DR5000 DIGICENTRAL

instruction manual

Firmware ab **V1.5.1** *(2018.09.27)*

Instruction manual

Please note this manual!
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

1.1 Index

1.2 Warranty and warranty conditions

All our products come with a 24-month manufacturer's warranty. Please read these instructions for use carefully.

Damage to the product caused by non-compliance with these instructions will void the warranty.

NOTE! The warranty expires as soon as the housings of the DR5000 and/or the power supply unit have been opened.

Please read the following points carefully before using the DR5000.

◊   The warranty is void if the DR5000 housing or power supply has been opened.

◊   The DR5000 must always be turned off while work is being carried out on the track.

◊   Never connect an external power supply or other digital system to the DR5000's Track Out or Progr.Track.

◊   This will damage the internal electronics and void the warranty, even if accidentally done.

◊   Never use a booster that operates on the "common ground" principle in combination with the DR5000.

◊   To prevent damage to the DR5000 or peripherals, use only electrically isolated boosters and LocoNet® accessories in conjunction with the DR5000. If in doubt about your peripherals, please contact your dealer or Digikeijs for assistance.

◊   **3-wire operation: Due to the H-bridge (track output) in the DR5000, the DR4088GND feedback modules must not be used against track ground, as is usually the case. This inevitably leads to the destruction of the DR5000.**

◊   **The same applies to all other feedback devices (from other manufacturers) which switch against track ground.**

◊   **If a 3-wire driver still wants to drive and re-register with the DR5000, the DR4088OPTO must be used.**

◊   **Always use official and approved wiring to avoid short circuits and damage.**

◊   The use of another DC voltage source for the DR5000 is permitted if the voltage is between 14 VDC and a maximum of 22 VDC (recommended input voltage max.19VDC) and CE approval has been obtained. Contact your dealer for more information.

◊   Use the DR5000 in a dry and dust-free environment.

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..

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Product overview

2.1 General product information

The DR5000 is a universal DCC control centre with almost all currently available bus connections.

The central can be operated with all LocoNet® and XpressNet devices and via WLAN with mobile hand controllers. The DR5000 can be connected to a PC via LAN, Wi-Fi or USB. The LocoNet®, Z21®, DR Command® or XpressNet® protocol can be selected for communication with the PC. This allows the DR5000 to communicate with any supporting software such as iTrain®, Koploper® Windigipet® Train Controller® and RocRail®. Peripherals such as the Roco® Multimaus®, Roco® Wlan Multimaus®, the Lenz LH01®, the Daisy II® (wired or wireless in connection with the radio master) and other LocoNet® or XpressNet® compatible devices can be connected and used simultaneously..

The maximum output current of the DR5000 is 3 A. If more power is required, use a booster with an H-bridge at the output, such as the DR5033. Older boosters with a common ground connection (e.g. Märklin®, Uhlenbrock®) are not suitable and will cause short circuits and/or damage to the DR5000.
.

2.2 Technical Specifications

Verf. Available protocols	DCC
Speed steps	14/28/128
Locomotives	A maximum of 117 locomotive addresses can be controlled at the same time.
Decoder addresses	9999, short addresses adjustable up to max. 126
Magnet article addresses	2048 DCC Magnet article addresses are controllable
Track current	max. 3A available at the track exit
Track exit	H-Bridge
Bus connections	LocoNet B® Booster connection (max. 40 boosters and max. 128 modules with 16 inputs RailCom®)
	LocoNet T® (Max. 128 modules with 16 inputs RailCom®)
	LocoNet B® and LocoNet® T together provide maximum 600mA supply current
	XpressNet® (Max. 30 Multi- Mice / 600mA)
	B-Bus® (max. 4 boosters can be connected)
	R-Bus® (Max. 10 modules with 16 inputs)
	ext88N (Max. 16 modules with 16 inputs. The bus connection is S88N® compatible!)
	RS-Bus® (Max. 32 modules with 16 inputs)
	Programming track Connection (simultaneous driving and programming possible)
	Voltage input (min. 14 VDC and max. 22 VDC) (Recommended input voltage max.19VDC)
	USB (Available protocols LocoNet®, XpressNet®-USB 3.6, LocoNet Binary®, Dr.Command® and Z21®)
	LAN (100 Mbit) (XpressNet®-LAN 3.6, LocoNet® LBServer, LocoNet® Binery®, Z21®)
	Wi-Fi (Lenz-LAN 3.6 and LocoNet®-LBServer)
	Infrared receiver (compatible with Uhlenbrock® and Piko®)
Software	iTrain, RocRail, Koploper, Traincontroller, DecoderPro, Win-Digipet and others that are LocoNet® or XpressNet® compatible

2.3 Hardware Overview

1   LAN connection (100 MBit)

2   ext88N Bus (compatible to S88N®)

3   LocoNet® B Bus (LocoNet® booster connection)

4   LocoNet® T Bus (LocoNet® accessories, handset controller, etc.)

5   Main track Connection
     5.1 TrackOut-L
     5.2 TrackOut-R

6   Feedback bus (X-Bus® & R-Bus®)

7   Booster Bus (B-Bus®)

8   RS bus

9   Programming track Connection
     9.1 Prog. track-R
     9.2 Prog. track L

10   USB connection

11   Power supply (min. 14VDC max. 22VDC) (Recommended input voltage max.19VDC)

12   Power supply (min. 14VDC max. 22VDC) (Recommended input voltage max.19VDC)
     Status of track exit and load display

Power:	Input voltage available Programming track Indication
Load:	output load Off No load, On Load 3.15Amp.
Short:	Short circuit (flashes) continuously on Track-Out Okay.

13   USB Aktivität
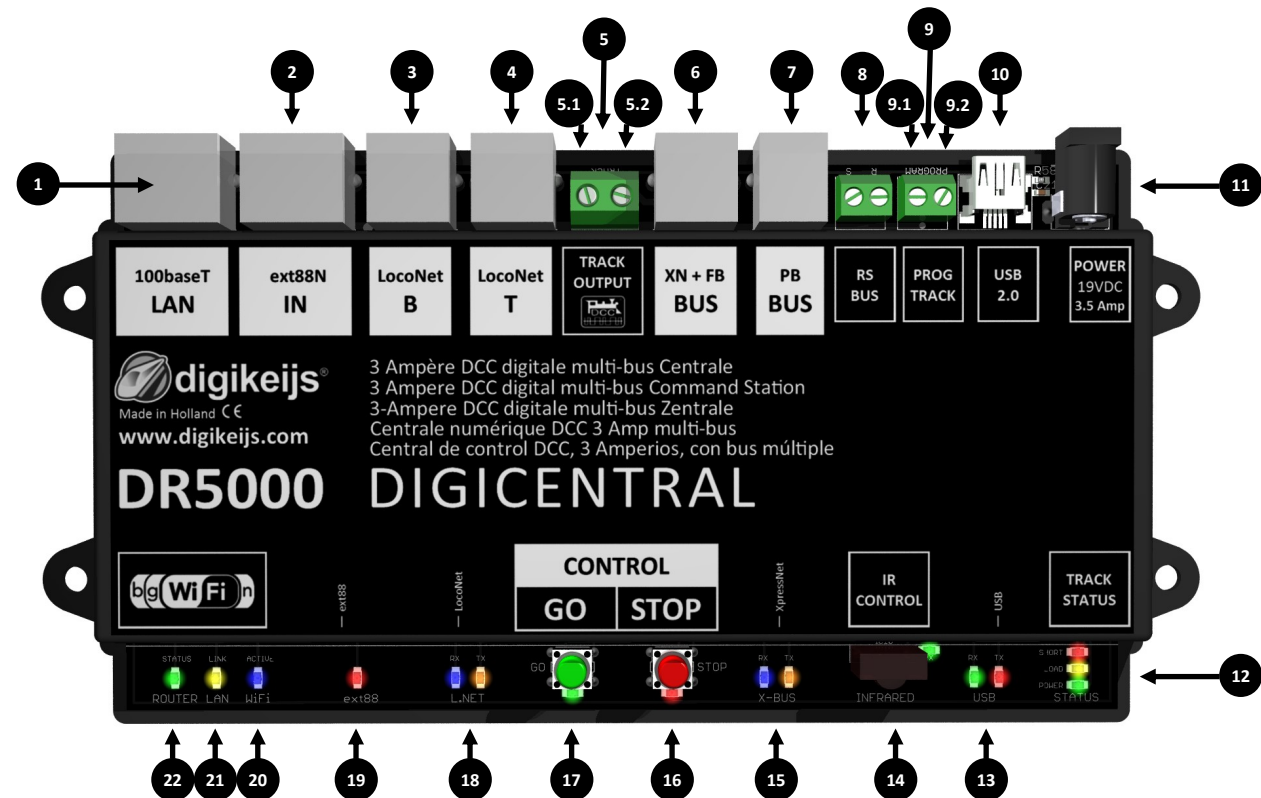
14   Infrared Receiver

15   XpressNet® Activity

16   STOP button (switch off track voltage)

17   GO button (switch on track voltage)

18   LocoNet® activity

19   ext88-N activity

20   Wi-Fi activity

21   LAN activity

22   Router activity

2.4 Track Out track output current and voltage

Track Voltage (Volt)

The DR5000 is supplied as standard with an adjustable switching power supply (15VDC - 24VDC) and an output of 3.5 amps. When setting the output voltage of the power supply unit, it should be noted that the central unit may be operated with a maximum of 22VDC (recommended input voltage max.19VDC). It is possible to use another rectified power supply if it has a minimum voltage of 14 VDC and a maximum voltage of 22 VDC (recommended input voltage max.19VDC).
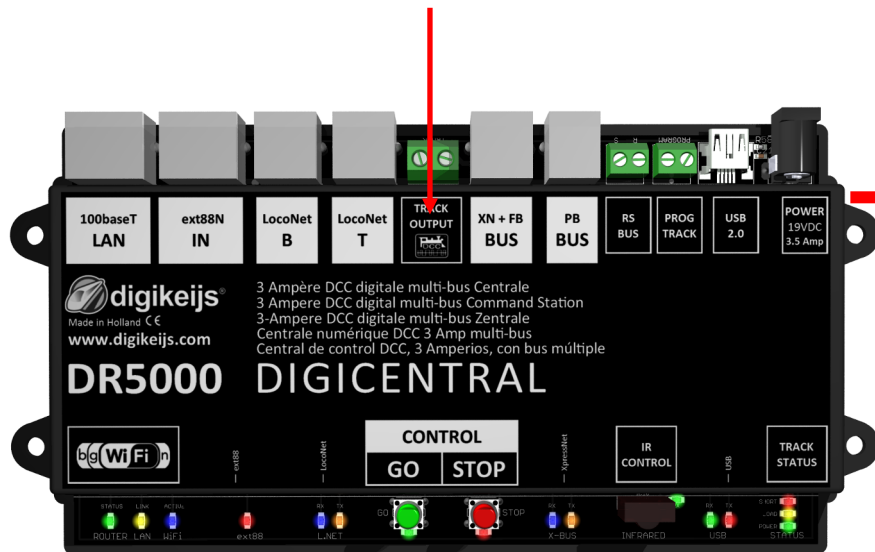
The actual track voltage always deviates 1 to 1.5 volts from the voltage connected to the DR5000's voltage input.
At 19 Volt power supply, the final track voltage is approximately 17.5 Volt..

The track voltage cannot be set in the hardware of the control panel or in the software.

Maximum output current

The maximum power of the DR5000 is 3 amps.
The maximum output current can be set via the configuration software.
Click on the "Track Output" menu to set the maximum track current.

2.5 Compatibility

The following table shows which products are compatible or not with the DR5000. If you have tested a product, we would love to hear about it. You can get this information via the following link: support@digikeijs.com

Tested by Digikeijs	Getest by customers	In theory compatible	Not yet tested	Not compatible
soon				

CONFIGURATIONS SOFTWARE

3.1 Inauguration

A USB connection to the PC is required for communication and setup of the DR5000 with the configuration software or model railway software. For this you need the supplied USB cable with a mini plug, a so-called USB A-to-USB mini cable.

3.2 Downloading software

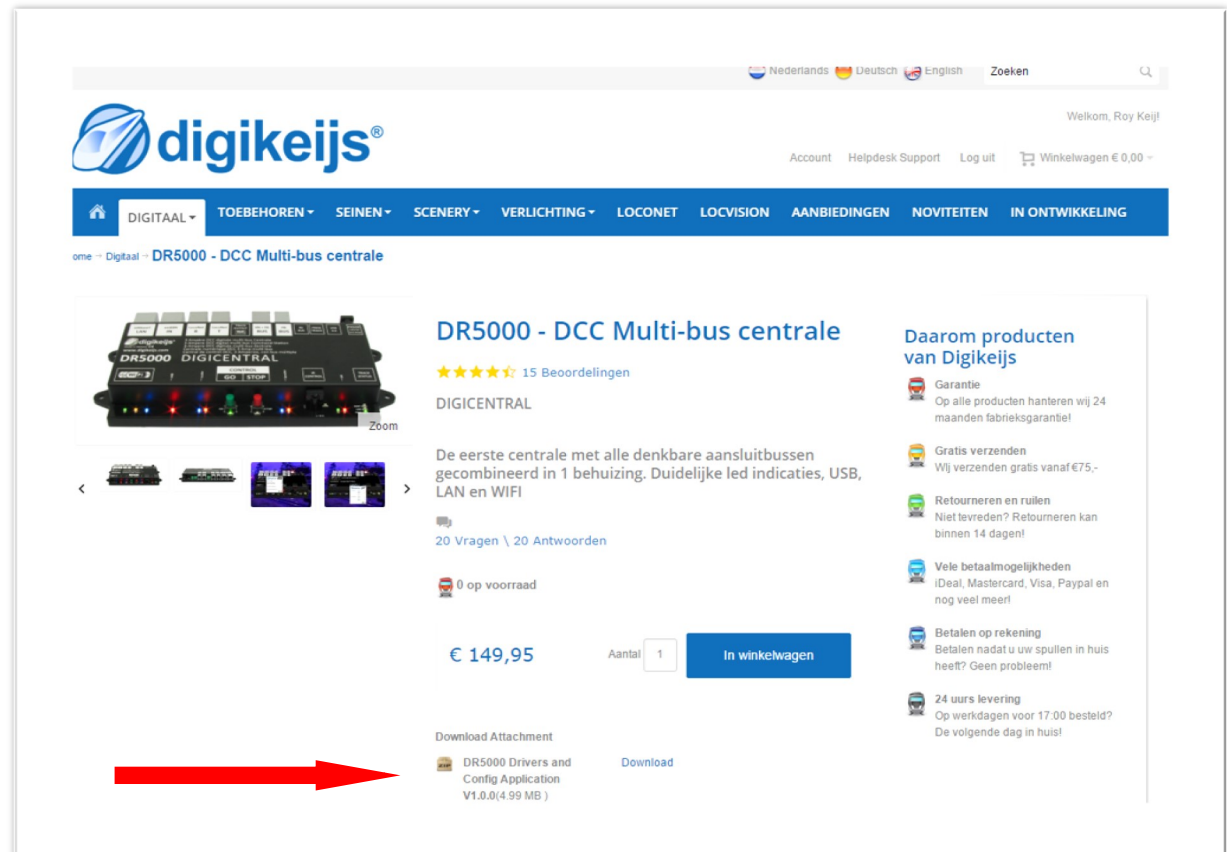**Do not yet connect the DR5000 to the PC!** First install the software, the can be downloaded from the DIGIKEIJS website.

www.digikeijs.com/dr5000

3.3 Software Installation

New in version 1.5.1
Since the firmware version 1.5.1 we have a new installer in use which should simplify the installation again. With the firmware version 1.5.1 it is no longer necessary to remove the old version via the Windows dialog before a new installation. It is now sufficient to simply start the EXE file with a double click. The deinstallation will now be executed automatically and the installation will be started afterwards.

After you have successfully downloaded the software, it is important to first unpack the downloaded file and save it on your hard disk.
Then start the installation with a double click on "setup" or "setup.exe".
Make sure that you always have administrator rights on your PC.

If this message appears during the installation it can be confirmed by pressing any key. This is not an installation error!

3
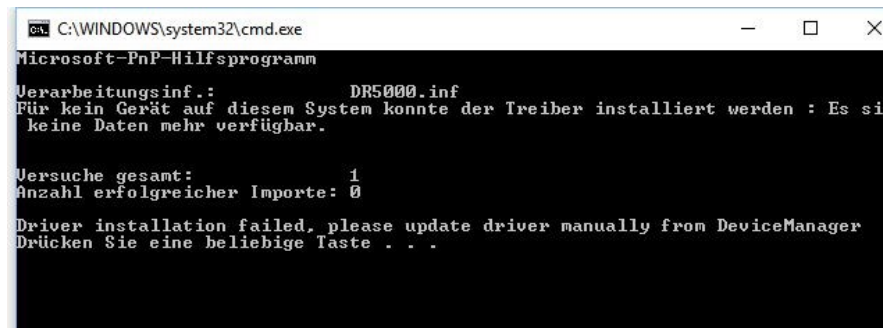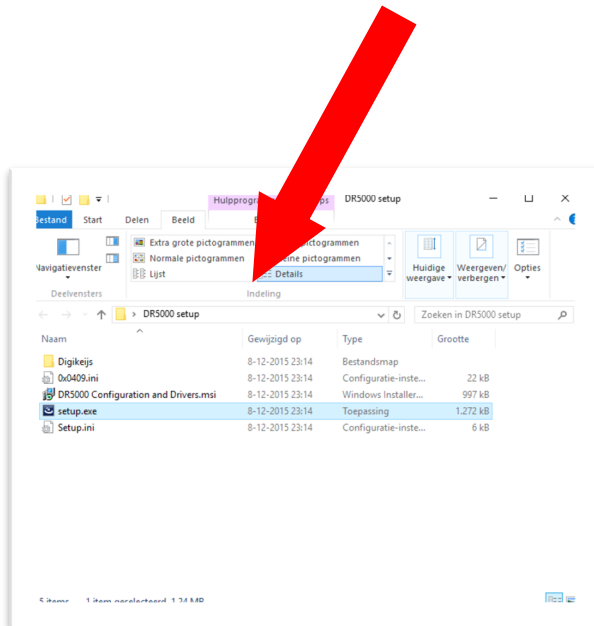
Important!
Do not connect the DR5000 to the PC via USB until the software and driver have been successfully installed.

After a few seconds, this screen appears. Click "Next".
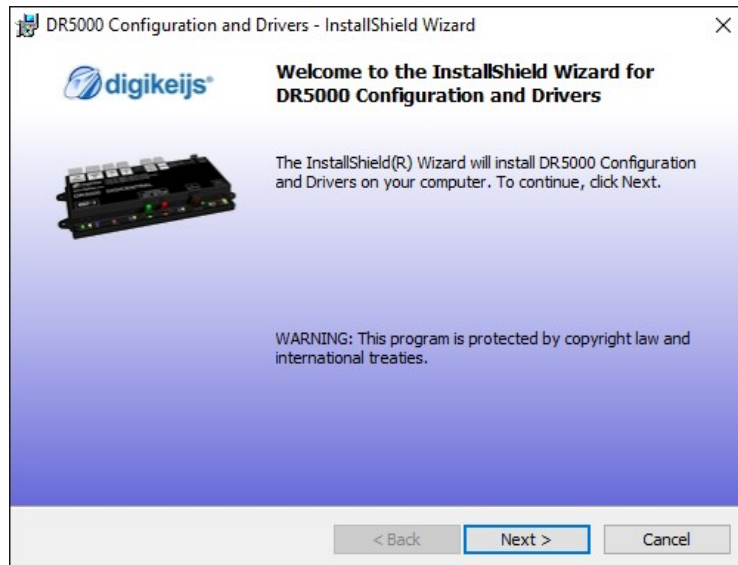
If you want to change the location of the software, you can do so on the following screen. If there is no need, it is best to leave the settings unchanged and click Next.
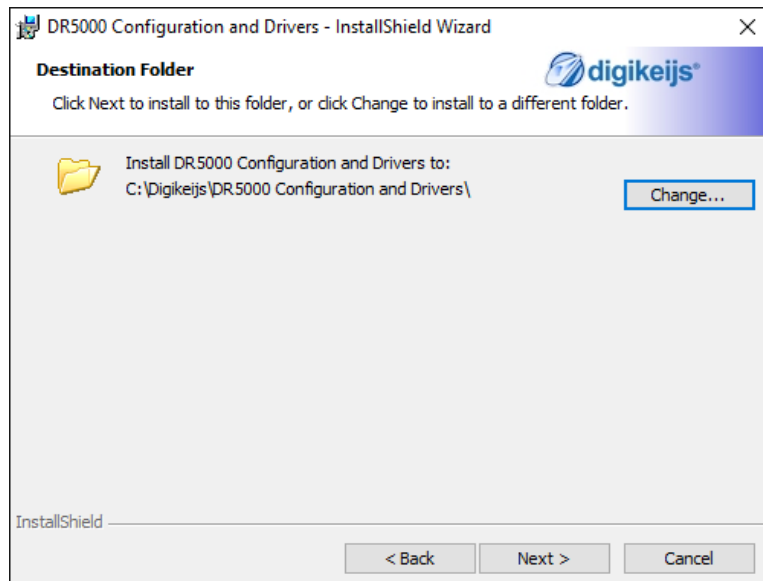
Below you will find an overview of the settings. Click on "Install" if you agree.
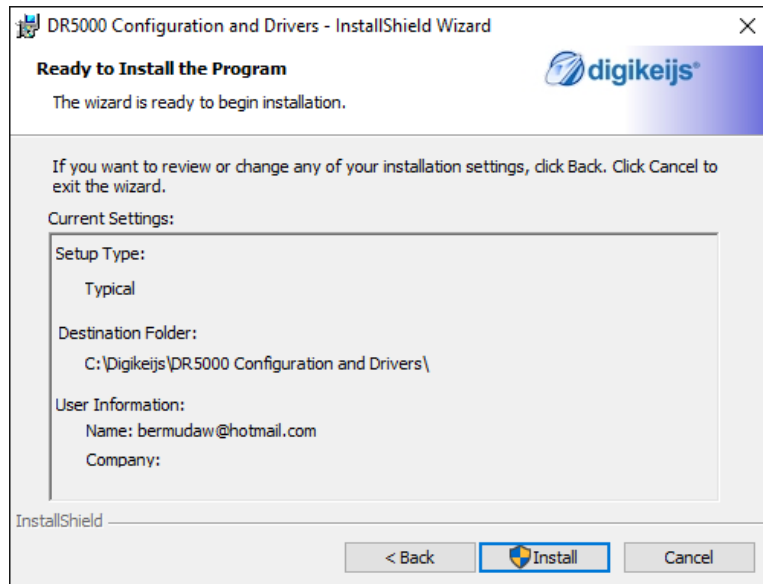
Now the configuration software is installed. Windows will ask you a few times if you trust the Digikeijs software.
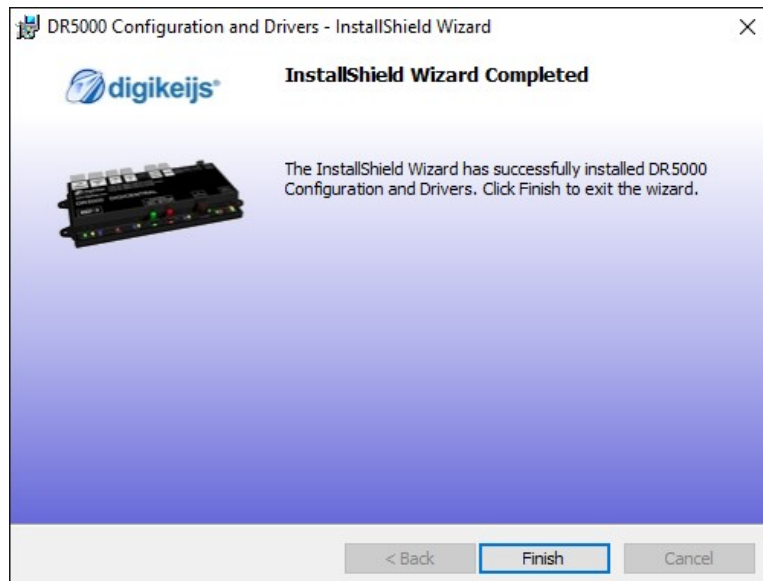
Once this is done, the last screen will appear. Press "Finish" and the drivers and configuration program are successfully installed.

3.4 Connecting the DR5000 to the PC via USB

An icon appears on the desktop with which the configuration software can be started.
Attention: Do not start the software before the DR5000 has been started. Do not start the software until the DR5000 has been connected to the PC.
Now first connect the DR5000 to your PC using the USB cable supplied and a free USB port.
Windows will now recognize the new hardware and install the drivers. Wait until this process is completed and you will receive a message from Windows that the hardware has been properly installed.

Windows will now assign and reserve 3 COM ports to the DR 5000.
(The numbering of the COM ports depends on the PC configuration)

In the right picture COM7 - COM9 are used.

COM7 is the communication port for LocoNet®.
COM8 is the communication port for the XpressNet.
COM9 is the communication port for connecting the configuration software to the DR5000 hardware. The configuration software automatically detects the correct COM port.
After the first start your firewall asks if the configuration software is allowed to access your network. Please answer with Yes. Close the app and restart it.
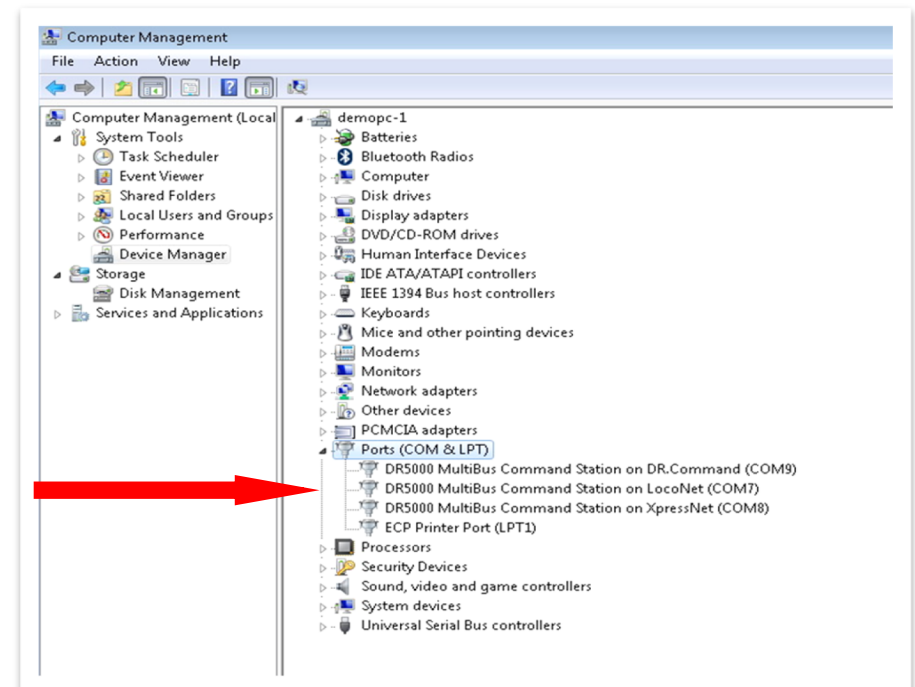
3.5 software overview

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

1   LAN Settings

2   ext88-N Settings

3   LocoNet® B Settings

4   LocoNet® T Settings

5   DCC Settings

6   XpressNet® R-Bus® Settings

7   B-Bus® Settings

8   RS Bus® Settings

9   Programming track Settings

10 USB Settings/Firmware upgrade
    control panel, switch control panel
    speed settings

11 Power supply Info

12 Main track Status

13 Infrared Settings

14 Control Settings

15 serial number

16 Exit software

17 Wi-Fi Settings
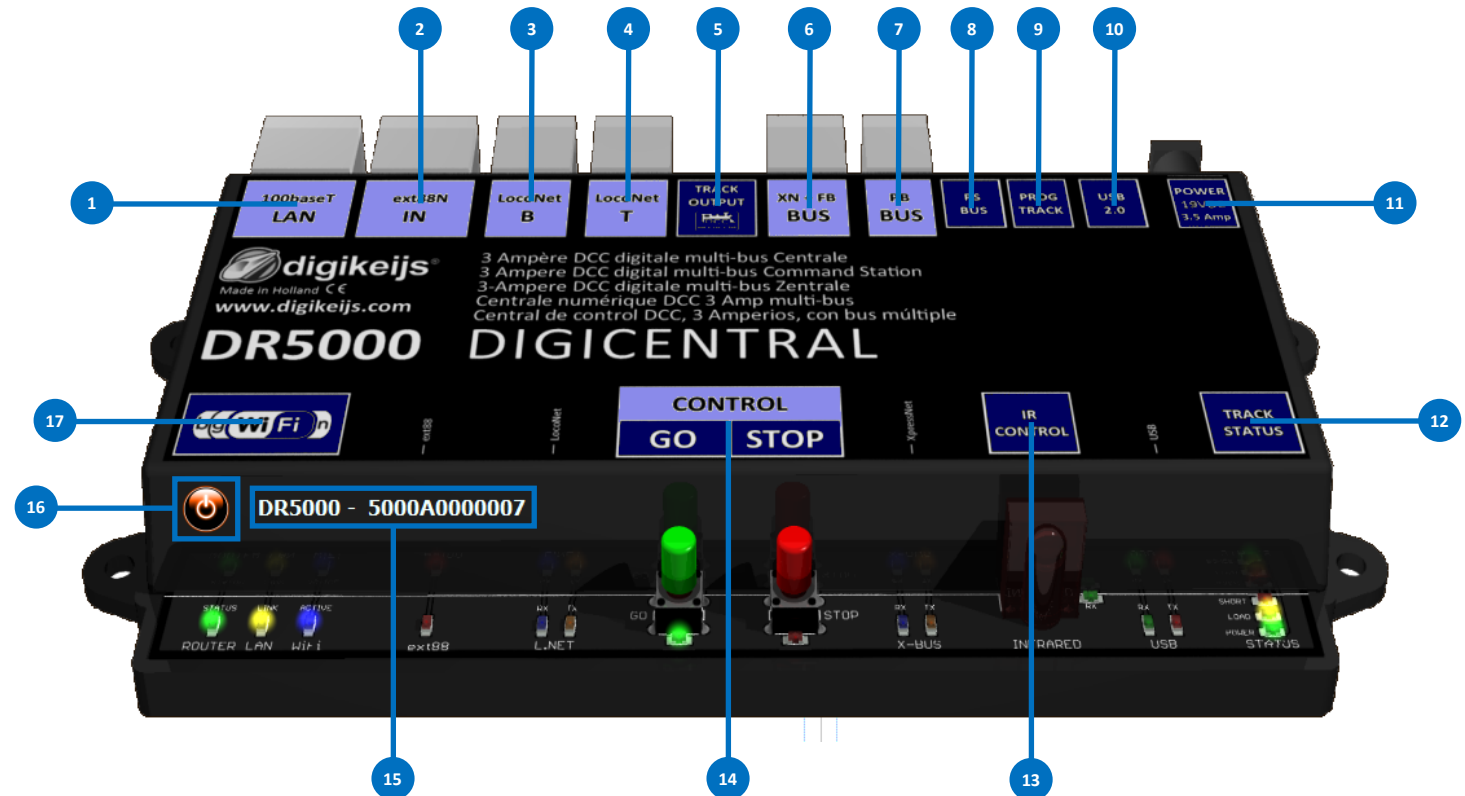
3.6 Restoring the factory settings

It is possible to reset the DR5000 settings to the factory defaults.

The USB menu in the configuration software allows you to activate the reset, resetting the DR5000 settings to factory defaults.

NOTE! Restoring the factory settings has no effect on the LAN and Wi-Fi settings.

3.6.1 Factory settings LAN and Wi-Fi settings

From firmware version 1.0.1, it is possible to restore the settings of the built-in LAN and Wi-Fi module via the software. You can activate this reset by opening the Wi-Fi settings menu in the configuration software.

NOTE! This option is only available from software and firmware version 1.0.1.
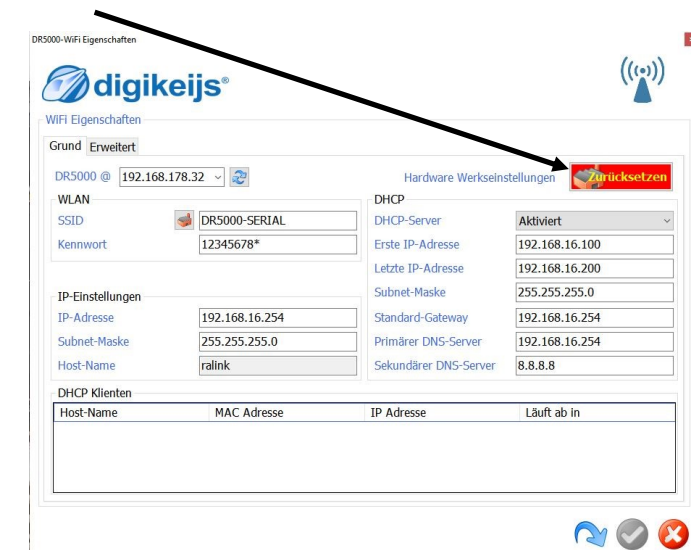
3.7 Updating software and firmware

The development of the DR5000 software continues. Firmware updates allow you to equip the control panel with the latest software. The new firmware is integrated in a new configuration software. You must first install the latest version of the configuration software before the current firmware update is available.

First uninstall the configuration software from your PC:

1)   First uninstall the current installation of the configuration software from your PC.
2)   (As of firmware version 1.5.1, the previous version is automatically uninstalled!)
3)   Disconnect the DR5000 from the PC.
4)   Download the new version from our website.
5)   Install the configuration software.
6)   Connect the DR5000 with the USB cable and the PC.
7)   Open the configuration software.
8)   Go to the USB2.0 menu.
9)   Use the "UPDATE DR5000" button to activate the firmware update.

IMPORTANT: When updating the firmware, do not disconnect the DR5000 from the PC or the power supply!
This may cause the DR5000 to become unusable.

NOTE! Updating the DR5000 always means that the settings are reset to the factory settings. As of version 1.2.8, the settings are saved before the update and reloaded after the update. Under certain circumstances, however, it can happen that the update fails. For this reason the settings should be saved via the export function before the update (see page 55).
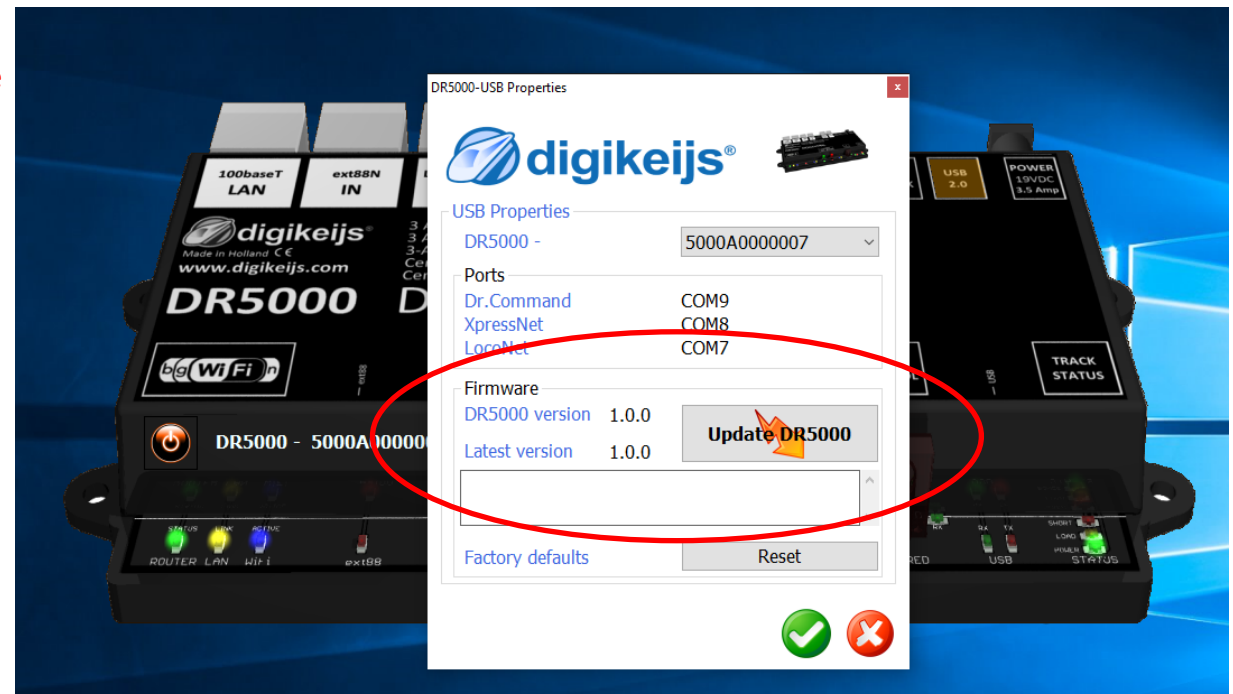
3.8 Firmware recovery mode

It may happen that something goes wrong when updating the firmware.
If this should happen, it is possible to update the firmware by following these steps
of the DR5000.

1) Only connect the DR5000 to the supplied power adapter.
2) Press the green button and hold it down.
3) Press the red button and hold it down.
4) Release the green button while holding down the red button.
5) Press the green button again.
6) Both the green and red LEDs under the GO and STOP switches will light up simultaneously.
7) Connect the USB cable.
8) Open the DR5000 configuration software.
9) The firmware update screen will start automatically
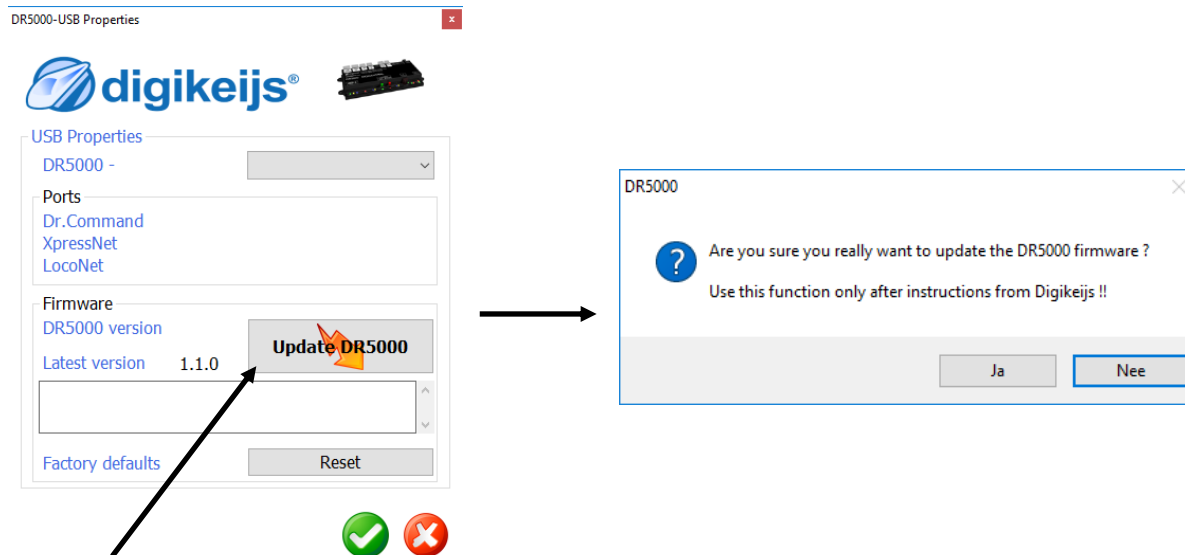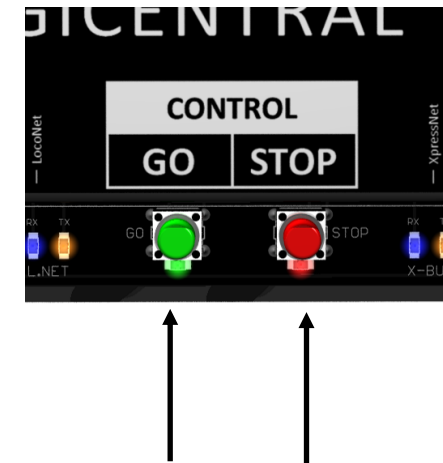
10) Press "UPDATE DR5000" and then click "Yes".
11) The firmware is now uploaded to the DR5000.

3.8.1 Boot loader recovery

(Attention! only for DR5000-A0xxxxx versions)

If the recovery procedure described in Section 3.8 (Firmware Recovery Mode) does not work, there is probably something wrong with the DR5000 boot loader. You can restore the boot loader from the DR5000 using the following procedure.

1) Connect the mains adapter and the USB cable to the DR5000.
2) Bridge the LOAD LED with a short pair of tweezers !
3) The LOAD LED lights up.
4) Start the DR5000 configuration software.
5) The firmware update is opened automatically.
6) Press "UPDATE DR5000".
7) Then press "Yes".
8) The firmware will be loaded and the DR5000 will work
    again.
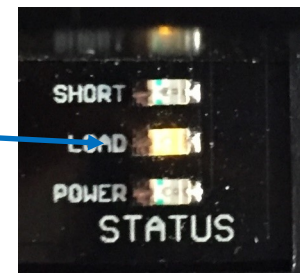
By clicking on the link below you can watch a video showing the above points:

https://youtu.be/wDyOsZ0cBmw

Update DR5000

DR5000

Are you sure you really want to update the DR5000 firmware ?

Use this function only after instructions from Digikeijs !!

| Ja | Nee |
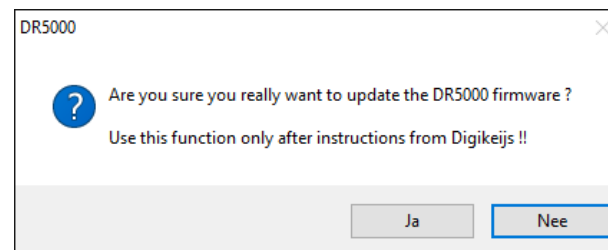
3.9 Changes to operating instructions

Version	Date	Description
1.0.0	01-02-2016	Eerste release.
1.0.1	15-02-2016	New ability to reset the Wi-Fi Module to the factory settings through the Wi-Fi menu.
1.1.1	01-03-2016	Comprehensive update. All updates are displayed in the text file that is downloaded together with the new ConfigApp.
1.4.x	12.12.2017	s88 Einstellungen erweitert.
1.4.x	01.03.2018	Lan Wlan Einstellungen erweitert.
1.4.x	11.04.2018	XpressNet Einstellungen erweitert.
1.4.x	22.05.2018	Anschlussbeispiel DR5088RC eingefügt.
1.4.x	26.07.2018	POM Erklärung lesen über DR5088RC.
1.4.9	29.07.2018	Hinweis Scripting eingefügt.
1.5.0	31.07.2018	Anschluß iTrain aktuallisiert.
1.5.0	06.08.2018	Erklärung Railcom Informationen hinzugefügt.
1.5.0	06.08.2018	Erklärung Fahrrgeler hinzugefügt.
1.5.0	06.08.2018	Locoent Eigenschaften Erklärung DR5088RC hinzugefügt
1.5.1	23.09.2018.	Erklärung Weichenadresse Roco und Standard hinzugefügt.
1.5.1	24.09.2018	XpressNet Protokoll Einstellungen Handregler hinzugefügt.
1.5.1	27.09.2018	Anhang Firmware Hinweis ergänzt.

LAN & Wi-Fi
settings

4.1 Inauguration
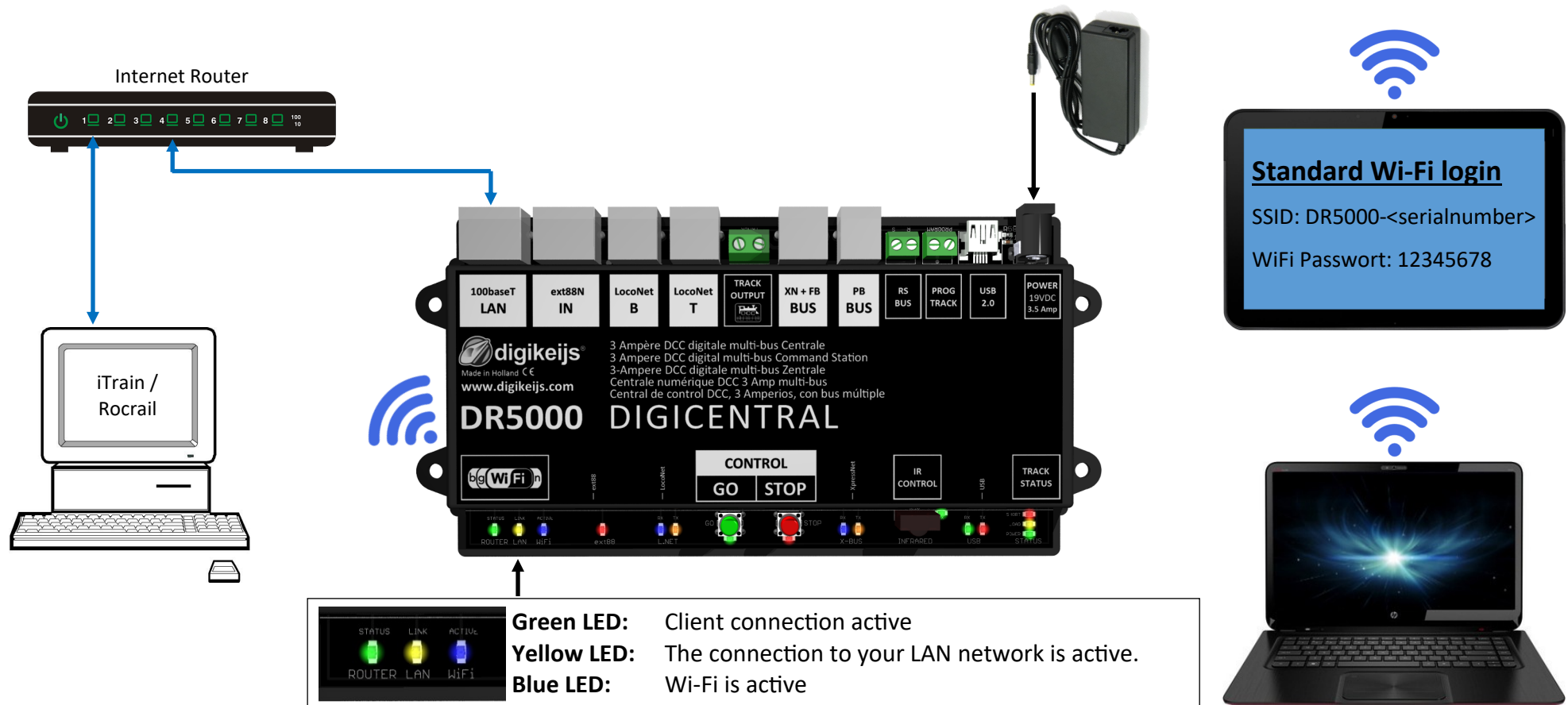
The DR5000 central unit is equipped with a built-in network router as standard, allowing the central unit to be accessed via a LAN network or a wireless network. This makes it possible to connect programs like iTrain or RocRail (and others) with network support over your own internal network without using the USB cable. Starting the internal router takes about 30 seconds.

Once the central unit is connected to your network, your router assigns an IP address to the DR 5000.

It is not possible to connect the DR5000 to your network using the DR5000's internal Wi-Fi module. The DR5000's Wi-Fi connection is intended only for connections to smartphones, tablets, PCs or laptops.

Internet Router

iTrain / Rocrail

100baseT LAN | **ext88N IN** | **LocoNet B** | **LocoNet T** | **TRACK OUTPUT** | **XN + FB BUS** | **PB BUS** | **RS BUS** | **PROG TRACK** | **USB 2.0** | **POWER 19VDC 3.5 Amp**

digikeijs
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DR5000 DIGICENTRAL

3 Ampère DCC digitale multi-bus Centrale
3 Ampere DCC digital multi-bus Command Station
3-Ampere DCC digitale multi-bus Zentrale
Centrale numérique DCC 3 Amp multi-bus
Central de control DCC, 3 Amperios, con bus múltiple

b|g Wi Fi n

CONTROL GO STOP

IR CONTROL

TRACK STATUS

STATUS LINK ACTIVE
ROUTER LAN WiFi   extBB   L.NET   X-BUS   INFRARED   USB   STATUS

Standard Wi-Fi login

SSID: DR5000-<serialnumber>

WiFi Passwort: 12345678

Green LED: Client connection active
Yellow LED: The connection to your LAN network is active.
Blue LED: Wi-Fi is active

STATUS   LINK   ACTIVE
ROUTER   LAN   WiFi

4.2 LAN Settings

This input mask is only available with firmware version 1.4.x and higher.

You can adjust the LAN settings via the configuration software. (Normally the DR5000 recognizes the IP address automatically. The prerequisite for this is that the DR5000 is connected to the home network. If the DR5000 does not recognize its IP address, it must be searched for in the network router and then entered below. If you do not have sufficient knowledge of the network technology, the default settings should not be changed. **Incorrect changes may cause the internal router to malfunction.**

IP address DR5000

DR5000 Protocol

This setting is used to select which protocol is made available via Lan or Wlan.

At the moment it is only possible to select a single protocol.

The protocol is then routed to Wlan and Lan.

If, for example, the Z21/Wlanmaus protocol was selected and the control program is connected to the DR5000 via Lan, the program can only access the DR5000 via this protocol.

XpressNet LAN

Select this option to connect external applications via XpressNet LAN.

LocoNet® over TCP/IP LBServer

Select this option to connect external applications (such as JMRI) via LocoNet® TCP / IP.

LocoNet® Binary

Select this option to connect external applications (like iTrain/RocRail) via LocoNet® TCP / IP

Dr. Command

Select this option to connect future Digikeijs applications.

Z21®/WLANmaus®

Select this option if you want to control with the Z21® App or with the Roco® WLAN mouse®.

LAN Addresses

It is recommended to leave the connection type at DHCP. Settings should only be made by experienced users.

LAN Operating Mode

It is recommended to leave the LAN operating mode at Gateway. Settings should only be made by experienced users.

4.2.1 Set the network protocol (Z21, XpressNet, etc.).

The DR 5000 can communicate with various protocols via the Lan/Wlan interface. There are two different ways of making the settings. **However, a connection via USB is always required for setup!**

4.2.1.1 Change the network protocol if there is a connection to the home network.

1.   Connecting the DR5000 to the USB port
2.   Lan interface of the DR5000 to the home network.
3.   The home network router assigns an IP address to the DR5000. This process normally takes about 30 seconds.
4.   Open the DR5000 Tool. (Connection type DR5000 Tool must be set to USB)
5.   Open Lan settings in the DR5000 Tool.
6.   Select the desired protocol.
7.   Confirm the selection with the green tick.
8.   It takes approx. 60 seconds until the Lan/Wlan module of the DR5000 is restarted.
9.   Now the DR5000 can communicate via the selected protocol.
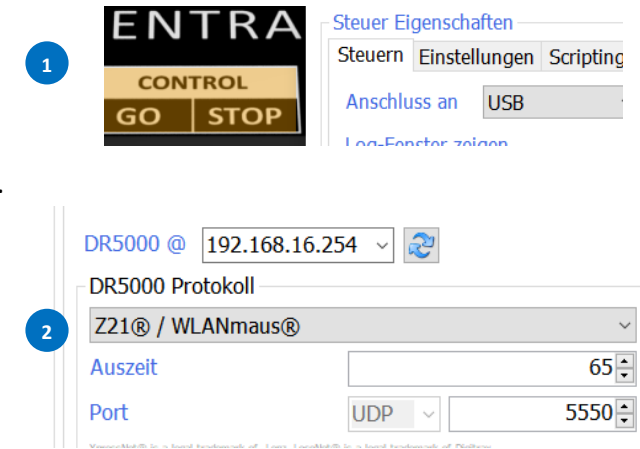
4.2.1.1 Change network protocol via Wlan

1.   Connecting the DR5000 to the USB port
2.   Now the PC must be connected to the Wlan of the DR500.
3.   After you have found the DR5000's Wlan network in the Windows network dialog click
      and enter the Wlan password. (Factory setting 12345678)
      The connection is now established. This process normally takes about 30 seconds.
4.   Open the DR5000 Tool. (Connection type DR5000 Tool must be set to USB)
5.   Lan Open settings in the DR5000 tool.
6.   Select the desired protocol.
7.   Confirm the selection with the green tick.
8.   It takes approx. 60 seconds until the Lan/Wlan module of the DR5000 is restarted.
9.   Now the DR5000 can communicate via the selected protocol.
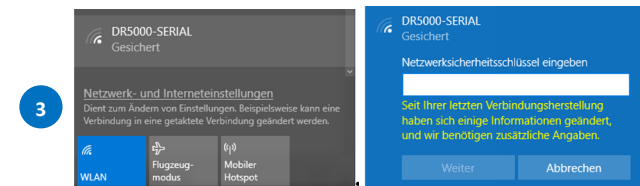
4.3 Connect the PC directly to the DR5000 via Lan/Wlan

The DR 5000 can be set so that it can be accessed directly from the PC via a Lan connection. The central unit then works as a router and provides a DHCP server for further network devices. There are two different ways to make the settings. A connection via USB is always required to change the Lan/Wlan settings.

4.3.1 Configure internal router via home network and switch to Brigde

1.   Establish USB connection with the PC (if necessary, install the configuration software of the central unit).
2.   Connect to the home network.
3.   Supply the central with power.
4.   The central is now assigned an IP address via the home network.
5.   Open Lan settings of the DR5000.
6.   Next, the Lan operating mode must be switched from gateway to bridge.
      In the Bridge setting, the DR5000 now provides its own Lan network.
      (It is recommended to retain the DHCP setting in the connection type.)
7.   Here you can select the protocol with which the central station is to be connected
      should communicate via Lan/Wlan.
8.   The settings still have to be accepted with the green checkmark.
9.   Now the DR5000 restarts the Lan/Wlan module. This procedure
      takes approx. one minute. Wait until the yellow and blue LEDs are illuminated again.
      flash evenly.
10.   Finally, the control unit must be disconnected from the power supply be separated. After approx. 1 minute
      the power supply can be switched off. can be restored.
11.   Now connect the PC to the Lan connector of the DR5000.
      (**Important**! An existing Lan/Wlan connection with your home network must be
      can be separated.)
12.   The PC can now access the DR5000 via Lan.

Attention! We recommend the Bridge mode!
We only recommend the Bridge operating mode if no home network is available and a direct
Lan connection PC <> DR50xx is desired! A connection via an existing **router, USB and the Gateway** operating
mode is always preferable to the Bridge operating mode! Please keep in mind that for these settings further
knowledge about Lan/Wlan should be available.

LAN-Betriebsmodus

⦿ Gateway   Der LAN-Port wird als WAN-Port behandelt. Verwenden Sie diese Einstellung, wenn Sie die DR5000 an ein Heimnetzwerk (Router / Switch) anschließen möchten.

○ Bridge   Der LAN-Port und die Wireless-Schnittstelle sind in einem einzigen Netzwerk verbunden. Verwenden Sie diese Option, wenn Sie die DR5000 als isoliertes Netzwerk verwenden möchten. z.B. Sie verbinden einen PC/Laptop mit der DR5000 (über ein direktes Kabel oder Hub/Switch).

LAN-Adressen
Verbindungstyp   DHCP   (Dynamisches IP)
IP-Adresse   192.168.178.32
Subnet-Maske   255.255.255.0
Standard-Gateway   192.168.178.1
Primärer DNS-Server 192.168.178.1
Sekundärer DNS-Server 192.168.178.1
Hostname

Grund Erweitert

DR5000 @ 192.168.178.32
DR5000 Protokoll
Z21® / WLANmaus®
Auszeit   65
Port   UDP   21105

4.3.2 Configure internal router via Wlan and switch to Brigde

1.   Supply power to the central unit (starting the Wlan module takes approx. one minute, after that the central unit is ready for operation).

2.   The PC must first be connected to the Wlan of the DR500.
      After you have found the Wlan network of the DR5000 in the Windows network dialog, click on it and enter the Wlan password. (Factory setting 12345678) The connection is now established.

3.   Now start the configuration tool of the DR5000. When opening the program, no connection to the DR5000 can be established due to the missing USB connection, therefore the connection type under Control must be changed to Network.

4.   Lan Open the DR5000 settings.

5.   Next, the Lan operating mode must be changed from Gateway to Bridge.
      In the Bridge setting, the DR5000 now provides its own Lan network.
      (It is recommended to retain the DHCP setting in the connection type.)

6.   Here you can select the protocol with which the central station is to be connected.
      should communicate via Lan/Wlan.

7.   The settings still have to be accepted with the green checkmark.

8.   Now the DR5000 restarts the Lan/Wlan module. This procedure
      takes approx. one minute. Wait until the yellow and blue LEDs are illuminated again
      flash evenly.

9.   Finally, the control unit must be disconnected from the power supply
      be separated. After approx. 1 minute the power supply can be switched off
      can be restored.

10.   Now connect the PC to the Lan/Wlan of the DR5000.
      (**Important!** An existing Lan/Wlan connection with your home network must be can be separated.)
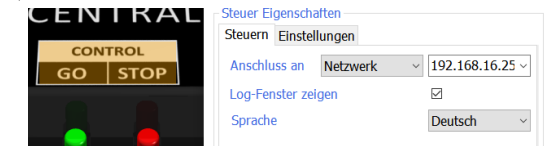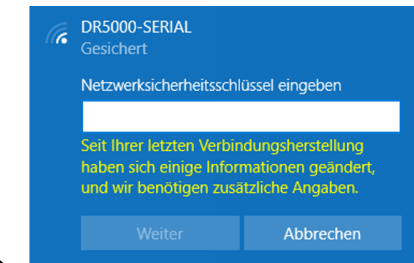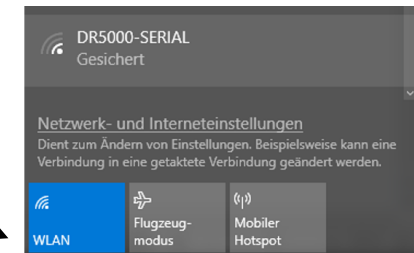
Attention! We recommend the Bridge mode!
We recommend the Bridge mode only if no home network is available and a direct Lan connection PC <> DR50xx is desired! A connection via an existing **router, USB and the Gateway** operating mode is always preferable to the Bridge operating mode! Please keep in mind that for these settings further knowledge about Lan/Wlan should be available.
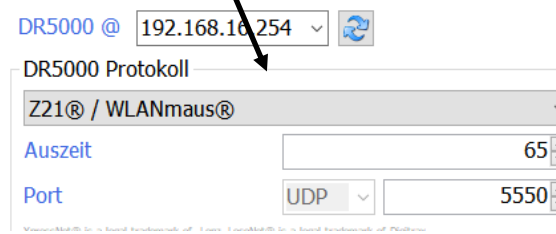
4.4 Wi-Fi Settings

This input mask is only available with firmware version 1.4.x and higher.

You can adjust the Wlan settings via the configuration software. (Normally the DR5000 recognizes the IP address automatically.)

If the DR5000 does not recognize your IP address, it must be searched for in the network router and then entered below.

If you do not have sufficient knowledge of network technology, the default settings should not be changed. Incorrect changes may cause the internal router to malfunction.

IP Adresse DR5000

Name (SSID) of the Wlan network that creates the DR5000.

Password of the Wlan network of the DR5000 (password in delivery state 12345678)

IP address of the DR5000 WLAN

DHCP Server of the DR5000
No changes should be made here. These settings are important so that the Roco Wlan mouse, mobile phones and tablets can be connected.

This window displays all devices (smartphones, tablets, Wlan handsets, etc.) connected to the DR5000. **Which steps are necessary, e.g. to connect a Wlan handset control, can be found in the respective instructions of the manufacturer.**

Connection with the control software

5.1 Inauguration

There are many different ways to connect the control software to the DR5000.

Connection via USB COM ports

First you need the correct COM port numbers. These are displayed as soon as the DR5000 has been connected to the PC via USB. As soon as the DR5000 has established a connection via USB, which ComPort has been assigned to which protocol is displayed.

To do this, click on the USB 2.0 option in the configuration software. A screen appears in which USB properties are displayed.

The following example shows which protocol has been assigned to the different COM port numbers.

Connection via LAN

To establish a connection via the LAN network, you must search your own router for the IP address received by the DR5000.

As of firmware version 1.4.x, the IP address assigned by the router is also displayed here.
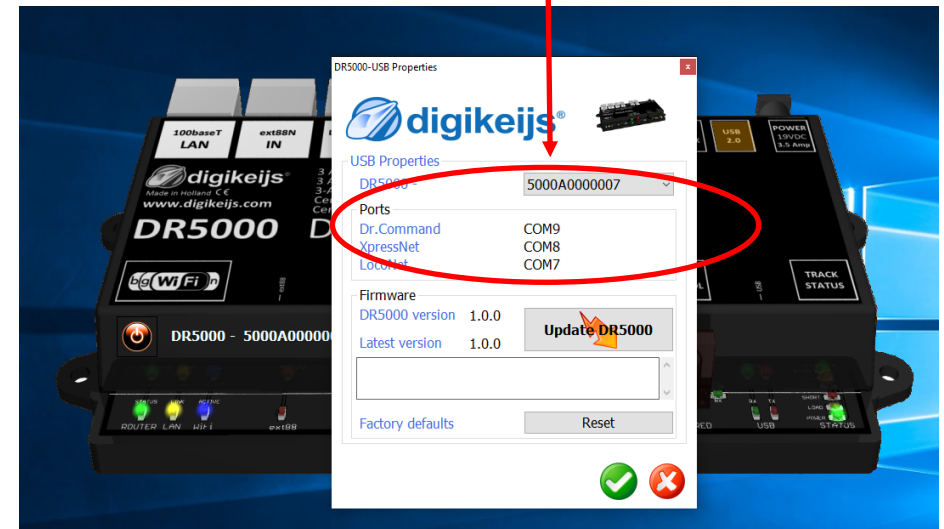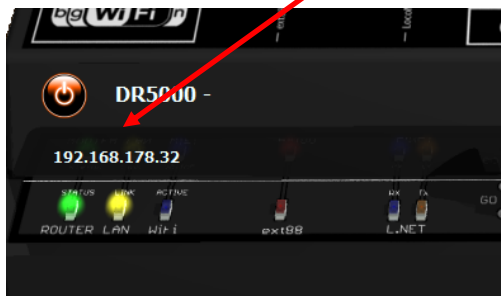
5.2 Connect Koploper® via USB

Start Koploper and choose a new database from the General menu. In the corresponding fields, enter the database name, digital system, and port number.

In the following example, the name DR5000 has been selected. LocoNet® was selected for the digital system and port number COM7.

To find the COM port number, follow the instructions on page 20 of this guide.
Click Next, and then click Finish.

To check if the connection is working, you can stop the green wire paddle signal in Koploper. Koploper is now connected to the DR5000 via LocoNet® and the green LED on the DR5000 lights up. Click on the paddle signal of the red wire and the DR5000 will light red.
The connection is successful.
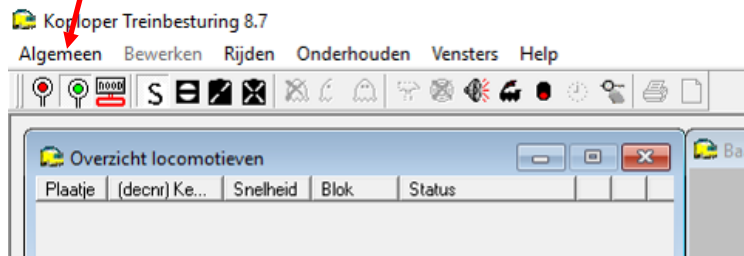
5.3 Connect ITrain® via USB

Start iTrain and click on the interface in the Changes menu. In the interface field, select S LocoNet©. Open the "Serial" tab and select 115200 as baud rate, then the COM port for LocoNet © must be selected (see page 20). In the following example we have used COM7.
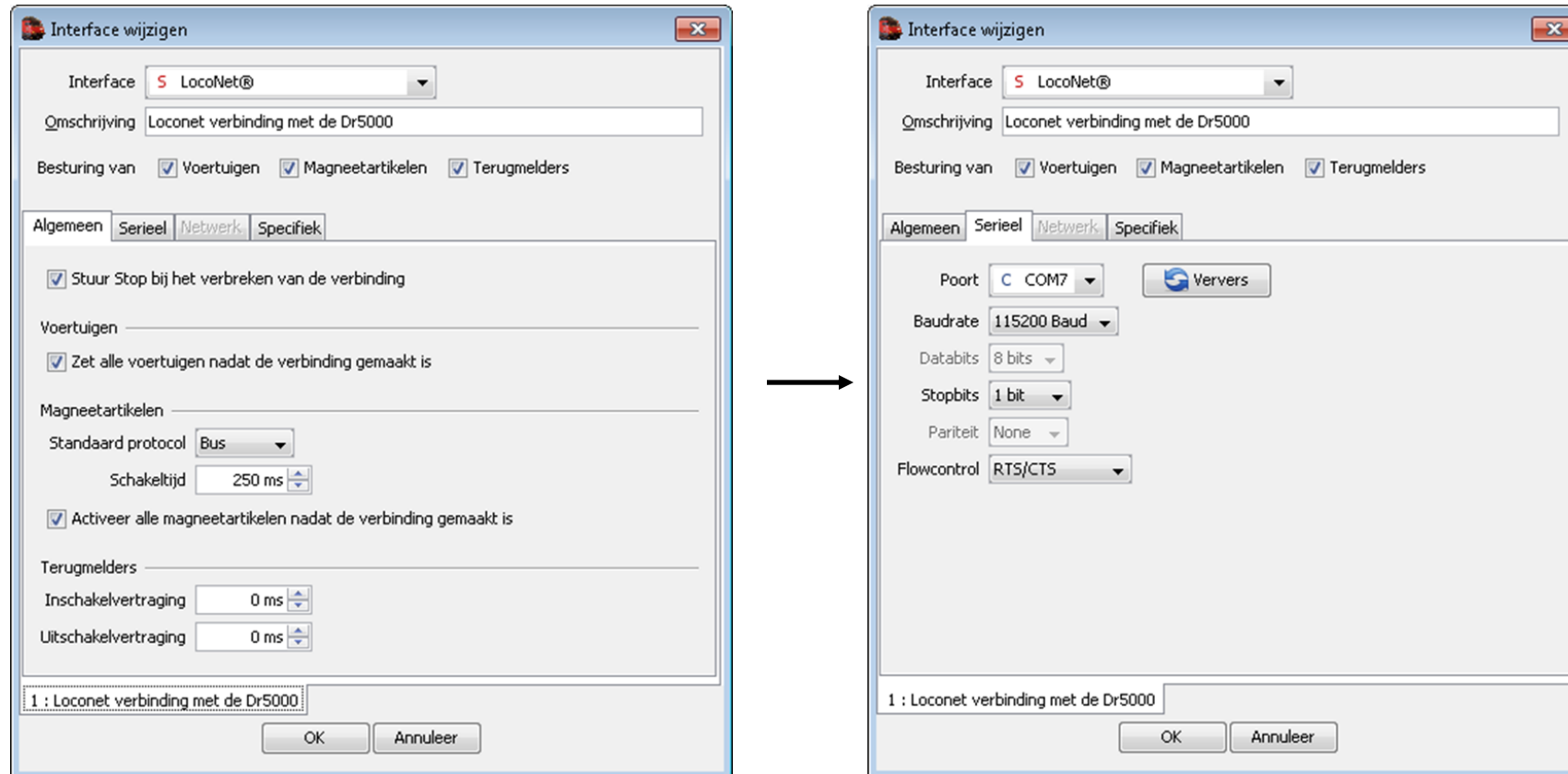
Click on OK and try to connect to the DR5000 by clicking on "Connect". At the bottom right of iTrain, you can see if this was successful and if iTrain is now 'online'. Check if the DR5000 responds to the Stop and Start buttons. If so, the connection is successful!

5.4 Connecting iTrain® via LAN

Connect the DR5000 to your local network and start the DR5000 configuration software. Then click on the 100baseT LAN settings and the LAN Properties screen will open. At the bottom of this screen, select 'XpressNet LAN' in the protocol settings and click the green OK button. Starting with iTrain V4 it is also possible to use LocoNet® Binary.

The DR5000 is now set to accept XpressNet LAN connections.
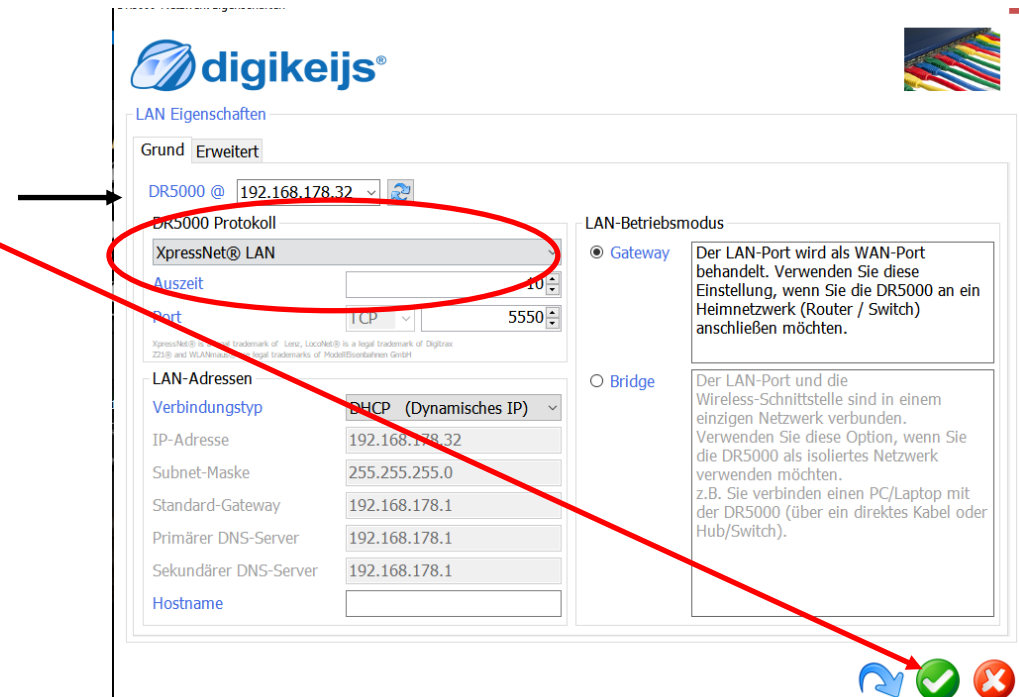
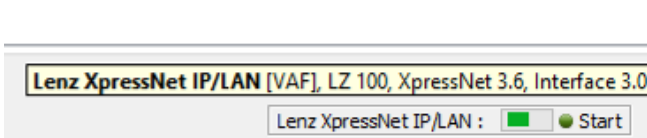Continue setting up iTrain on the next page.

Now start iTrain and click on the Changes menu in the user interface. In the interface field, select N LocoNet® TCP/TP

Open the Network tab and enter the IP address of the DR5000.

Enter port number 5550.
Set the timeout to 2000ms.

Click OK and try to connect to the DR5000 by clicking Connect at the top of the iTrain screen.

Interface wijzigen	✕

Interface N Lenz XpressNet IP/LAN ⌄

Omschrijving

Besturing van ☑ Voertuigen ☑ Magneetartikelen ☑ Terugmelders

Algemeen *Serieel* **Netwerk** Specifiek

IP-adres 192.168.32.25

Poort 5.550

Timeout 2.000 ms

1 : Lenz XpressNet IP/LAN

OK   Annuleer

Verbinden Start Stop Beëindig alle

Lenz XpressNet IP/LAN [VAF], LZ 100, XpressNet 3.6, Interface 3.0

Lenz XpressNet IP/LAN : ▭ ● Start

At the bottom right of iTrain, you can see whether this was successful and whether iTrain is now 'online'.
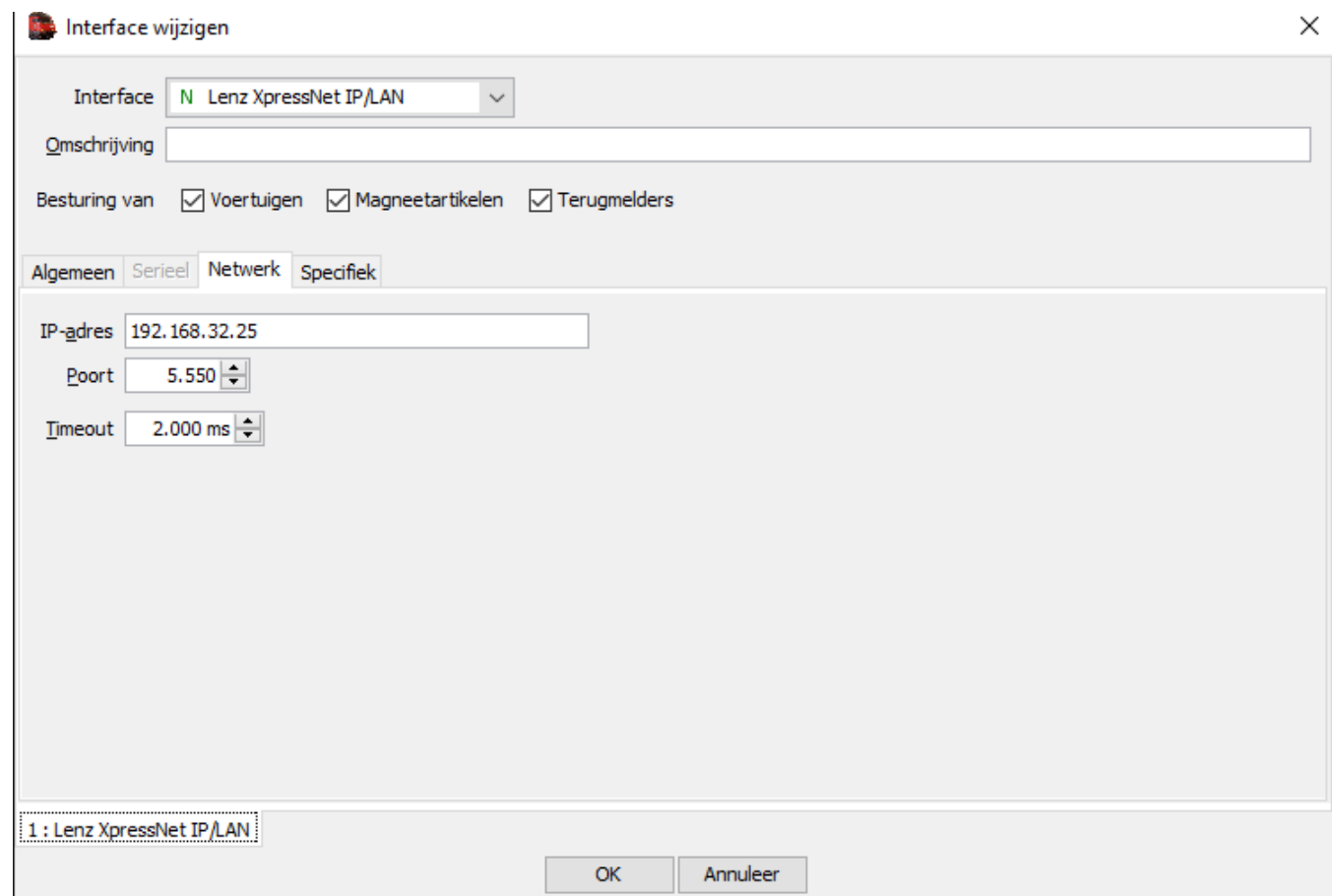
Check if the DR50000 responds to the Stop and Start buttons. If this is the case, the connection has been successfully established!

5.5 Connect Traincontroller® via USB

Start the Train Controller and select "Setup Digital Systems" from the "Railroad" menu. Then click on the "Add" button to establish a new connection. In "Select Digital System" select "LocoNet®". On the next screen, select the appropriate LocoNet® COM port.
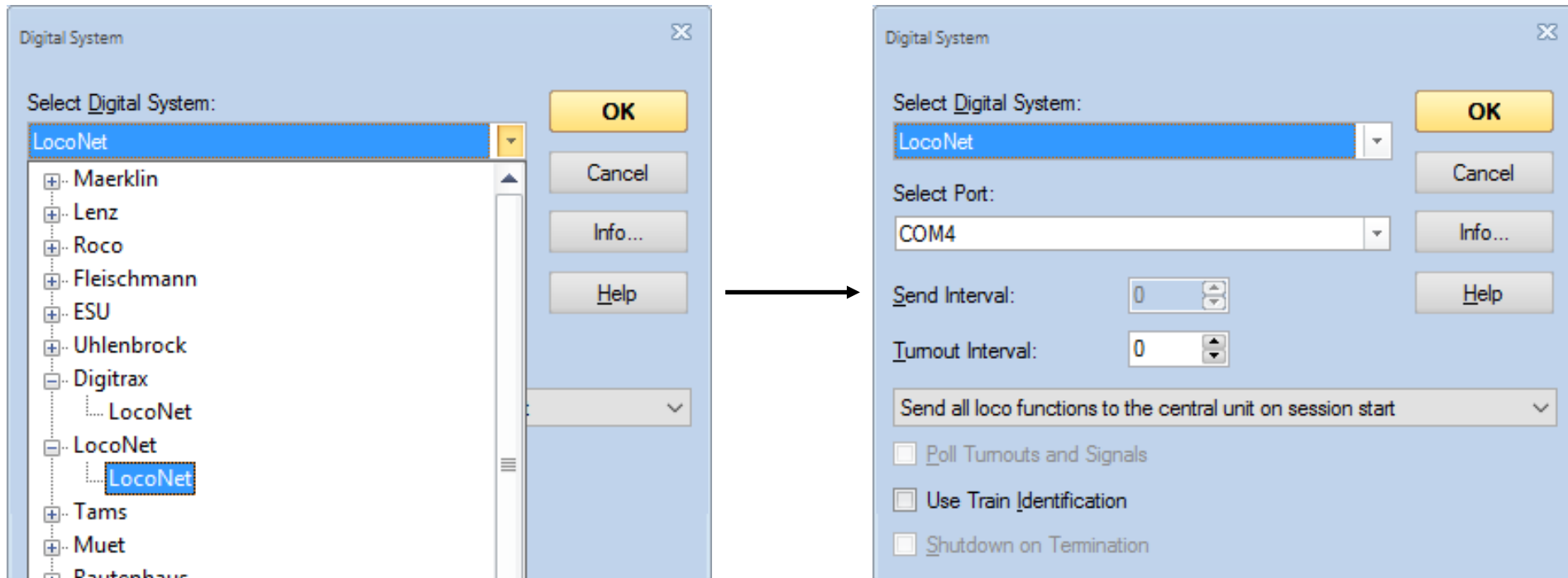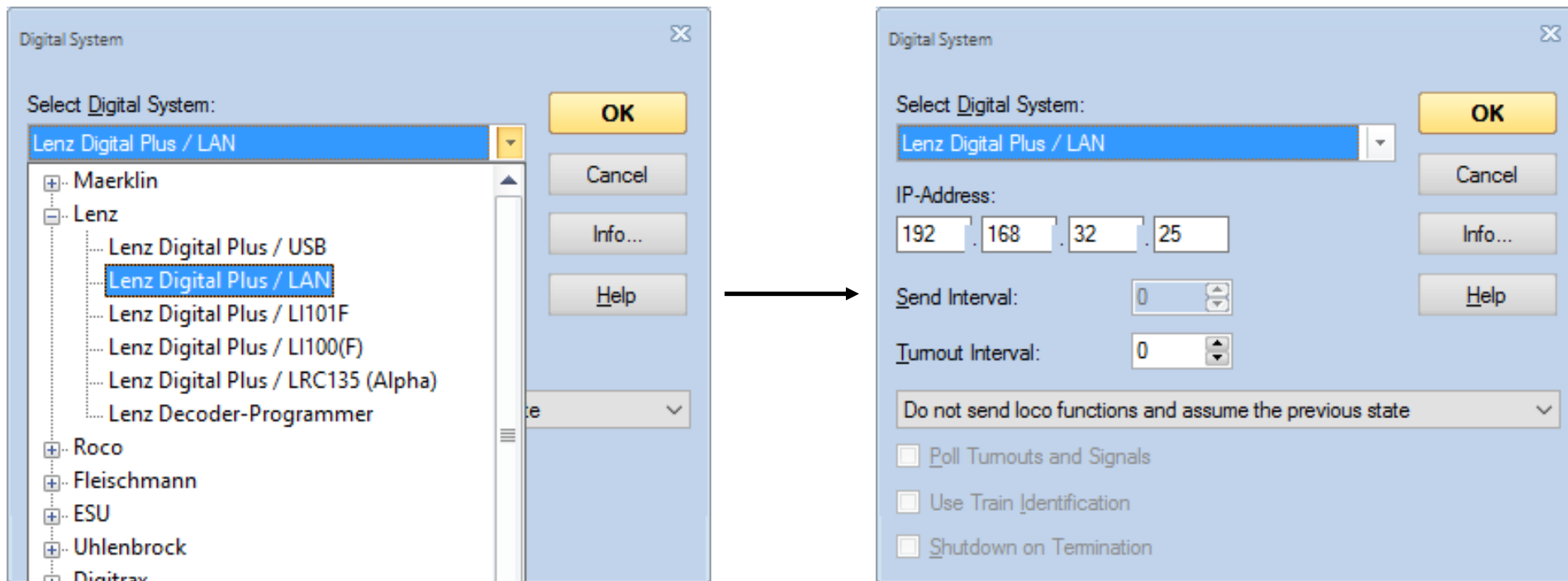

Now test the connection by clicking on the green or red button in Traincontroller®. The DR5000 will follow Train Controller's instructions. At the bottom right you can also see the status of the connection.
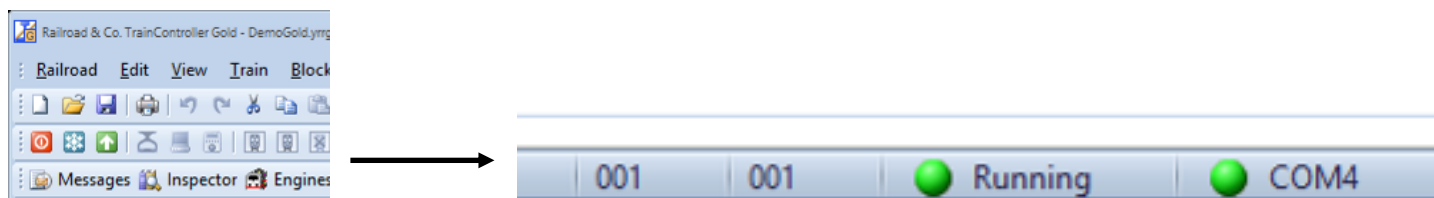
5.6 Connect Traincontroller® via LAN

Start Train Controller and select "Setup Digital Systems" from the "Railroad" menu. Then click on the "Add" button to establish a new connection. Under "Select Digital System", select the option "Lenz Digital Plus / LAN". In the next screen, enter the IP address of the DR5000. Then press OK.

Now test the connection by clicking on the green or red button in Traincontroller®. The DR5000 will follow Train Controller's instructions. At the bottom right you can also see the status of the connection.
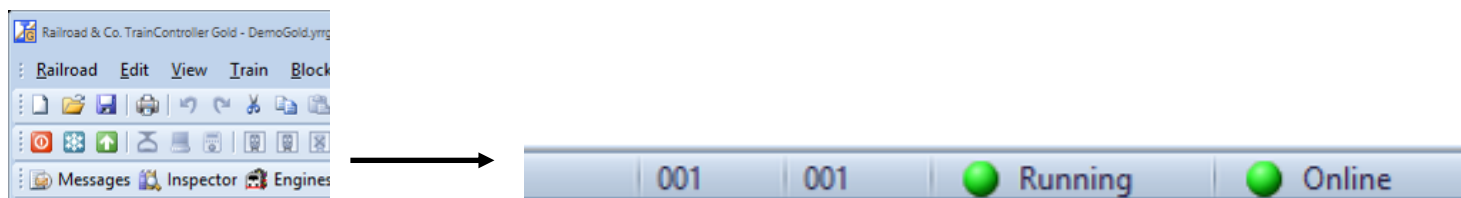
5.9 Connect Win-Digipet® via USB

The settings refer to WDP 2015.2®. Other versions may require different settings.

Start WinDigipet® and select "System settings" in the upper left menu.

The settings can be made according to the example picture:
(In this example, the DR5000 is connected to WDP via COM 6.

Digital system Type: Digikeijs DR5000 LocoNet®
Via LAN: do not check the box
Baud rate: 57600
The two checkmarks "Screen display of all locomotive commands" and "Position display of the magnetic articles" should also be checked.

Now close WinDigipet® by clicking on "Spokes & Close" and restart WDP to re-initialize the connection.
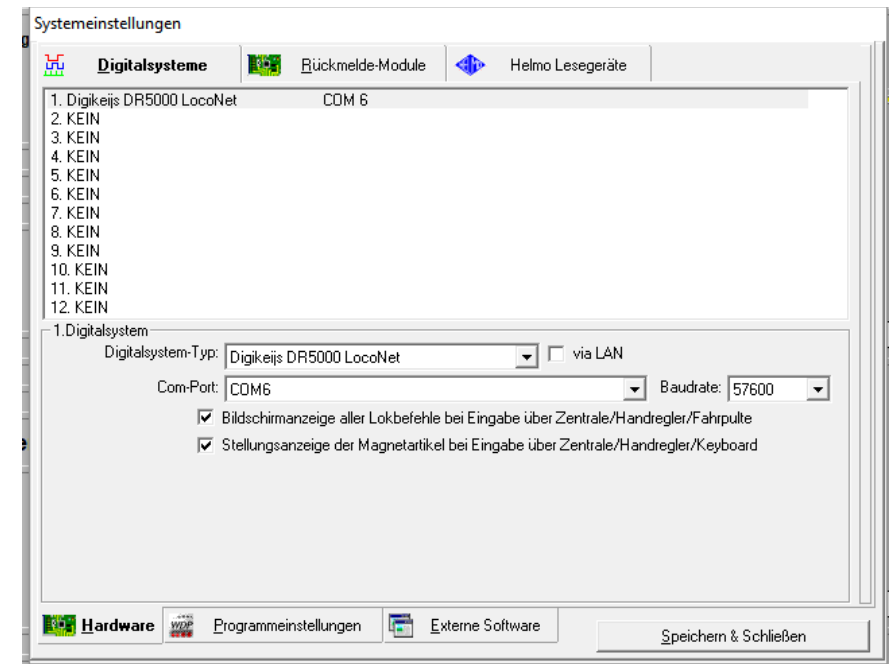
The next step is to enter the feedback modules.

Click on New RM Module Assignment and enter the feedback modules as shown in the picture on the right. The number of feedback modules depends of course on the number of modules used by them.

Digital system: Digikeijs DR5000 LocoNet®

Feedback modules with 16 inputs must be divided into two 8-fold modules.
For example module 1 to module 1 contacts 1-8 and module 2 to module 2 contacts 9-16.

Now close WinDigipet ® by clicking on "Spokes & Close" and restart WDP to reinitialize the feedback modules.
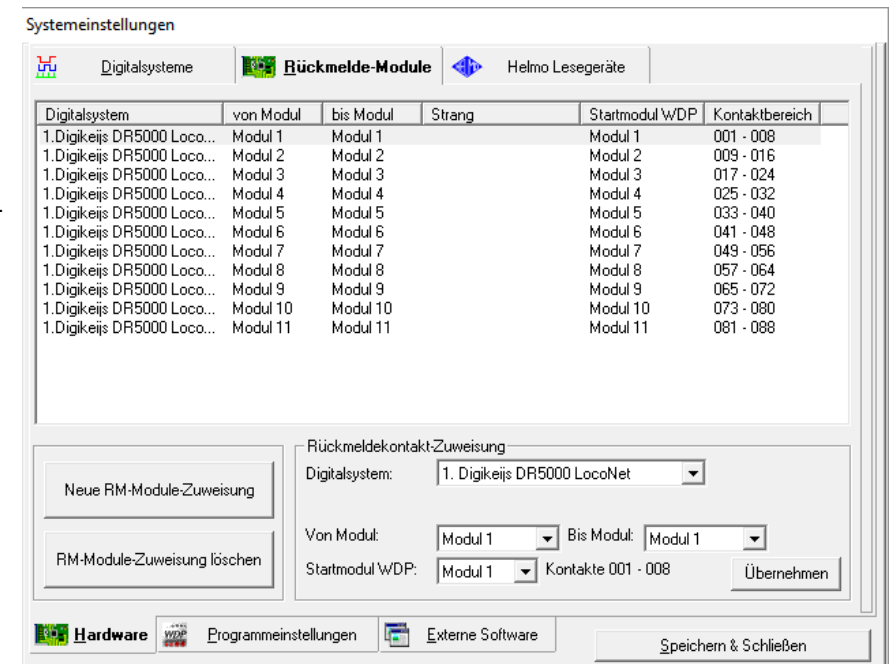
6.0 Connect Win-Digipet® via LAN

The settings refer to WDP 2015.2®. Other versions may require different settings.

Start WinDigipet® and select "System settings" in the upper left menu.

The settings can be made according to the example picture:

Digital system type: Digikeijs DR5000 LocoNet®
Via LAN: Check the box
IP address of the DR5000: IP address of the DR5000 assigned via DHCP.
TCP port 1: 5550
The two checkmarks "Screen display of all locomotive commands" and "Position display of the magnetic articles" should also be checked.

Now close the WinDigipet® input mask by clicking on "Spoke & Close" and restart WDP to reinitialize the connection.

In the next step, the feedback modules must be entered.

Click on New RM Module Assignment and enter the feedback modules as shown in the picture on the right. The number of feedback modules depends of course on the number of modules used by them.

Digital system: Digikeijs DR5000 LocoNet®

Feedback modules with 16 inputs must be divided into two 8-fold modules.
For example module 1 to module 1 contacts 1-8 and module 2 to module 2 contacts 9-16.

Now close WinDigipet® by clicking on "Spokes & Close" and restart WDP to reinitialize the feedback modules.
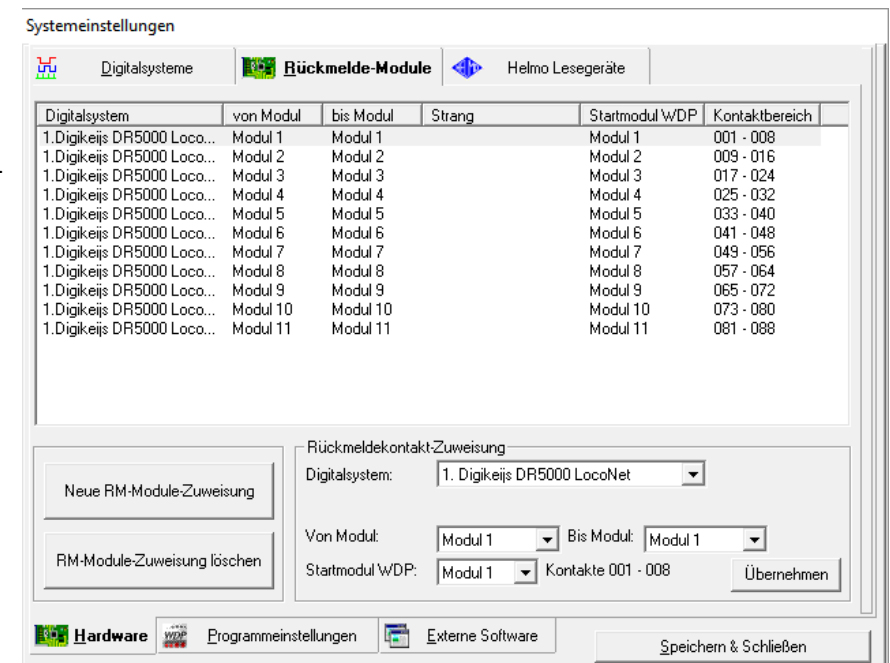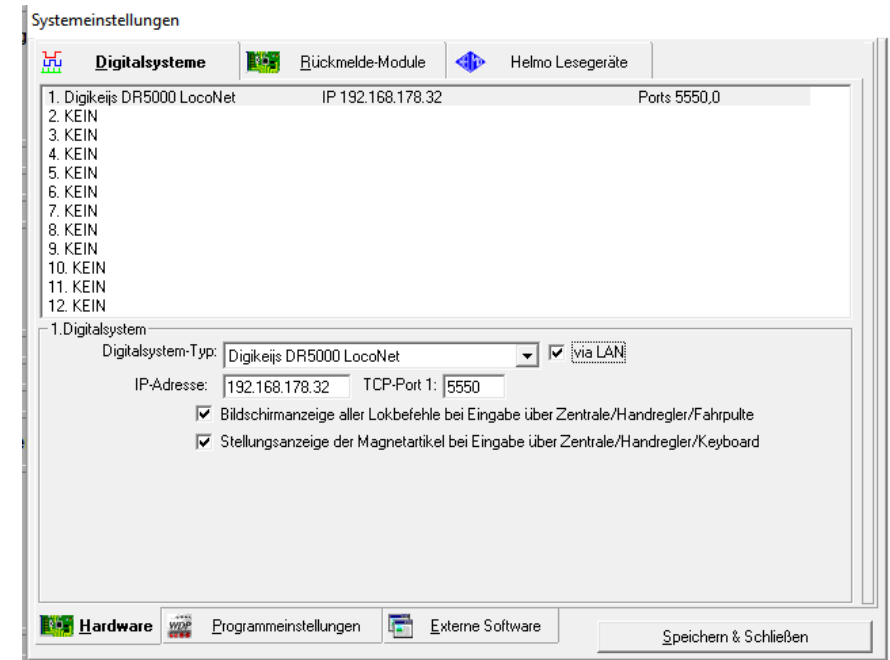
Configuration Options for the

7.1 ext88N

The ext88N connector of the DR5000 is a S88N® compatible bus*.

1) Number of connected S88N® feedback modules with 16 inputs.*
2) Number of connected S88N® feedback modules with 8 inputs.*
3) Total number of connected feedback contacts.
4) First feedback contact of the 1. connected s88® module.
5) The entire s88® feedback chain can be located anywhere in the feedback range from 1-2048.
6) When the track output is switched on (green button), all inputs are signalled via the various buses.
7) Waiting time after switching on before the contacts are reported.
8) Complete overview of all connected S88N® contacts.
9) Accept current settings
10) abort

*Note! If no S88 feedback modules are connected and another feedback bus is used, the number 0 must be set for the "Number of XX input modules", otherwise an address conflict with the other feedback systems may occur.

3-wire operation: Due to the H-bridge (track output) in the DR5000, the DR4088GND feedback modules must not be used against track ground, as is usually the case. This inevitably leads to the destruction of the DR5000.
The same applies to all other feedback devices **(from other manufacturers)** which switch against track ground.
If a 3-wire driver still wants to drive and feedback with the DR5000, the DR4088OPTO must be used.

7.1.1 Use ext88N to control magnetic items

With the DR5000 it is possible to simply switch magnetic article addresses via feedback modules connected to the ext88N bus (DR4088GND, 4088OPTO).

For this function, the first 8x16 feedback inputs (a maximum of 128 feedbacks) are provided on the ext88N bus. If this function is used, please note that the feedback modules which are used for the connection of pushbuttons or switches must always be connected directly to the ext88N bus of the DR5000!
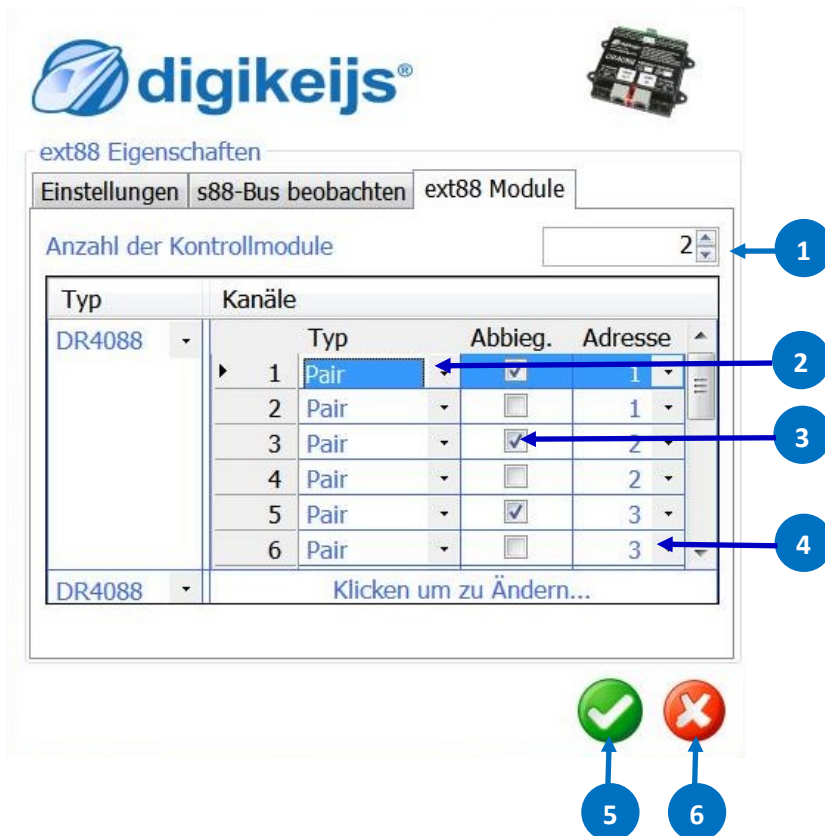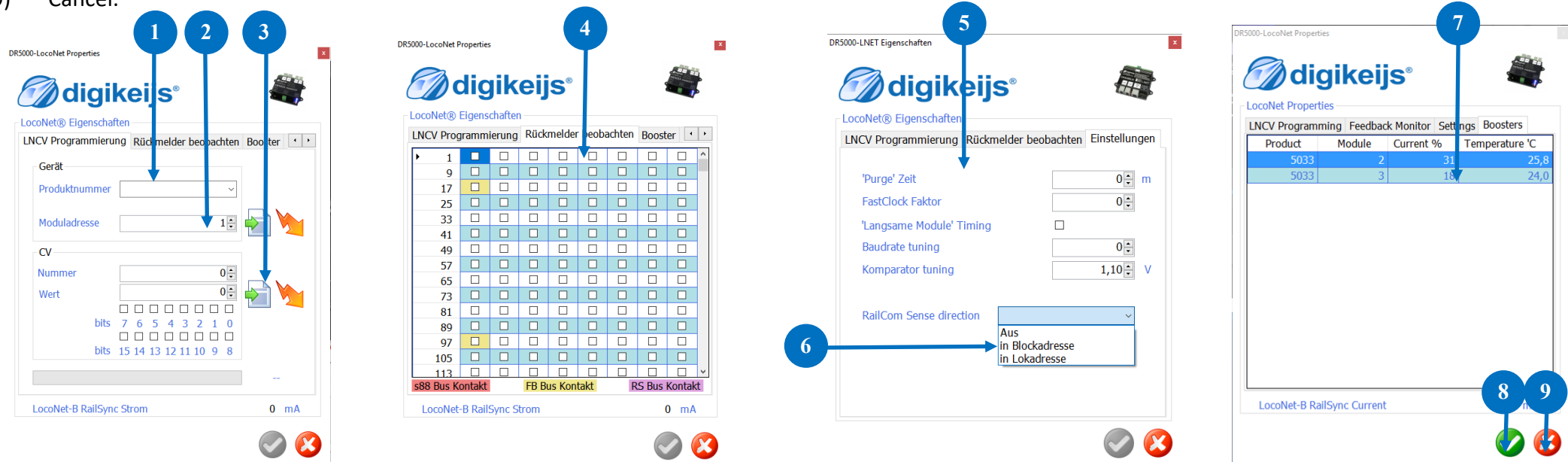
1) Number of feedback modules to be used for push buttons or switches.
2) Function selection how the feedback module should be used.

   Pair   Two buttons per switch, a total of two inputs are required by the DR4088. Conventional turnout control with the buttons 'Red' and 'Green'.

   Toggle One push button per turnout, one input is required on the DR4088.
   The term 'toggle' means:
   Press the button, the turnout switches from "straight to curved".
   Press button again, turnout switches from "bent to straight".

   OnOff   One toggle switch per turnout, one input is required on the DR4088.
   OnOff' means:
   Toggle switch On, "Crossover curved".
   Toggle switch Off, "Crossover straight".
   The DR5000 switches the turnout as soon as the switch position changes.

3) Selection of how the magnet article should switch.
4) Address the magnetic article which is to be switched.
   If the **'Pair'** function was selected, the address must be entered twice (once for the red button and once for the green button).
5) Accept current settings
6) abort

7.2 LocoNet® B

1) Product number of the LocoNet® module.
   The product number can be entered either in 4 digits e.g. Digikeijs or in 5 digits e.g. Uhlenbrock®.

2) Read and / or program LNCV module addresses.

3) LNCV LocoNet® Read CVs and / or program.
   The values can be entered either decimal or bitwise (by ticking).

4) LocoNet® Feedback Monitor. The different colors indicate the different feedback busses.

5) Extended settings. (Only experienced users should make changes here.)

   Purge time   LocoNet® special (normally nothing can be changed here)

   FastClock factor   LocoNet® special (normally not adjustable here)

   Slow module timing.   Can be activated in case of problems with LocoNet® blocks of other manufactu-
   rers.

   *Module rate tuning.   Used to adjust the exact baud rate in LocoNet®.

   *Comperator tuning.   Here the edge steepness and the edge height can be adjusted.

   *!Note! Here only experienced users should Here only experienced users should alterations

6) **Attention!** If one or more **DR5088RC** are connected to the **DR5000**, this setting must match the RailCom Sens **Direction setting in the DR5088RC!** (see operating instructions DR5088RC Steite 20)

7) Overview of the connected LocoNet® Boosters. Some information about the LocoNet® Boosters is displayed here.

8) Accept current settings.

9) Cancel.

7.3 LocoNet® T

1) Product number of the LocoNet® module.
   The product number can be entered either in 4 digits e.g. Digikeijs or in 5 digits e.g. Uhlenbrock®.
2) Read and / or program LNCV module addresses.
3) LNCV LocoNet® Read CVs and / or program.
   The values can be entered either decimal or bitwise (by ticking).
4) LocoNet® Feedback Monitor. The different colors indicate the different feedback busses.
5) Advanced settings (only experienced users should make changes here).
6) (Further information see LocoNet B)
7) Accept current settings.
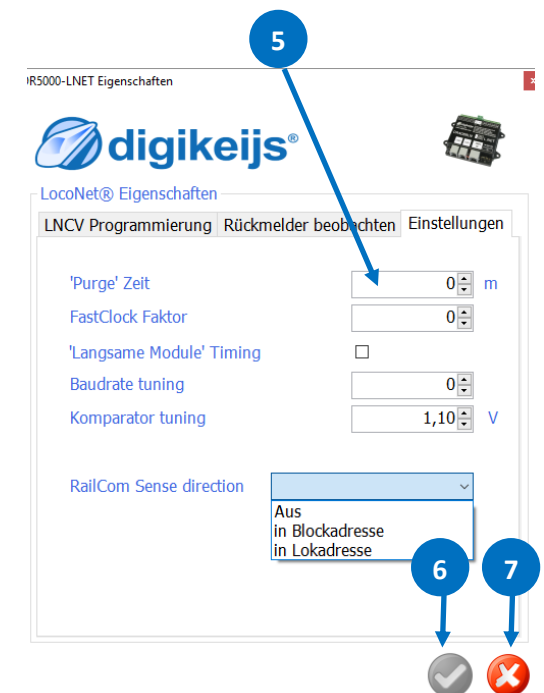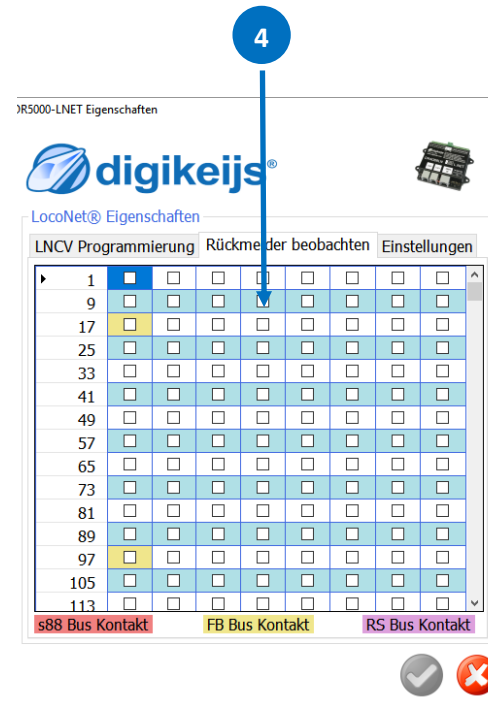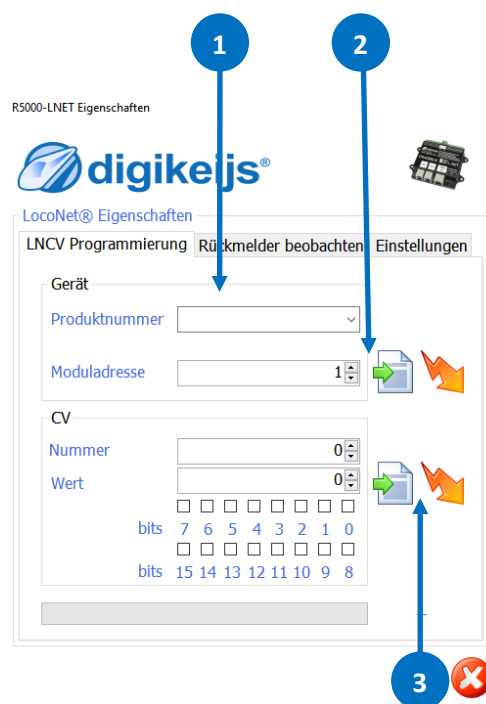
7.4 Main track output Track Output

1) Generate RailCom® cut-outs.
2) Polarity of the RailCom® cut-out.
3) Activation of the automatic RailCom® polarity change.
4) Maximum current that the track output delivers to the rails.
5) Short circuit delay before switching off the track output.
6) Temperature of the internal amplifier.
7) The actual current in milliamperes delivered by the control unit.
8) Accept current setting
9) abort

10) Highest short locomotive address that can be addressed
11) Standard speed levels with which the locomotives are addressed
12) Selection of which F-functions are transmitted in the refresh cycle turn
13) Accept current setting
14) abort
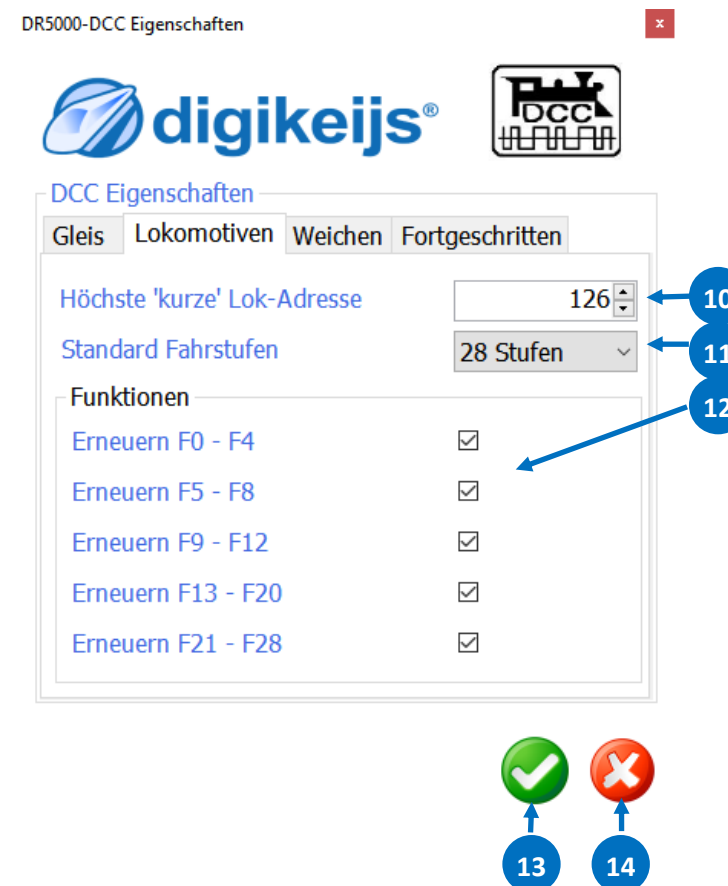
1) First switch (1.magnetic article address) to be addressed.
   Setting:
   0 =   Roco® (shift of the magnetic article addresses +4)
   1 =   Magnetic article addresses Standards-compliant to RCN 213
             (Standard setting!)
2) Minimum switch-on time of the magnetic articles.
3) Maximum switch-on time of the magnetic articles.
4) LDT® turnout decoder
   (check box to activate problems with LDT® turnout decoders)
5) Signal polarity. In case of problems with LDT® turnout decoders
   Select positive or negative.
6) Accept current setting.
7) abort

8) Number of "preamble" bits:
   Normally this setting does not need to be changed.
   (**Note:** In case of problems with decoders without Railcom, this value can be increased.)
9) Speed repetition:
   Here you define how often the speed is transmitted in the refresh cycle.
10) F x-F x Packet repetition:
    Here you define how often the F-functions are transmitted in the refresh cycle.
11) Switch package repetition:
    Here you define how often the turnout packages are transferred in the refresh cycle.
12) Accept current setting
13) abort

7.5 XN + FB BUS (XpressNet®)

1) Switch XpressNet® on or off.
2) Reverse switch commands.
3) Activate loco info broadcast (Windigipet®).
4) Start module address for feedback messages on the XpressNet® protocol.
   (Important! Everything below this address is treated as a turnout command. This setting is important for the Roco® Multimaus® to be able to use the switch display is updated in the display)
5) Activate detection of the connected R-Bus® feedback modules.
6) Time interval between the reports of the R-Bus® modules.
7) First feedback contact of the 1. connected R-Bus® module.
   (The entire R-Bus® feedback chain can be located anywhere in the feedback range from 1-2048.)
8) When the track output is switched on (green button), all inputs are signalled via the various buses.
9) Complete overview of all connected R-Bus® feedback modules.
   As soon as you have connected an R-Bus® feedback module, the number of feedback points is automatically detected.
10) You can use this wizard to address and configure R-Bus® feedback modules.
11) Feedback base module.
12) Waiting time after switching on before the contacts are reported.
13) XpressNet® Central/Version. Here you specify which panel type and which XpressNet® version the DR5000 reports to the XpressNet®.
   If XpressNet® handsfree controllers are connected to the XN/FB bus connection, this setting must be given if necessary.
   Z21® 3.6 *   Roco® Multi mouse®, Roco® Wlan mouse. (Standard setting) Functions F11-F20 possible with the multi mouse.
   LH100/LZ100 /Compact*   Lenz hand controller
   DR5000*   DR5000 Mode
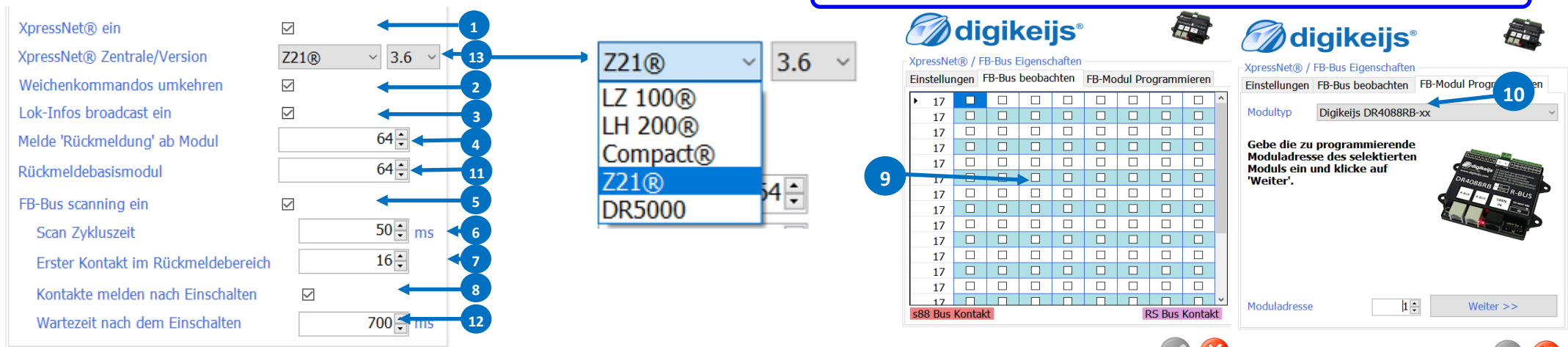
> *** When using a Roco® Multi mouse or a Roco® Lok mouse, use Z21 3.6**

7.5.1 XN + FB Configuring the BUS feedback modules

Zum programmieren der Rückmeldern folgen Sie bitte den Anweisungen im Assistenten

7.6 PB-Bus®

1)   Short circuit delay in milliseconds
2)   Display of the detected B-Bus® boosters.
3)   Booster Number that has detected a short circuit.7
4)   Accept current settings
5)   abort
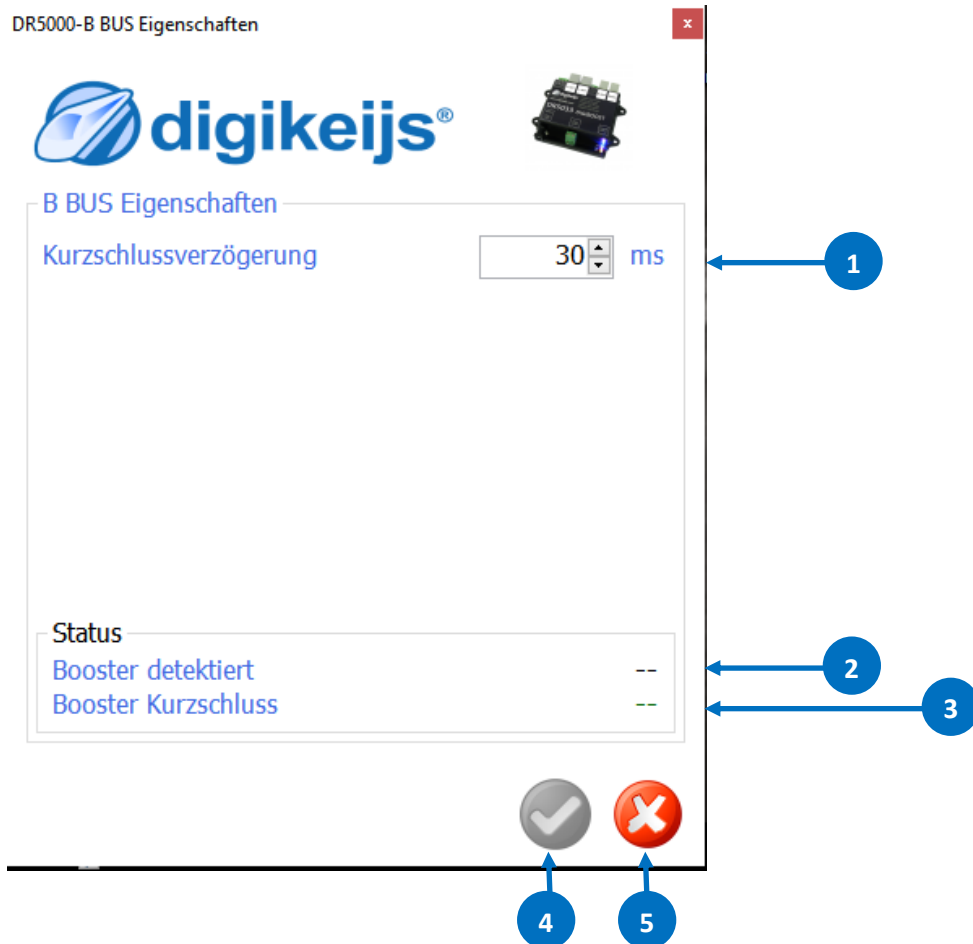
7.7 RS Bus®

1) Switch RS-Bus® on or off.
2) First contact in the RS-Bus®. The entire RS-Bus® feedback chain can be located anywhere in the feedback range from 1-2048.
3) Activate LDT® timing (in case of problems with LDT®-RS feedback).
4) When the track output is switched on (green button), all inputs are signalled via the various buses.
5) Waiting time after switching on before the contacts are reported.
6) Complete overview of all connected RS-Bus® feedback modules.
7) You can use this wizard to address and configure RS-Bus® feedback modules.
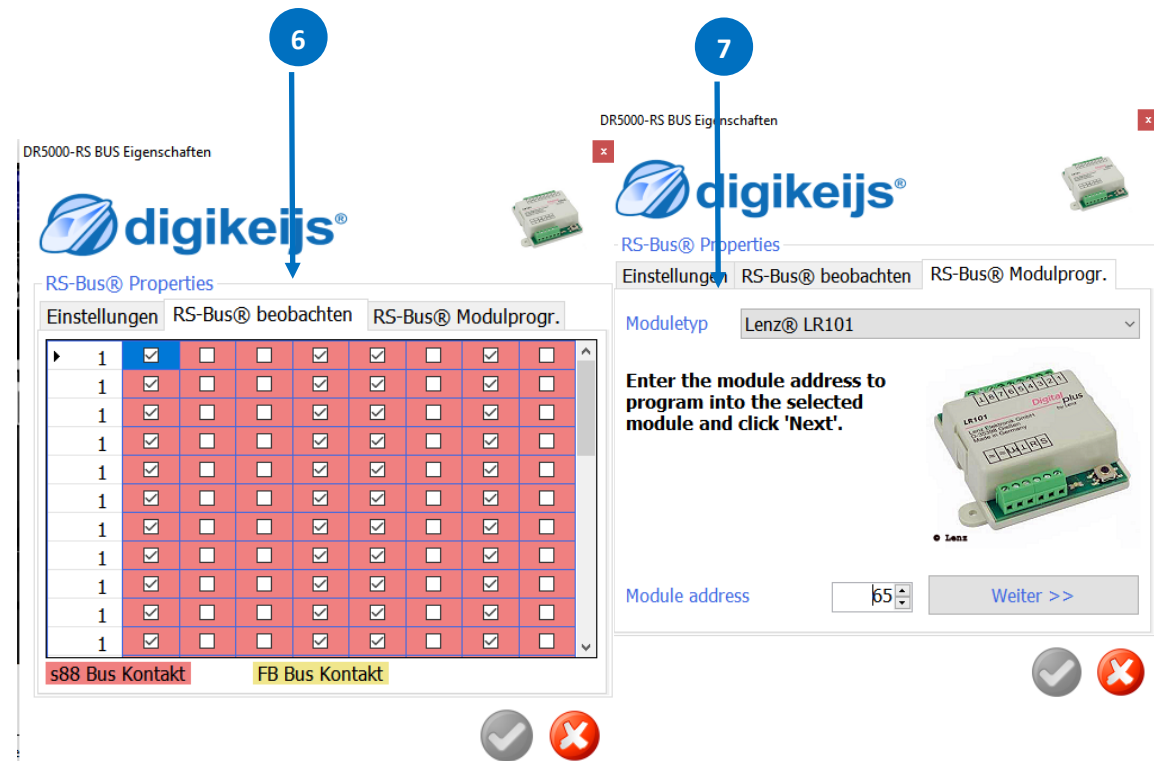
7.7.1 RS-Bus® Configuring feedback modules

To program the feedbacks, please follow the instructions in the wizard.

7.8 Programming track

1) Selection of programming or main track (POM) programming.
2) Decoder address.
3) **CV number**   input as decimal value**.**
4) **CV value**   input as decimal value.
5) **Bits.**   The individual bits can be activated by ticking the box.
6) Status of the readout or programming process.

   OK   Readout, write operation OK.
   Fail   Readout, write operation failed.
   TimeOut   no decoder detected.
7) Display of the measured load on the programming track during readout or programming.
   (If no current is displayed during programming, there is no locomotive on the programming track.)
8) If the decoder is badly recognized, the Ack current can be varied (less/more).
   (Unfortunately no statement can be made here what is better here, each decoder is different.)
9) If there are problems with the DR5088RC when reading CV's via POM it is recommended to increase this value.

7.9 USB 2.0

1) The serial number of the connected DR5000.
2) The assigned COM ports of the DR5000.
3) The current firmware version of the DR5000.
4) The last available firmware version.
5) Start firmware update.
6) Status of the firmware update.
7) Reset DR5000 to factory setting.

8) abort

Note: As of firmware version 1.2.8, the current configuration of the DR5000 is saved automatically before the firmware update and written back to the DR5000 after a successful update.
To be on the safe side, however, a data export should always be carried out to save the current settings of the DR5000!

8.0 Power

DR5000-Power Eigenschaften   [x]

Power Eigenschaften

Die DR5000 benötigt ein DC-Schaltnetzteil mit:

- **Mindestens 14V DC und maximal 22V DC Ausgangsspannung.**
- **Mindestens 3,5A Augangsstrom.**

- **Das Hauptgleis liefert max. 3A.**
- **Das Programmiergleis liefert max. 750mA.**
- **Die Spannung am Gleis ist die Netzteilsausgangspannung minus 1,1V.**

- **LocoNet liefert max. 750mA insgesamt an beide Buchsen.**
- **XpressNet liefert max. 1A.**

8.1 Infrared Settings

1)   Decoder addresses associated with the infrared remote control.
2)   Specify the addresses associated with the preferred channel of the infrared remote control.

DR5000-IR Eigenschaften

IR Eigenschaften

Lok Adresse	Kanal A	3
	Kanal B	4	← 1
	Kanal C	5
	Kanal D	6
Weichenadresse	Kanal A	3
	Kanal B	4	← 2
	Kanal C	5
	Kanal D	6

Control

9.1.1 Speed controller and control panel in general

1) Here you select how the DR5000 is connected to the PC.
2) This option opens a logging window. All commands are recorded here, which will be sent to and from headquarters.
3) Select language.
4) Use this option to open a new LokController.
5) Opens a new control panel with which magnetic items can be controlled.
6) With these two buttons you can change the current settings of the DR5000 can be saved or restored.
7) Display of the current processor temperature of the DR5000.
8) Displays the current H-Bridge temperature of the DR5000.
9) Check this box, then the last locomotive state is displayed, after Stop->Go to all locomotives again. **Important!** Before switching off the central unit Stop must be activated.

10) Selection whether the track voltage is active after switching on.
11) Waiting time after switching on before the track voltage is activated.
12) Here it is possible to assign an individual speed level to individual locomotives which is different from the basic setting.
13) Scripting
14) 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.
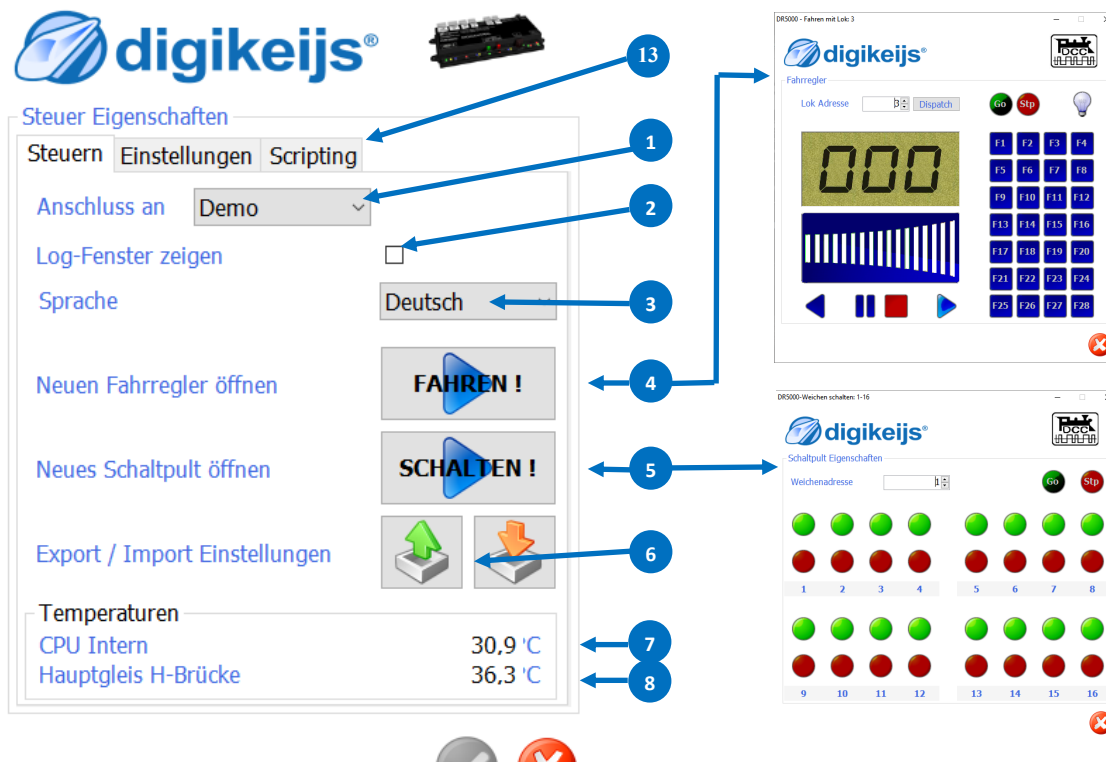
9.1.2 Speed controller functions and operation

1) Address to be used with the speed controller.
2) Display of speed steps, direction, RailCom information (only displayed if a DR5088RC is connected).
3) Speed preselection
4) Stop / Go (switch off track voltage).
5) Lighting on / off.
6) Functions (F1 to F28) on / off.
7) Transfer the address to the IR handset controller.
8) Emergency Stop
9) Stop with braking delay

The locomotive can be controlled either by clicking with the mouse on the corresponding symbol or with the PC keyboard.

Keyboard commands:

Accelerate	arrow up
Brake	down arrow
Arrow left	Direction of travel backwards
Arrow right	Direction of travel forward
F1 - F12	Activate locomotive functions F1 - F12.
Space bar	Emergency stop
0 on number pad	stop with braking delay
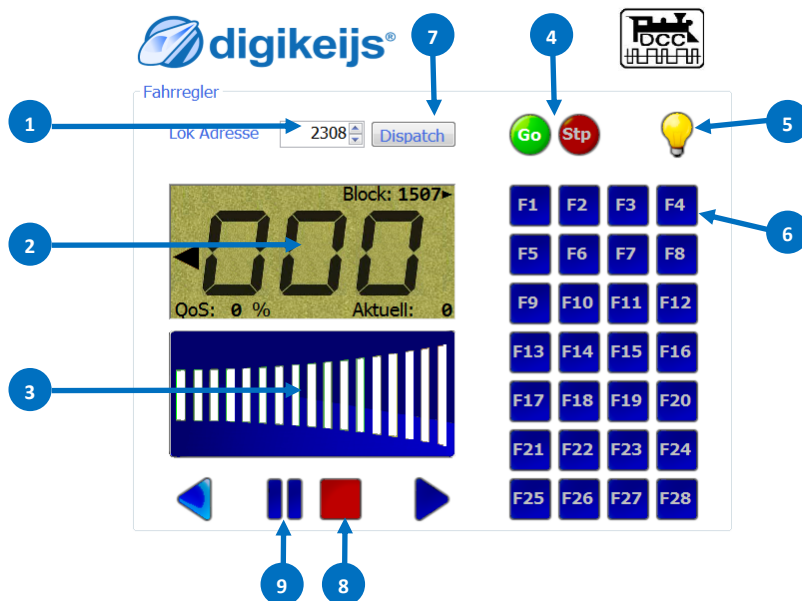
9.1.3 Speed controller when using the DR5088RC

If a DR5088RC is used in conjunction with the DR5000, the speed controller called up can also display additional information that is read out via Railcom®. Values are only displayed if the DR5088RC detects a change.

1) Address
2) Display of the block in which the called locomotive is located
3) QoS messages. Signal quality of the Railcom® messages.
   This message can be used to generate a statement about the condition (soiling) of the tracks or locomotive.
   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).
4) Display of the current speed
5) Unfortunately no statement can be made here what is displayed here. Some decoders indicate the speed steps, an arbitrary value or the speed in Km/h here.
   For more information please contact the decoder manufacturer.
6) Rails direction detected.
7) Selected direction of travel.
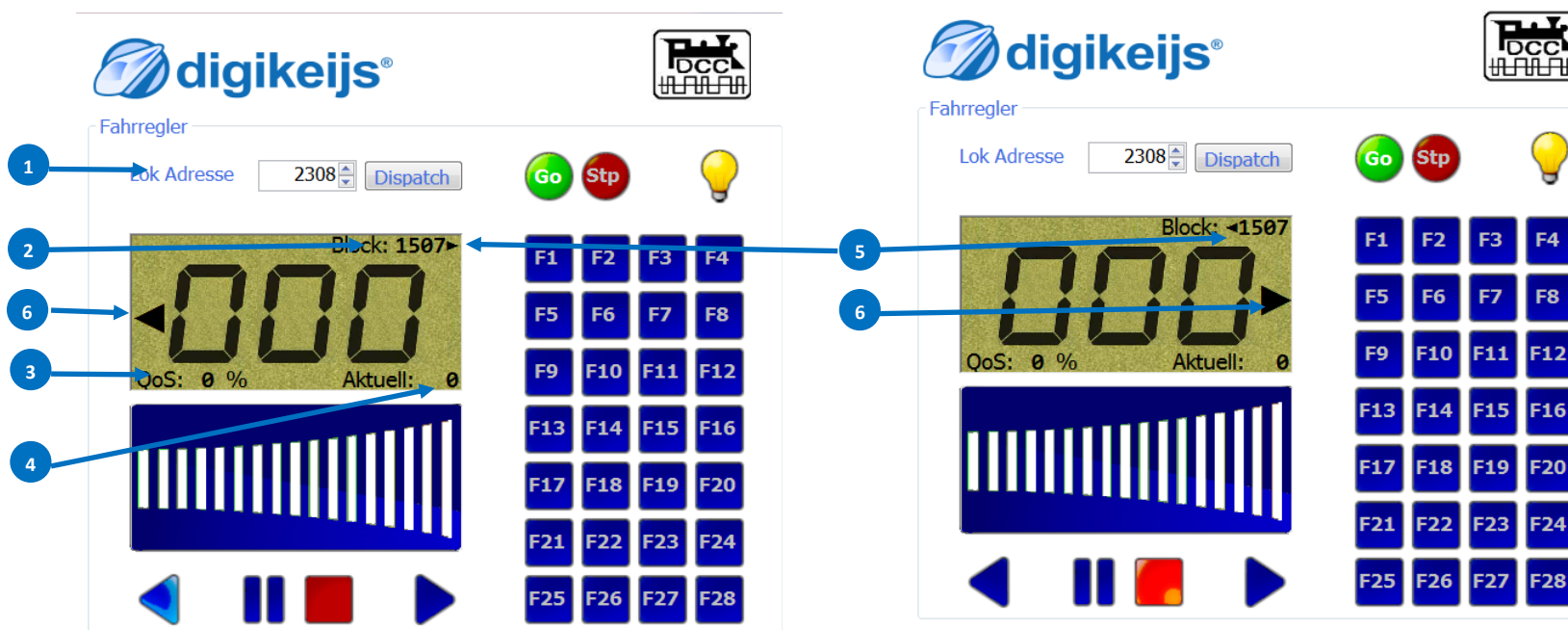
9.1.4 Configuring the speed controller for multiple traction

With the DR5000 it is possible to easily configure multiple traction. This allows a leading locomotive to drive several locomotives simultaneously with one speed controller.

1) Open a new speed controller with the address of the locomotive contained in the multiple traction should be.
2) Click with the right mouse button on the address field.
3) Now enter the **leading** locomotive in the input field (here the locomotive address 1 as an example) and press **ENTER**.
   "The locomotive with **address 2** is now coupled to the **locomotive at address 1.**"
4) The speed controller of the leading locomotive with address 1.
5) Speed controller of the coupled locomotive with address 2.
   (The drive options are roughened to indicate that the locomotive is part of a multiple traction.)
6) To undo the multiple traction again, click with the right mouse button in the speed controller of the coupled locomotive on the field **Multiple Tr**. and confirm the unhitching with the left mouse button. The locomotive is now uncoupled from the multiple traction and can be driven normally again.
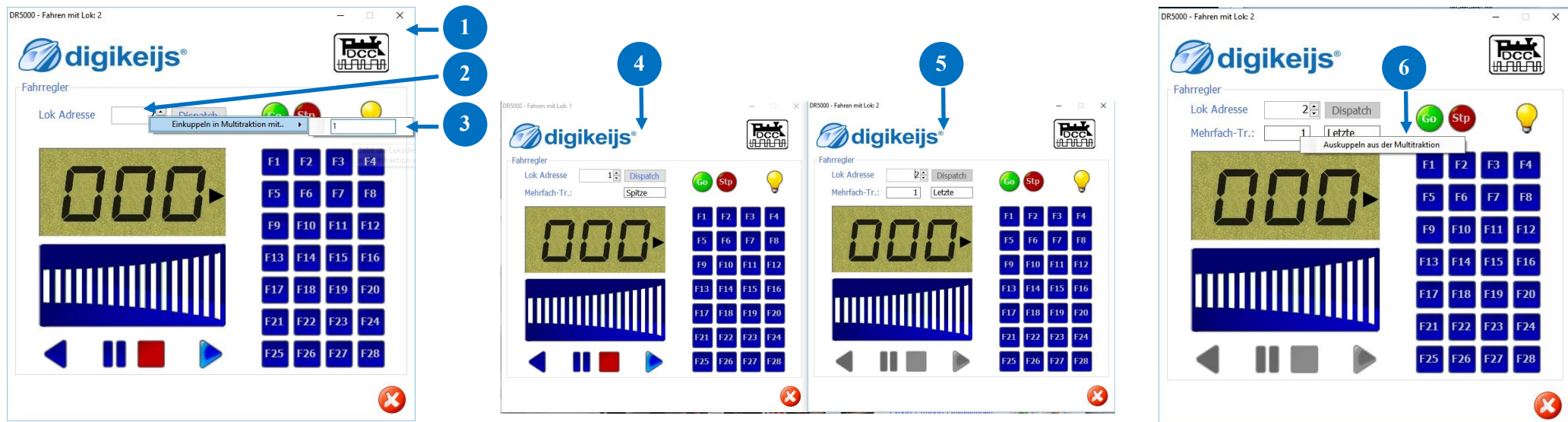
9.2 Scripting DR. Script

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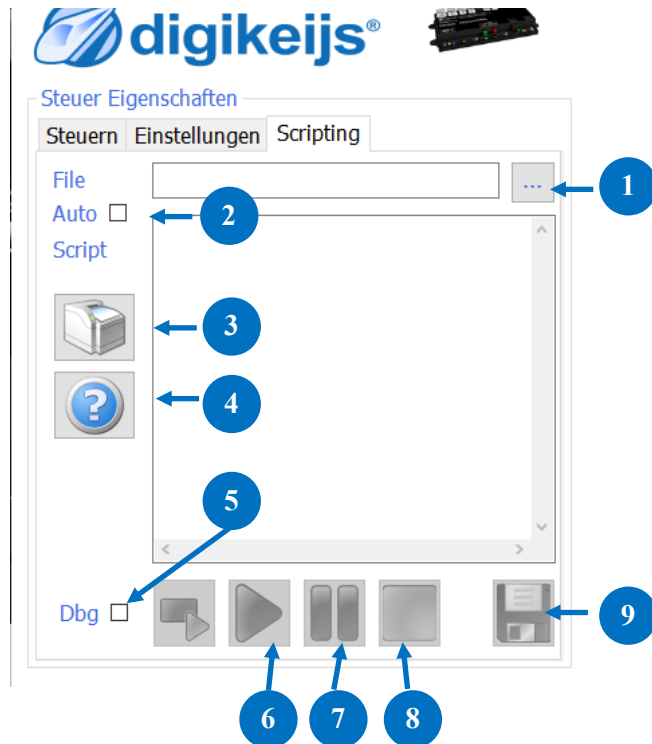
Connective Examples

3-wire operation: Due to the H-bridge (track output) in the DR5000, the DR4088GND feedback modules must not be used against track ground, as is usually the case. **This inevitably leads to the destruction of the DR5000.** The same applies to all other feedback devices (from other manufacturers) which switch against track ground. If a 3-wire driver still wants to drive and feedback with the DR5000, the DR4088OPTO must be used.

10.1 ext88N/S88N® Feedback Modules (DR4088CS)

DR5000 in conjunction with S88N® feedback modules

The ext88N connector of the DR5000 is a compatible S88N® bus.

In this example the feedback modules DR4088CS (current sensors) are used. These feedback modules are connected to the DR5000 and to each other with normal RJ45 cables. A maximum of 16 S88N® modules with 16 inputs each can be connected to the central unit. A total of 256 feedback modules (S88N®/ext88N) can be managed by the DR5000.

3-wire operation: Due to the H-bridge (track output) in the DR5000, the DR4088GND feedback modules must not be used against track ground, as is usually the case. This inevitably leads to the destruction of the DR5000. The same applies to all other feedback devices (from other manufacturers) which switch against track ground. If a 3-wire driver still wants to drive and feedback with the DR5000, the DR4088OPTO must be used.

10.2 LocoNet® Booster

DR5000 in conjunction with the DR5033 LocoNet® Booster

With the DR5033 LocoNet® Booster you can easily increase the maximum performance of the DR5000. Each booster has an output of 3 amps. In addition, the DR5033 booster has an automatic phase reversal. This means you don't have to worry about the correct polarity of the rails.

10.3 LocoNet® Feedback Modules (DR4088LN-CS)

DR5000 in conjunction with LocoNet feedback modules (DR4088LN-CS)
In this example the LocoNe®t modules DR4088LN-CS (current sensor principle) are used. These feedback modules are connected to the DR5000 via LocoNet®. A maximum of 128 modules with 16 inputs each can be connected to the LocoNet® T socket of the central unit.

A total of 2048 feedback modules are thus possible.
All other connected feedback modules that are connected via ext88N or R-Bus® must be disconnected from these 2048 feedback modules.

10.4 XpressNet® and R-Bus® feedback modules (DR4088RB)

DR5000 in conjunction with R-Bus® feedback modules (DR4088RB)
In this example the feedback modules DR4088RB are used.
These feedback modules are connected to the DR5000 central unit via R-Bus®. You can connect a maximum of 10 modules with 16 inputs each to the R-Bus® of the DR5000. A maximum of 160 feedback modules can be connected in this way.
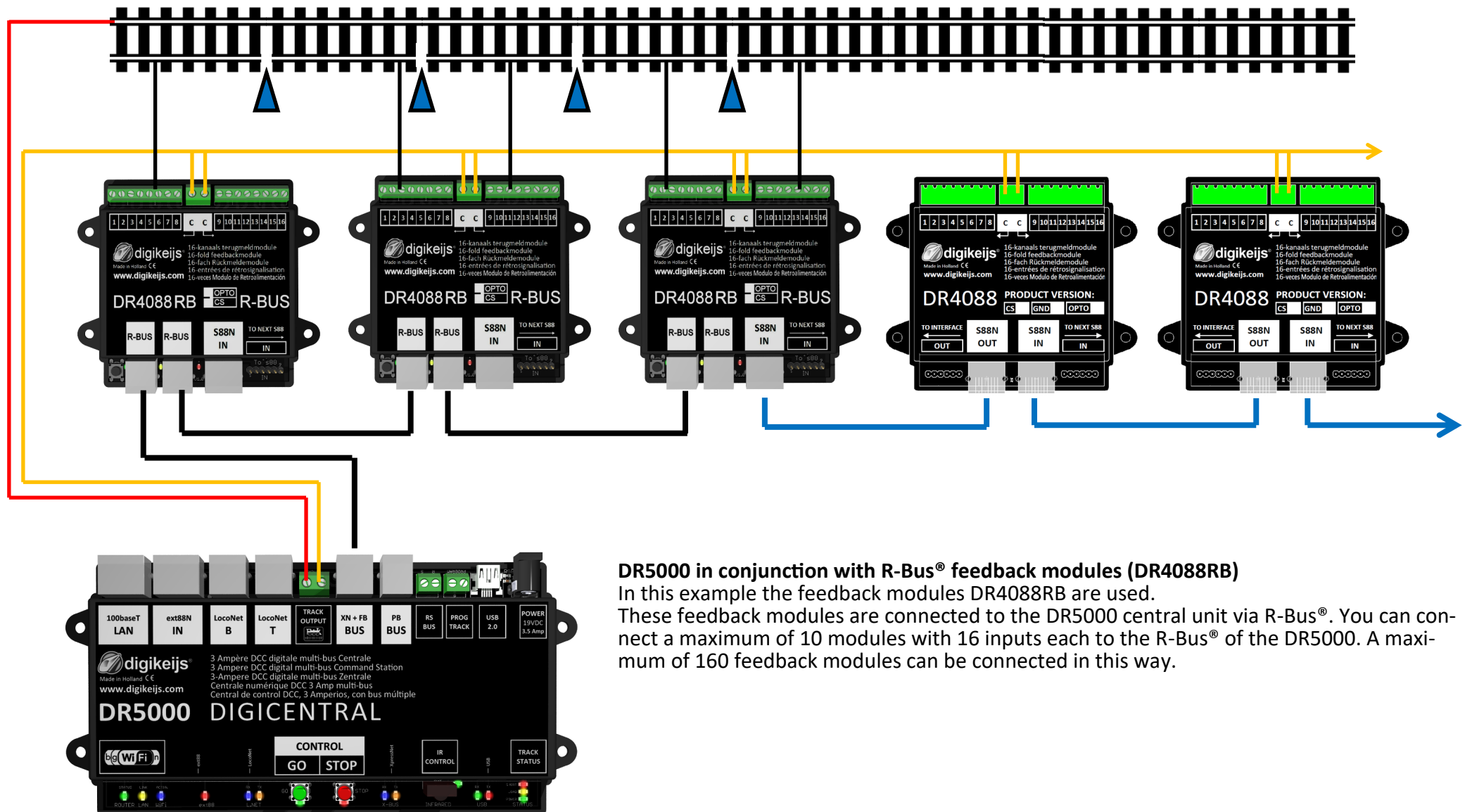
10.5 (P)B-Bus® Booster
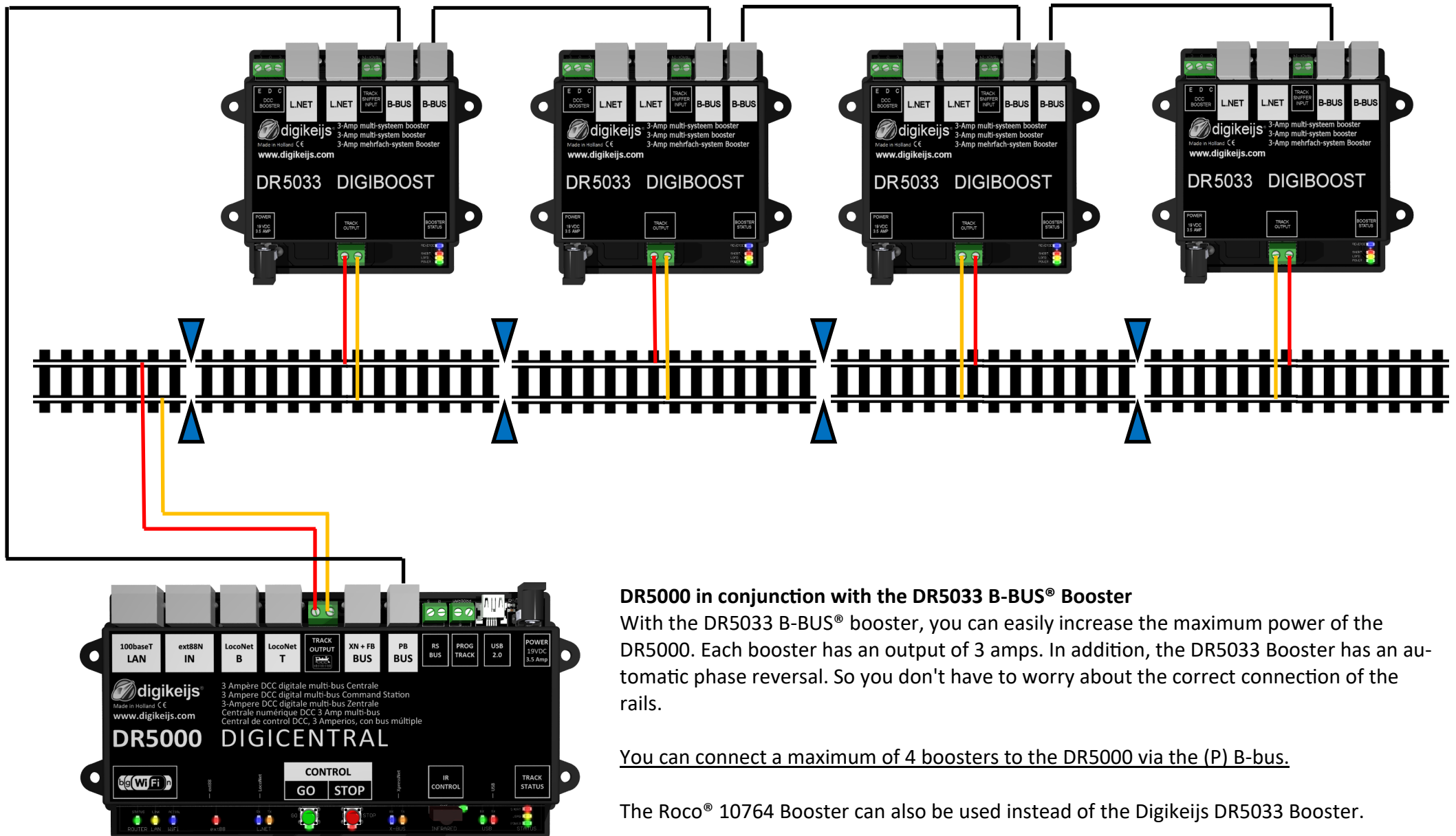
DR5000 in conjunction with the DR5033 B-BUS® Booster

With the DR5033 B-BUS® booster, you can easily increase the maximum power of the DR5000. Each booster has an output of 3 amps. In addition, the DR5033 Booster has an automatic phase reversal. So you don't have to worry about the correct connection of the rails.

You can connect a maximum of 4 boosters to the DR5000 via the (P) B-bus.

The Roco® 10764 Booster can also be used instead of the Digikeijs DR5033 Booster.

10.6 DR5088RC in combination with the DR5000
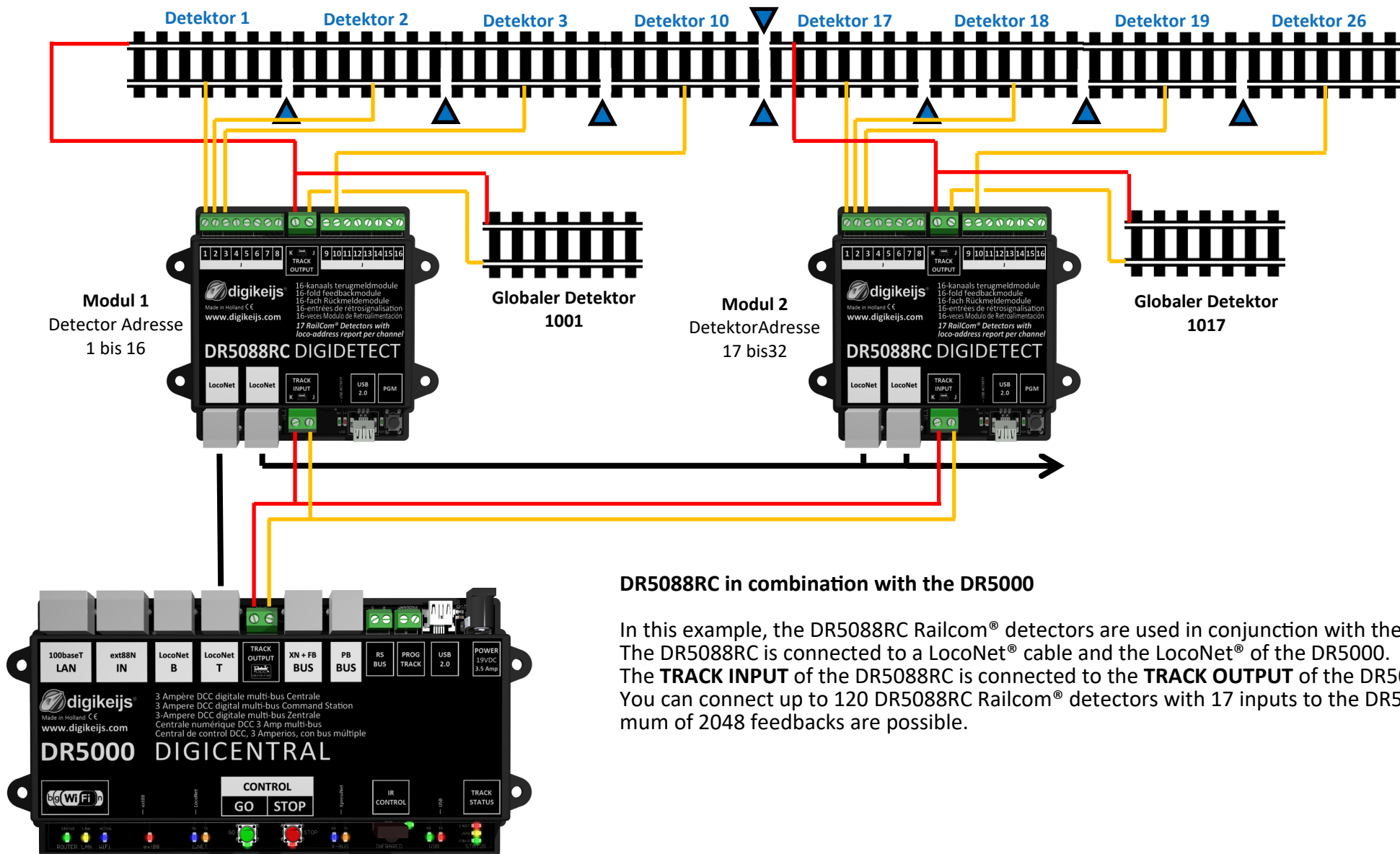
DR5088RC in combination with the DR5000

In this example, the DR5088RC Railcom® detectors are used in conjunction with the DR5000.
The DR5088RC is connected to a LocoNet® cable and the LocoNet® of the DR5000.
The **TRACK INPUT** of the DR5088RC is connected to the **TRACK OUTPUT** of the DR5000.
You can connect up to 120 DR5088RC Railcom® detectors with 17 inputs to the DR5000. A maximum of 2048 feedbacks are possible.

11.0   Attachment

11.1 Roco® Wlan Multimaus and Roco® Multimaus POM read with DR5000 and DR5088RC

With firmware version 1.5.1 of the DR5000, the Roco® Wlan mouse or the Roco® Multi mouse, in conjunction with a DR5088RC, can be used to read CV's on the main track (POM)..

Prerequisites for POM reading to work:
- The current firmware must be installed on the Roco® Wlan multi mouse.
- At least firmware version 1.03 must be installed on the Roco® multi mouse.
- The Roco® mouse must be connected to the XN+FB connector of the DR5000.
- The Roco® Wlan mouse must be connected to the DR5000 via Wlan.
- The DR5000 must have the firmware version 1.5.1.
- The setting Z21® 3.6 must be selected in the XN+FB settings of the DR5000.
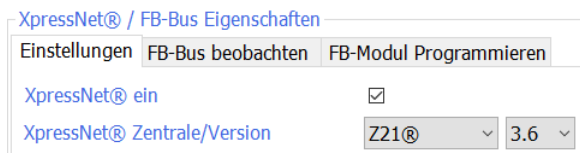
- At least one DR5088RC must be connected to the DR5000 via LocoNet® and the track.
- Railcom® must be activated in the DR5000 and in the locomotive decoder!
- The POM setting must be active in the Wlan mouse or in the Roco® multi mouse.
  (Settings Roco® MM: Menu -> Programming -> Mode -> POM)
  For more detailed information on how to select this setting, please refer to the instructions for the multi mouse or the Wlan mouse.

> **Note**: Since the activated function greater than F10 via XpressNet® can only be activated when the voltage in the Roco® Multimaus or Roco® Wlan mouse, it may be possible that the Roco® Multi mouse or Roco® Wlan mouse does not notice this. This is indicated by flashing functions greater than F10. If the multi mouse or the Roco® Wlan mouse shows this behaviour it is sufficient to disconnect and reconnect the multi mouse once or to switch the Wlan mouse off and on again then the flashing should have disappeared.

11.2 Release notes firmware versions

Version V1.5.0:
Firmware:
-

- The whole programming track operation has been thoroughly overhauled and improved.
- Regardless of the DR5000 revision it is now possible (at the demo system) to read almost every decoder error-free.
- Daisy II and IB Basic-slave can read and write CVs.
- Programming track = read & write, main track = write only (because the Uhl devices can not read POM)
- Read address and program (option on Daisy II) are not (yet) supported.
- n the programming area both POM read and write are revised and made faster and more reliable.
- With e.g. JMRI you can now read all decoders quickly and conveniently via POM.
- OPC_IMM_PACKET Now this LocoNet command is fully implemented so that e.g. JMRI the so called Signal mast aspects can be sent to so called Extended Accessory Decoders.
- Also for RailCom info the indicated track polarity is now correct, even if "in locomotive address" is selected.

App:
- NEW! Dr.Script is here! After installation you will find Dr.Script.pfd and some examples in the installation folder. Scripting can be found under "Control | Scripting".
- The firmware update is improved, so that the app does not freeze during the flashing.
- Loco drive window contains extra information for RailCom Actual Speed & QoS
- The product manual can be opened by clicking on the "DIGICENTRAL" button

11.2 Release notes firmware versions

Version V1.5.1:

Firmware:

- Completed LocoNet implementation of Daisy-II support for Address programming/reading
- Completed LocoNet implementation of IB-V2.0 support for Long Address programming/reading
- Added capability to LocoNet, to let the "Daisy-Tool" work through DR5000 LocoNet COM-Port
- Added capability to LocoNet, to let the "Daisy-Update" work through DR5000 LocoNet COM-Port
- Added configuration option to set the XpressNet Command Staion Type and protocol version
- Added support for MultiMAUS(r) F13-F20 being consistent between multiple Mice.
- Added "loco-steal" (Blinking loco symbol) notification for Mice and LH handcontrollers.
- Added POM-CV read for MultiMAUS (from FW V1-04) and WLANmaus (from FW V1-07) when DR5088RC is setup with DR5000.

App:

- XB+FB Bus properties screen has been changed to add the configuration option for XpressNet Version and Command Station type.
- nstallation procedure has been totally overhauled.
- Now the installer is selfextracting and supports the update possibility.
- No need anymore to first de-install the previous version.