DR5052 DIGITURN instruction manual

Firmware 1.2.0
(2021-07-06)

1.0 General Information

1 Index

Please note!
This manual currently contains only the basic information and will be extended step by step. Suggestions, improvements, additions, comments or suggestions are always welcome.
support@digikeijs.com

1.2 Warranty and warranty conditions

All our products come with a 24-month manufacturer's warranty. Please read these operating instructions carefully.
Damage to the product caused by non-compliance with these instructions will invalidate the warranty.
ATTENTION: The warranty is void if the housing of the product is opened.

1.3 Legal information

Printing errors and mistakes, technical or other changes as well as changes in the availability of individual products are expressly reserved.
Data and illustrations are non-binding. All changes to hardware, firmware and software are reserved.
We reserve the right to change the design of the product, the software and / or the firmware without prior notice.

Copyright

2.0 Product overview

2.1 General product information

The DR5052 is a turntable decoder that can control almost all turntables. All common control protocols are supported. When using the DR5052 in the **Basic** or **Basic Plus** version, **no** modifications to the turntable are necessary, the turntable can be connected and operated "Out of the Box". For the turntables of Roco® and Märklin® corresponding adapters are available, so that also here a conversion of the turntable is omitted, when using the **Basic** or **Basic Plus** version. For the **professional** version we offer a complete conversion kit including an adapter board for a Plux22 decoder (The decoder must be purchased separately.). The polarity of the bridge track is reversed directly in the DR5052, so no additional hardware is required. Of course, a **RailCom® detector** and a **"normal" occupancy signal** for the bridge track are also integrated.

Features of the individual versions:

DR5052 Basic	The position is detected by the latch of the turntable platform, so there is a "click" to be heard at every exit. Slow braking at the selected siding is possible. The motor control is carried out directly via the DR5052. The speed can be set individually in the tool.
DR5052 Basic-Plus	Position detection is carried out via additional feedback sensors on the track connections. The un-latching of the turntable platform is performed once and remains unlocked until the DR5052 detects the selected siding. Now the DR5052 brakes down and drives slowly into position. After reaching the position, the turntable platform latches safely again. The motor is controlled directly via the DR5052. The speed can be set individually in the tool.
DR5052 Professional	Position detection is carried out via additional feedback sensors on the track connections. The motor control is carried out via a separate Locomotive decoder (PluX22). Depending on the decoder used, load control is also available. Of course you can also use sound (at decoder) can be played back. The light of the bridge house and the entrance and exit signals can also be controlled if the locomotive decoder used provides sufficient function outputs. The maximum speed (CV5), the acceleration ramp (CV3) and the deceleration ramp (CV4) are programmed directly in the tool of the DR5052.

Basic requirements for the use of the DR5052:

The turntable must be **mechanically in order** and function absolutely problem-free!

It is important that the latch-magnet coil (Fleischmann® or similar) of the turntable drive opens completely. There must be no clicking noises when turning when the locking device is pulled out!

The DR5052 is directly supplied with track voltage and can also be operated via a separate DC power supply. The **separate** power supply **must** always be used when the track voltage **is below 16V.** A voltage below 16V is **not** sufficient to safely control the turntable!

! Attention!

In principle, the **track connections of** the turntable must be **insulated** from the shed tracks on both sides! This must be observed in order to avoid a short circuit. The continuing tracks can then be normally supplied with track voltage again or monitored with a feedback signal. The polarity of the sidings can be set in the configuration program.

2.2 Technical Specifications

The terminals are designed for a cross-section of 0.25mm² (Turntable and Sense) and 0.5mm² (Track Input). For the 0.25mm² terminals, a screwdriver should be used with a blade size of 0.3×1.8mm (e.g. Wera® 118004) Other sizes can damage the terminals.

Supply voltage	Track voltage Optional by an additional separate power supply DC min. 16V/2A max. 19V/2A. (A separate power supply unit must be used for track voltages **below** 16V!) Digikeij's power supply **DR60710-M** recommended.
Maximum load bridge track	**2A**
Maximum load bridge motor	**1A**
RailCom	RailCom® detector for the turntable platform.
feedback unit	Feedback for occupancy indication of the turntable platform. Bridge rotates / position reached / Emergency stop active.
Supported turntables	**Fleischmann® H0 and N** all* (operation as Basic, Basic-Plus, Profi version possible). **Märklin® H0** all* with adapter board DR5052-M (operation as Basic. BasicPlus and Professional version **not possible at** the moment) **Märklin® Z** (operation only as basic version possible). A separate power supply DR60710-M is required! (Firmware **Ver. 1.2.x**) **Roco® H0** with adapter board DR5052-R (operation as Basic. Basic-Plus and Professional version **not possible at** the moment!). **Roco® TT** The connection is the **same as for the Fleischmann® H0** and N (operation as Basic, Basic-Plus, Profi version possible). **Arnold® N** only as basic version possible, an additional bridge rectifier is required. (Firmware Ver. 1.2.x) **stepper motor** with adapter board DR5052-Step, max. phase current 1A (Firmware Ver. 1.2.x)
Available Product Sets*	**DR5052-BASIC** Set contents: DR5052, USB cable, LocoNet cable 3m **DR5052-EXT** Set contents: DR4088-OPTO, DR4188-DC adapter for position feedback, 1m STP cable (Required for the Basic-Plus and Pro versions. Note the number of rail sidings!) **DR5052-R** Set contents: DR5052-ROCO adapter, 25 cm STP cable (Required for operating a Roco® H0 turntable) **DR5052-M** Set contents: DR5052-MARKLIN adapter, 25 cm STP cable (Required for the operation of a Märklin® H0 turntable) **DR5052-PRO** Set contents: DR5052-PRO Adapter, DR5052-PLuX

***)** The very old sheet metal discs cannot be controlled for the time being

****)** Depending on the desired design, the corresponding installation sets must be put together.
Fleischmann® H0 turntable with 16 track connections should be operated as Basic-Plus variant:
1x DR5052-BASIC , 2x DR5052-EXT
Roco® H0 turntable with 16 track connections is to be operated as Basic-Plus version:

Attention! The DR5052 can only be operated as Basic Version and without LocoNet® on a digital system that operates according to the "Common Ground" principle (for example Uhlenbrock®). Failure to do so may result in damage to the DR5052 and/or the control unit.

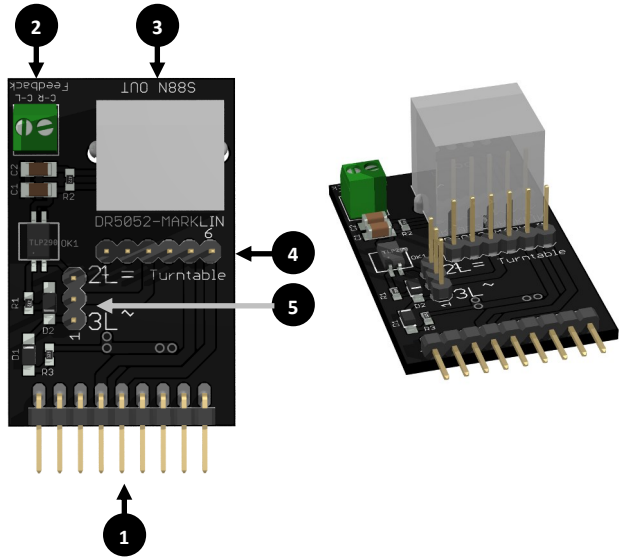
2.3.0 Hardware Overview DR5052

1	**S88N IN** Connection S88 Feedback modules
2	**L R** Measuring voltage connection Track connections (see connection examples)
3	Turntable connection **Motor** control Y = yellow cable (colour code Fleischmann turntable) G = grey cable (colour code Fleischmann turntable) R = **red cable** (colour code Fleischmann turntable)
4	Connection **turntable** platform (bridge track) Y = yellow cable (colour code Fleischmann turntable) Y = yellow cable (colour code Fleischmann turntable)
5	**LocoNet®** connection 1
6	**LocoNet®** connection 2
7	**red LED** (three flashing cycles when turning **left**) fast flashing cycle rotate fast speed middle flashing cycle turn slow speed stop slow flashing cycle (move pos. slowly)
8	push button **Step** Left Turn the turntable one rail siding to the left
9	push button **Rotate** Rotate turntable platform by 180 degrees
10	push button **Step** Right Turn the turntable one rail siding to the left
11	**red LED** (three flashing cycles when turning right) fast flashing cycle rotate fast speed middle flashing cycle turn slow speed stop slow flashing cycle (move pos. slowly)
12	**green LED** lights up Turntable bridge stands still turns out of turntable platform lightning short Track siding was actuated
13	**Track Input** K and J

14	**USB Status LED** **green** RX **red** TX
15	**USB 2.0 connection**
16	**External power supply** DC 16-19V 2A min.
17	**green LED** status (two flashing cycles) Slow flashing rate Supply voltage present fast flashing cycle no track voltage or no external power supply available

2.3.1 Hardware Overview DR5052-M

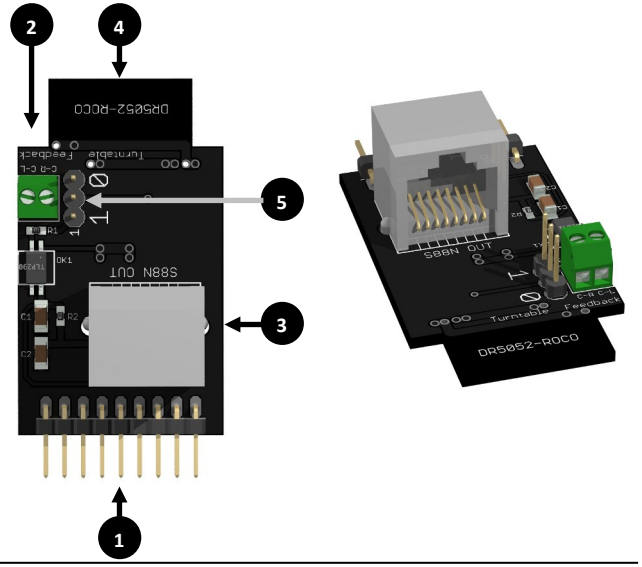
This adapter is required to connect a Märklin® turntable to the DR5052 in the Basic, Basic-Plus and Profi versions. (Please note the connection example in points 6.2 and 6.5.) Corresponding installation sets are available in the online shop.



1	**Male connector for connection to DR5052** (The pin header has 9 poles, i.e. 2 poles more than the DR5052, which is production-related and has no influence on the function.)
2	L R Connection Measuring voltage Track sidings (see connection examples)
3	**S88N® OUT connection** Connection to feedback module, bridge track occupied signal "ground detection" (see connection examples)
4	**Male connector for connecting the turntable**
5	**Jumper for determining whether 2-wire or 3-wire turntable.**

2.3.2 Hardware Overview DR5052-R

This adapter is used to connect a Roco® H0 turntable to the DR5052 in Basic, Basic-Plus and Professional version required. (Please note the connection example in points 6.3 and 6.6.) Corresponding installation sets are available in the online shop.

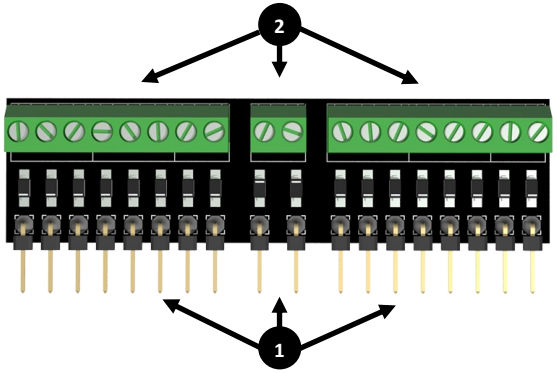


1	**Male connector for connection to DR5052** (The pin header has 9 poles, i.e. 2 poles more than the DR5052, which is production-related and has no influence on the function.)
2	**L R** Connection Measuring voltage Track sidings (see connection examples)
3	**S88N® OUT connection** Connection to the feedback modules, position feedback (see connection examples)
4	**Boards Connector for connecting the turntable**
5	**Jumper Position message internal or external.** (see Roco® operating instructions)

2.3.3 Hardware Overview DR4188-DC

This adapter is required for the Basic-Plus and Profi versions. With this adapter an exact position monitoring of the sidings in connection with a DR4088OPTO is possible. (Please note the connection example in points 6.4, 6.5 and 6.6.) Corresponding installation sets are available in the online shop.

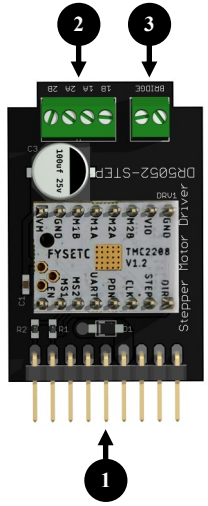
1	**Male connector for connection to DR4088-OPTO**
2	**Terminal block for the connection of the feedback units** Please note the connection example in points 6.4, 6.5 and 6.6.

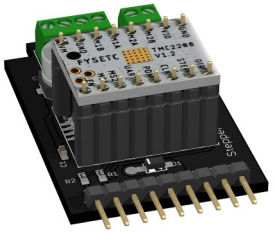


2.3.4 Hardware Overview DR5052-Step

This adapter is required to connect a stepper motor to the DR5052 for all versions.

1	**Male connector for connection to DR5052** (The pin header has 9 poles, i.e. 2 poles more than the DR5052, which is production-related and has no influence on the function.)
2	**Terminal block for connecting the stepper motor** Please note the following connection example
3	**Bridge-track Connection**





3.0 CONFIGURATION SOFTWARE

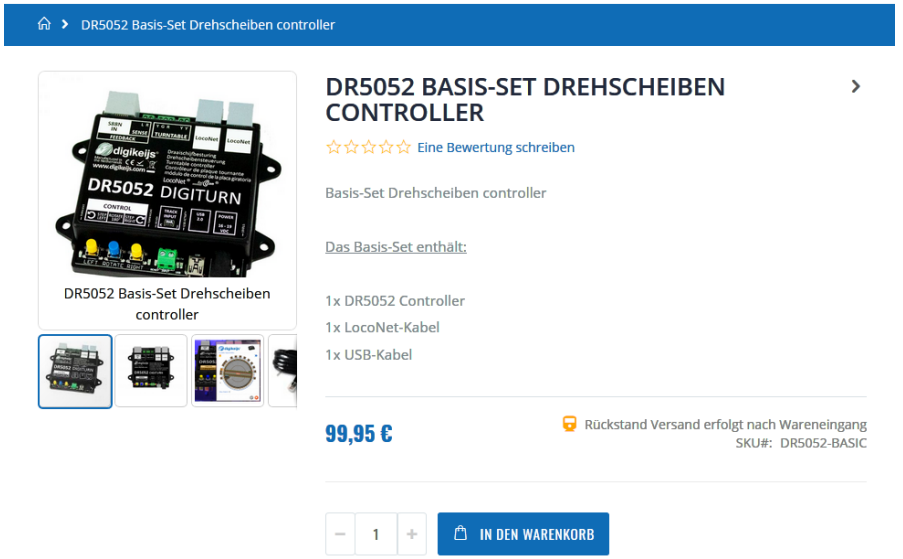
ATTENTION!!!! It may happen that the USB connection to the PC is lost if the DR5052 remains permanently connected via USB and the track input of the DR5052 is supplied with power. For this reason **we recommend the use of a USB isolator.**

3.1 introductory remarks

A USB connection to the PC is required to configure the DR5052.
Please use the supplied USB cable (a so-called USB A to USB mini cable).

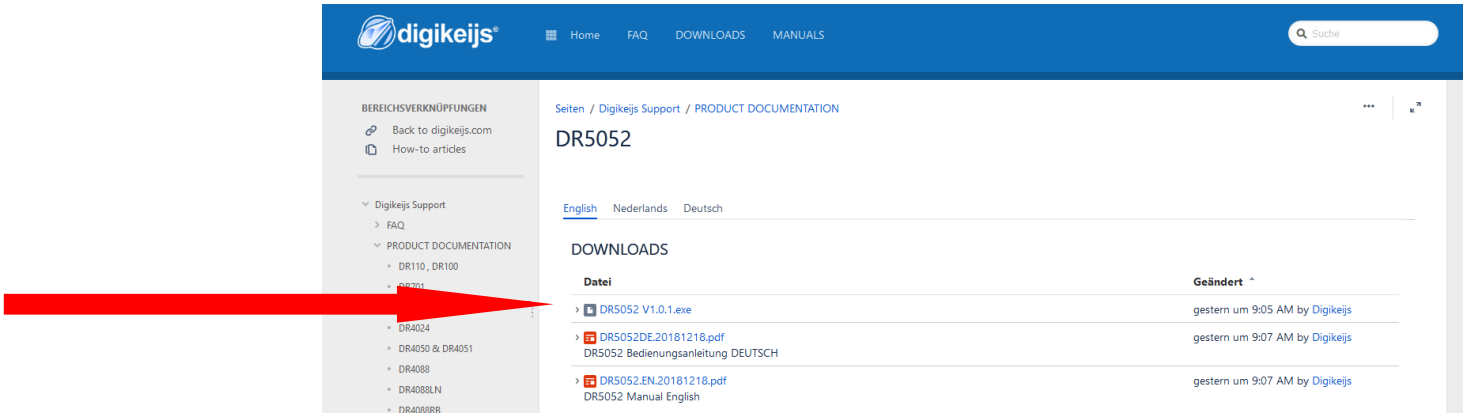
System requirements:

- Intel Pentium or AMD Athlon 64 processor
- Microsoft Windows 7 with Service Pack 1, Windows 8.1, or Windows 10
- 1 GB RAM for 32 Bit; 2 GB RAM for 64 Bit
- 100 MB free hard disk space
- Monitor with a resolution of 1,024 x 768 (1280 x 800 recommended)



3.2 Download Software

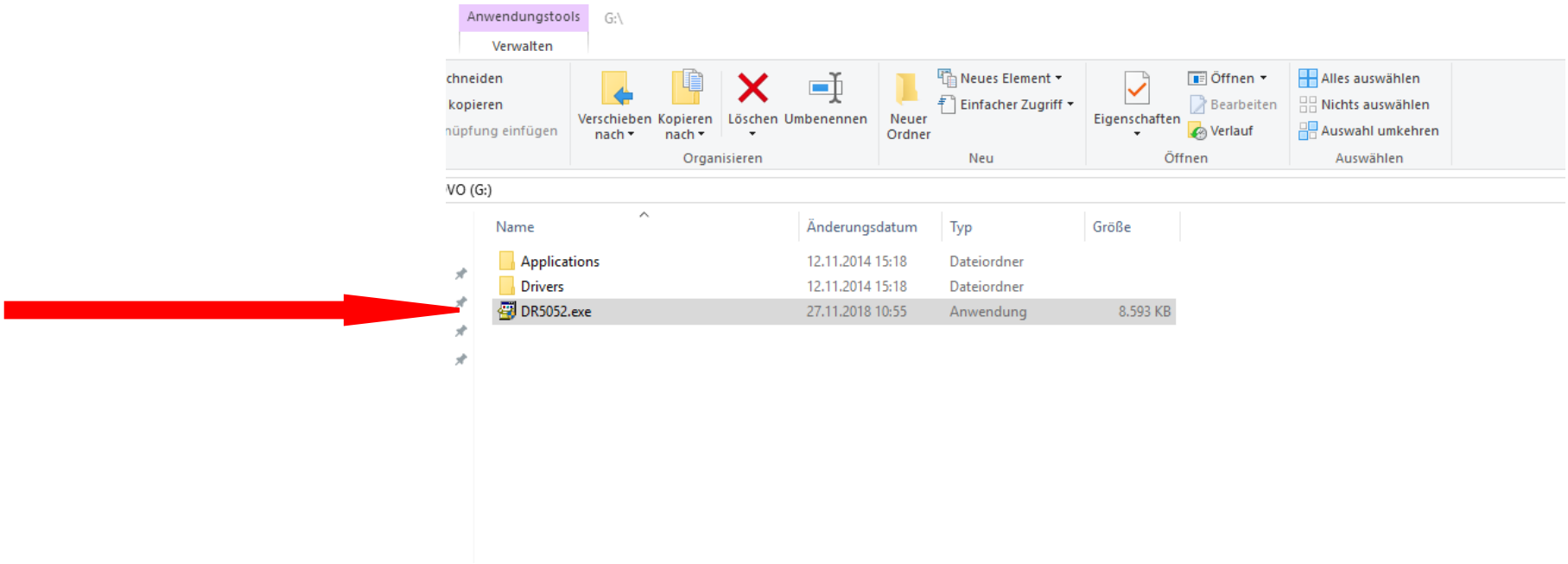
Do not connect the DR5052 to the PC until the software has been installed.
The software can be downloaded from the DIGIKEIJS website.



3.3 Install software

After you have successfully downloaded the software, the installation can be started by double-clicking on the "DR5052xx.exe" file.

Make sure that you have administrator rights on your PC.

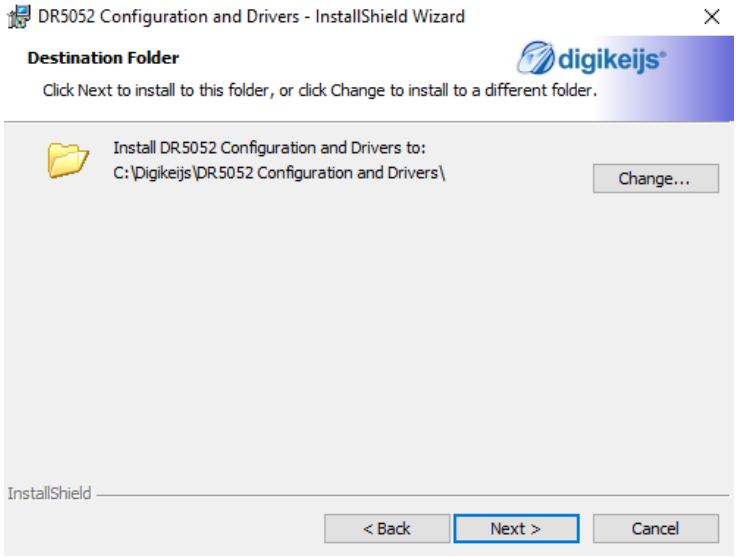


Important !!!

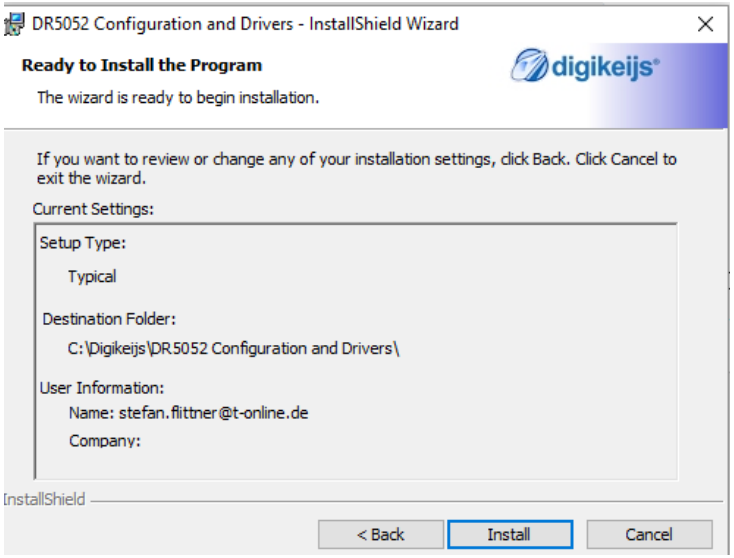
Only connect the DR5052 after successful installation of Software and Drivers on the PC.

The following screen appears after a few seconds. Select Execute here anyway and click "Next".

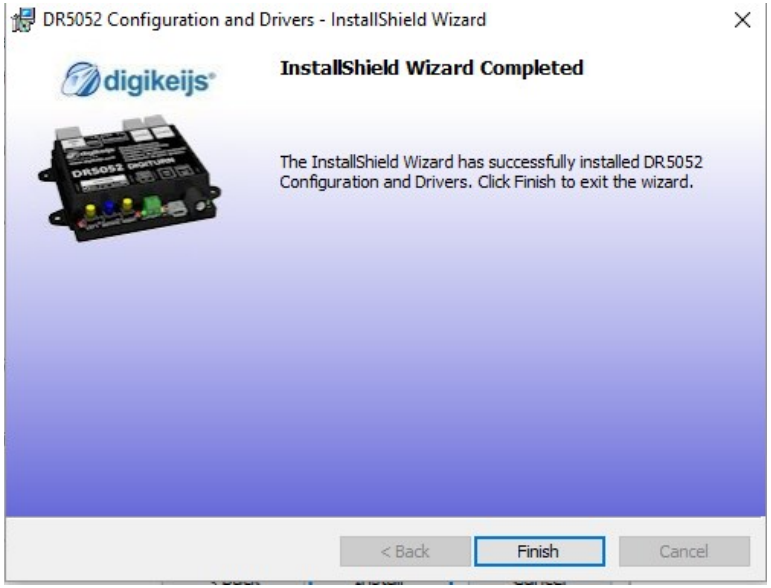
If you want to change the location of the software, you can do so on the next screen.
However, it is recommended to leave the settings as they are and click "Next".



Now follows a short overview of the settings. Click on "Install" if you agree.



Now the configuration software will be installed and Windows will ask you a few times if you trust Digikeij's software.When all this is complete, the last screen appears. Press "Finish" and the drivers and configuration program are installed.



3.4 Connecting the DR5052 to the PC via USB

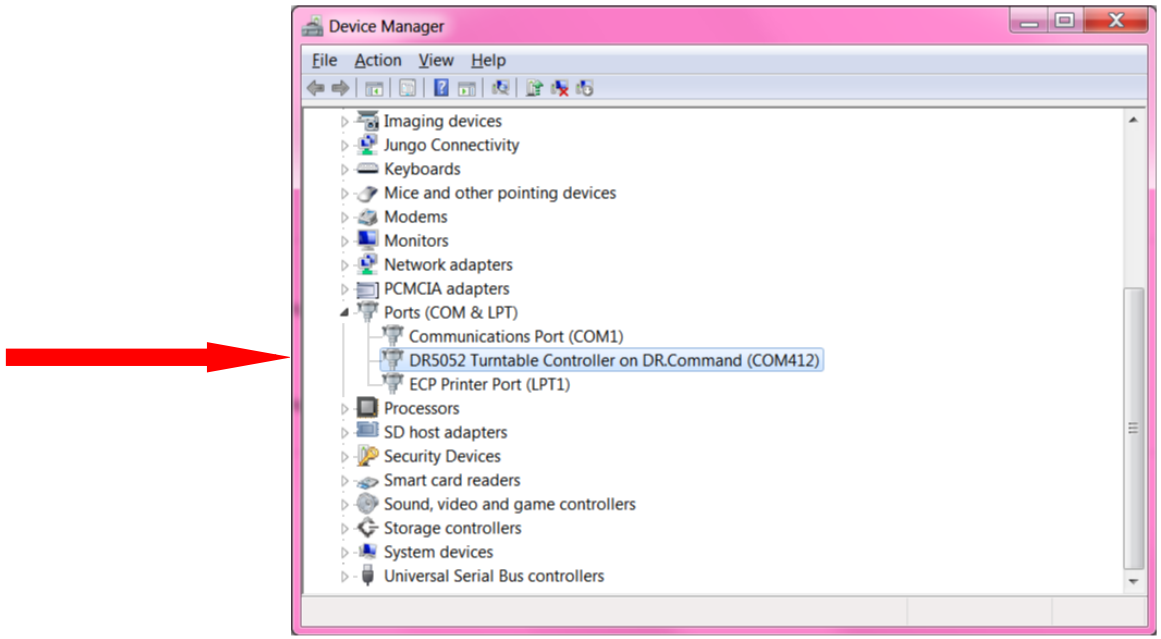
With the desktop symbol the software can be started. Do not start the software until the following steps have been performed!

First connect the PC with the supplied USB cable and then with the DR5052.
Windows "detects" the new hardware and installs the drivers.
Wait until this process is completed and you receive a message from Windows that the hardware has been installed correctly.

Windows will assign and reserve a COM port to the DR5052.
(The numbering of the COM ports depends on the configuration of the PC)

Here the **COM412** port is used.

COM412 is the communication port for the **DR.Command** protocol.



4.0 programming

ATTENTION!!!! It may happen that the USB connection to the PC is lost if the DR5052 remains permanently connected via USB and the track input of the DR5052 is supplied with power. For this reason **we recommend the use of a USB isolator.**

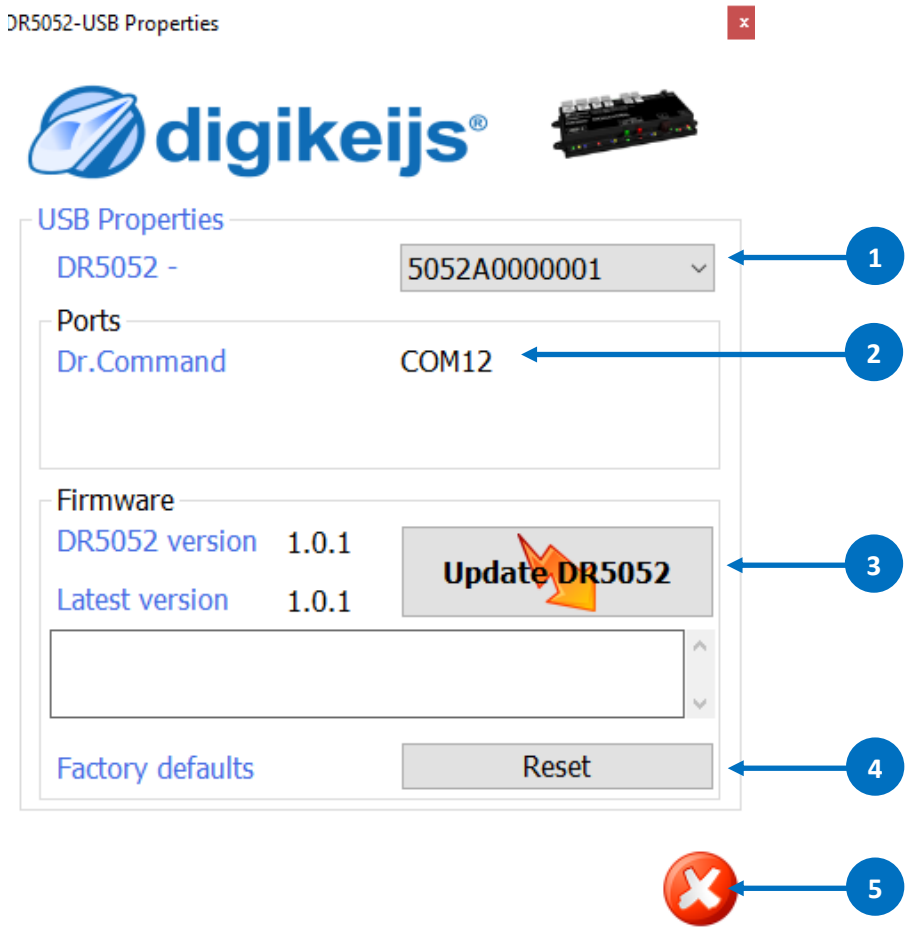
4.1 Overview Configuration Software

The different options can be easily accessed by clicking on the respective connections.

1. S88N in Properties
2. Properties Turntables Bridge Detector
3. USB Properties / Firmware Upgrade
4. Exit software
5. DR5052 serial number
6. Module Properties
7. LocoNet® Properties
8. Open User Manual
9. Operate and/or Configure the turntable

4.2 USB 2.0 Features

1) The selected DR5052 has been connected via USB and the serial number is read.
2) COM port number for the Dr.Command protocol.
3) Update the firmware of the DR5052.
4) Reset to factory settings.
5) Cancel

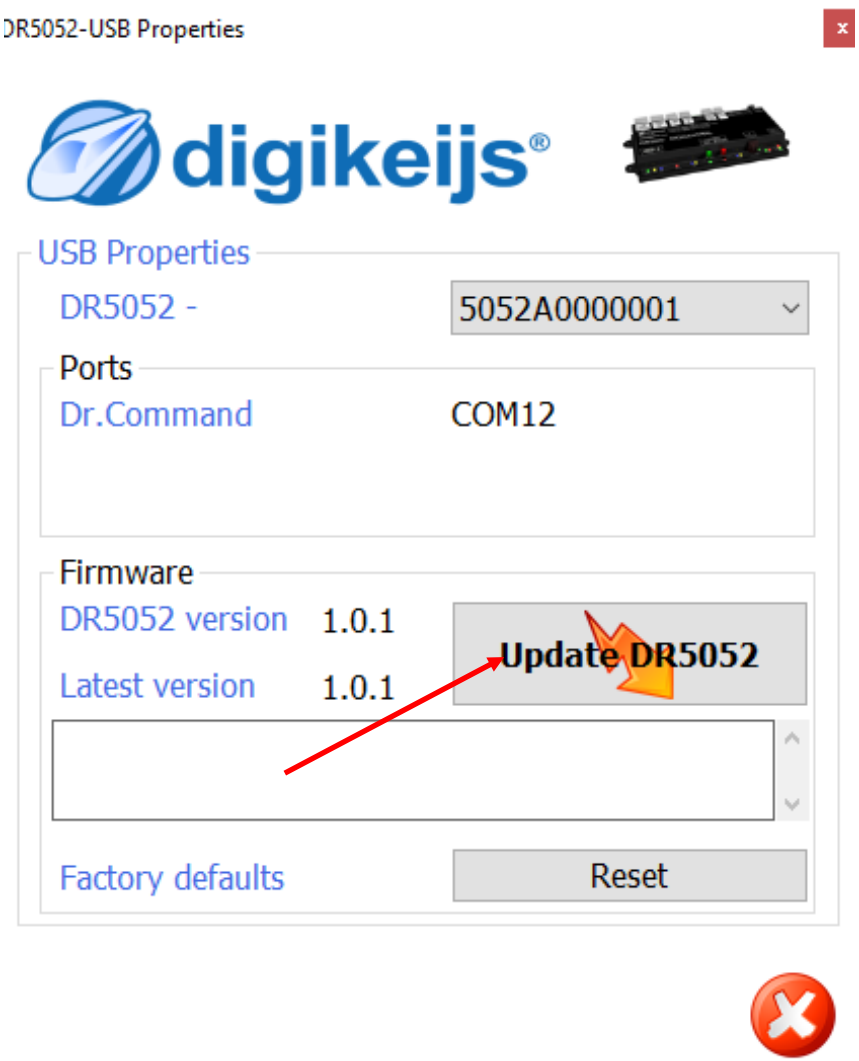


4.3 Restoring the factory settings

It is possible to reset the DR5052 settings to the factory defaults.
The USB menu in the configuration software allows you to activate the reset, which resets the DR5052 settings to factory defaults.

4.4 Updating the Soft- and Firmware

The development of the DR5052 software continues and is constantly being improved. Firmware updates allow you to equip the DR5052 with the latest software. The new firmware is integrated in a new configuration software. Before a firmware update is performed, it is recommended to save the current settings using the "Import/Export Settings" function.
You must first install the latest version of the configuration software before the current firmware update is available.



Procedure:

1) First uninstall the current installation of the configuration software from
2) her PC.
3) Disconnect the DR5052 from the PC.
4) Download the new version from our website.
5) Install the configuration software.
6) Connect the DR5052 to the USB cable and the PC.
7) Open the configuration software.
8) Go to the USB2.0 menu.
9) Use the "Update DR5052" button to activate the firmware update.

IMPORTANT: Do not disconnect the DR5052 from the PC when updating the firmware! This may cause the DR5052 to become unusable.

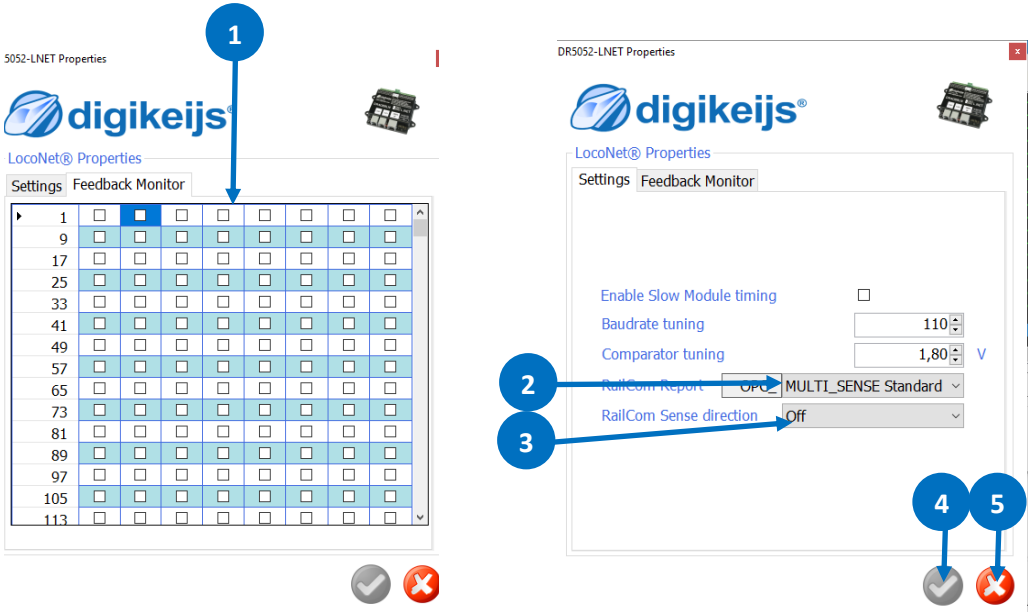
IMPORTANT!!! Before the firmware update, the DR5052 automatically saves the settings. However, it may happen that the DR5052 module is reset to the factory settings. Therefore, check all settings of the DR5052 after an update!

4.5 Firmware Versions

Version	Date	Description
1.0.0	02.12.2018	First beta version for beta testers
1.0.0	02.12.2018	First instructions
1.0.0	02.12.2018	Connection examples
1.2.0	03.04.2019	Arnold Turntable
1.2.0	03.04.2019	Stepper (stepper motor)
1.2.x	13.05.2019	Marklin z turntable

4.6 LocoNet® Features

1) **LocoNet® Feedback Monitor** The different colors characterize the different feedback buses.
2) **RailCom®** Report Here you select which LocoNet command is used to send the RailCom® message.
   MULTI_SENSE_Standard The original OPC_MULTI_SENSE command is used (Digitrax® and Bluecher® compatible).
   There is a restriction of the address ranges "locomotive address or block address" when the derail direction is sent.
   MULTI_SENSE_Long The new OPC_MULTI_SENSE_L command is used: No restriction of the address ranges.
   MULTI_SENSE_Both Both commands (Long and Standard) are transmitted to the central unit.
3) **RailCom® Railing direction** Here you can select how the derailment direction is reported to the control panel in the case of "MULTI_SENSE_Standard".
   Off No derailment direction is transmitted.
   in block address Derailing direction is transmitted in the block address (restriction of block addresses to a maximum of 2048).
   in locomotive address Derailing direction is transmitted in the locomotive address (restriction of locomotive addresses to a maximum of 4095).
4) Accept current settings.
5) Cancel.

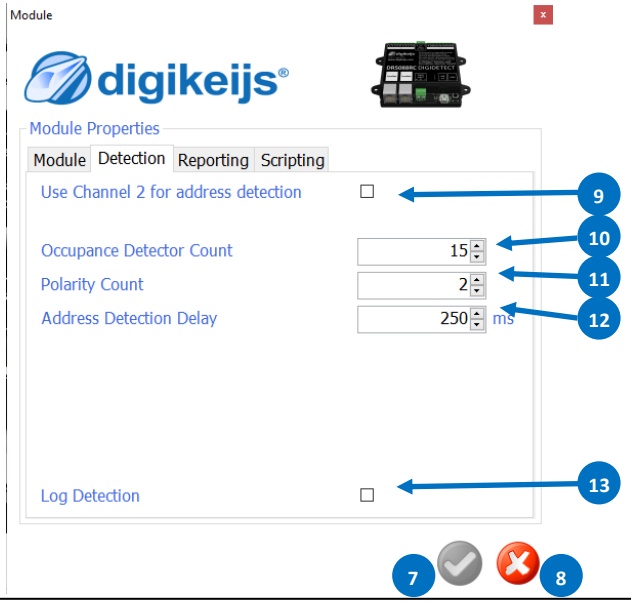


4.6.0 Module Properties

1) Display Logging Window.
2) Select language.
3) Module address in LocoNet®.
4) Report feedback contacts after switching on.
5) Waiting time after switching on before the contacts are reported.
6) Module Setting Export/Import
7) Accept current settings
8) abort
9) Railcom® channel 2 for additional address recognition.
   A maximum of 4 addresses can then be detected simultaneously by one detector.
10) Number of bits to be counted before a busy message is issued.*
11) Number of Railcom® bits to be counted before direction recognition takes place.*
12) Waiting time until the direction recognition is measured in a stable way.*
13) Railcom® detection with logging

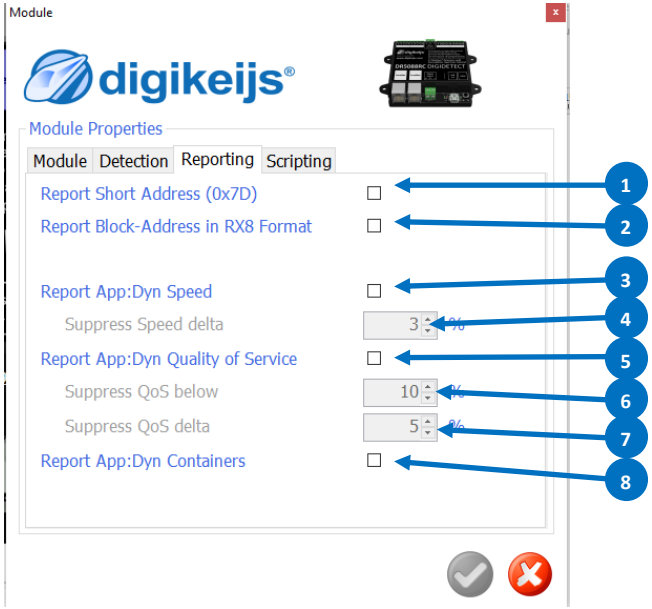
*The lower the value, the faster the detection.

Note! Not all functions are supported by all decoders. Please refer to the respective decoder manual for details.



4.6.1 Module Properties

1. Digitrax® specification for reporting 'short' locomotive addresses.
   Standard: Report 0x7D in high quality byte.
   Alternative: Report 0x00 in high quality byte.
2. Block addresses are sent by Digitrax® only in even numbers. However, the DR5052 can also send linear (even and odd) block addresses, extending the reporting range by 2048.
3. Report the speed of the locomotives to the control centre via Railcom®
4. A "Delta" value can be set here so that too many messages are not sent to the central unit when the value changes quickly. (*See example)
5. Report the signal quality of the Railcom® messages to the control centre. The messages are reported by the decoder in %.
   0% All commands have arrived (track or locomotive clean).
   100% of the commands have not arrived (track or locomotive dirty).



6. All QoS messages below this value are not reported to the central unit.
7. A "Delta" value can be set here so that too many messages are not sent to the central unit when the value changes quickly.
8. "Report the "tank contents" of the locomotives to the central unit via Railcom®.

***Example:**

1.	last measured	value =10	
	newly measured	value = 6	**Delta = 4**
2.	last measured	value =3	
	newly measured	value =9	**Delta = 6**
3.	last measured	value =12	
	Newly measured	value =1	**Delta = 11**

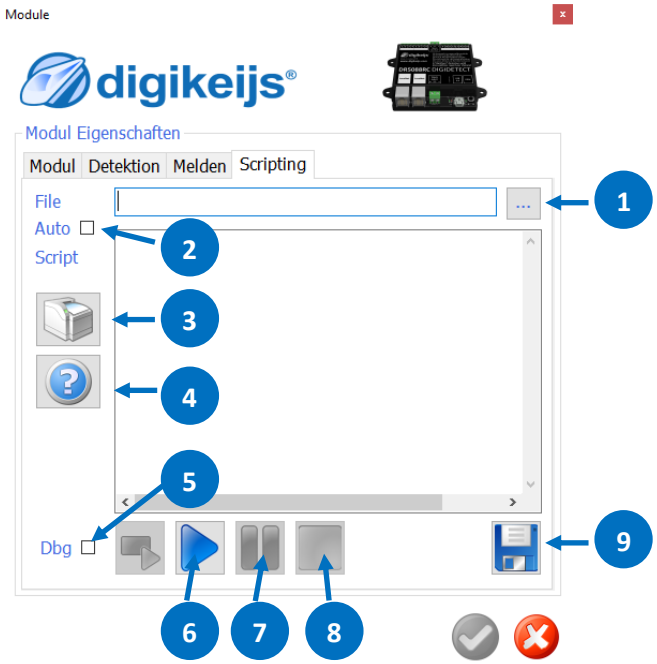
Parameter "Delta" = 6 The values 2. and 3. are reported, 1. is suppressed.

Note! Not all functions are supported by all decoders. Please refer to the respective decoder manual for details.

4.7 Scripting with DR. Script

DR Script is a BASIC / Assembler similar, text based programming language. With Dr. Script you have the possibility to control even complex processes with the help of a product of the DR50xx series. Further information about Dr. Script can be found in the separate documentation.

1) Open script.
2) If this check mark is set, the last called script is automatically started after the DR50xx has started.
3) Select printer.
4) Call up help.
5) Debug mode.
6) Start the selected script.
7) Stop selected script (PAUSE).
8) Stop selected script.
9) Save script.

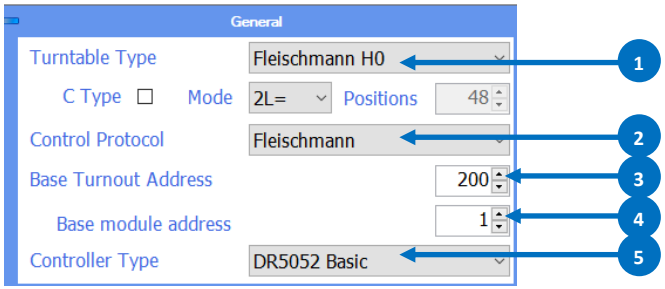


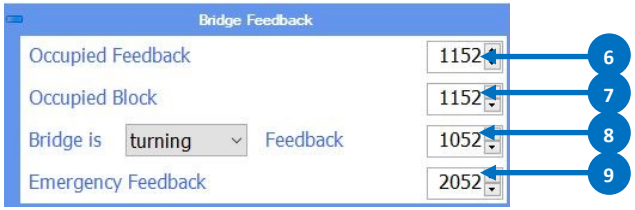
4.8 Configuring the turntable

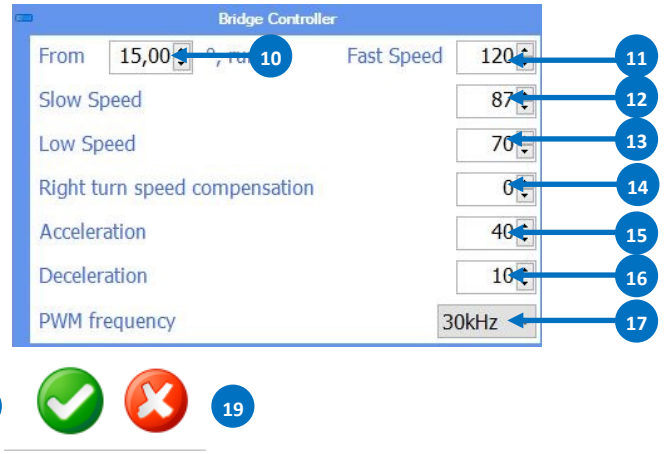
Here the type of turntable, the protocol to be used, track connections, feedback numbers and all other characteristics of the turntable are defined. Depending on which decoder type is selected, different options are available in the software.

4.8.1 Settings which are available for the decoder types Basic, Basic-Plus, Profi.

1) Turntables Type
   Protocol type with which the turntable is to be controlled
   (see Annex points 7.1. and 7.2 respectively)
2) Base address of the DR5052.
3) The base address determines from which address the functions for controlling the turntable start. (see Appendix item 7.1 or 7.2)
4) First turnout (1st magnetic article address) which is to be addressed.
   Setting:
   0 = Roco® (shift of the magnetic article addresses + 4)
   1 = Magnetic article addresses Standards-compliant to RCN 213
   (default setting!)
5) Selection of the operating mode of the DR5052.
6) Feedback number of the occupancy detector of the turntable platform.
7) RailCom® Feedback number of the occupancy detector of the turntable platform.
8) Feedback number Turntable platform rotates or stop.
9) Feedback number to trigger an emergency stop.
10) From this rotation angle in degrees the "fast" speed is used for the rotation.
11) "Fast" speed of rotation of the bridge.
12) "Slow" speed for short movements of the bridge e.g. from a siding to the next one.
13) "Low" speed after reaching the siding until the bridge stops.7
14) Compensation for right speed of rotation. If the turntable turns faster in one direction, this can be compensated.
    Positive value turns faster to the right than to the left.
    Negative value turn slower to the right than to the left.
15) Acceleration ramp until the set speed is reached.
16) Brake ramp until the set speed or standstill is reached.
17) PWM Control frequency for the motor of the turntable.
18) Accept settings.
19) Cancel



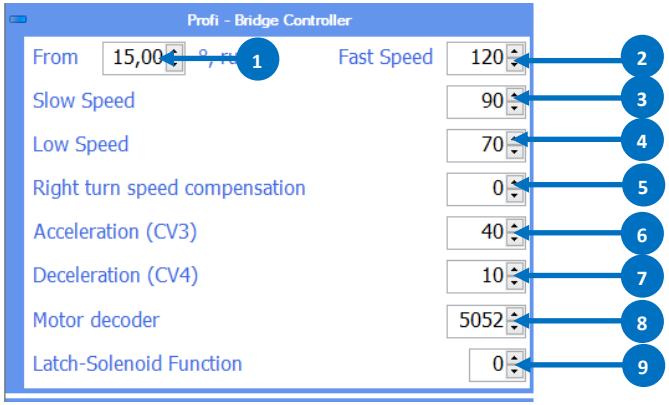




4.8.2 Settings speed etc. for the professional decoder type.

The DR5052 can also control the turntable using a locomotive decoder. This makes it possible to control the drive motor load, illuminate the bridge house, switch entry and exit signals on the bridge and of course the turntable can be equipped with sound. To be able to use the professional version, the turntable must be converted. A complete conversion kit is available for this purpose. Only a suitable locomotive decoder with the corresponding number of function outputs must be purchased separately. For details, please refer to the documentation for the conversion of the turntable.

If the DR5052 is configured as a professional version decoder, the following settings are still possible.

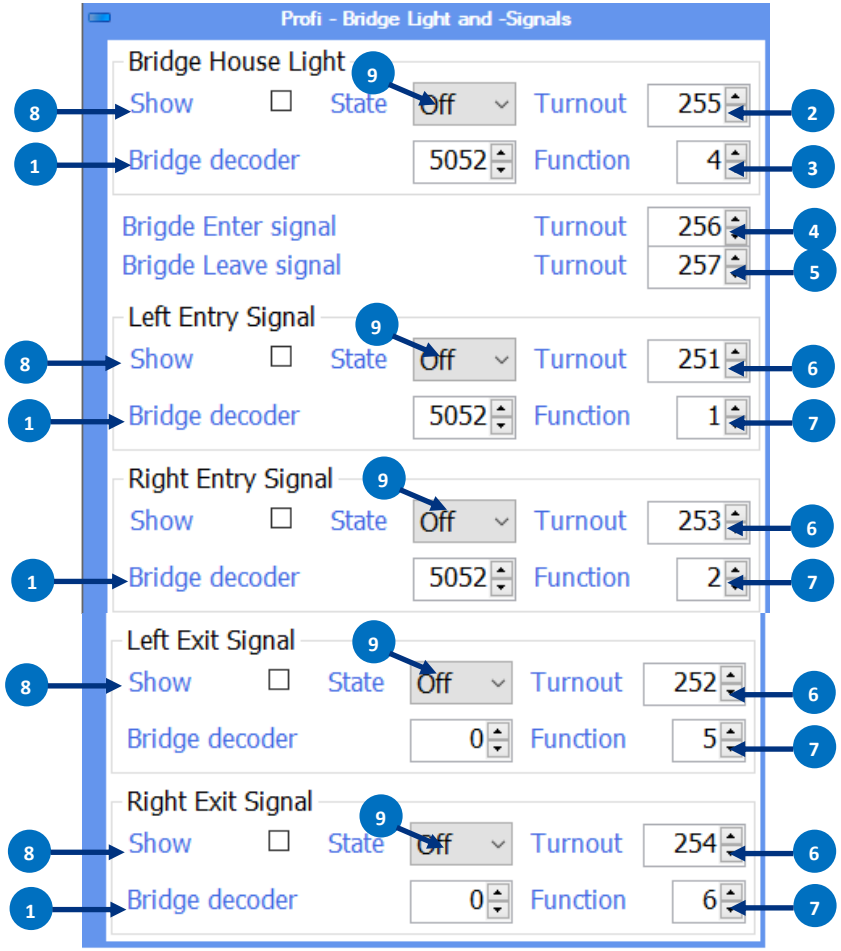


1) From this rotation angle in degrees the "fast" speed is used for the rotation.
2) "Fast" speed of rotation of the bridge.
3) "Slow" speed for short movements of the bridge e.g. from a siding to the next one.
4) "Low" speed after reaching the siding until the bridge stops.
5) Compensation of right rotation speed.
   If the turntable turns faster in one direction, this can be compensated.
   Positive value turns faster to the right than to the left.
   Negative value turn slower to the right than to the left.
6) Acceleration (CV3) of the locomotive decoder.
   (a change is written directly into the decoder via POM)
7) Delay (CV4) of the locomotive decoder.
   (a change is written directly to the decoder via POM)
8) Locomotive address of the installed decoder.
9) Function number (F0-Fx) of the decoder with which the locking function of the turntable is switched.

The conversion kit is unfortunately not yet available. We are working on it! If everything goes according to plan, the conversion kit will be available in the 2nd quarter of 2019.

4.8.3 Settings professional decoder of the bridge for lighting and signal control.

Here the functions are assigned which the built-in locomotive decoder should control.

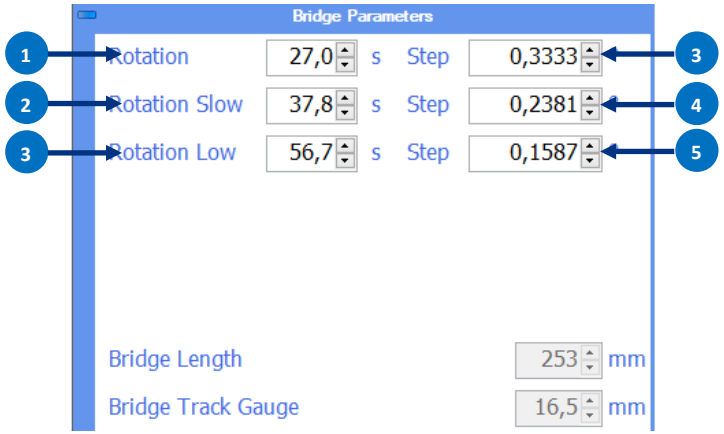


1) Base address of the locomotive decoder installed in the bridge.
2) Switch address which switches the lighting.
3) Decoder function (Fx) which is assigned to the lighting.
4) As soon as the turnout address is set to "straight", the corresponding exit signal of the bridge automatically switches to SH1 as soon as the position is reached and the bridge is stationary. Turning the signal to SH0.
5) As soon as the turnout address is set to "straight", the corresponding departure signal of the bridge automatically switches to SH1 as soon as the position is reached and the bridge is stationary. Turning sets the signal to SH0.
6) Turnout address that switches the signal.
7) Decoder function (Fx) which is assigned to the signal.
8) By ticking the check box the adjacent function is activated and thus switchable.
9) Basic position of the corresponding function after switching on the supply voltage.

The conversion kit is unfortunately not yet available. We are working on it! If everything goes according to plan, the conversion kit will be available in the 2nd quarter of 2019.

4.8.4 Settings to synchronize the turntable display in the DR5052 tool with the real turntable.

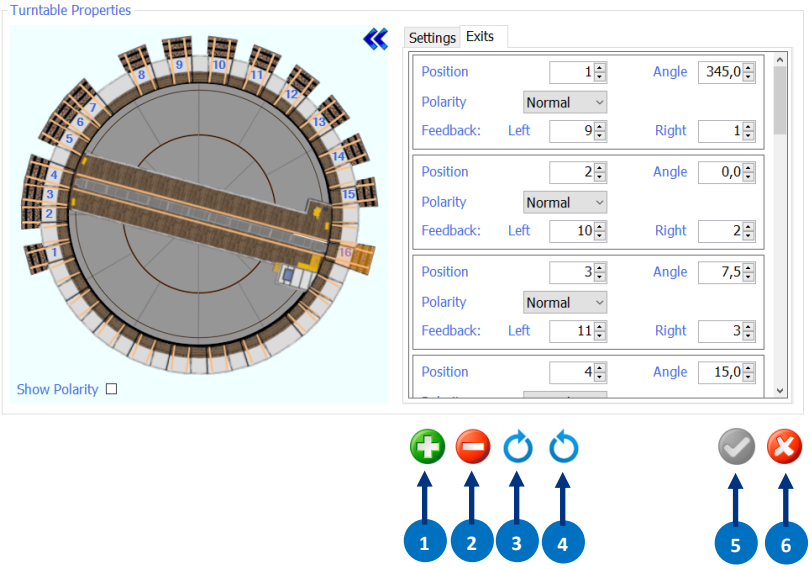
This input mask can be used to set the rotary motion display in the DR5052 Tool so that the rotary motion in the tool matches the rotary motion of the real turntable. To synchronize the setting, simply stop the time the turntable takes to rotate by 180 degrees. This time must then be entered in the corresponding field. The tool calculates all further values independently.

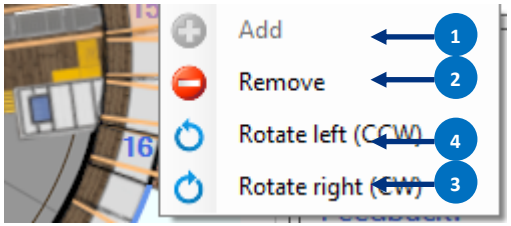


1) Time in sec. which the turntable needs for a rotation of 180 degrees.
2) Normally no input required (calculated automatically).
3) Normally no input required (calculated automatically).
4) Normally no input required (calculated automatically).
5) Normally no input required (calculated automatically).
6) Normally no input required (calculated automatically).

4.9 Add track connection

In this menu the physically existing track connections of the turntable must be recorded. This can be done in two ways.



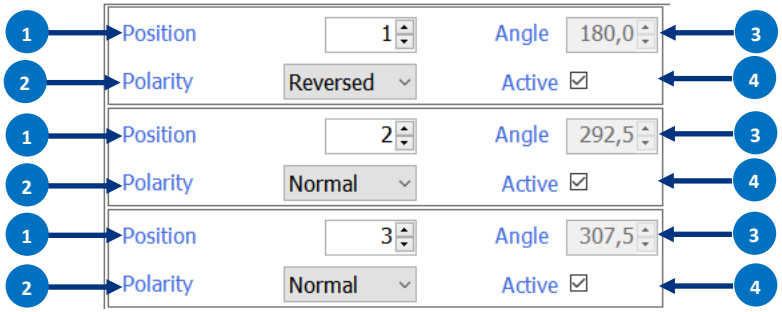


Add track connection via the individual buttons in the settings menu.
Button 1) adds a new siding to the bridge house. If the button is pressed several times, a new siding is always created for each click.
Now the desired siding can be selected with the mouse (left click). With the buttons 3) and 4) the siding can be moved clockwise or counter clockwise. This is possible until the selected siding reaches the next free siding. A deletion of the selected siding is possible with button 2).

Add track connection with the context menu.
Select the desired siding with the mouse pointer and right click. Now the context menu opens with which a new siding can be added. If you want to move a siding, you can also do this with the context menu. Simply select the desired siding with the mouse pointer and right click and move the siding with left or right turn. You can also remove a siding in the same way

1) Add a connection
2) Remove rail connection
3) Move track connection clockwise
4) Move track connection counter clockwise
5) Accept current settings
6) abort

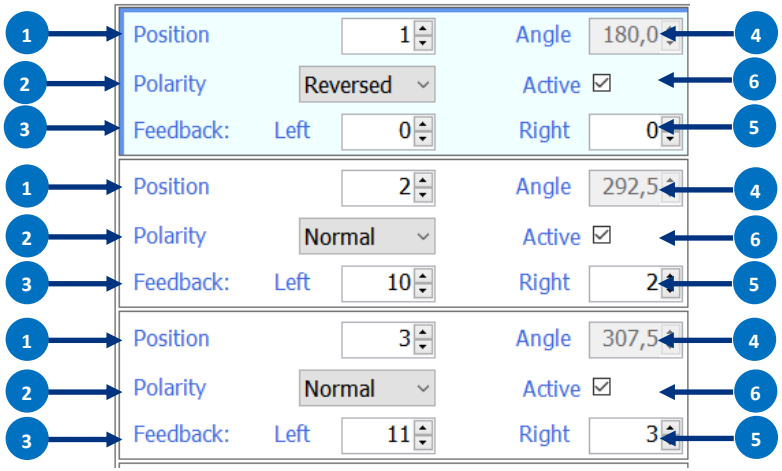
4.10 Parameterize track Connection Basic Version



1) Position of the rail siding (for assigned address see Appendix 7.1.1 or 7.1.2 of the selected protocol)
2) Polarity of the turntable platform and track connections.
3) Physical position of the sidings in degrees (no input required)
4) Track siding Active*

(*If necessary, remove this check mark when using TrainController® as a control program. For more information, please refer to the separate documentation on the use of the DR5052 and TrainController®).

4.11 Parameterize track Connection Basic-Plus and Profi Version

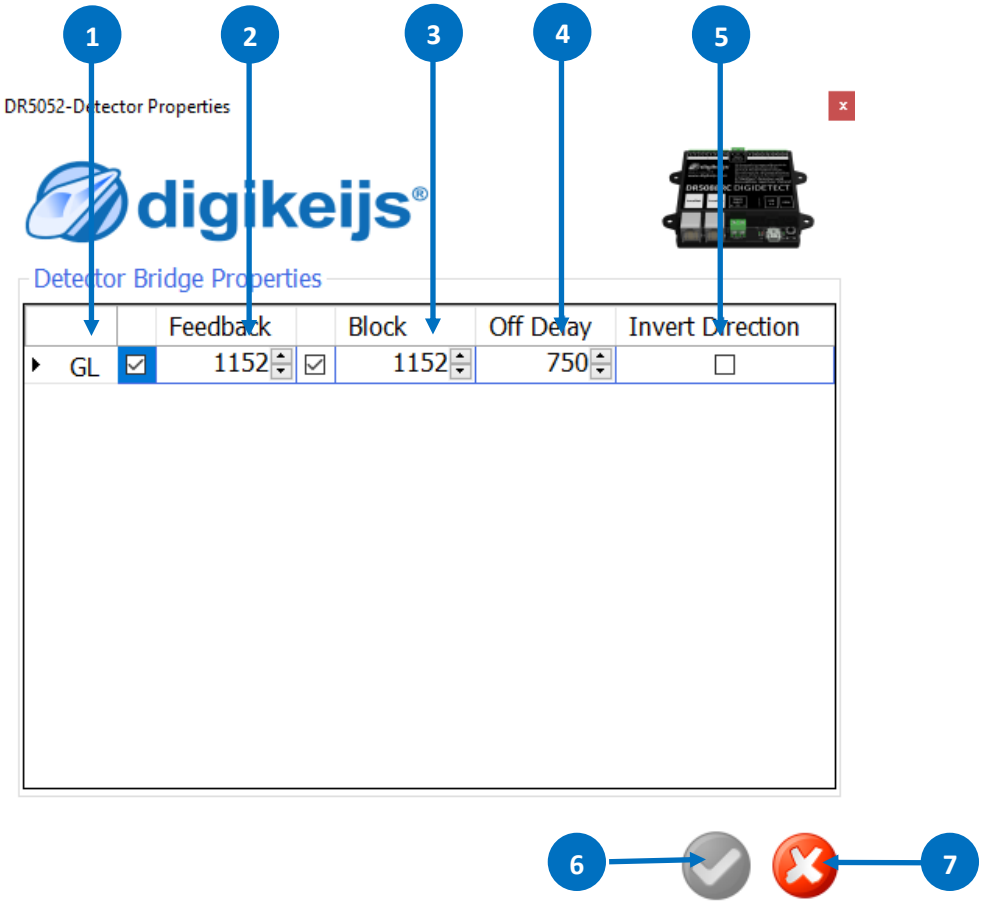


1) Position of the rail siding (for assigned address see Appendix 7.1.1 or 7.1.2 of the selected protocol)
2) Polarity of the turntable platform and track connections.
3) Feedback number LEFT rail of the corresponding track connection.
   With this RM, the DR5052 recognizes the position and the direction from which the rail siding is approached.
   (Further information see connection example item 6.4, 6.5, 6,6)
4) Physical position of the sidings in degrees (no input required)
5) Feedback number RIGHT rail of the corresponding siding.
   With this RM the DR5052 recognizes the position and the direction from which the siding is approached.
6) Track siding Active*
   (*If necessary, remove this check mark when using TrainController® as a control program. For more information, please refer to the separate documentation on the use of the DR5052 and TrainController®).

4.12 Features Bridge Detector

Here the properties of the global detector of the turntable platform are defined.

1) Detector input on the module. (If a check mark is removed here, the corresponding detector is deactivated).
2) Feedback address of the normal occupancy detector (current sensor).
3) Block number linked to the detector output (RailCom® detector).
4) Switch-off delay of the feedback units.
5) The DR5052 detects the track direction of the locomotive.
   With this option you can reverse the direction.
6) Accept current settings.
7) Cancel

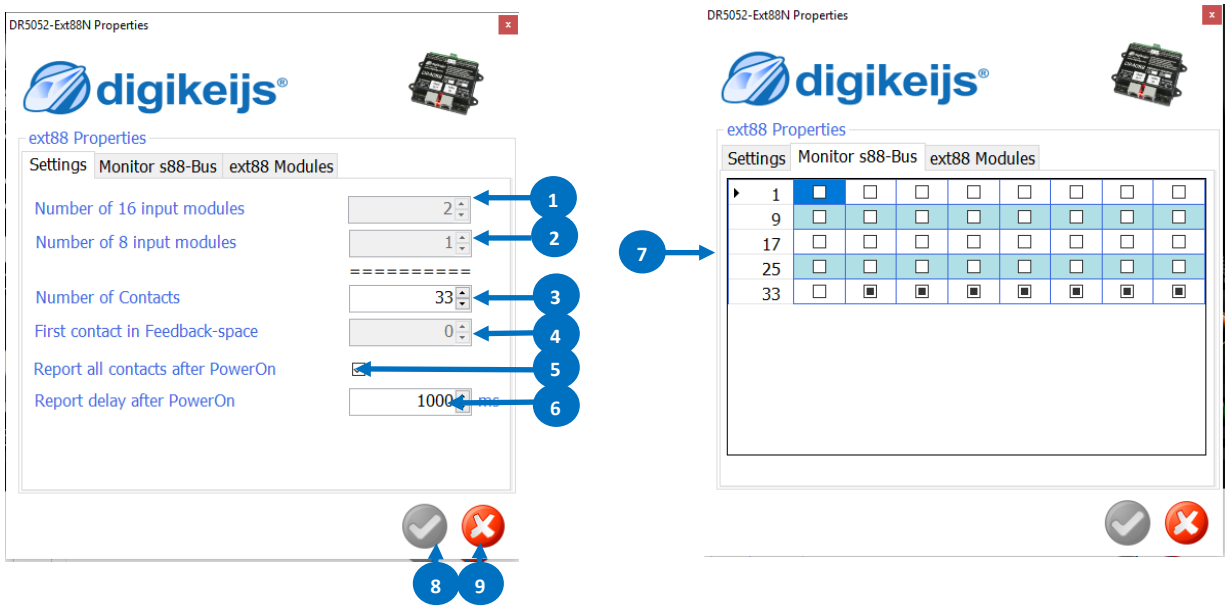


4.13 S88N® IN Settings (only for Basic Plus and Professional versions)

The S88N® connector is a S88N® compatible bus. The **DR4088-OPTO** feedback modules for detecting the position of the turntable relative to the track sidings are connected to this connection. The feedback addresses programmed here are only used internally by the DR5052 and are not reported to the control panel, so these feedback modules do not occupy any feedback devices in the feedback area of the actual control panel.

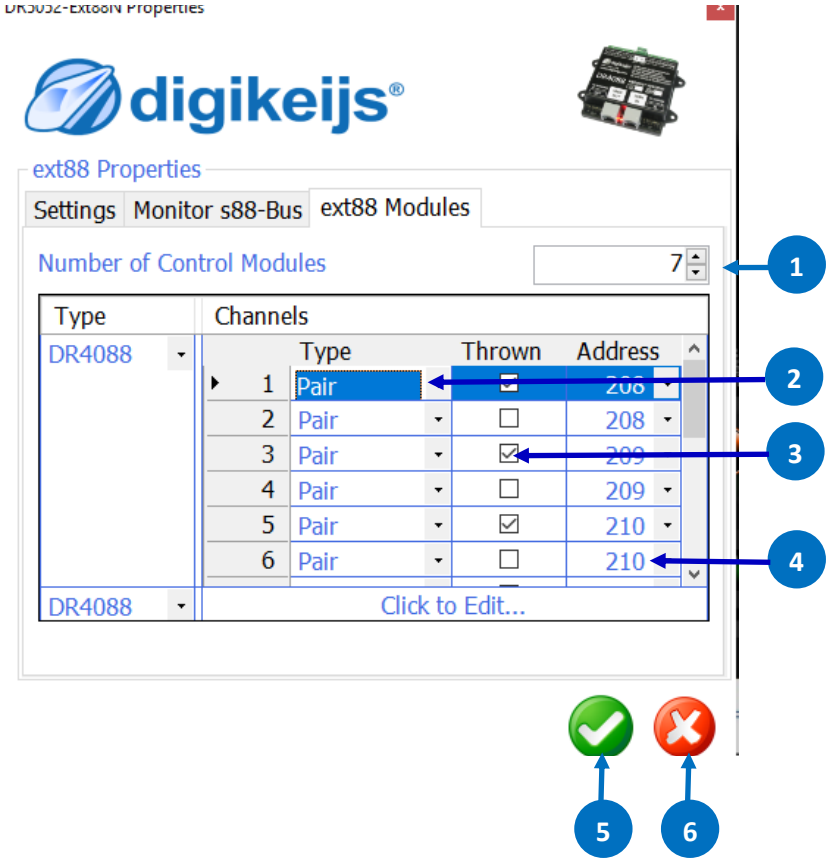
1) Number of connected S88N® feedback modules with 16 inputs. (No input required)
2) Number of connected S88N® feedback modules with 8 inputs. (No input required)
3) Total number of connected feedback contacts.
4) First feedback contact of the 1. connected s88® module. (No input required)
5) When the track output is switched on (green button), all inputs are signalled.
6) Waiting time after switching on before the contacts are reported.
7) Complete overview of all connected S88N® contacts.
8) Accept current settings
9) abort

Note: Normally there is no need to make a setting here as the position feedback addresses are automatically assigned as soon as the plus or the pro is selected.



4.13.1 ext88N use to control the turntable

With the DR5052, it is possible to easily control the turntable via feedback modules connected to the S88N bus (DR4088GND, 4088OPTO).
For this function, the 8x16 feedback inputs (a maximum of 128 feedback inputs) are provided on the S88N bus of the DR5052. If this function is used, note that the feedback modules that are used for the connection of buttons or switches must always be connected as the first modules to the S88N bus of the DR5052 !

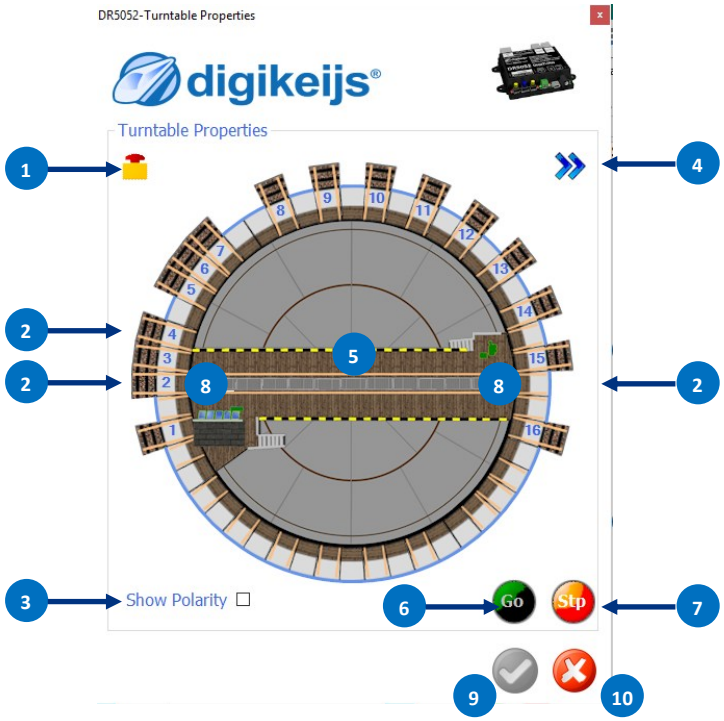


1) Number of feedback modules to be used for push buttons or switches.
2) Function selection how the feedback module is to be used.
   'Pair' Two buttons per address, two inputs are required from the DR4088.
   Conventional address control with the 'Red' and 'Green' keys
   'Toggle' One pushbutton per address, one input is required from the DR4088.
   The term toggle means:
   Press the button, the address switches from "closed to thrown".
   Press the button again, the address switches from "thrown to closed".
   'OnOff' One toggle switch per address, one input is required from the DR4088.
   OnOff' means:
   Toggle switch On, "address thrown".
   Toggle switch Off, "Address closed".
3) The DR5052 switches the address as soon as the switch position changes.
   Select how the solenoid should switch.
4) Address of the solenoid to be switched.
   If the 'Pair' function has been selected, the address must be entered twice (once for the red button and once for the green button).
5) Accept current settings
6) abort

5.0 Control turntable

5.2 Turntable with the Control tool (Fleischmann® protocol)

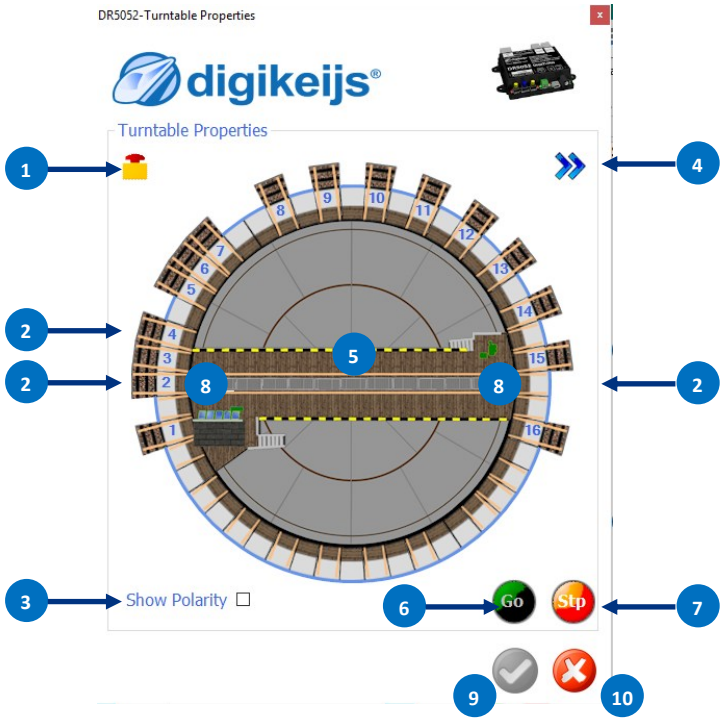
Here the general operation of the turntable is described and how the turntable behaves when the Fleischmann® protocol is selected in the settings. The exact protocol is shown in the appendix item 7.1.2. Here you can also see which turnout address controls which (addresses of the sidings, turn address 180°, etc.).



1) Emergency Stop rotation.
   The rotation stops as long as the mushroom-switch remains pressed.
2) Track connection 1-xx
   By clicking on the desired track connection, the platform rotates to the desired position.
   Left click with the mouse on the siding -> rotation of the bridge house side to the selected siding.
   (The turntable bridge always takes the shortest way)
   Right click with the mouse on the siding -> rotary movement to the selected siding opposite the bridge house.
   (The turntable platform always takes the shortest way)
3) Show polarity.
   Shows the polarity of the turntable platform and the track connections.
4) Expand the display and open the settings menu.
5) Rotate feedback display and turntable platform 180°.
   Indicates once that the turntable platform is occupied (normal occupancy detector) and additionally RailCom® information (locomotive address, track direction, etc.) is read out.
   (Of course only if provided by the installed locomotive decoder)
   Left click with the mouse on the message display -> turn counterclockwise (to the left) by 180°.
   Right click with the mouse on the message display -> turn clockwise (to the right) by 180°.
6) Send Go command via LocoNet® (track voltage on).
7) Stop Send command via LocoNet® (track voltage off).
8) By clicking on the end of the bridge, the turntable rotates one position (step) further.
   The positions are always approached in the order e.g. 1-2-3-4-etc.
   Left click with the mouse on the end of the bridge-> counterclockwise rotation (to the left) to the next siding.
   Right click with the mouse on the end of the bridge -> clockwise rotation (to the right) to the next siding.
9) Accept current settings.
10) Cancel

5.1 Turntable with the Control Tool (Märklin® Protocol)

Here the general operation of the turntable is described and how the turntable behaves when the Märklin® protocol is selected in the settings. The exact protocol is set out in Annex, point 7.1.1. Here you can also see which turnout address controls what (addresses of the sidings, turn address 180°, etc.).



1) Emergency-stop rotation.
   The rotation stops as long as the mushroom switch remains pressed.
2) Track connection 1-xx
3) By clicking on the desired track connection, the platform rotates to the desired position.
   Left click with the mouse on the siding -> clockwise rotation (to the right) to the selected siding.
   Right click with the mouse on the siding -> turn counter clockwise (to the left) to the selected siding.
4) Show polarity.
   Shows the polarity of the turntable platform and the track connections.
5) Expand the display and open the settings menu.
   Rotate feedback display and turntable platform 180°.
   Indicates once that the turntable platform is occupied (normal occupancy detector) and additionally Railcom® information (locomotive address, track direction, etc.) is read out.
   (Of course only if provided by the installed locomotive decoder)
   Left click with the mouse on the message display -> turn clockwise (to the right) by 180°.
   Right click with the mouse on the message display -> turn counter clockwise (to the left) by 180°.
6) Send Go command via LocoNet® (track voltage on).
7) Stop Send command via LocoNet® (track voltage off).
8) By clicking on the end of the bridge the turntable turns one position (step) further.
   The positions are always approached in the sequence e.g. 1-2-3-4-etc.
   Left click with the mouse on the end of the bridge-> clockwise rotation (to the right) to the next siding.
   Right click with the mouse on the end of the bridge -> turn counterclockwise (to the left) to the next siding.
9) Accept current settings.
10) abort

6.0 Connection examples

Attention! The DR5052 can only be operated as **Basic Version** and **without** LocoNet® on a digital system that operates according to the **"Common Ground" principle** (for example Uhlenbrock®). Failure to do so may result in damage to the DR5052 and/or the control unit.

A few basic requirements:
For the **Basic** and the **Basic-Plus** version no conversion of the turntable is necessary! The tabs on the bridge **(Basic-Plus version)** must not be removed! If the **professional** version is to be used, conversions to the turntable are necessary. This conversion is described in a separate manual.
are described.

The DR5052 is supplied directly with track voltage or via an optional separate DC power supply unit with min. 16V DC/2A. The power supply unit **must** always be used when the track **voltage is below 16V**. A voltage below 16V is **not** sufficient to safely control the turntable.

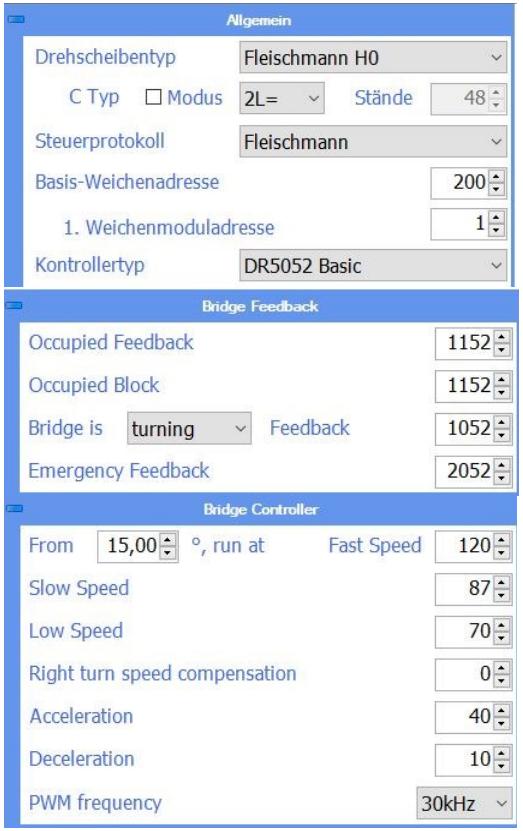
! Attention!
In principle, the **track connections** of the turntable must be insulated from the shed tracks on **both** sides! This must be observed in order to avoid a short circuit. The continuing tracks can then be normally supplied with track voltage again or monitored with a feedback signal.

Please note that there are of course other possibilities and special cases that cannot be presented here!

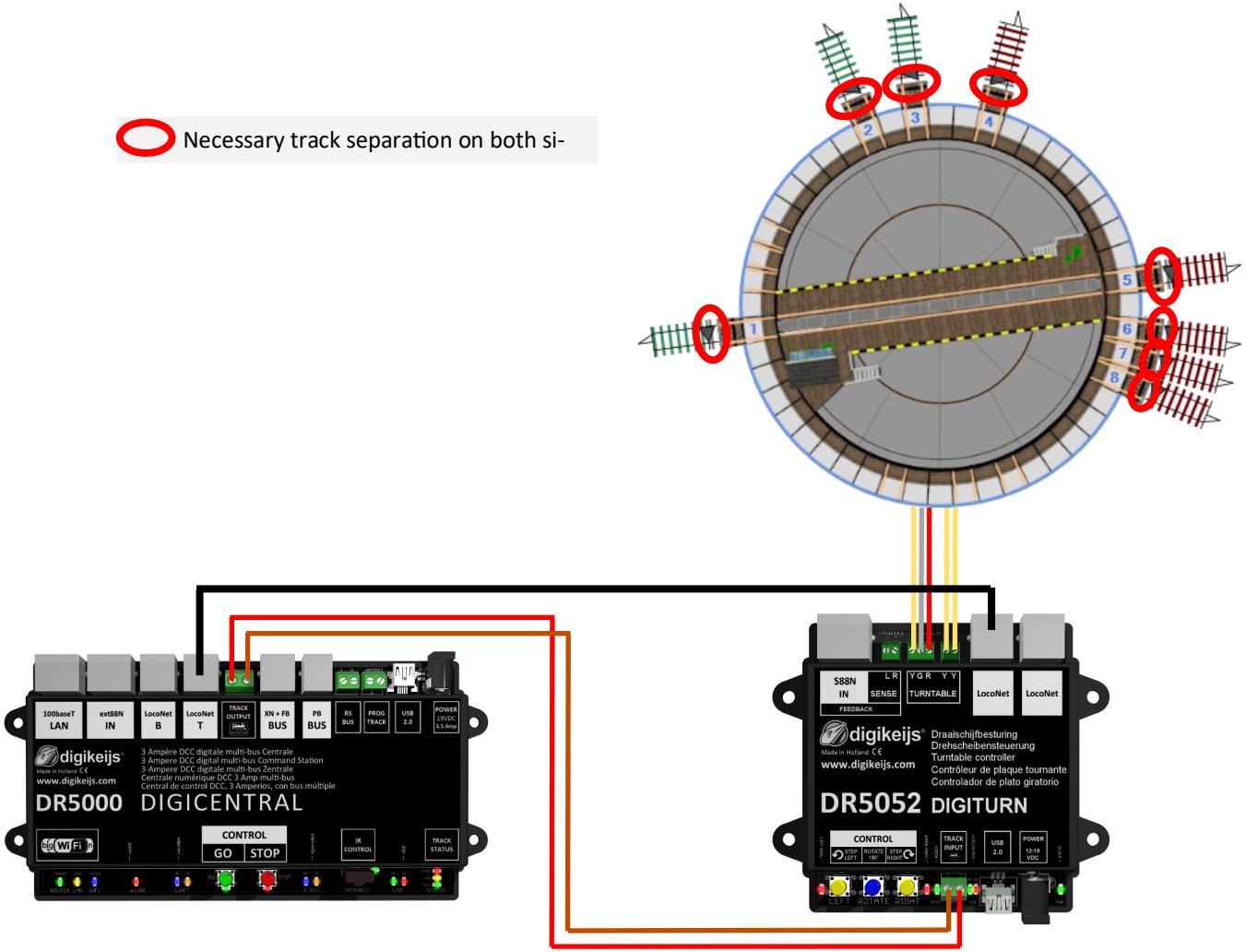
6.1 DR5052 Basic for Fleischmann® H0,N and Roco® TT DS, 2-wire track

If the DR5052 is used in the basic version, **no modifications** to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are **insulated** (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control centre. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet®.

These settings are necessary for operation.
See point 4.8.



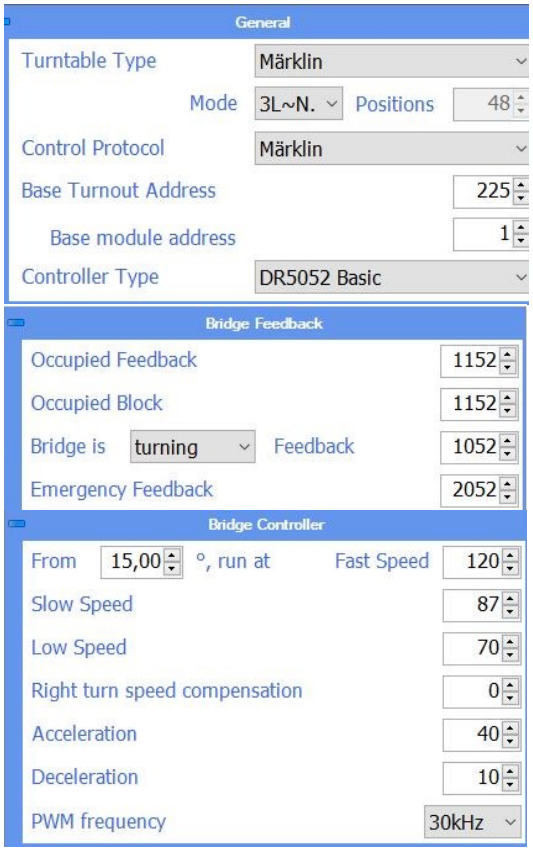
Necessary track separation on both si-



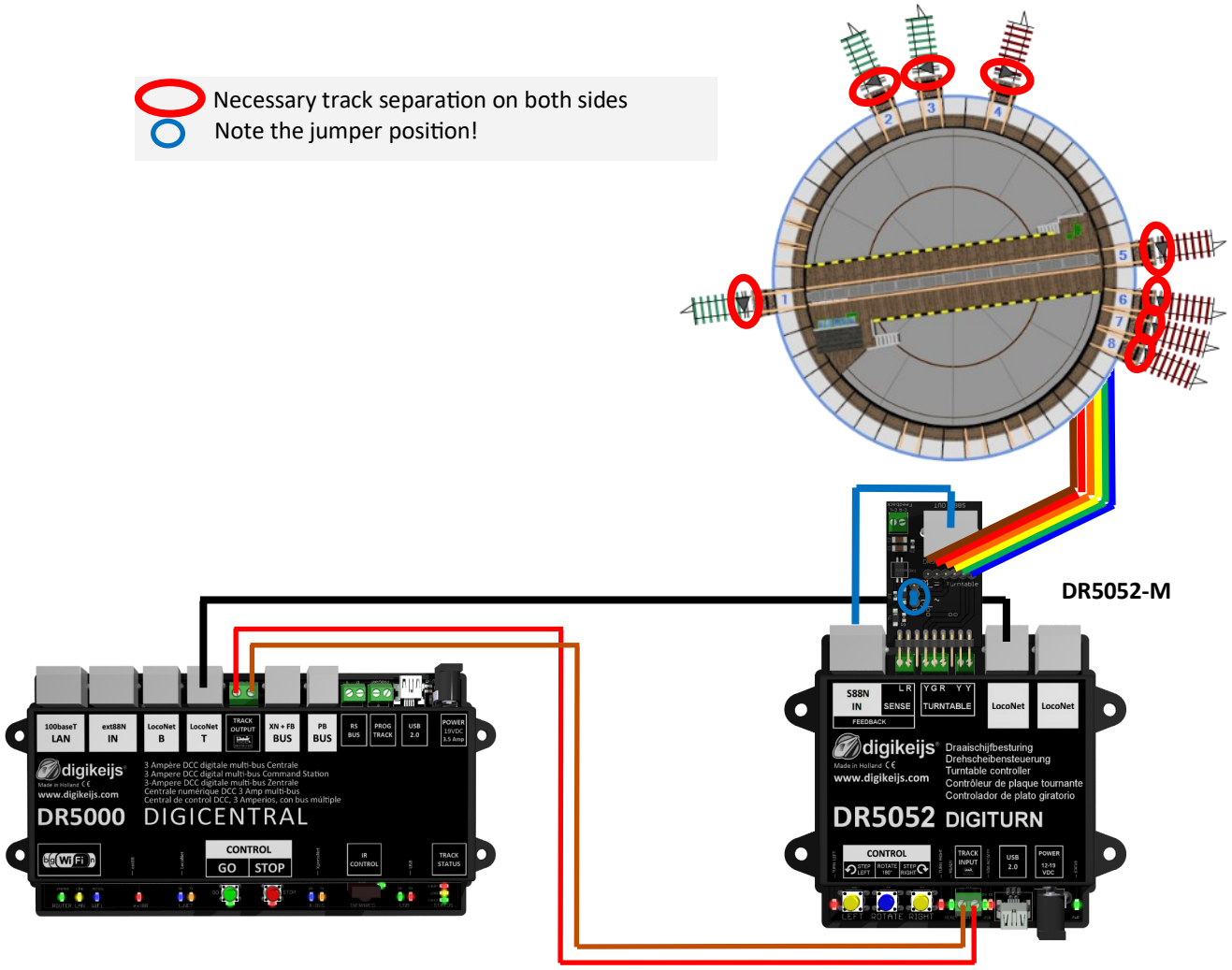
6.2 DR5052 Basic for Märklin® H0 DS, 3-wire track

If the DR5052 is used in the basic version, **no modifications** to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are **insulated** (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via feedback sensors or directly from the control centre. The Märklin® adapter transmits the occupancy message of the turntable platform against track ground (GND). An additional feedback is therefore not necessary. Various information (Railcom® information, feedback, control commands) is exchanged with the control centre via LocoNet®. The **DR5052-M adapter** board is required to operate the Märklin® turntable.

These settings are necessary for operation.
See point 4.8.



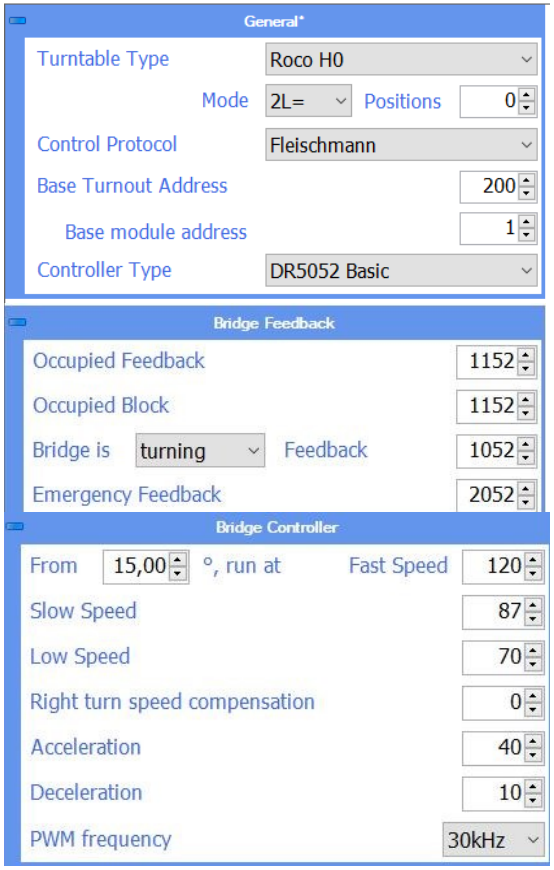
Necessary track separation on both sides
Note the jumper position!



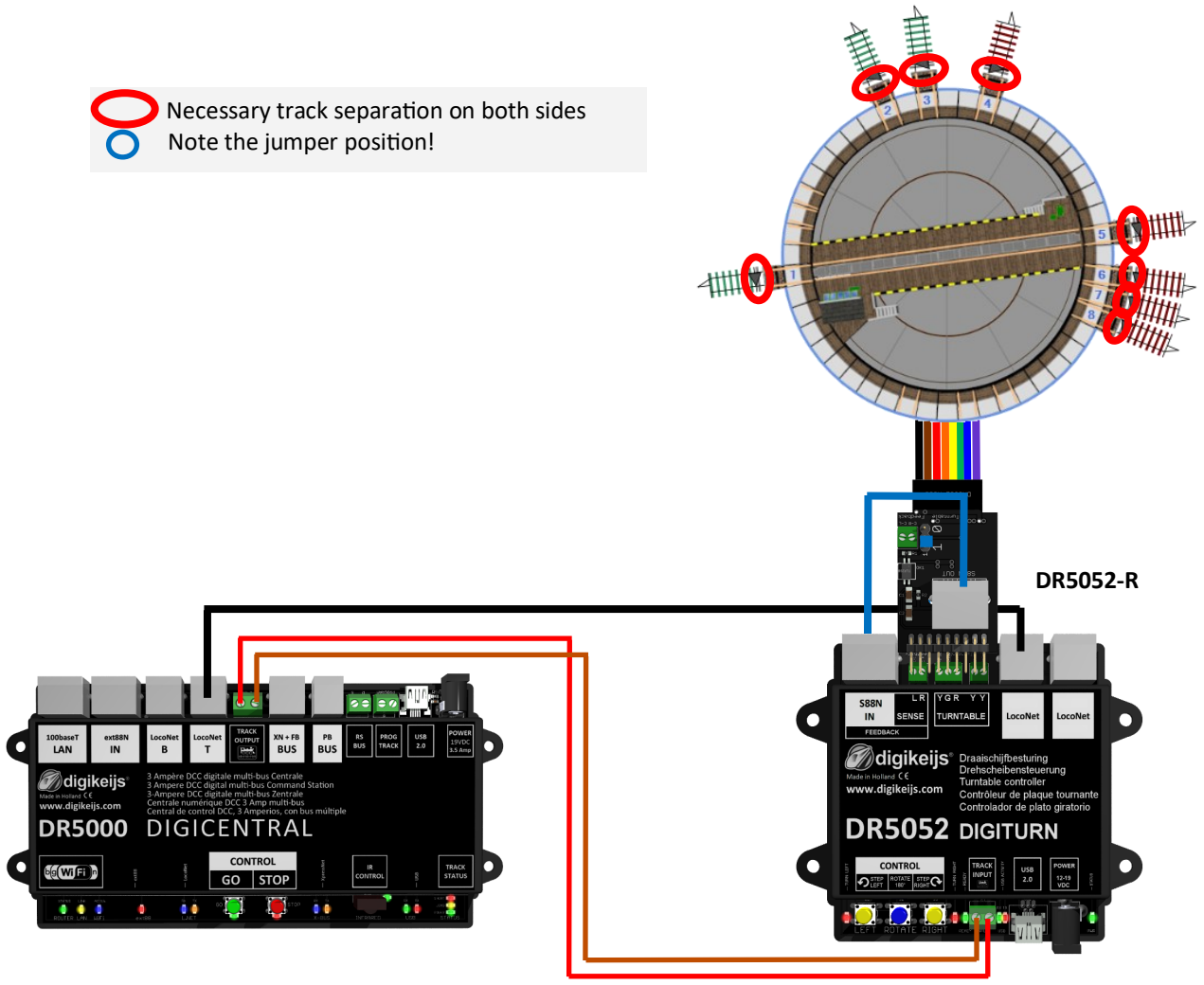
6.3 DR5052 Basic for Roco® H0 DS, 2-wire track

If the DR5052 is used in the basic version, **no modifications** to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are **insulated** (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control centre. The Roco® adapter transmits the position feedback of the turntable platform. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet®. The **DR5052-R adapter** board is required to operate the Roco® turntable.

These settings are necessary for operation.
See point 4.8.



Necessary track separation on both sides
Note the jumper position!

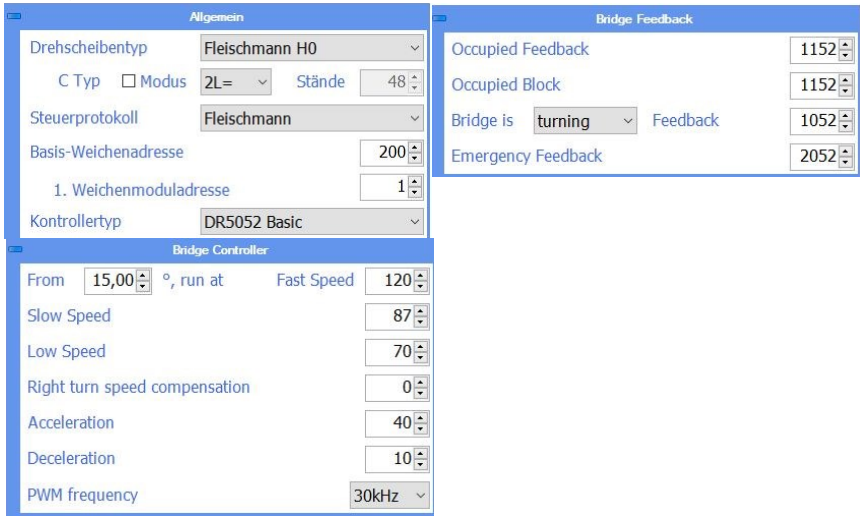


6.4 DR5052 Basic-Plus for Fleischmann® H0, N and Roco® TT DS , 2-wire track

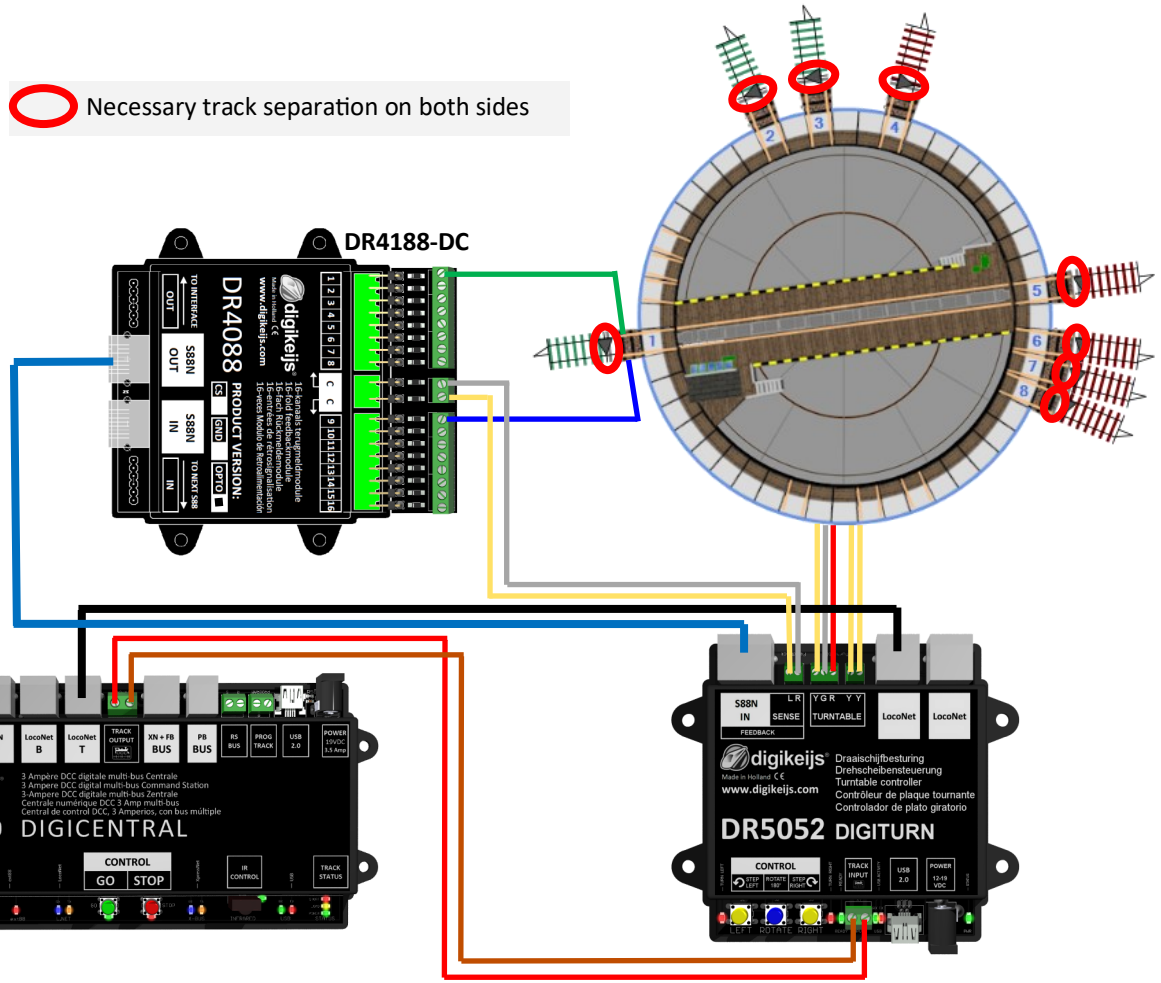
If the DR5052 is used in the **Basic-Plus** version, **no modifications** to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are **insulated** (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control centre. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet®.

Additional feedbacks: The **DR5052-EXT** set is required for turning without "clacking", internal position feedback and for precise Bremen and stopping. The feedback included in the set allows the DR5052 to detect the exact position of the turntable platform and react accordingly. All siding sidings must be equipped with feedback detectors. The **DR5052-EXT** set includes a **DR4088-OPTO**. This allows 8 track sidings to be monitored. If there are more than 8 sidings, **DR5052-EXT** is needed to monitor all sidings. These are then simply connected to the last **DR4088-OPTO** as an extension.

These settings are necessary for operation.
See point 4.8.



The settings of the sidings are also necessary!
See point 4.9 and point 4.10.

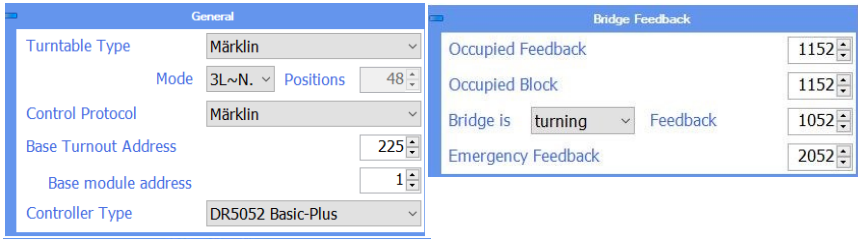


6.5 DR5052 Basic-Plus for Märklin® H0 DS, 3-wire track NOTE: Currently NOT ailable!

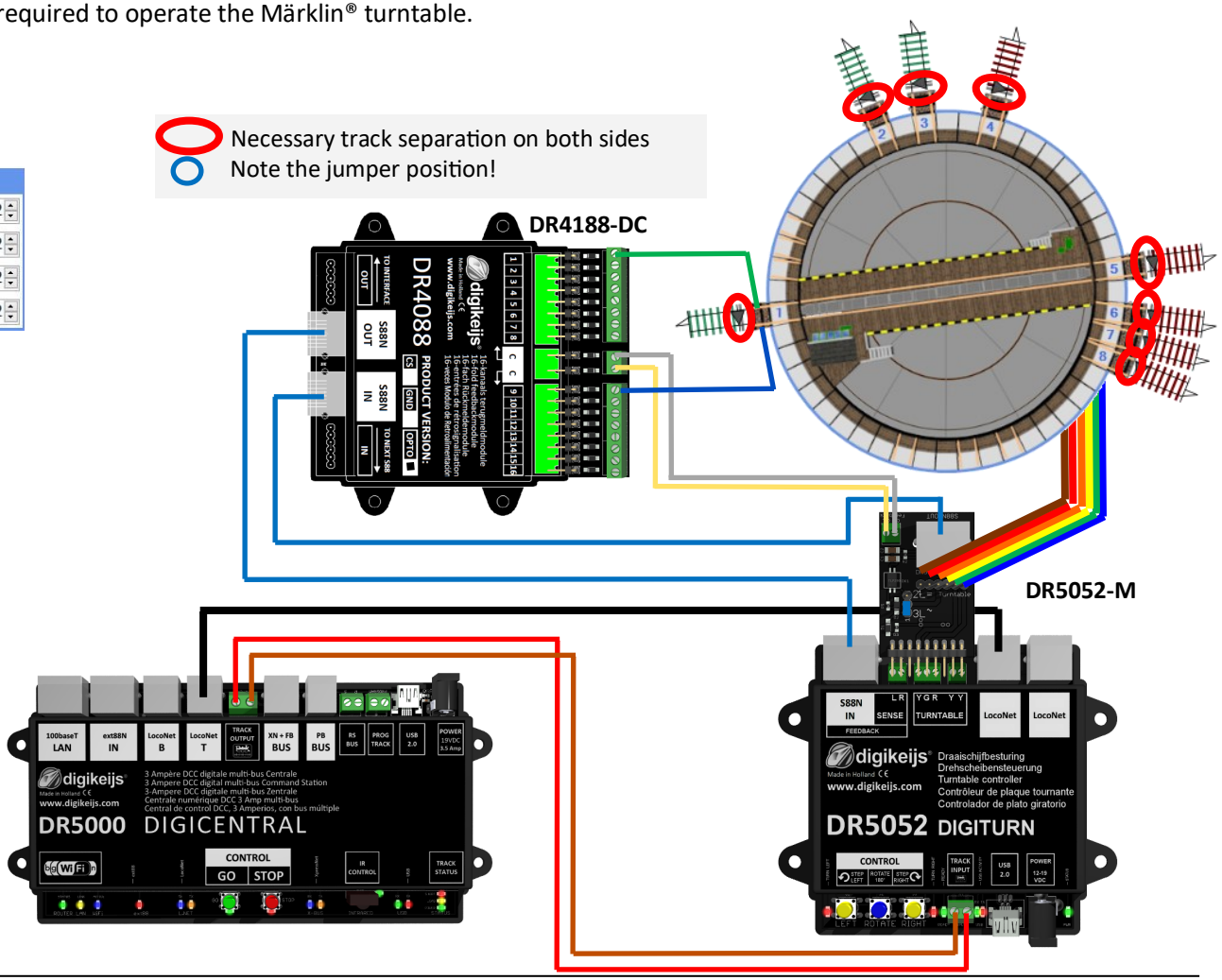
If the DR5052 is used in the Plus version, no modifications to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are insulated (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control centre. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet.

Additional feedbacks: The **DR5052-EXT** set is required for turning without "clacking", internal position feedback and for precise Bremen and stopping. The feedbackincluded in the set allows the **DR5052** to detect the exact position of the turntable platform and react accordingly. All siding sidings must be equipped with feedback detectors. The **DR5052-EXT** set includes a **DR4088-OPTO**. This allows 8 track sidings to be monitored. If there are more than 8 sidings, **DR5052-EXT** is needed to monitor all sidings. These are then simply connected to the last **DR4088-OPTO** as an extension. The **DR5052-M adapter** board is required to operate the Märklin® turntable.

These settings are necessary for operation.
See point 4.8.



The settings of the sidings are also necessary!
See point 4.9 and point 4.10.



6.6 DR5052 Basic-Plus for ROCO® H0 DS, 2-wire track NOTE: Currently NOT available!

If the DR5052 is used in the Plus version, no modifications to the turntable are required! Under no circumstances must the contact lugs on the turntable platform be removed. It is also important that the track connections are insulated (separated) from the shed tracks on both sides. The shed tracks can be supplied with track voltage either via return media or directly from the control centre. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet.

Additional feedbacks: The **DR5052-EXT set** is required for turning without "clacking", internal position feedback and for precise braking and stopping. The feedback included in the set allows the DR5052 to detect the exact position of the turntable platform and react accordingly. All siding sidings must be equipped with feedback detectors. The **DR5052-EXT** set includes a **DR4088-OPTO**. This allows 8 track sidings to be monitored. If there are more than 8 sidings, **DR5052-EXT** is needed to monitor all sidings. These are then simply connected to the last DR4088-OPTO as an extension. The **DR5052-R adapter** board is required to operate

These settings are necessary for operation.
See point 4.8.

General

Turntable Type	Roco H0		
Mode	2L=	Positions	0
Control Protocol	Fleischmann		
Base Turnout Address			200
Base module address			1
Controller Type	DR5052 Basic-Plus		

Bridge Feedback

Occupied Feedback			1152
Occupied Block			1152
Bridge is	turning	Feedback	1052
Emergency Feedback			2052

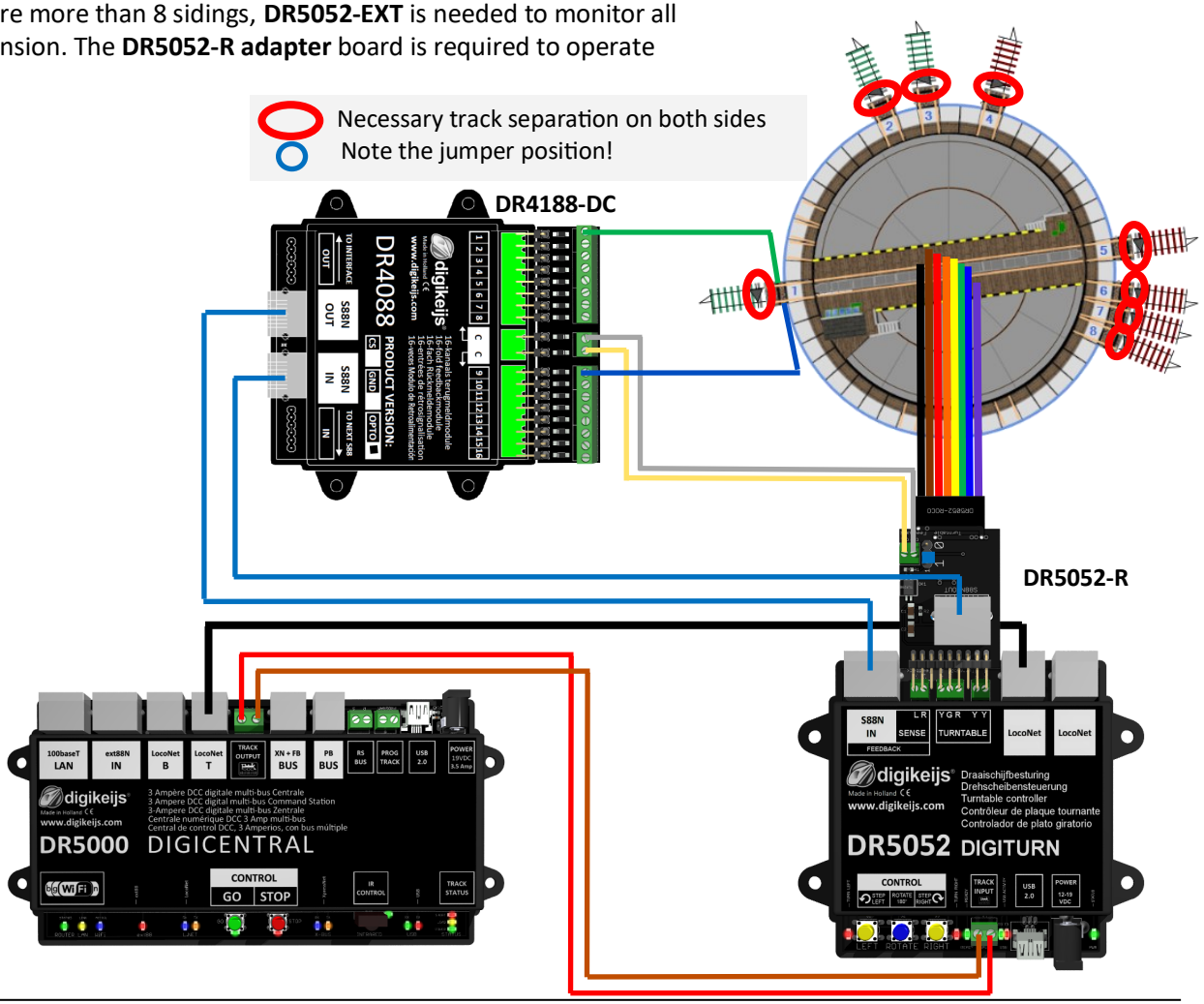
Bridge Controller

From	15,00 °, run at	Fast Speed	120
Slow Speed			87
Low Speed			70
Right turn speed compensation			0
Acceleration			40
Deceleration			10
PWM frequency			30kHz

The settings of the sidings are also necessary!
See point 4.9 and point 4.10.

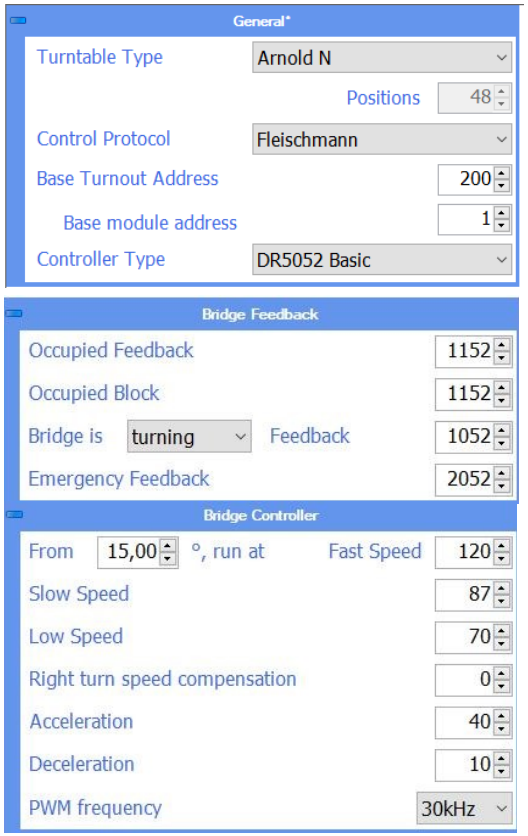
Position	1	Angle	345,0
Polarity	Normal		
Feedback: Left	9	Right	1

Position	2	Angle	0,0
Polarity	Normal		
Feedback: Left	10	Right	2



6.7 DR5052 Basic for Arnold® N turntable (as of Firmware Ver. 1.2.x)

The DR5052 can only be used with the Arnold turntable in the Basic version. A full bridge rectifier must be installed in the blue supply line as shown in the wiring diagram. The purple connecting cable of the turntable is not required! It is important that the track connections on both sides are insulated (separated) from the shed tracks. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control panel. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet®.

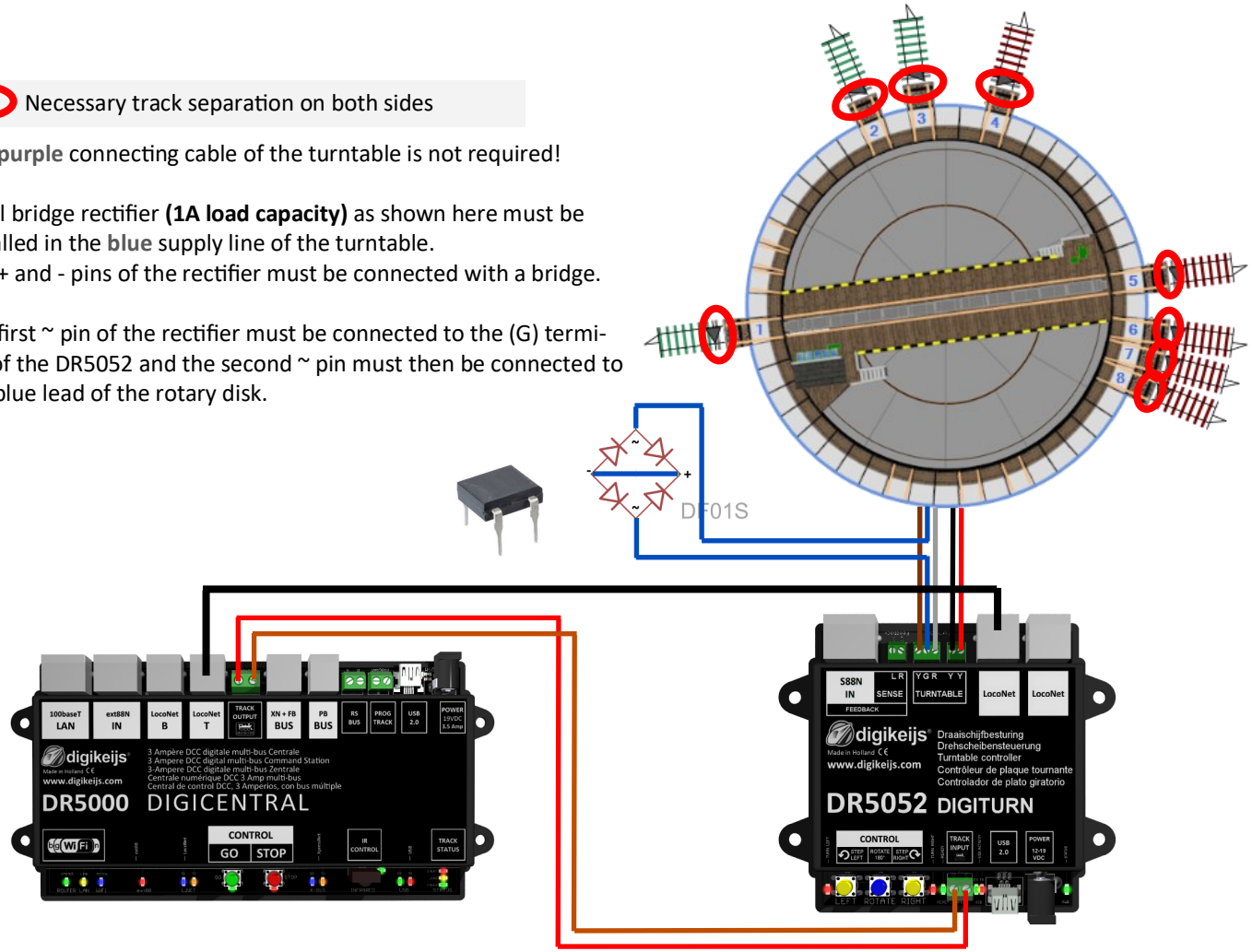


Necessary track separation on both sides

The **purple** connecting cable of the turntable is not required!

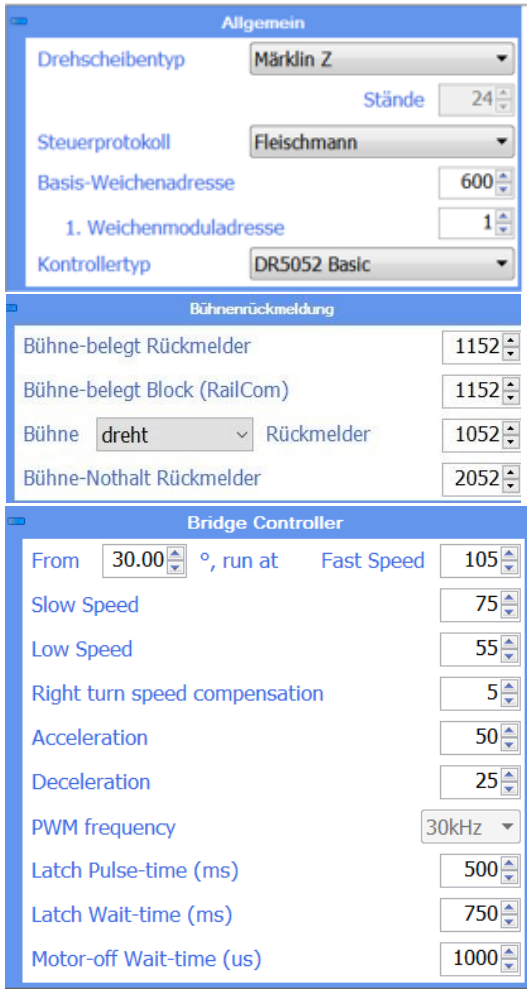
A full bridge rectifier **(1A load capacity)** as shown here must be installed in the **blue** supply line of the turntable.
The + and - pins of the rectifier must be connected with a bridge.

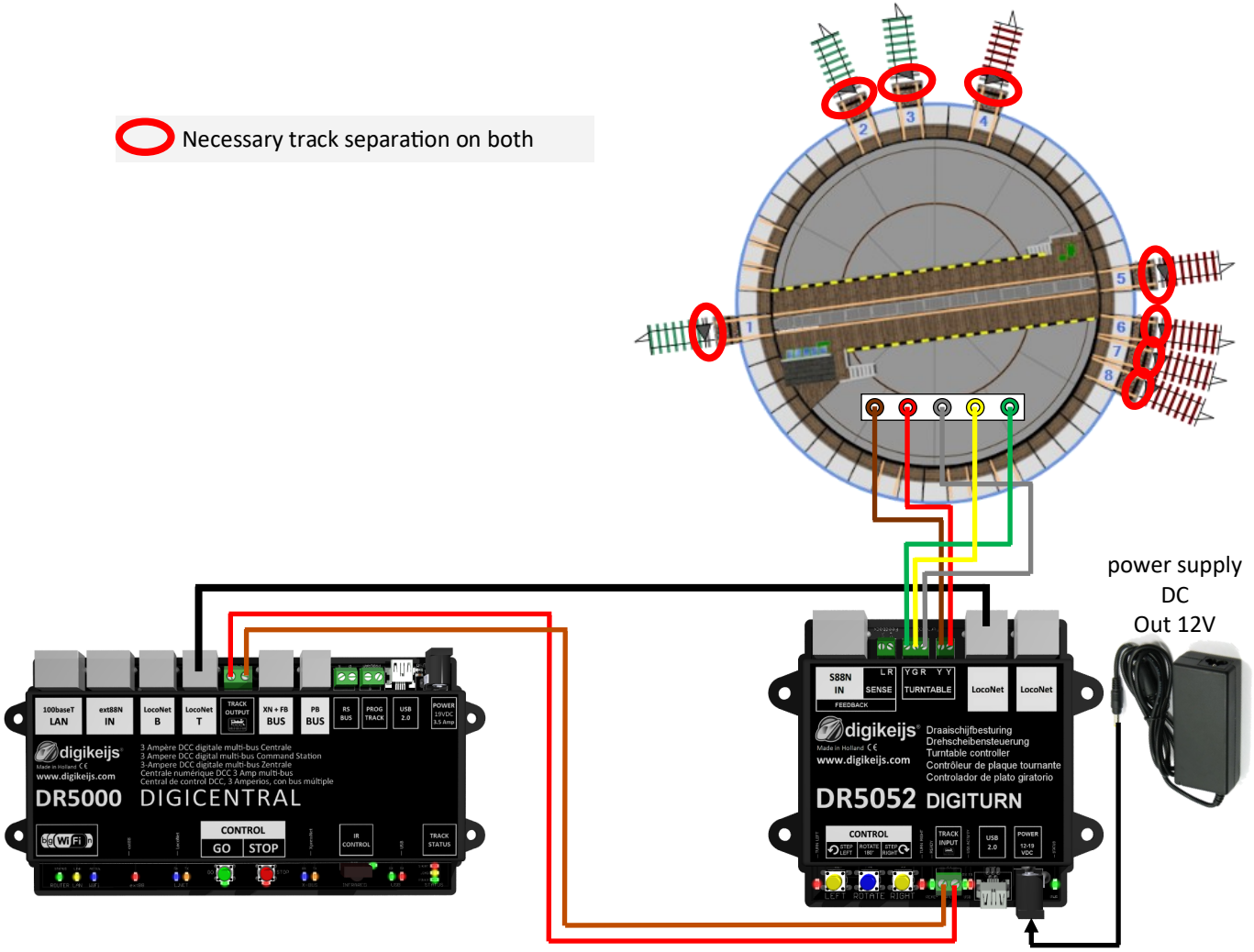
The first ~ pin of the rectifier must be connected to the (G) terminal of the DR5052 and the second ~ pin must then be connected to the blue lead of the rotary disk.



6.9 DR5052 Basic for Märklin® Z turntable (from Firmware Ver. 1.2.x)

If the DR5052 is used in the basic version, no modifications to the turntable are required! It is also important that the track connections on both sides are insulated (separated) from the shed tracks. The shed tracks can be supplied with track voltage either via feedback devices or directly from the control panel. Various information (RailCom® information, feedback, control commands) is exchanged with the control centre via LocoNet®.
A separate **DC** power supply unit is required for operation. The power supply unit must be set/have to a maximum of 12V output voltage and connected to the DR5052 so that the motor and latch work without problems and are not overloaded.





7.0 Attachment

7.1.1 Comparison of Märklin® protocol and functions in the DR5052

Adr.	Key Function	Function Märklin® Protocol	Function with DR5052
225	red	End of programming	unused
	green	Start programming	unused
226	red	Clear 180°	Emergency stop
	green	Turn	Rotation 180° degrees
227	red	clockwise step	Step (Step) in clockwise direction
	green	Counter clockwise step	Step (Step) counter clockwise
228	red	Turn clockwise	Clockwise direction preselection
	green	Rotate counter clockwise	Counter clockwise direction preselection
229	red	Connection 1	rail connection 1
	green	Connection 2	rail connection2
230	red	Connection 3	rail connection 3
	green	Connection 4	rail connection 4
231	red	Connection 5	rail connection 5
	green	Connection 6	rail connection 6
232	red	Connection 7	rail connection 7
	green	Connection 8	rail connection 8
233	red	Connection 9	rail connection 9
	green	Connection 10	rail connection 10
—	—	—	—
	—	—	—
240	red	Connection 23	rail connection 23
	green	Connection 24	rail connection 24

7.1.2 Comparison of Fleischmann® protocol and functions in the DR5052

Adr.	Key Function	Function Märklin® Protocol	Function with DR5052
200	red	Turn 180° clockwise	Turn 180° clockwise
	green	Turn 180° counter clockwise	Turn 180° counter clockwise
201	red	Track connection 1 **with** bridge house at the connection	Track connection 1 **with** bridge house at the connection
	green	Track connection 1 **without** bridge house at the connection	Track connection 1 **without** bridge house at the connection
202	red	Track connection 2 **with** bridge house at the connection	Track connection 2 **with** bridge house at the connection
	green	Track connection 2 **without** bridge house at the connection	Track connection 2 **without** bridge house at the connection
203	red	Track connection 3 **with** bridge house at the connection	Track connection 3 **with** bridge house at the connection
	green	Track connection 3 **without** bridge house at the connection	Track connection 3 **without** bridge house at the connection
204	red	Track connection 4 **with** bridge house at the connection	Track connection 4 **with** bridge house at the connection
	green	Track connection 5 **without** bridge house at the connection	Track connection 5 **without** bridge house at the connection
—	—	—	—
	—	—	—
248	red	Track connection 47 **with** bridge house at the connection	Track connection 47 **with** bridge house at the connection
	green	Track connection 47 **without** bridge house at the connection	Track connection 47 **without** bridge house at the connection
249	red	Track connection 48 **with** bridge house at the connection	Track connection 48 **with** bridge house at the connection
	green	Track connection 48 **without** bridge house at the connection	Track connection 48 **without** bridge house at the connection