

# Qdecoder Programmer



quick start guide

# Introduction

We congratulate you on the choice of a **Qdecoder programmer**. Please read this manual carefully before first use. Please note that the **Qdecoder programmer** is not a fully equipped digital command station. It is not suitable for the operation of large model railroad layouts.

The **Qdecoder programmer** is primarily designed for configuring and testing of Qdecoders. In addition, the programmer is able to program all popular DCC decoders of any manufacturer. Locomotive driving and function commands can also be sent.

The PC software Qrail is required to operate with the **Qdecoder programmer**. Other control and programming software is currently not supported.

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## Quick start guide

This quick start guide refers to MS Windows operating systems.

If the installation is running on a Linux or Mac OS computer, you have to select the driver from the appropriate folder for these operating systems on the CD. The individual points are described on the following pages of the manual in detail.

1. Check package contents and system requirements
2. Connect a Qdecoder to the programmer
3. Connect the Programmer with the supplied AC adapter and plug the AC adapter into the power outlet.
4. Green LED lights up → everything is ok, red LED lights up → overload or short circuit → check and remove the error cause → restart by pressing the button
5. Connect the programmer via the supplied USB cable to the PC → operating system (Windows Vista or higher) should detect a new hardware and will automatically configure it when you first connect the programmer to the PC → if there is no automatic installation → install the drivers manually (FTDI)
6. Check if at least Java version 6 is installed → From the Windows Start menu, choose Execute from the menu and start a console by typing *cmd* followed by return → type *java-version* and execute by pressing the return key → If the reported Java version is greater than or equal to „1.6.x\_xx“ no Java installation is necessary, in this case the next step can be skipped
7. Install a current Java version by running *xuxx-jre-windows-i586.exe* from the Java folder.
8. Installation of the configuration and control software Qrail
9. Start Qrail by double clicking on the desktop shortcut
10. Qrail will automatically try to connect to a programmer when an interaction with the programmer is started. A successful connection can easily be verified by the status message “Connected to COMx” in the bottom right corner of the main window. If the connection could not be verified, the communication port must be configured manually. → Detailed information can be found in the section “Configuration software Qrail”.

## Package contents

Please check first if the package content is complete

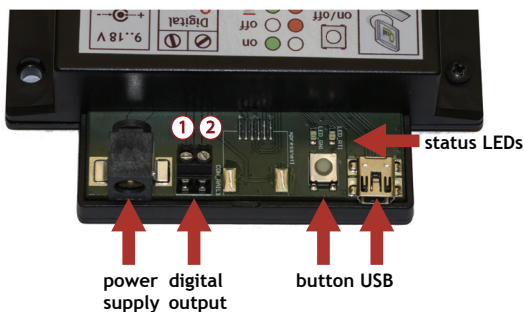
**Qdecoder Programmer**, power supply, installation CD and USB cabel



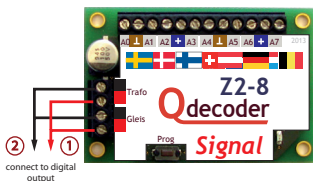
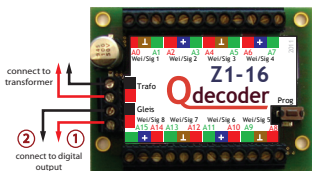
## System requirements

- Operating system: starting from Windows XP, MacOS or Linux
- Java version 6 or higher
- optional: Internet access for automatic updates
- USB Port

## Connections of the programmer



Connect the **Qdecoder programmer** via the supplied USB cable to the PC. The digital output is connected directly to a Qdecoder or to a (programming) track. When directly connecting the Qdecoder make sure that the decoder track and transformer inputs will be connected.



It is recommended to use only the supplied AC adapter. When using a different power supply voltage must range between 9V - 18V DC.

Pay attention to the polarity of digital output, to avoid problems during firmware updates (connect digital output ① with red track input and ② with black track input).

To avoid short circuits, the power supply should always be connected at last with the **Qdecoder programmer**.

## LEDs on the programmer

At the back of the Qdecoder Programmer next to the button there are two LEDs that indicate different operating states of the programmer:

- Green LED lights when the programmer is supplied with power. A DCC signal is generated at the digital output.
- Red LED lights if there is an error or the programmer is switched off by pressing the button. An error is defines a short circuit or over current. The digital output is disabled. No DCC signal is generated.
- Red LED flashes when the programmer is ready to receive a firmware update. This mode is left automatically after a short time.
- Red and green LED lights when the programmer receives data from the PC or arrived commands are executed.

## Button of the programmer

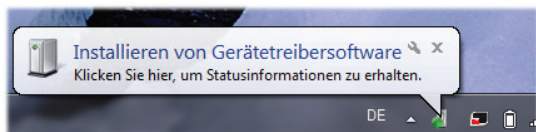
By pressing the button, the DCC signal on the digital output can be switched on and off. This change in the functional state is indicated by the LED.

If the button is pressed and held while connecting the power supply, the Qdecoder programmer switches to programming mode and is ready to receive firmware updates for a short time.

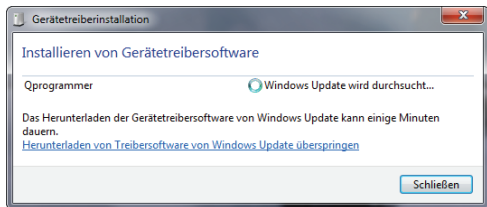
## Connecting the programmer to the PC

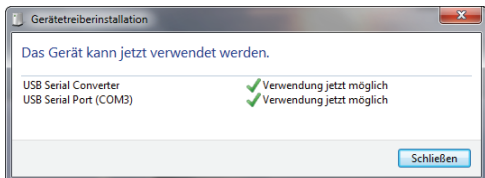
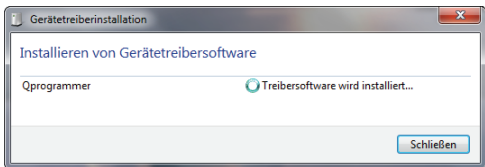
Now connect the **Qdecoder programmer** to the PC using the supplied USB cable. When you first connect the programmer it is recognized by Windows as new hardware and should be automatically configured (starting from Windows Vista). If automatic configuration is not successful or if you work with Windows XP, the driver must be installed manually → More information can be found in the section “manually install the driver software (FTDI)”.

The following example shows the automatic configuration under the Windows 7 operating system:



Click on the speech bubble to get more detailed information about the installation process.





## Installation of Java

The Qrail PC software requires a Java runtime environment at least in version 6. On most computers, Java is already installed. In this case, you can skip this chapter.

By following workflow you can check which version of Java is installed on your PC. Please select from the Windows Start menu the selection Run and open a console by typing *cmd* followed by the return command. In the console, please type *java-version* followed by the return command. The command is reporting the latest Java version on you PC. If this is greater or equal than „1.6.x\_xx“ no Java installation is necessary.

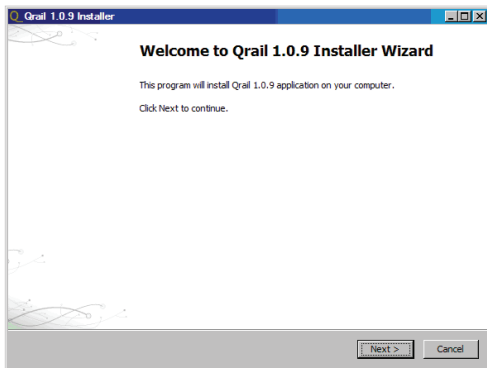
If your system still does not have Java installed, you will find on the CD in the appropriate subfolder Java installers for various operating systems. Under Microsoft Windows, the file *jre-xuxx-windows-i586.exe* has to be used.

**Note:** For security reasons it is always recommended to use a recent version of Java. More information and the latest java versions can be found on the website: <http://www.java.com>

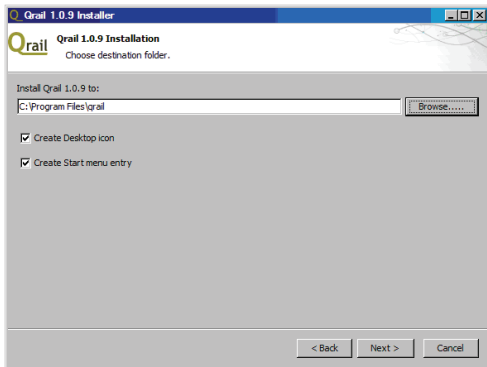
# Installation of software Qrail

The software Qrail is located on the enclosed CD in the folder Qrail. This folder contains installers for the various supported operating systems.

On Microsoft Windows, run the file Qrail-rcp-application-1.xx-windows.exe. This opens the installation wizard Qrail.



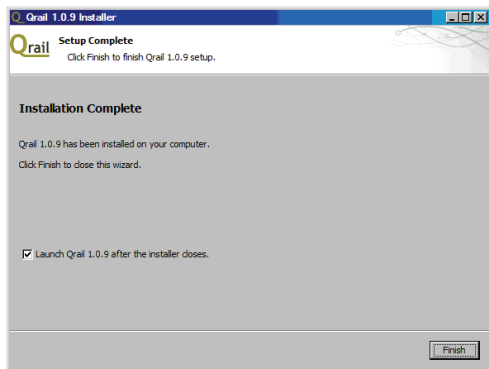
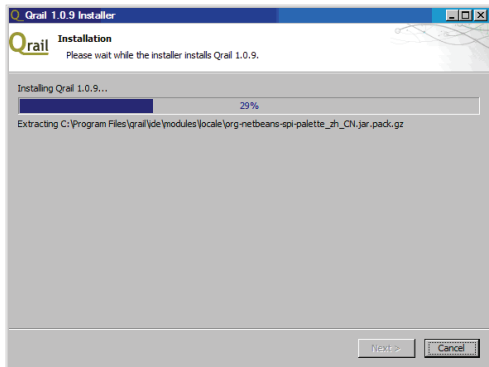
Click the Next button to start the installation.





Please select an installation path for the program files. In the next two windows you can select creating a shortcut on the desktop, or select creating an entry should be created in the start menu.

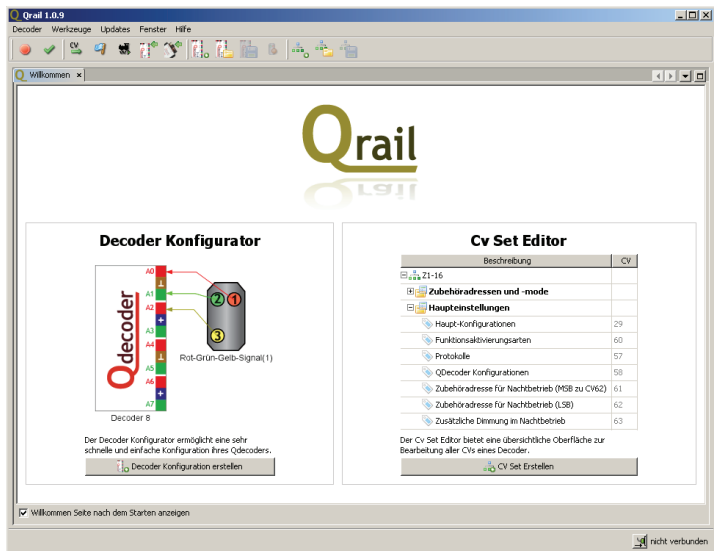
Click on the Install button to start the installation process.



The installation is successfully completed. Confirm by clicking the Finish button. The check box determines whether Qrail should be started after the installation.

# The software Qrail

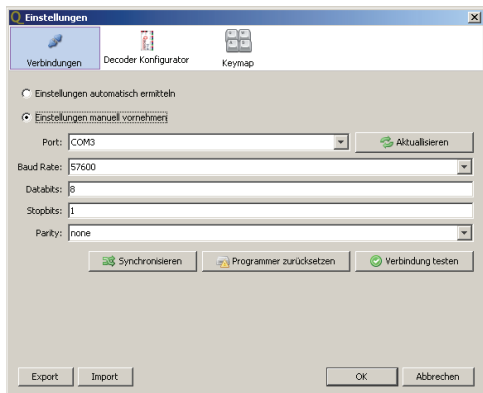
Start Qrail by double-clicking the desktop shortcut on the Start menu or directly by executing the `qrail.exe`.



Qrail will try to automatically establish a connection to a connected Qdecoder programmer when an interaction is started with the programmer (eg, read CV, CV writing, accessories send commands, ...). The current connection status is displayed in the bottom right corner of your screen.



The connection settings can be changed manually, if needed. For this purpose you can find these settings in the main menu under *tool settings* „Einstellungen“ in section *connections* - „Verbindungen“.



The **Qdecoder programmer** works with a default baud rate (transmission speed) of 57600 baud, 8 data bits, one stop bit and no parity checksum.

Changes to these settings should be performed only by experts, because they may affect the communication to the programmer.

Use the *Test connection* - „Verbindung testen“ button to check the current settings.

With the *Reset programmer* - „Programmer zurücksetzen“ button, the programmer can be reset.

The *Synchronize* - „Synchronisieren“ button starts a synchronization of the time base of the Qdecoder programmer. This function is only required in exceptional cases.

# Automatic updates

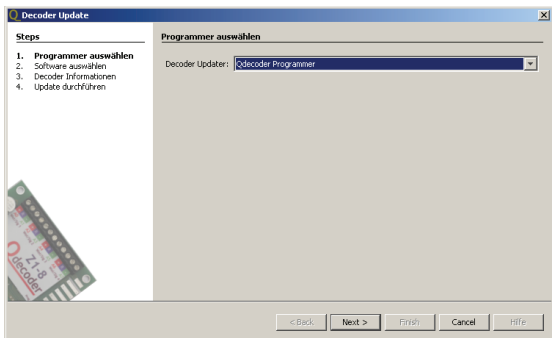
The software Qrail provides the current firmware versions for the programmer and for all **Qdecoder**. Qrail has an automatic update mechanism which can download and install new versions of the software if you are online. Please search for available updates via the help menu. It is recommended to search for updates after finishing the installation of Qrail.

## Qdecoder firmware updates

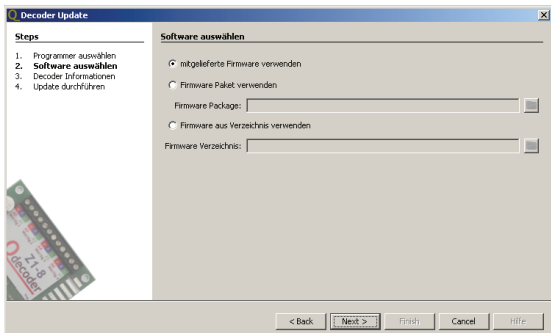
Qrail is able to update the firmware of all **Qdecoder** from software version 8. Older decoders do not support firmware updates and need to be sent to Qelectronics for an update.

Via the main menu *updates* → *decoder update*, the decoder update wizard can be started. This wizard accompanies them step by step through the update process. Final confirmation is needed before the update is performed. You can always return to the previous step or cancel the update.

The update of a **Qdecoder** is performed in four steps:



In the first step, the hardware can be selected to perform the update of the decoder. Currently only the **Qdecoder programmer** is offered as a choice. This should also be the default choice for most users.



In the second step, the source of the firmware must be specified. By default the firmware package that came with Qrail is used as the source. This firmware package is automatically updated by the auto-update feature of Qrail (if an internet connection is present).

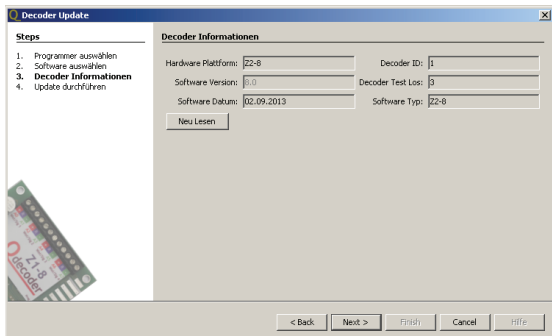
As a further choice a firmware package or a firmware directory can be specified. These packages or directories can be in special cases obtained directly from [www.qdecoder.de](http://www.qdecoder.de).

For most users, the delivered firmware package is the right choice.

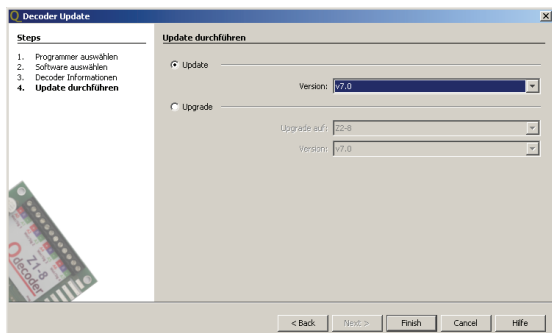
In the third step, various information about the connected decoder can be determined. This may take a few seconds. After the decoder has been read successfully, the corresponding information such as decoder type, software version, software date are displayed.

**Caution:** If an error occurred during the read out, the update process can not continue. It might be necessary to reverse the polarity of the connections of the track signal.

Please also note that older **Qdecoder** are not updatable. At least software version 8 is needed!



In the last step of the wizard, select the target software version. There may be several versions to choose from, the latest version is always selected by default.



By clicking the *Finish* button, the update process is started. This process may take a few minutes and can not be canceled. During the update, the decoder may not be disconnected from the programmer! Similarly, the Qdecoder programmer should not be disconnected from its power supply.

If an error occurs during update the process must be repeated.

## Qdecoder programmer firmware updates

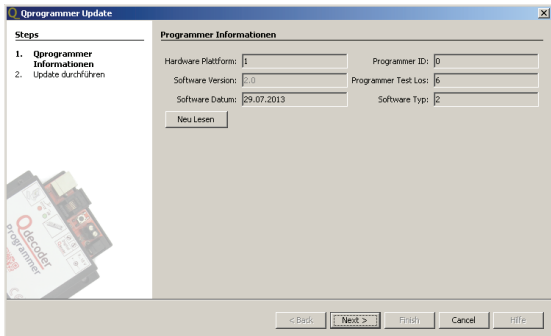
With Qrail also **Qdecoder programmer** can be provided with firmware updates. In the main menu you can select *Updates* → *Update Wizard* Qprogrammer. The appropriate wizard will be started, which will guide you through the update process.

The firmware update of the programmer is done in two simple steps.

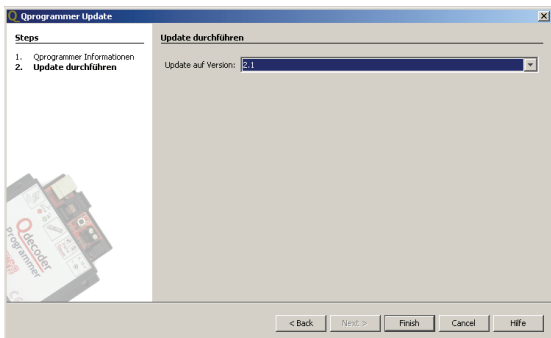
In the first step, information of the connected **Qdecoder programmer** are read and displayed. For this purpose, it must be ensured that the programmer is powered on and connected to the PC.

If the reading is successful, information such as software version, software date are displayed. By pressing the *read* button, the readout can be repeated if necessary.

**Note:** If an error occurs during reading, the update process can not continue!



In the second and final step, the target software version must be selected. By pressing the *Finish* button, the update process is started. This process may take a few minutes and can not be canceled. Connection of the programmer to the PC should not be interrupted during this time. Also, a reliable power supply must be guaranteed for this process.





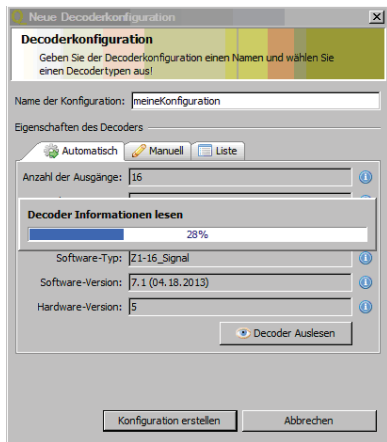
# Decoder configuration

The decoder configuration allows a very quick and easy configuration of your **Qdecoder**. The configuration of the accessory items which are connected to the decoder is done with a special graphical interface. Detailed knowledge of configuration variables is not necessary.

The complete configuration of the decoder is done in 5 steps:

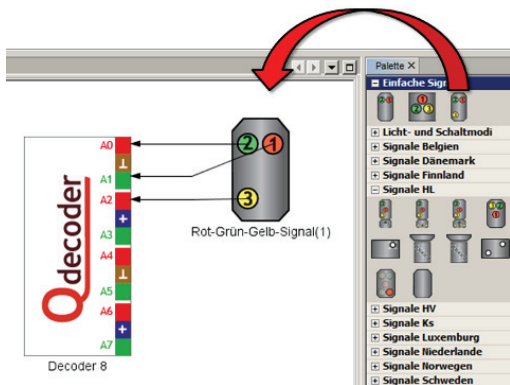
## 1. Selection of the decoder

In the first step the decoder type must be selected. This can either be carried out automatically by reading a connected decoder or manually by selecting decoder features or by direct selection from a list of available decoders



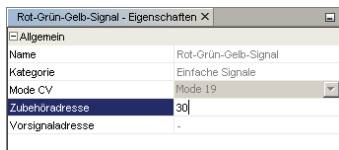
## 2. Definition of connected accessories

All available accessory items are shown in a palette grouped by categories. In this selection only accessory items are included, which are also supported by the selected decoder. Accessory items from the palette can be connected by drag and drop to the decoder.



### 3. Specify addresses

In the next step, each accessory item should be assigned an address. Depending on the type of signal might be necessary an additional pre signal address.

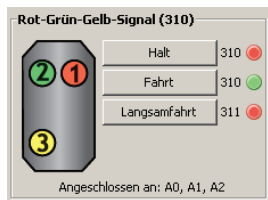


### 4. Automatically programmed CVs

If all accessories are connected to the decoder and all addresses are assigned as desired, the necessary CVs can be written by pressing a single button

### 5. Testing the Configuration

After writing all CVs the correct function of all connected accessory items can be tested in the test area.



# CV set editor

The CV Set Editor allows simple and easy editing of complete CV sets of **Qdecoder** or any NMRA decoders.

There are all CVs shown grouped according to various functions. Many groups have special graphical interfaces that facilitate the CV processing significantly.

Created **CV sets** can be saved and loaded for later use. In the description field you can browse efficiently on CVs through grouped functions. There is also the possibility to export the CV set as CSV.

In **CV list** view all CVs are listed, which differ from the default value of the decoder. All modified CVs can be programmed by pressing a button.

Beschreibung	CV
Z1-16	
Zubehöradressen und -mode	
Haupteinstellungen	
Haupt-Konfigurationen	29
Funktionsaktivierungsarten	60
Protokolle	57
QDecoder Konfigurationen	58
Zubehöradresse für Nachtbetrieb (MSB zu CV62)	61
Zubehöradresse für Nachtbetrieb (LSB)	62
Zusätzliche Dimmung im Nachtbetrieb	63
weitere Einstellungen	
Lokadressen	
Betriebsart der Funktionsausgänge	
Eigenschaften der Funktionsausgänge	
Funktionstasten	
Informationen	
Alle CVs	

CV	Beschreibung	Wert	Buttons
CV 29	Haupt-Konfigurationen	6 0000 0110	Schreiben Lesen
CV 60	Funktionsaktivierungsarten	9 0000 0100	Schreiben Lesen
CV 57	Protokolle	1 01	Schreiben Lesen
CV 58	QDecoder Konfigurationen	0 0000	Schreiben Lesen
CV 61/62	Zubehöradresse für Nachtbetrieb	1023	Schreiben Lesen
CV 63	Zusätzliche Dimmung im Nachtbetrieb	50 0011 0010	Schreiben Lesen

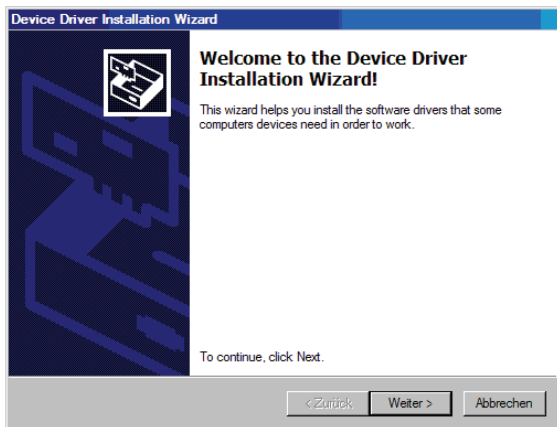
## Manual installation of the driver software (FTDI)

Please do this step only if automatic configuration of the driver software was not successfully or if you use Windows XP, Linux or MacOS X.

The drivers for Windows, Linux and MacOS X are located on the CD in the Treiber folder.

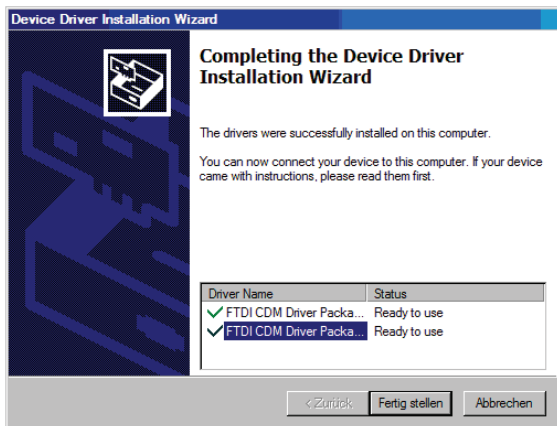
Before you perform the installation, please disconnect the connection between programmer and PC or Mac ...

Under Microsoft Windows, the file CDM20830\_Setup.exe must be executed. This will open an installation wizard for the FTDI driver.



Click the *Next* button to start the installation.

The installation may take a little time ...



The installation was successful.

Further information and drivers for other systems, refer to the Website of the manufacturer's drivers: <http://www.ftdichip.com>

## Help and troubleshooting

- Red LED lights up after connecting the programmer to the power supply → programmer detects an overload and switches to digital output off → please eliminate the short circuit or overload and restart by pressing the button on the programmer
- Qrail with the following issue: *Could not find valid connection to programmer* → Is the programmer correctly connected via the USB cable to the PC? Are the FTDI drivers installed correctly? Is the programmer properly connected to the power supply? If yes, open manually configuration of the communication channel between PC and programmer in Qrail → Open *settings* from the tools menu and make settings manually activate and test connection
- There is no decoder update possible → Is a Qdecoder firmware version 8.x used? → If yes, please reverse the polarity.
- The programmer no longer responds to interactions with Qrail → Is the green LED on? → If not, unplug the power adapter for 10 seconds and plug it back in again
- Red LED flashes for longer than 10 sec → no correct upload of the programmer firmware is done → restart the upload again
- No LED lights by using a non-supplied AC adapter → Does the power supply return a DC voltage in the range of 9-18 V? Is the inner pole of the plug connected to the positive pole and the negative pole outside? → If no, please reverse polarity
- Green LED flickers using a non supplied AC adapter → Does the power supply deliver a DC voltage in the range of 9-18 V? Is the current of the power supply sufficient for the decoder, programmer and accessories load
- No interaction between Qrail and decoder by reading CV → Is the red LED active when the button is pressed at the decoder → If not, the cabling between decoder and programmer should be checked → A hint, adjust the cable to the screw terminals

You will find further help in the online help of Qrail and online at website [www.qdecoder.de](http://www.qdecoder.de)

## Product notes

All rights reserved. Not suitable for children under 3 years due to small parts. The Qdecoder programmer is not a toy and should be used only under the supervision of children. Improper use may result in injury due to sharp edges and tips! Only for dry rooms. Subject to change due to technical progress, product development or other production methods are reserved. Liability for any damage or consequential damage caused by improper use, failure to follow these instructions, operating with inadequate power supplies or other electrical devices, unauthorized intervention, trauma, overheating, moisture, etc. is excluded; also voids the warranty. The user uses the Qdecoder programmer, the included applications and documentation at your own risk. The Qelectronics is not liable for damage caused or suffered by the user or any third party use. In no event shall Qelectronics GmbH for lost sales or profits or loss of data or for any direct, indirect, special, consequential, incidental, or punitive damages and by the use or inability to use the Qdecoder programmer, the included applications responsible documentation were caused, regardless of any theoretical liability. This also applies if the Qelectronics GmbH has been advised of the possibility of such damages.

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## technical data

dimensions	100 x 90 x 25 mm
supply voltage	9 - 18 V (DC Voltage)
current load	0,5 A with supplied AC adapter 2 A with non supplied AC adapter
	overcurrent protection
terminals	digital output for programming track USB port
protocols	DCC

address: **Qelectronics GmbH**  
Am Sandberg 7a  
01259 Dresden

telephone: +49 (0) 351 479 42 250  
fax: +49 (0)351 479 42 111  
email: info@qdecoder.de

**www.qdecoder.com**  
**www.qdecoder.de**