W in right position, route selection / alternative route preview

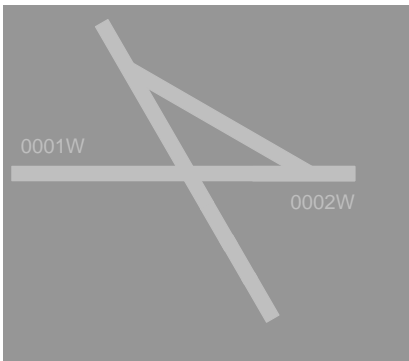
No.	Symbol	Description
[SS-41]		Point 0001W in left position and 0002W in right position, route selection / alternative route preview
[SS-42]		Points 0001W and 0002W in left position, route selection / alternative route preview
Siemens		alternative route preview
Siemens		alternative route preview

No.	Symbol	Description
Siemens		alternative route preview
[SS-43]		Point 0001W trailed, last call right position, e.g. point was in right position when it became "trailed" or was called to the right position by the first switch trailed point command
[SS-44]		Point 0001W trailed, last call left position, e.g. point was in left position when it became "trailed" or was called to the left position by the first switch trailed point command
[SS-45]		Point 0002W trailed, last call left position, e.g. point was in left position when it became "trailed" or was called to the left position by the first switch trailed point command

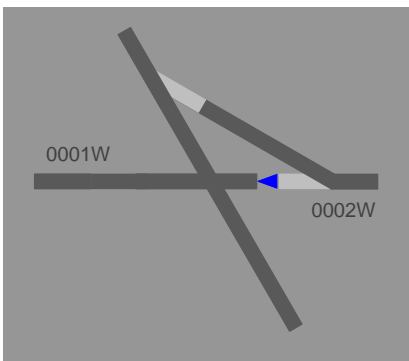
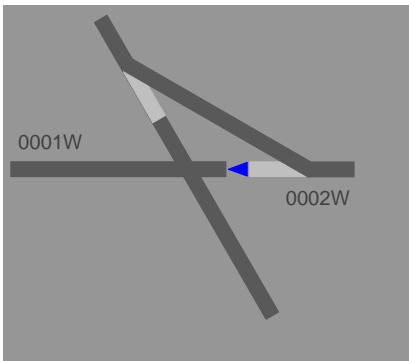
No.	Symbol	Description
[SS-46]		Point 0002W trailed, last call right position, e.g. point was in right position when it became “trailed” or was called to the right position by the first switch trailed point command
Siemens		Points 0001W Passivated, last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
Siemens		Points 0001W Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
Siemens		Points 0001W Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated

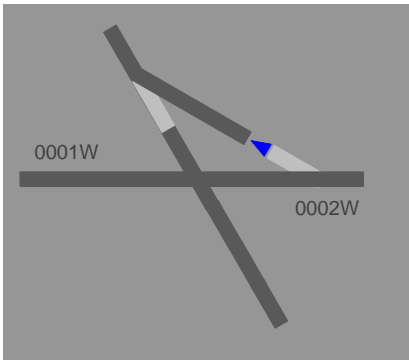
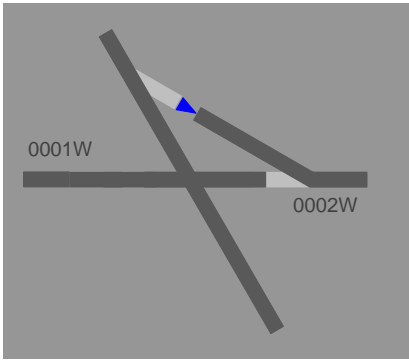
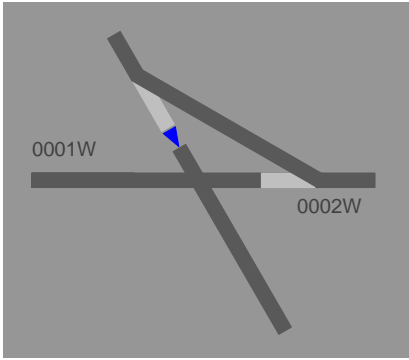
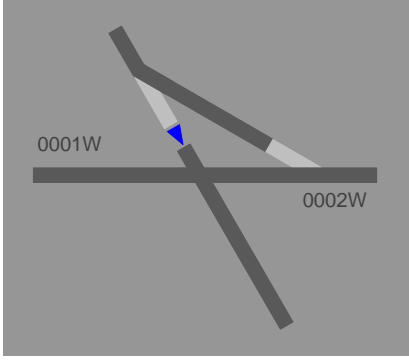
No.	Symbol	Description
Siemens		Points 0002W Passivated, last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
[SS-47]		Points track section failed, points 0001W and 0002W in right position
[SS-48]		Points track section failed, point 0001W in left position and point 0002W in right position
[SS-49]		Points track section failed, points 0001W and 0002W in left position

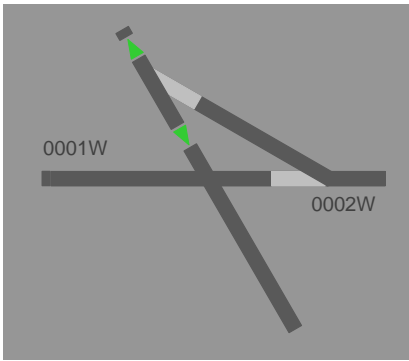
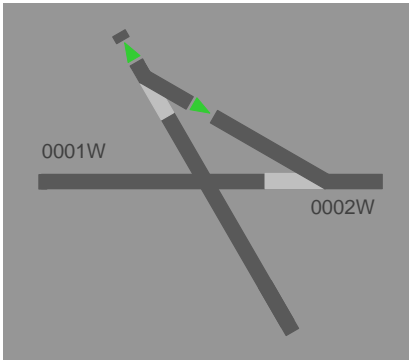
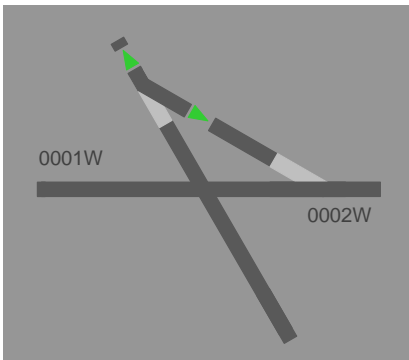
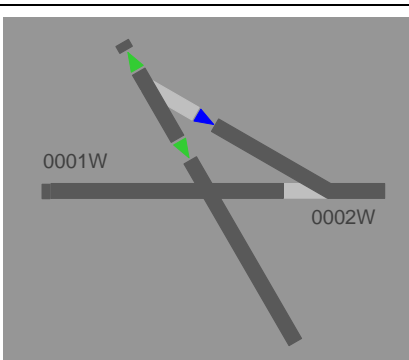
No.	Symbol	Description
[SS-50]		Point 0001W passivated, last call left position
[SS-51]		Point 0001W passivated, last call right position
[SS-52]		Point 0002W passivated, last call left position
[SS-53]		Point 0002W passivated, last call right position

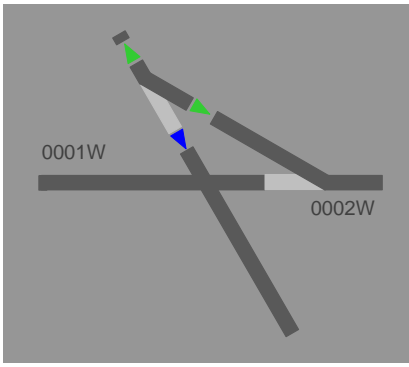
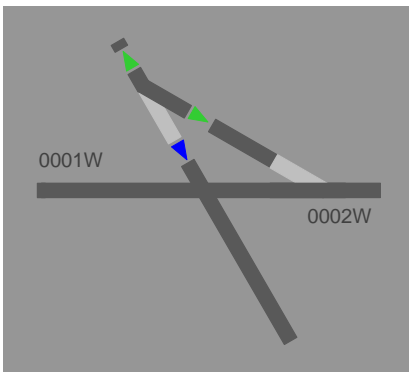
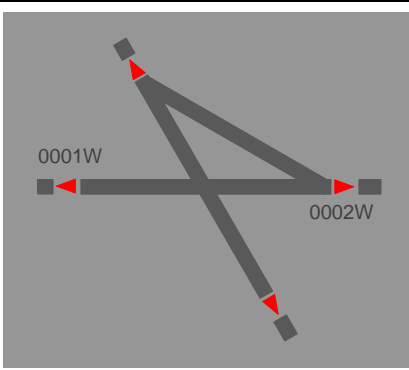
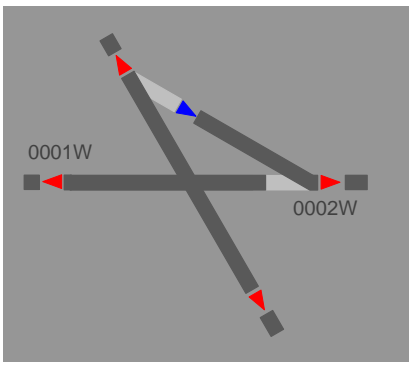
No.	Symbol	Description
[SS-54]		Points 0001W and 0002W without track free detection – Static points

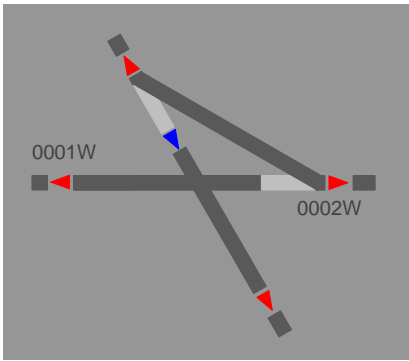
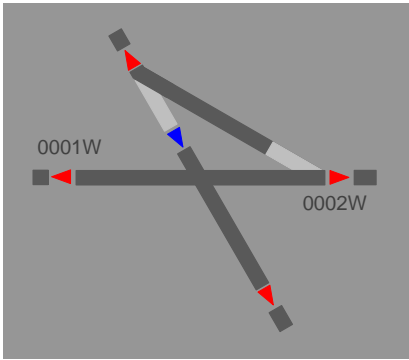
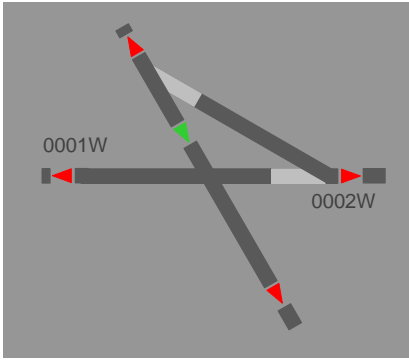
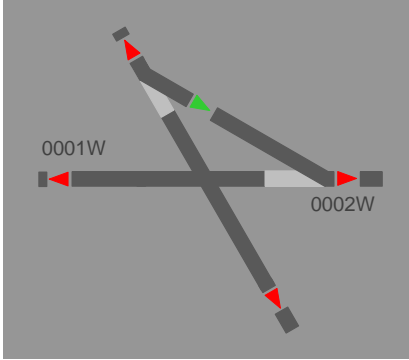
3.6.2 Inhibition and protection indicators / Crank handle and power failure indicators

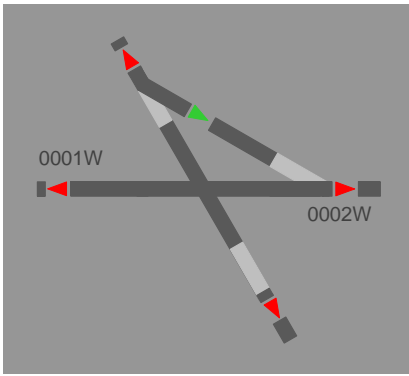
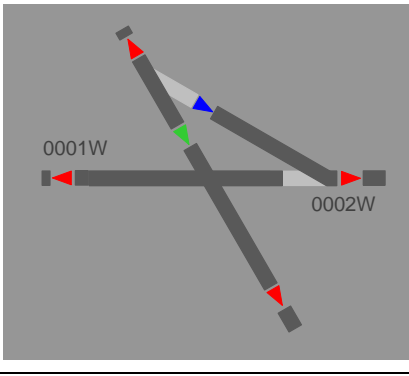
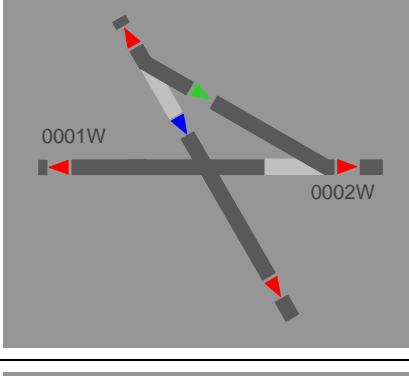
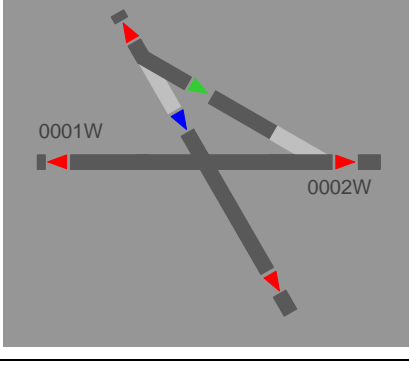
No.	Symbol	Description
[SS-55]		Points 0001W and 0002W in right position, flank protection over 0002W left leg
[SS-56]		Points 0001W in left position and 0002W in right position, flank protection over 0002W left leg

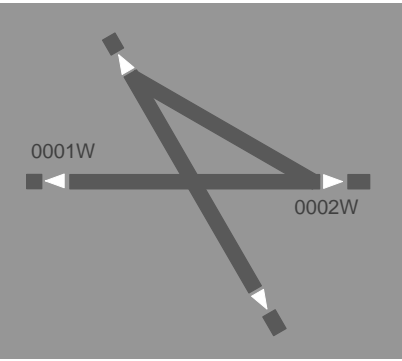
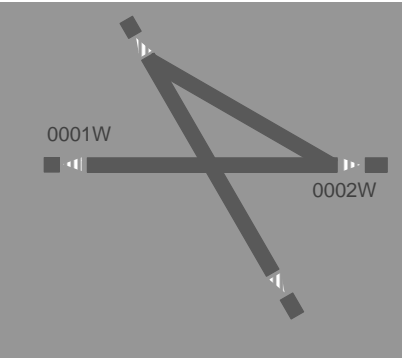
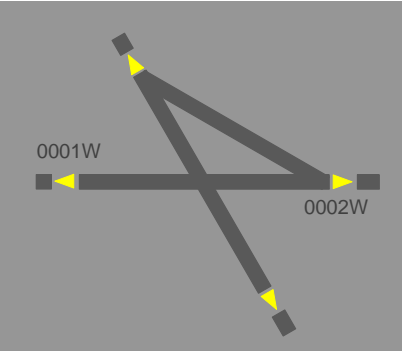
No.	Symbol	Description
[SS-57]		Points 0001W and 0002W in left position, flank protection over 0002W right leg
[SS-58]		Points 0001W and 0002W in right position, flank protection over 0001W left leg
[SS-59]		Points 0001W in left position and 0002W in right position, flank protection over 0001W right leg
[SS-60]		Points 0001W and 0002W in left position, flank protection over 0001W right leg

No.	Symbol	Description
[SS-61]		Points 0001W and 0002W in right position, 0001W inhibited against throwing
[SS-62]		Points 0001W in left position and 0002W in right position, 0001W inhibited against throwing
[SS-63]		Points 0001W and 0002W in left position, 0001W inhibited against throwing
[SS-64]		Points 0001W and 0002W in right position, 0001W inhibited against throwing, flank protection over 0001W left leg

No.	Symbol	Description
[SS-65]		Points 0001W in left position and 0002W in right position, 0001W inhibited against throwing, flank protection over 0001W right leg
[SS-66]		Points 0001W and 0002W in left position, 0001W inhibited against throwing, flank protection over 0001W right leg
[SS-67]		Points inhibited against route traversal
[SS-68]		Points 0001W and 0002W in right position, inhibited against route traversal, flank protection over 0001W left leg

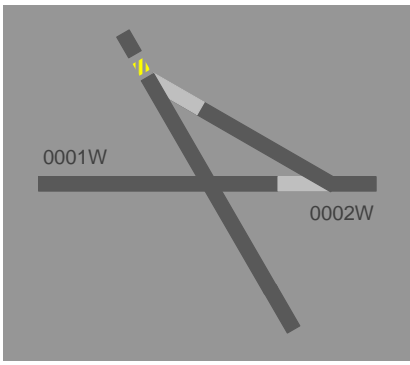
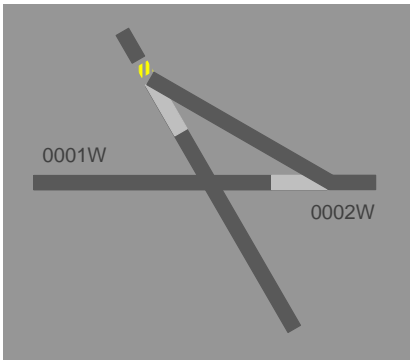
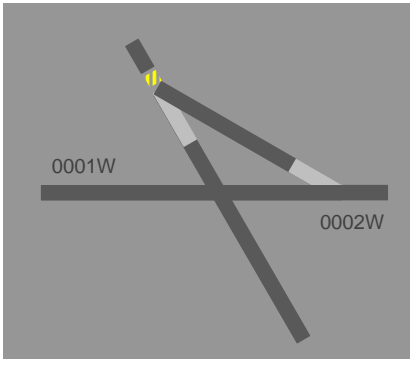
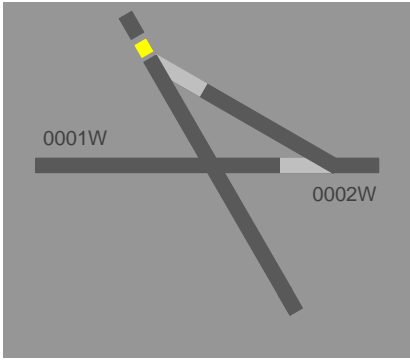
No.	Symbol	Description
[SS-69]		Points 0001W in left position and 0002W in right position, points inhibited against route traversal, flank protection over 0001W right leg
[SS-70]		Points 0001W and 0002W in left position, points inhibited against route traversal, flank protection over 0001W right leg
[SS-71]		Points 0001W and 0002W in right position, points inhibited against route traversal, point 0001W inhibited against throwing
[SS-72]		Points 0001W in left position and 0002W in right position, points inhibited against route traversal, 0001W inhibited against throwing

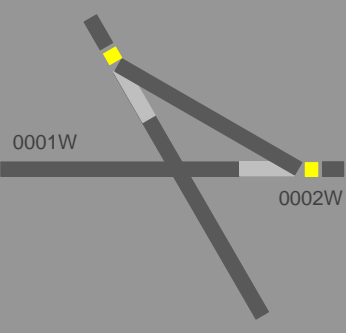
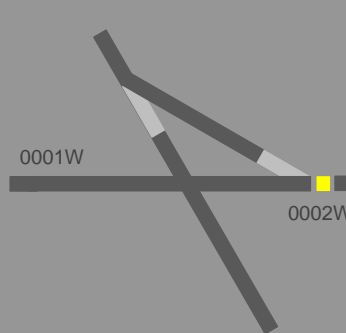
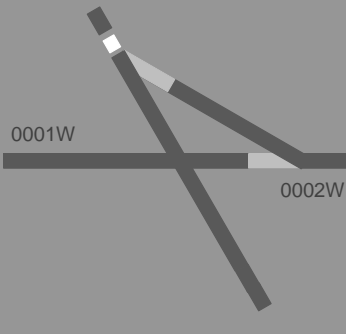
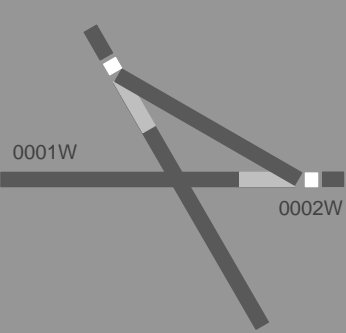
No.	Symbol	Description
[SS-73]		Points 0001W and 0002W in left position, points inhibited against route traversal, 0001W inhibited against throwing
[SS-74]		Points 0001W and 0002W in right position, points inhibited against route traversal, point 0001W inhibited against throwing, flank protection over 0001W left leg
[SS-75]		Points 0001W in left position and 0002W in right position, points inhibited against route traversal, 0001W inhibited against throwing, flank protection over 0001W right leg
[SS-76]		Points 0001W and 0002W in left position, points inhibited against route traversal, 0001W inhibited against throwing, flank protection over 0001W right leg

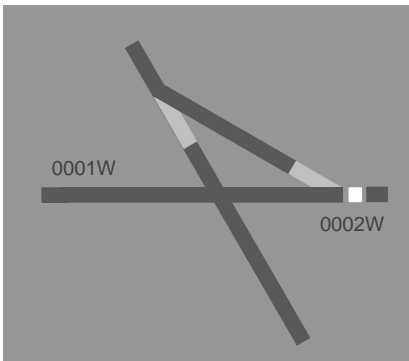
No.	Symbol	Description
[SS-77]		<p>Power failure not reset,</p> <p>independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal</p>
[SS-78]		<p>Points power failure reset, timer running,</p> <p>independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal</p>
[SS-79]		<p>Crank handle release mode,</p> <p>independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal</p>

Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

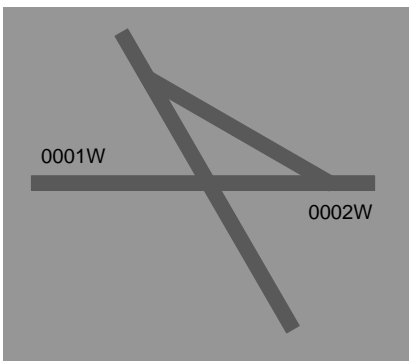
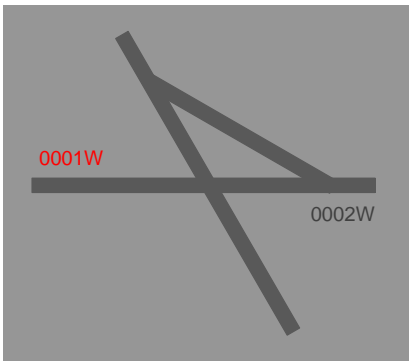
3.6.3 Lock indicator

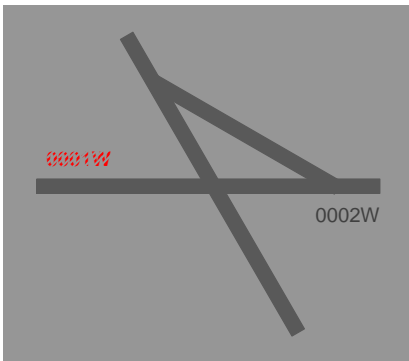
No.	Symbol	Description
[SS-80]		Points 0001W and 0002W in right position, 0001W requested for switching
[SS-81]		Points 0001W in left position and 0002W in right position, 0001W requested for switching
[SS-82]		Points 0001W and 0002W in left position, 0001W requested for switching
[SS-83]		Points 0001W and 0002W in right position, part of the running path or overlap of a route locked

No.	Symbol	Description
[SS-84]		Points 0001W in left position and 0002W in right position, part of the running path or overlap of a route locked
[SS-85]		Points 0001W and 0002W in left position, part of the running path or overlap of a route locked
[SS-86]		Points 0001W and 0002W in right position, part of the running path or overlap of a route entered
[SS-87]		Points 0001W in left position and 0002W in right position, part of the running path or overlap of a route entered

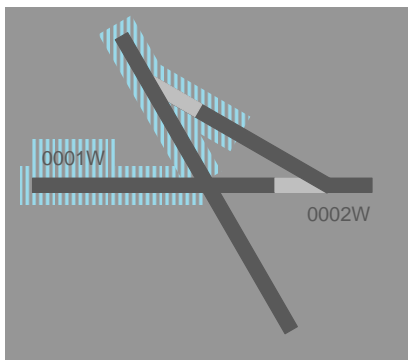
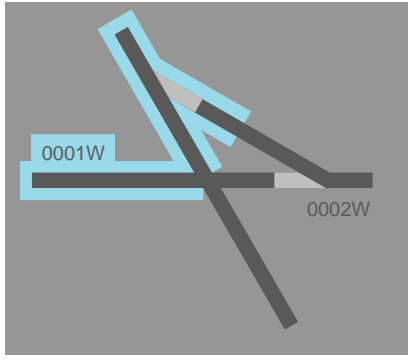
No.	Symbol	Description
[SS-88]		Points 0001W and 0002W in left position, part of the running path or overlap of a route entered

3.6.4 Single slip name

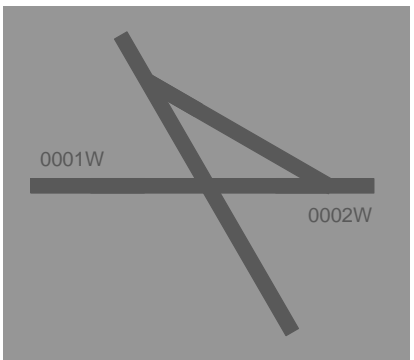
No.	Symbol	Description
[SS-89]		Points normal and available
[SS-90]		<p>Point 0001W with hardware fault external to the interlocking.</p> <p>Includes the following faults: Point trailed or Point not supervised / lost detection</p>

No.	Symbol	Description
[SS-91]		Point 0001W with hardware fault in interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.6.5 Single slip highlight

No.	Symbol	Description
[SS-92]		Point 0001W highlighted for special operator commands. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[SS-93]		Point 0001W selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.6.6 Missing status information

No.	Symbol	Description
[SS-94]		Points 0001W and 0002W without status information (Interface error between HMI and Logic Module)

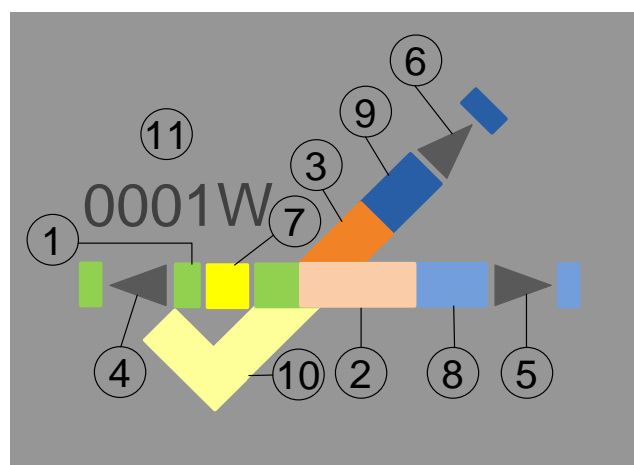
Note: A single slip without status information is displayed in steady grey.

3.7 DERAILER

The general element indication of a derailer can be composed of various parts:

Tip element (1), position indicators (2, 3), inhibition and protection/crank handle and power failure indicators (4, 5, 6), lock indicator (7), WFK indicators (8, 9), derailer indicator (10) and point name/failure and passivation messages (11).

Figure 11 – Derailer element layout



The colour priority in case of concurrent indications for the tip element (1), position indicators (2, 3) and WFK indicators (8, 9) is: Red Flashing > Red Flashing on Black > Red > Green/Blue > Yellow > Black¹⁹.

The inhibition and protection/crank handle and power failure indicators (4, 5, 6) are used to display the inhibited against throwing and inhibited against route traversal indications as well as the protection indications and the crank handle and power failure indications. The colour priority in case of concurrent indications for the inhibition and protection / crank handle and power failure indicators at the derailer's legs (5, 6) is: Yellow > White > Blue/Green > Red²⁰. The colour priority in case of concurrent indications for the inhibition and protection / crank handle and power failure indicators at the derailer's tip (4) is: Yellow > White > Red > Green²¹.

The lock indicator (7) is used to display the route lock indications and also the switching request indication. The colour priority in case of concurrent indications for the lock indicator (7) is: Yellow flashing > Yellow/White²².

The WFK indicators (8, 9) are used to display the configured WFK information. The WFK information (red flashing) has the highest colour priority in case of concurrent indications for the WFK indicators (8, 9). The WFK information doesn't override any indication for the inhibition and protection / crank handle and power failure indicators at the derailer's legs (5, 6).

The derailer indicator (10) allows to distinguish between the derailer and a normal point.

When a derailer is simultaneously used in the overlap of a route and in the running path of the following route, the route running path indications override the overlap indications for the tip element (1), position indicators (2, 3), lock indicator (7) and WFK indicators (8, 9).

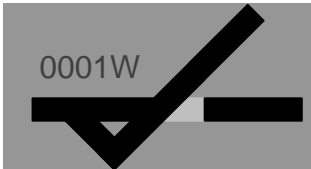
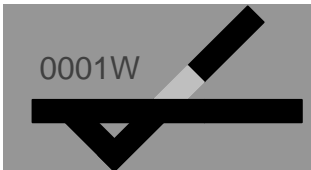
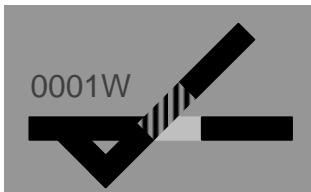
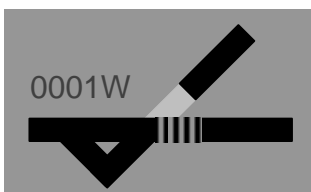
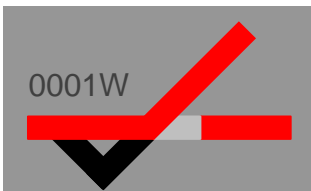
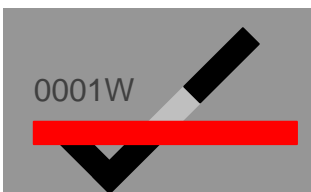
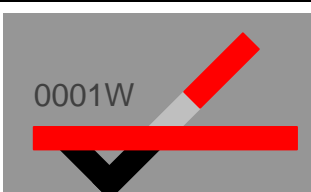
¹⁹ Passivated / WFK > Track section failure > Occupied > Main/Shunt route > Route set/Overlap > Free.

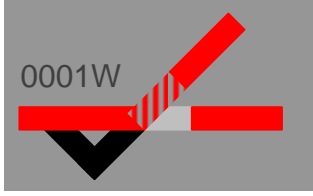
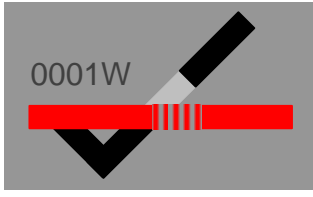
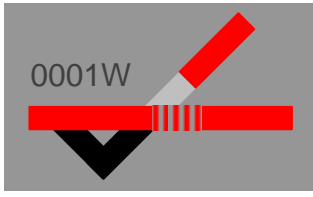

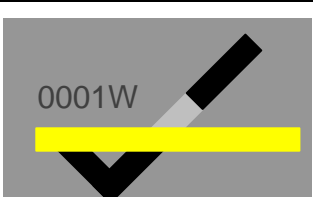
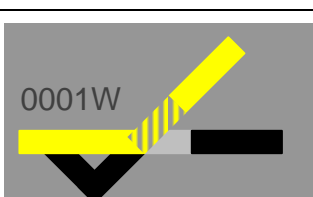
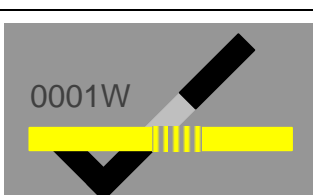
²⁰ Crank handle > Power failure > Flank protection/Inhibited against throwing > Inhibited against route traversal.

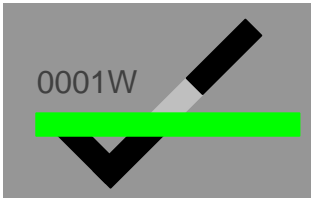
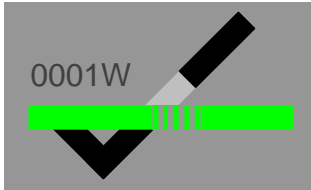
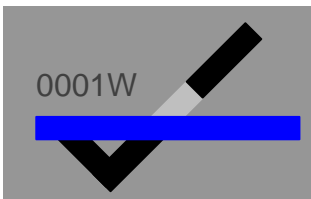
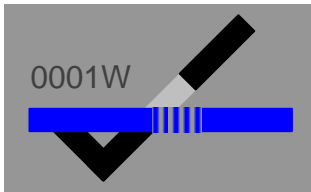
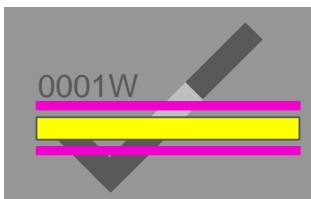
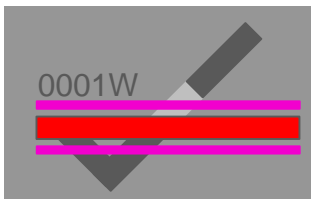

²¹ Crank handle > Power failure > Inhibited against route traversal > Inhibited against throwing.

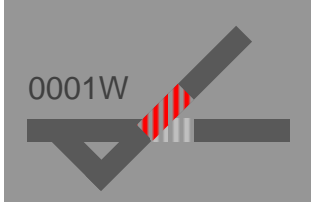
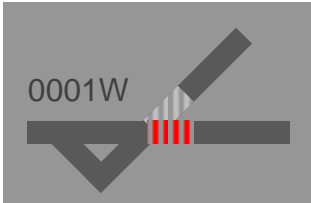
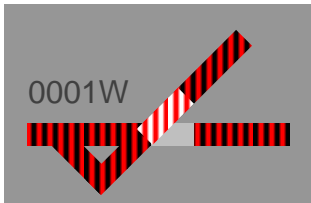
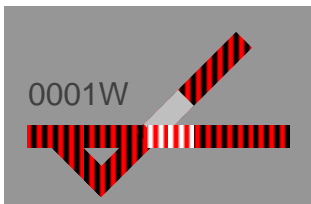
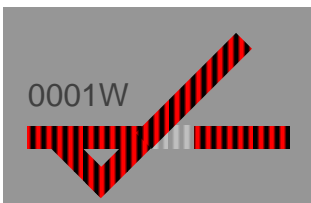
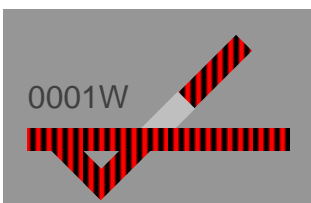
²² Request for switching > Route locked/Locked route entered.

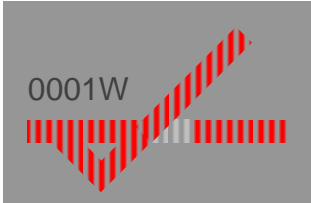
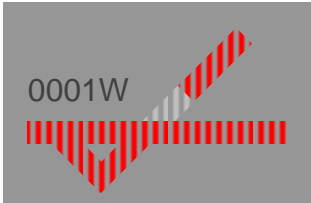
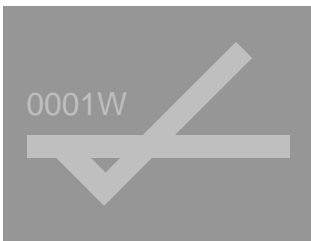
3.7.1 Derailer element

No.	Symbol	Description
[DR-1]		Derailer on left position and free, no route set
[DR-2]		Derailer on right position and free, no route set
[DR-3]		Derailer free, last called position is left, lost detection or no correspondence, no route set
[DR-4]		Derailer free, last called position is right, lost detection or no correspondence, no route set
[DR-5]		Derailer on left position and occupied, no route set
[DR-6]		Derailer on right and occupied with route set
[DR-7]		Derailer on right position and occupied, no route set

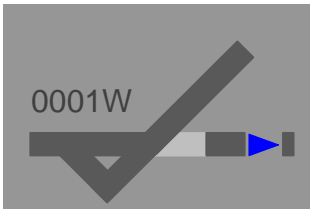
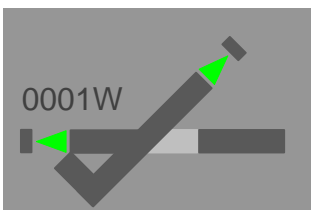
No.	Symbol	Description
[DR-8]		Derailer occupied, last called position is left, lost detection or moving, no route set
[DR-9]		Derailer occupied with route set, last called position is right, lost detection or no correspondence
[DR-10]		Derailer occupied, last called position is right, lost detection or no correspondence, no route set
[DR-11]		Derailer on left position, route set / overlap
[DR-12]		Derailer on left position, route set / overlap
[DR-13]		Derailer free, last called position is left, lost detection or no correspondence, route set / overlap
[DR-14]		Derailer free, last called position is left, lost detection or no correspondence, route set / overlap

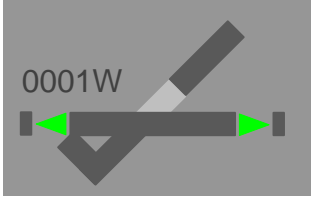
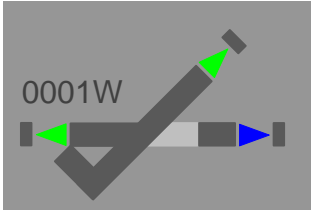
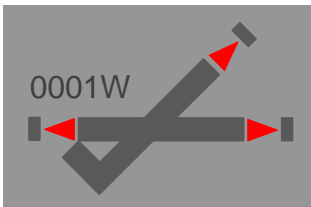
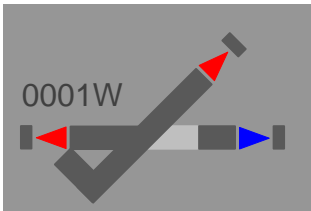
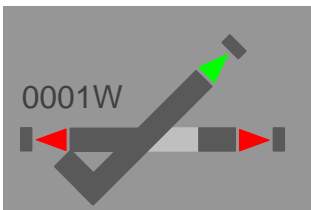
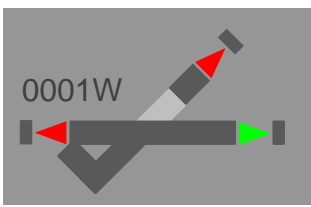
No.	Symbol	Description
[DR-15]		Derailer on right position, main route (A-route, C-route or U-route)
[DR-16]		Derailer free, last call off the track, lost detection or moving, main route (A-route, C-route or U-route)
[DR-17]		Derailer on right position, shunt route (B-route)
[DR-18]		Derailer free, last call off the track, lost detection or moving, shunt route (B-route)
[DR-19]		Derailer on right position, emergency route (N-route)
		Derailer on right position and occupied, emergency route (N-route)
[DR-20]		Derailer off the track, route selection / alternative route preview

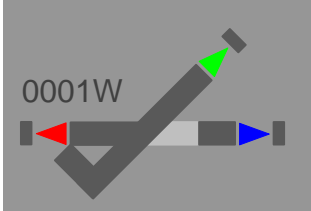
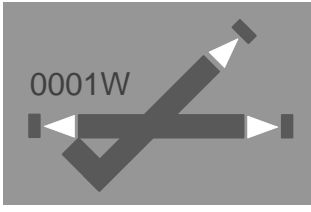
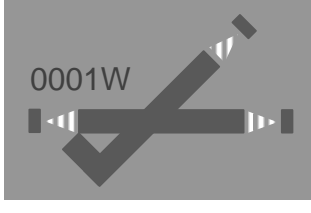
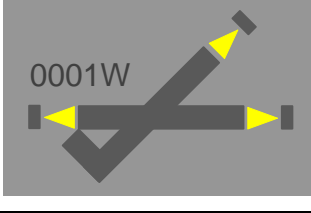
No.	Symbol	Description
[DR-21]		Derailer trailed, last call on the track, e.g. derailer was on the track as it became “trailed” or was called to be on the track by the first switch trailed point command
[DR-22]		Derailer trailed, last call off the track, e.g. derailer was off the track as it became “trailed” or was called to be off the track by the first switch trailed point command
		Derailer Passivated, last called position left (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Derailer trailed, unauthorized cranking, object controller passivated
		Derailer Passivated , last called position right (Flashing: red-to-black) Last position (Flashing: red-to-white) e.g. Point trailed, unauthorized cranking, object controller passivated
[DR-23]		Derailer track section failed, derailer on the track
[DR-24]		Derailer track section failed, derailer off the track

No.	Symbol	Description
[DR-25]		Derailer passivated, last call on the track
[DR-26]		Derailer passivated, last call off the track
[DR-27]		Derailer without track free detection – Static derailer

3.7.2 Inhibition and protection indicators / Crank handle and power failure indicators

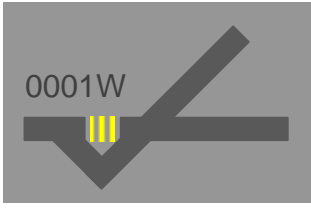
No.	Symbol	Description
[DR-28]		Derailer on the track, flank protection
[DR-29]		Derailer on the track, inhibited against throwing

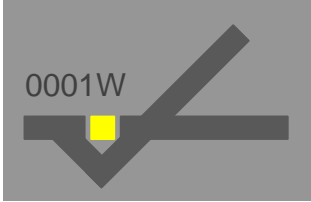
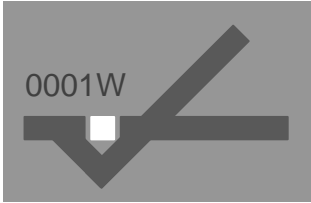
No.	Symbol	Description
[DR-30]		Derailer off the track, inhibited against throwing
[DR-31]		Derailer on the track, inhibited against throwing, flank protection
[DR-32]		Derailer inhibited against route traversal
[DR-33]		Derailer on the track, inhibited against route traversal, flank protection
[DR-34]		Derailer on the track, inhibited against throwing and against route traversal
[DR-35]		Derailer off the track, inhibited against throwing and against route traversal

No.	Symbol	Description
[DR-36]		Derailer on the track, inhibited against throwing and against route traversal, flank protection
[DR-37]		Power failure not reset, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal
[DR-38]		Derailer power failure reset, timer running, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal
[DR-39]		Crank handle release mode, independently of any other concurrent indications for protection, inhibition against throwing or inhibition against route traversal

Note: The active route inhibitions will be shown in a special predefined area on the right-hand side of the footer of the “Zoom” or “Overview” picture.

3.7.3 Lock indicator

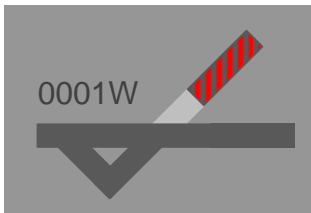
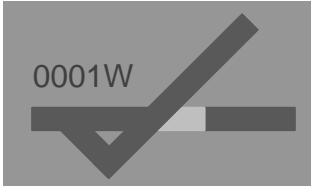
No.	Symbol	Description
[DR-40]		Derailer requested for switching

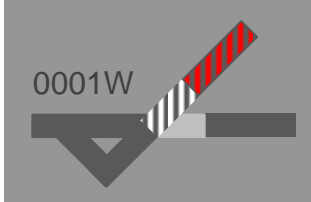
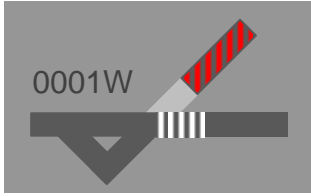
No.	Symbol	Description
[DR-41]		Derailer part of the running path or overlap of a route locked
[DR-42]		Derailer part of the running path or overlap of a route entered

3.7.4 WFK configured

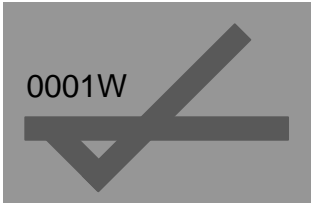
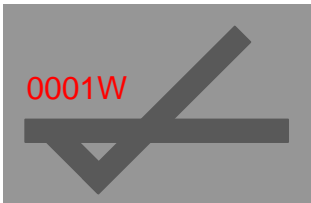

The WFK information is only displayed for configured derailleurs when the element is not used by a route or overlap.

3.7.4.1 Default position is left


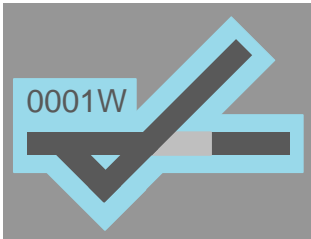
No.	Symbol	Description
[DR-43]		WFK Configured, default position is left. Derailer on right position
[DR-44]		WFK Configured, default position is right. Derailer on left position

No.	Symbol	Description
[DR-45]		WFK Configured, default position is left. Last called position is left, lost detection or no correspondence
[DR-46]		WFK Configured, default position is left. Last called position is right, lost detection or no correspondence

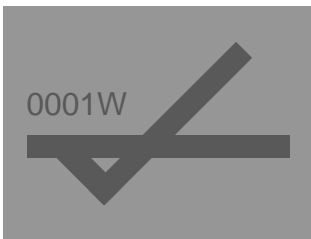
3.7.5 Derailer name

No.	Symbol	Description
[DR-47]		Derailer normal and available
[DR-48]		Hardware fault external to interlocking. Includes the following faults: Derailer trailed or Derailer not supervised / lost detection
[DR-49]		Hardware fault in interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.7.6 Derailer highlight

No.	Symbol	Description
[DR-50]		<p>Special operator commands for derailer.</p> <p>The highlighting for special commands can be combined with all other element indications.</p> <p>The element highlighting for special commands has priority over other element highlighting</p>
[DR-51]		<p>Derailer selected for command execution via mouse.</p> <p>The highlighting for element selection can be combined with all other element indications</p>

3.7.7 Missing status information

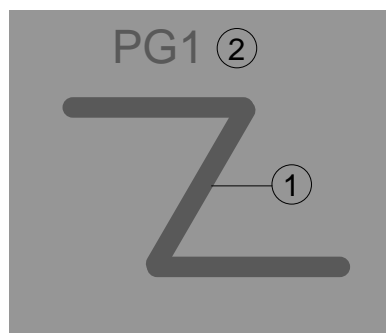
No.	Symbol	Description
[DR-52]		<p>Derailer without status information (Interface error between HMI and Logic Module)</p>

Note: A derailer without status information is displayed in steady grey.

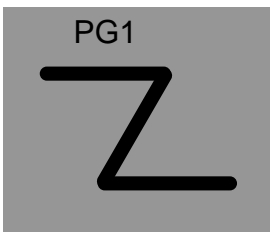
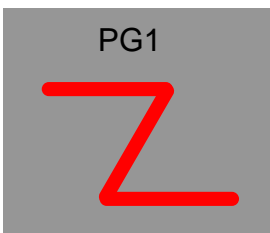
3.8 POWER GROUP

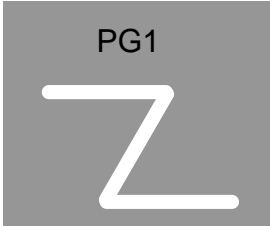
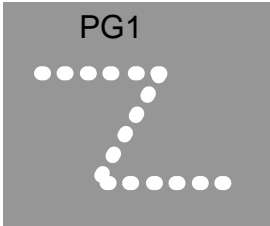
The element indication of a power group is composed of the power group indicator (1) and the power group name (2), and displays information associated with power failure and reset operations.

Figure 12 – Power group element layout

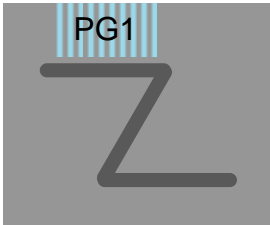



3.8.1 Power group element

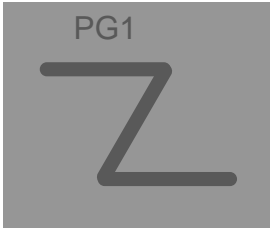
No.	Symbol	Description
[PG-1]		Power normal on group of points
[PG-2]		Power failure on group of points

No.	Symbol	Description
[PG-3]		Power failure on group of points not reset
[PG-4]		Power failure on group of points reset, timer running (white flashing)

3.8.2 Power group highlight

No.	Symbol	Description
[PG-5]		<p>Special operator commands for power group element.</p> <p>The highlighting for special commands can be combined with all other element indications.</p> <p>The element highlighting for special commands has priority over other element highlighting</p>
[PG-6]		<p>Power group element selected for command execution via mouse.</p> <p>The highlighting for element selection can be combined with all other element indications.</p>

3.8.3 Missing status information

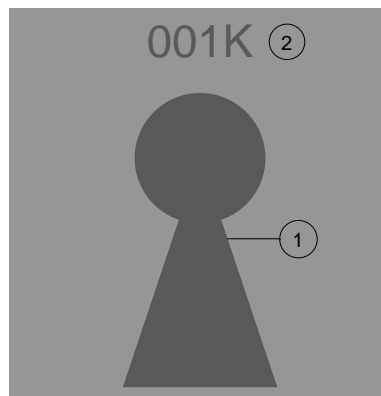
No.	Symbol	Description
[PG-7]		Power group element without status information (Interface error between HMI and Logic Module)

Note: A power group element without status information is displayed in steady grey.


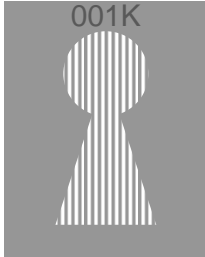
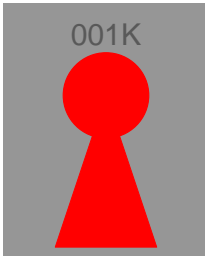
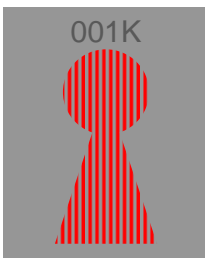
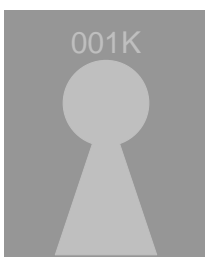
3.9 KEY LOCK

The element indication of a key lock is composed of the key element (1) and the key lock name/failure and passivation messages (2)




Figure 13 – Key lock element layout



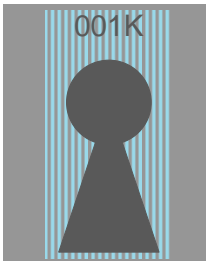
3.9.1 Key element

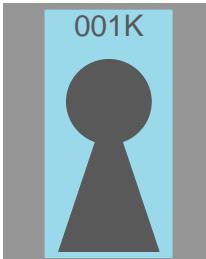
No.	Symbol	Description
[KL-1]		Key normal
[KL-2]		Key release timer running
[KL-3]		Key out
[KL-4]		Passivated / Not normal
[KL-5]		Static Key element

3.9.2 Key lock name


No.	Symbol	Description
[KL-6]		No error or passivation messages
[KL-7]		Hardware fault external to the interlocking. Includes the following faults: Key lock failed and Key lock not supervised
[KL-8]		Hardware fault in the interlocking. Includes the remaining faults, not covered by the hardware fault external to interlocking

3.9.3 Key lock highlight

No.	Symbol	Description
[KL-9]		Special operator commands for key lock element. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting

No.	Symbol	Description
[KL-10]		Key lock element selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.9.4 Missing status information

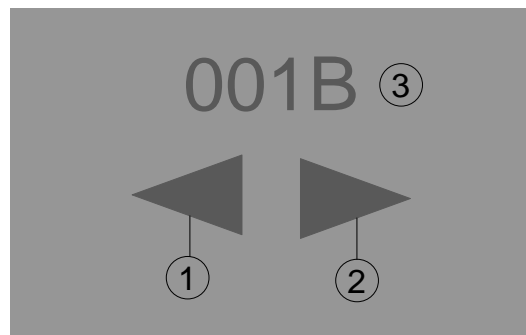
No.	Symbol	Description
[KL-11]		Key lock element without status information (Interface error between HMI and Logic Module)

Note: A key lock element without status information is displayed in steady grey.

3.10 BLOCK OVERALL LOCK

The element indication of a block overall lock is composed of the block overall lock indicators (1, 2) and the block overall lock name/failure and passivation messages (3).

Figure 14 – Block overall lock indicators layout



Block overall lock indicators represent all the block states. They are shown at each of the 2 ends of an internal block as well as on the external block. The correspondent interlocking system element is called “block overall lock”. The indication is used for the internal and external block.


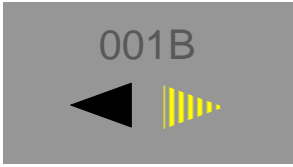

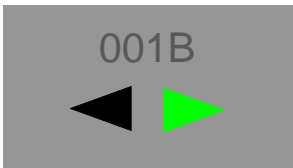
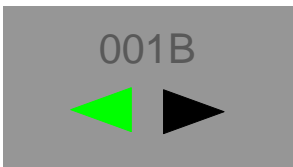
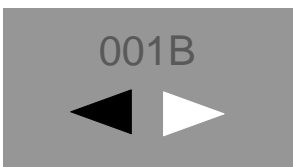
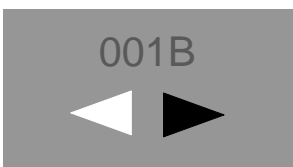
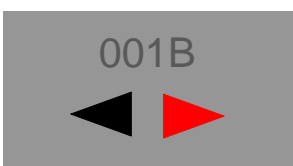
Outgoing and incoming indicators are used for the block overall lock direction indication and for the general block status.

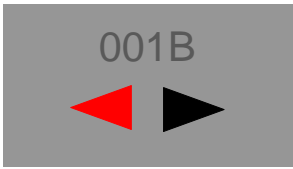
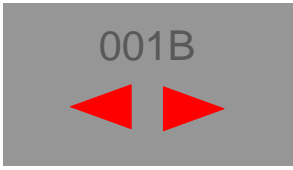



The block overall lock name is used to display the failure messages and as active field for block overall lock commands.

The colour priority in case of concurrent indications for the block overall lock indicators is Yellow flashing > White > Green > Red > Red flashing > Black²³.

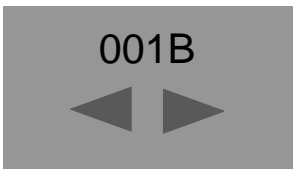
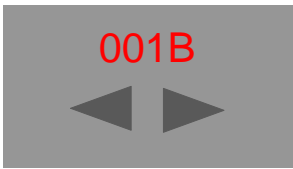
²³ External line request > Direction set not resettable to neutral > Direction set > Inhibited against direction change > Interface failure > Direction not set.


3.10.1 Block overall lock indicators

No.	Symbol	Description
[BL-1]		Block overall lock not set and available
[BL-2]		External line request - right direction: Block overall lock called or line-free response required
[BL-3]		External line request – left direction: Block overall lock called or line-free response required
[BL-4]		Block overall lock set to right direction
[BL-5]		Block overall lock set to left direction
[BL-6]		Block overall lock set to right direction, reset to neutral not possible - route set, route entered, track section occupied or track section failure
[BL-7]		Block overall lock set to left direction, reset to neutral not possible - route set, route entered, track section occupied or track section failure
[BL-8]		Block overall lock inhibited against change to right direction (incoming direction)


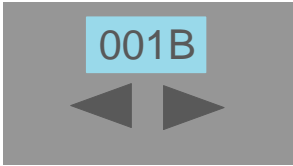
No.	Symbol	Description
[BL-9]		Block overall lock inhibited against change to left direction (incoming direction)
[BL-10]		Block overall lock inhibited against direction change on both sides
[BL-11]		Passivated, interface failure, block overall lock set to right direction
[BL-12]		Passivated, interface failure, block overall lock set to left direction
[BL-13]		Passivated, interface failure, block overall lock not set

3.10.2 Block overall lock name

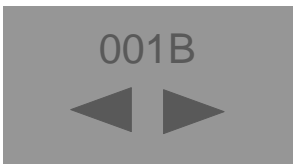
No.	Symbol	Description
[BL-14]		Block overall lock normal and available
[BL-15]		Hardware fault external to interlocking

No.	Symbol	Description
[BL-16]		Hardware fault in the interlocking

3.10.3 Block overall lock indicators highlight

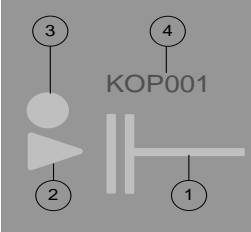
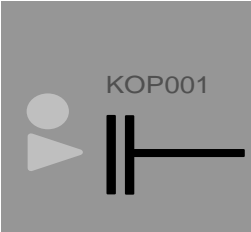
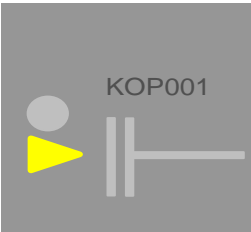
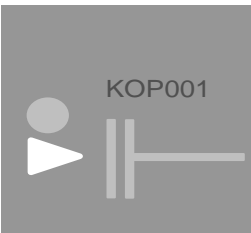
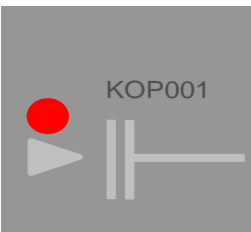
No.	Symbol	Description
[BL-17]		Special operator commands for block overall lock element. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[BL-18]		Block overall lock indicators selected for command execution via mouse. The highlighting for element selection can be combined with all other element indications

3.10.4 Missing status information

No.	Symbol	Description
[BL-19]		Block overall lock indicator without status information (Interface error between HMI and Logic Module)

Note: A block overall lock indicator without status information is displayed in steady grey.


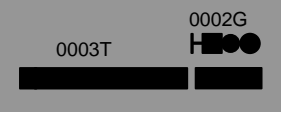
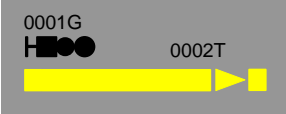
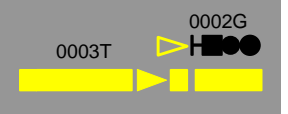
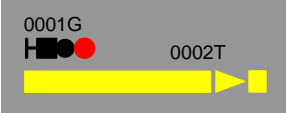
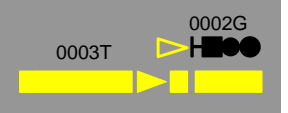
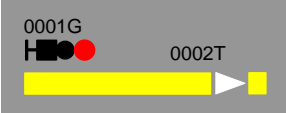
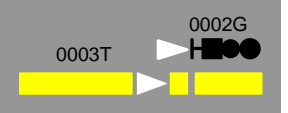
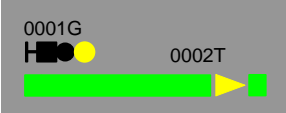
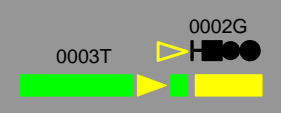

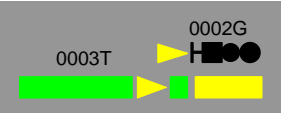

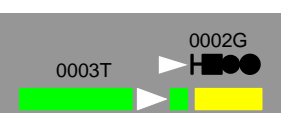
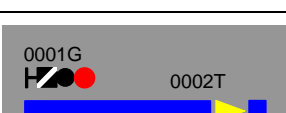
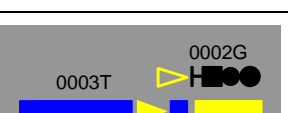
3.10.5 Coupling Element

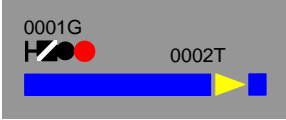
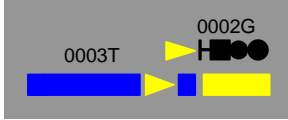

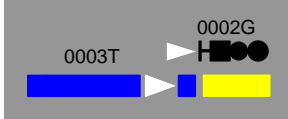

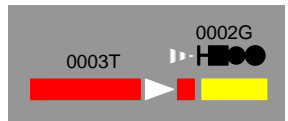
No.	Symbol	Description
[BL-19]		Block overall lock indicator without status information (Interface error between HMI and Logic Module)
		Coupling element normal
		Route set up to coupling element
		Entered locked route set up to the coupling element
		Active Stop (prevent route entering the station)

3.11 ROUTE STATE

The internal state of routes is visible by the combined indications of the track sections and signals.

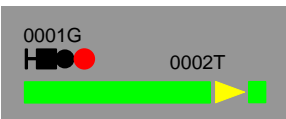
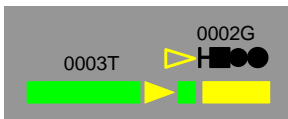
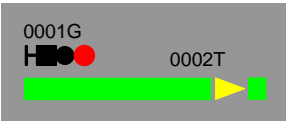
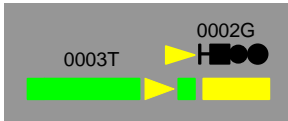
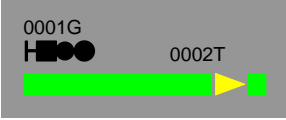
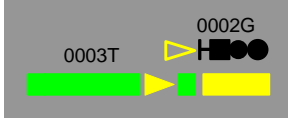
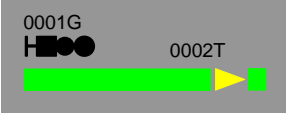
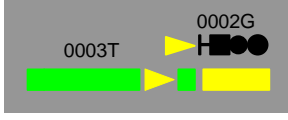
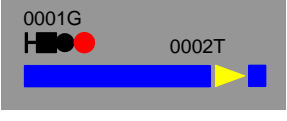
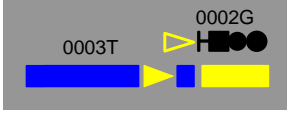
3.11.1 Route setting and train movement

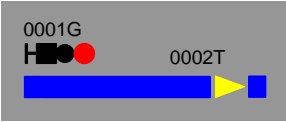
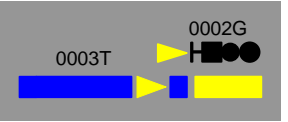
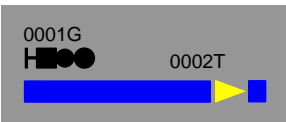
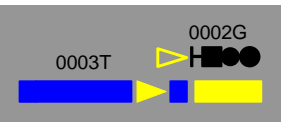
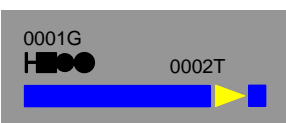
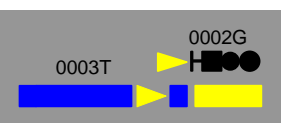
No.	Start Symbol	Description	Destination Symbol
[RT-1]		No route	
[RT-2]		Route called, elements not yet locked	
[RT-3]		Route set, elements locked, not yet supervised	
[RT-4]		Route set, elements locked, not yet supervised; final defined state	
[RT-5]		Main route set, elements locked, signal called, unapproached	
[RT-6]		Main route set, locked, signal called, approached; first defined state	
[RT-7]		Main route set, route is entered and the train has not yet reached the destination track; final defined state	
[RT-8]		Shunt route set, elements locked, signal called, unapproached	

No.	Start Symbol	Description	Destination Symbol
[RT-9]		Shunt route set, locked, signal called, approached; first defined state	
[RT-10]		Shunt route set, route is entered and the train has not yet reached the destination track; final defined state	
[RT-11]		Main or shunt route set, route is entered and the train reached the destination track, overlap release timer is running	

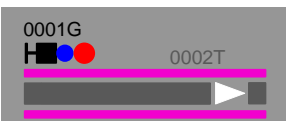
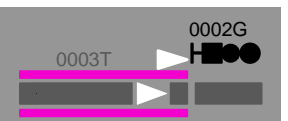
Note: Origin of a shunt route can be a main signal or a shunt signal, and the destination can be a main signal or a dummy signal.

3.11.2 Route failure

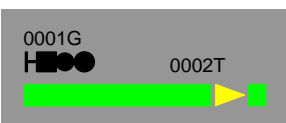
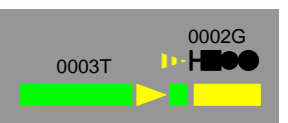
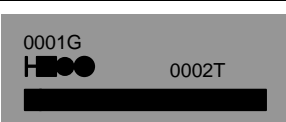
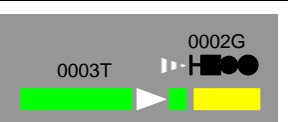
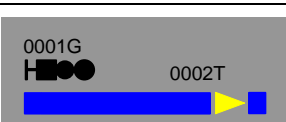
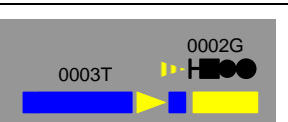
No.	Start Symbol	Description	Destination Symbol
[RT-12]		Main route lost supervision, unapproached, elements in route still locked	
[RT-13]		Main route lost supervision, approached, elements in route still locked	
[RT-14]		Main route unapproached, an element in route lost lock	
[RT-15]		Main route approached, an element in route lost lock	
[RT-16]		Shunt route lost supervision, unapproached, elements in route still locked	


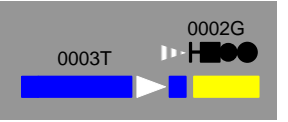
No.	Start Symbol	Description	Destination Symbol
[RT-17]		Shunt route lost supervision, approached, elements in route still locked	
[RT-18]		Shunt route unapproached, an element in route lost lock	
[RT-19]		Shunt route approached, an element in route lost lock	

3.11.3 Emergency route

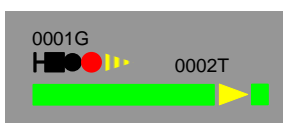
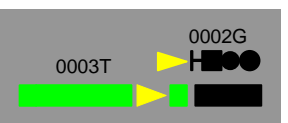
No.	Start Symbol	Description	Destination Symbol
[RT-20]		Route set, emergency signal aspect called; final defined state	

3.11.4 Manual route release

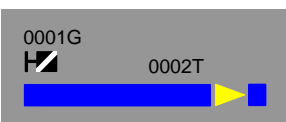
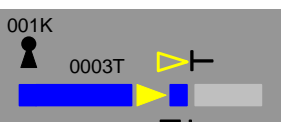
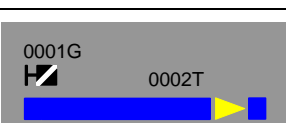
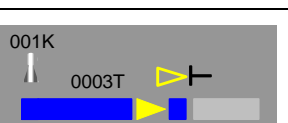
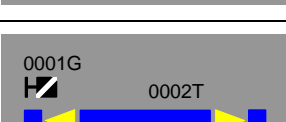
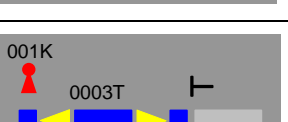
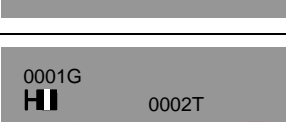
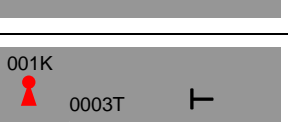
No.	Start Symbol	Description	Destination Symbol
[RT-21]		Main route approached, release timer running; first defined state	
[RT-22]		Main route entered, emergency release timer running; final defined state	
[RT-23]		Shunt route approached, release timer running; first defined state	

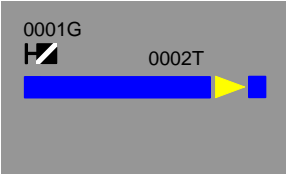
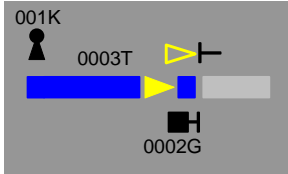
No.	Start Symbol	Description	Destination Symbol
[RT-24]		Shunt route entered, emergency release timer running; final defined state	

3.11.5 Zero overlap timer

No.	Start Symbol	Description	Destination Symbol
[RT-25]		Zero overlap timer running	




3.11.6 Auto shunting

No.	Start Symbol	Description	Destination Symbol
[RT-26]		Shunt route set, unapproached	
[RT-27]		Shunt route set, unapproached, auto shunting key release timer running	
[RT-28]		Auto shunting	
[RT-29]		Auto shunting entered	

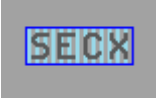

No.	Start Symbol	Description	Destination Symbol
[RT-30]		Shunt route set, key in cancels auto shunting	

3.12 OPERATING PERMISSION


3.12.1 Interlocking permission indicator

No.	Symbol	Description
[OP-1]		Operating permission for an interlocking only available for the current location. The current location has exclusive permission of the block in this moment
[OP-2]		Operating permission for an interlocking not available for the current location
[OP-3]		Permission for simultaneous operation within an interlocking available

3.12.1.1 Interlocking permission indicator highlight

No.	Symbol	Description
[OP-4]		Special operator commands for interlocking operating permission. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[OP-5]		Interlocking operating permission indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications



3.12.1.2 Missing status information










No.	Symbol	Description
[OP-6]		Interlocking operating permission indicator without status information





Note: An interlocking permission indicator without status information is displayed in steady grey over a yellow background with a blue frame.

3.12.2 Station permission indicator

The station operating indicator is only used if the station is divided in more than one operating permission area.



No.	Symbol	Description
[OP-7]		Station is centrally operated. The current operator place has no operating permission
[OP-8]		Station is centrally operated. The current operator place has the exclusive operating permission

No.	Symbol	Description
[OP-9]		The operating permission is shared between different operator places. The current central operator place has partly the operating permission
[OP-10]		Station is locally operated. The current operator place has no operating permission
[OP-11]		Station is locally operated. The current operator place has the exclusive operating permission
[OP-12]		The operating permission is shared between different operator places. The current local operator place has partly the operating permission
[OP-13]		Station is centrally operated. The current operator place has no operating permission. All operating permissions for the current station are being offered to / requested by the current operator place
[OP-14]		The operating permission is shared between different operator places. The current central operator place has partly the operating permission. All active operating permissions of another operator place for the current station are being offered to / requested by the current operator place
[OP-15]		Station is locally operated. The current operator place has no operating permission. All operating permissions for the current station are being offered to / requested by the current operator place
[OP-16]		The operating permission is shared between different operator places. The current local operator place has partly the operating permission. All active operating permissions of another operator place for the current station are being offered to / requested by the current operator place
[OP-17]		Station is centrally operated. The current operator place has the exclusive operating permission. All operating permissions for the current station are being offered to / requested by another operator place



No.	Symbol	Description
[OP-18]		The operating permission is shared between different operator places. The current central operator place has partly the operating permission. All active operating permissions of the current operator place for the current station are being offered to / requested by another operator place
[OP-19]		Station is locally operated. The current operator place has the exclusive operating permission. All operating permissions for the current station are being offered to / requested by another operator place
[OP-20]		The operating permission is shared between different operator places. The current local operator place has partly the operating permission. All active operating permissions of the current operator place for the current station are being offered to / requested by another operator place
[OP-21]		Operator place with permission not available (disconnected/down)

Note: The operating place 'X' can consist of 2 digits, therefore the indicators can have 4 characters altogether.

3.12.2.1 Station permission indicator highlight

No.	Symbol	Description
[OP-22]		Special operator commands for station operating permission. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[OP-23]		Station operating permission indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications





3.12.2.2 Missing status information







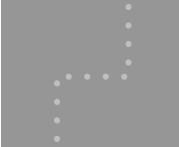
No.	Symbol	Description
[OP-24]		Station central permission indicator without data (Interface error between HMI and Logic Module)
[OP-25]		Station local permission indicator without data (Interface error between HMI and Logic Module)

Note: A station permission indicator without status information is displayed in steady grey.

3.12.3 Operating permission area indicator



The operating permission area indicator is used as a station indicator if the station has only one operating permission area. If the station is divided in more than one operating permission area, the border between the areas will be shown as a dotted line.

No.	Symbol	Description
[OP-26]		The area is centrally operated, by operating place x (x=1 or 2 ...). The current operator place has no operating permission over the area
[OP-27]		The area is centrally operated, by the current operating place x (x=1 or 2 ...). The current operator place has the exclusive operating permission over the area
[OP-28]		The area is locally operated, by operating place x (x=1 or 2 ...). The current operator place has no operating permission over the area
[OP-29]		The area is locally operated, by the current operating place x (x=1 or 2 ...). The current operator place has the exclusive operating permission over the area



No.	Symbol	Description
[OP-30]		The area is centrally operated, by operating place x (x=1 or 2 ...). The current operator place has no operating permission over the area. The operating permission is offered to / requested by the current operator place
[OP-31]		The area is locally operated, by operating place x (x=1 or 2 ...). The current operator place has no operating permission over the area. The operating permission is offered to / requested by the current operator place
[OP-32]		The area is centrally operated, by the current operating place x (x=1 or 2 ...). The current operator place has the exclusive operating permission over the area. The operating permission is offered to / requested by another operator place
[OP-33]		The area is locally operated, by the current operating place x (x=1 or 2 ...). The current operator place has the exclusive operating permission over the area. The operating permission is offered to / requested by another operator place
[OP-34]		Handover of operating permission for the current area was not successful
[OP-35]		Operator place with permission not available (disconnected/down)
[OP-36]		Border line between the station areas

Note: The operating place 'X' can consist of 2 digits, therefore the indicators can have 4 characters altogether.

3.12.3.1 Operating permission area indicator highlight

No.	Symbol	Description
[OP-37]		Special operator commands for operating permission area. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[OP-38]		Operating permission area indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications

3.12.3.2 Missing status information



No.	Symbol	Description
[OP-39]		The operating permission indicator of area x without data (x=1 or 2 ...) (Interface error between HMI and Logic Module)
[OP-40]		The operating permission indicator of area x without data (x=1 or 2 ...) (Interface error between HMI and Logic Module)

Note: An operating permission area indicator without status information is displayed in steady grey.


3.13 STATION RELATED INDICATIONS

The station related indicators are shown in the zoom pictures and in the overview picture. They are always located near the station name.


3.13.1 ATR indicator

No.	Symbol	Description
[ST-1]		Automatic route setting not active in the station
[ST-2]		Automatic route setting active in the station

3.13.1.1 ATR indicator highlight




No.	Symbol	Description
[ST-3]		ATR indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications

3.13.1.2 Missing status information



No.	Symbol	Description
[ST-4]		ATR indicator without status information (Interface error between HMI and Logic Module)

Note: An ATR indicator without status information is displayed in steady grey.


3.13.2 Inhibition indicator

No.	Symbol	Description
[ST-5]		All manual inhibitions are up to date in this station
[ST-6]		The update of all manual inhibitions is currently running for this station
[ST-7]		The safe update of all manual inhibitions failed. The operator has to confirm the current status of all inhibitions as correct.

3.13.2.1 Inhibition indicator highlight




No.	Symbol	Description
[ST-8]		Special operator commands for inhibition indicator. The highlighting for special commands can be combined with all other element indications. The element highlighting for special commands has priority over other element highlighting
[ST-9]		Inhibition indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications

3.13.2.2 Missing status information


No.	Symbol	Description
[ST-10]		Inhibition indicator without status information (Interface error between HMI and Logic Module)

Note: An inhibition indicator without status information is displayed in steady grey.


3.13.3 Element status information

No.	Symbol	Description
[ST-11]		No error update currently active for the interlocking where this station is located
[ST-12]		Error update currently started for the interlocking where this station is located
[ST-13]		Error update currently active for the interlocking where this station is located

3.13.3.1 Element indicator highlight


No.	Symbol	Description
[ST-14]		Element indicator selected for command execution via mouse by operator. The highlighting for element selection can be combined with all other element indications

3.13.3.2 Missing status information


No.	Symbol	Description
[ST-15]		Element indicator without status information (Interface error between HMI and Logic Module)

Note: An element indicator without status information is displayed in steady grey.

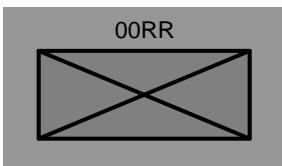
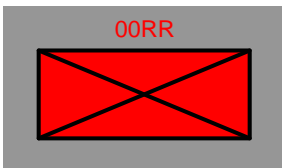
3.13.4 Station name

No.	Symbol	Description
[ST-16]		Station name

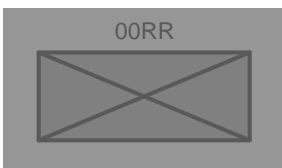
3.13.4.1 Station name highlight

No.	Symbol	Description
[ST-17]		Station name selected for command execution via mouse by operator

3.13.5 Interlocking states

No.	Symbol	Description
[ST-18]		Interlocking without alarm messages
[ST-19]		Interlocking with alarm messages

3.13.5.1 Missing status information

No.	Symbol	Description
[ST-20]		Interlocking state indicator without status information (Interface error between HMI and Logic Module)

Note: An interlocking state indicator without status information is displayed in steady grey.

END OF DOCUMENT