

300900



FichtelBahn

Made in Germany



Manual

# BiDiB-IF2



English

....

2 - 28

## What is a BiDiB-IF2 needed for?

The BiDiB-IF2 is an interface from USB to BiDiB with a fully-integrated DCC command station. This interface can be used to connect a further 31 BiDiB modules to the computer. If this number is not sufficient, the BiDiBus can be extended by a further 31 modules using a ReadyHUB.

The BiDiB-IF2 is also a DCC command station with buttons for soft stop, emergency stop and booster ON/OFF and generates the track signal for the connected traction current boosters.

|  |
|--|
| USB to BiDiBus interface                                 |
| Integrated DCC command station with RailCom®             |
| Buttons for soft stop, emergency stop and booster ON/OFF |
| Status and operating status indicator LEDs.              |
| Watchdog function for safe system operation              |

## Online Documentation

Nowadays, printed manuals can become outdated very quickly.

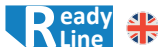
The most recent version of this manual can be found in the download section of the **FichtelBahn webpage**. The version number in the footer will show the current version.

New functions and additions are always published in the online version on the webpage first.

Further information on this product can be found also in the BiDiB-Wiki on <https://wiki.fichtelbahn.de> (Until now unfortunately mainly in German)

## Table of contents

|   |    |
|---|----|
| 01. Safety Instructions .....                     | 4  |
| 02. Introduction.....                             | 4  |
| 03. Technical Data.....                           | 5  |
| 04. Connecting the BiDiB-IF2 to a computer .....  | 6  |
| 05. Connecting BiDiB modules to a BiDiB-IF2.....  | 7  |
| 06. BiDiB-IF2 as DCC command station .....        | 8  |
| 07. Connection setup with a computer .....        | 9  |
| 08. Module settings of the BiDiB-IF2 .....        | 15 |
| 09. Configurations in the control program .....   | 18 |
| 10. Buttons on the BiDiB-IF2 .....                | 19 |
| 11. LED indication on BiDiB-IF2 .....             | 20 |
| 12. Background knowledge .....                    | 22 |
| 13. Firmware update .....                         | 23 |
| 14. Node backup .....                             | 26 |
| 15. Support case and further help.....            | 27 |
| 16. Warranty Information.....                     | 28 |
| 17. Declaration of Conformity .....               | 28 |
| 18. WEEE directive and packaging regulations..... | 28 |



## 01. Safety Instructions

To reduce the risk of electric shock and injuries do not touch parts that carry voltage. Do not touch conductive material that might carry voltage in case of a fault, e.g. short circuit, improper input voltage, excessive humidity and accumulation of condensate.

### **To reduce these risks, keep these safety precautions in mind:**

Use this module only indoors and in a clean and dry environment. Avoid moisture and splash water in close proximity.

Switch off the voltage supply before carrying out wiring work. Only use wire with sufficient cross-section. Wait for 2 hours after accumulation of condensate.

## 02. Introduction

This manual explains the basics step by step for using this module. Careful reading and taking note of tips will reduce potential errors and therefore the amount of work to solve failures.

### **Designated Use**

The normal use of the BiDiB-IF2 is for model making especially digital model railways according to this manual. Any improper use will lead to loss of warranty. The module is not intended to be installed by children under the age of 14.

### **Package Contents**

- BiDiB-IF2 module in housing
- USB cable 2.0 / plug A <> plug B
- Quick Start Guide

### **Required Materials**

To connect the BiDiB-IF2 to other BiDiB nodes, you need a patch cable (1:1 connection) with RJ45 connectors. The free 'BiDiB Wizard' tool is available for download in the FichtelBahn download area or in the BiDiB Wiki.

### Required additional devices

It is not possible to use the BiDiB-IF2 module without additional devices.

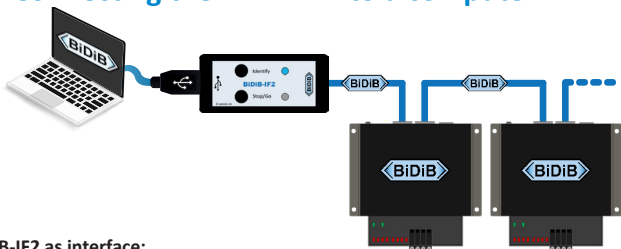
The following devices can be used for initial setup, configuration and operation of the model railway system:

|                                   | Initial setup | Configuration                | Operation of model railway                  | Analogue operation |
|-----------------------------------|---------------|------------------------------|---|--------------------|
| XpressNet Multimaus               | ✗             | ✗                            | ✗   | ✗                  |
| WLAN Hand controller              | ✗             | ✗                            | Additional digital system (control program) | ✗                  |
| Computer systems (USB connection) | ✓             | ✓                            | ✓   | ✗                  |
| Tablet Smartphone                 | ✗             | via IP tunnel (BiDiB-Wizard) | via IP tunnel (control program)             | ✗                  |
| Computer systems (LAN connection) | ✗             | via IP tunnel (BiDiB-Wizard) | via IP tunnel (control program)             | ✗                  |

## 03. Technical Data

|                                       |  |
|---------------------------------------|--|
| Supply voltage                        | 5V via the USB port                              |
| Power consumption (quiescent current) | less than 100mA                                  |
| Data protocols                        | USB / BiDiB / DCC                                |
| Computer interface                    | 1x USB 2.0 (socket type B)                       |
| BiDiBus interface                     | 1x RJ-45 socket                                  |
| Protection class                      | IP 40  |
| Ambient temperature (operation)       | 0 ... +60 °C / 32 ... 140 °F                     |
| Ambient temperature (storage)         | -10 ... +80 °C / 14 ... 176 °F                   |
| Permissible relative humidity         | max. 85 %  |
| Dimensions casing                     | 83mm x 41mm x 20mm / 3.26 in x 1.61 in x 0.79 in |
| Weight                                | 40g / 1.4 oz                                     |

## 04. Connecting the BiDiB-IF2 to a computer



### BiDiB-IF2 as interface:

A connection to a computer is established using the enclosed USB cable. After connecting, you will automatically find a new serial port (also called COM port) added in the device manager of your computer. This serial port is required for the subsequent connection to the computer program, e.g. BiDiB Wizard.

Use an RJ45 patch cable between the interface and the first BiDiB node. The illustration shows an example of the possible connection setup.

### Does the BiDiB-IF2 supply the BiDiBus with power?

No, the IF2 does not provide a power supply for the BiDiBus. If modules are used that can be supplied from the bus (e.g. GBM16TS), then a separate bus supply is required for the module (e.g. see GBM16TS instructions, here a bus supply can be provided via the GBM16TS or GBMboost node).

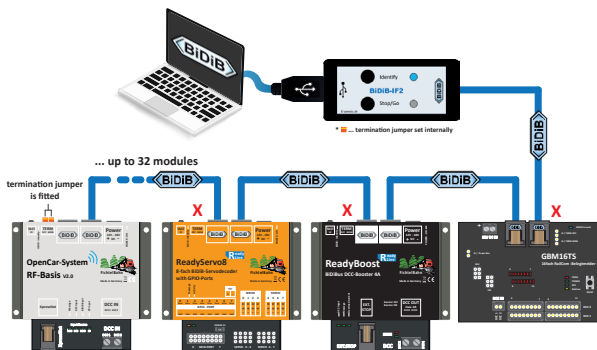
If BiDiB modules are used that are not supplied from the BiDiBus, no bus supply is required. All BiDiBus modules (including the GBM16TS) can be used safely and stably without a supply voltage from the BiDiBus.

### Note:

The BiDiBus is an RJ45 data cable and not a power cable for supplying modules. The maximum current is limited to 500mA and also depends on the bus cables and connections used. **Due to these aspects, it is recommended not to use the BiDiBus for the power supply and to connect each module individually to the power supply.**

## 05. Connecting BiDiB modules to a BiDiB-IF2

The 'BiDiB-IF2' interface has a BiDiBus socket to which different BiDiB modules can be connected in any order using patch cables.



### How is the BiDiBus terminated?

The BiDiB-IF2 has built-in terminating resistors and is therefore the first device in the bus chain (no further action is required here).

The BiDiBus now only needs to be **terminated at the last BiDiB module**.

In the illustration above, the BiDiBus has been terminated at the 'RF-Basis' module using the two enclosed terminating jumpers as an example.

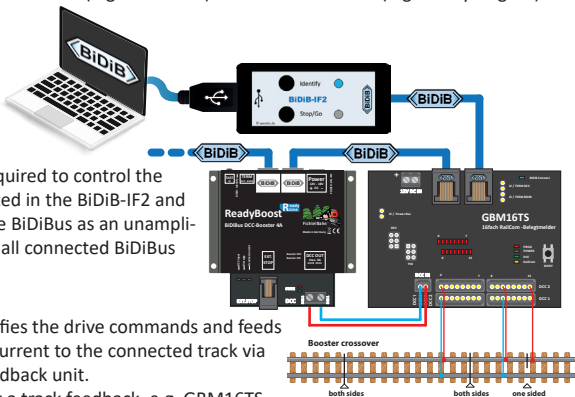
### Note:

If the last module of the bus is not terminated with the termination jumpers the distortion of the signal might lead to errors in the data transmission. If the termination jumper is fitted on a module **within** the bus the transmission might be disrupted. **Both cases will not lead to any damage of the modules.**

No GBMboost Master or BiDiB-IFnet may be used if a BiDiB-IF2 is used as the Master. An existing GBMboost Master may have to be reconfigured as a GBMboost Node.

## 06. BiDiB-IF2 as DCC command station

All BiDiB modules can be connected to the 'BiDiB-IF2': From BiDiB boosters (e.g. ReadyBoost), BiDiB feedback units (e.g. GBM16TS) to BiDiB accessories (e.g. ReadyMagnet).



The **DCC signal** required to control the vehicles is generated in the BiDiB-IF2 and transmitted via the BiDiBus as an unamplified data signal to all connected BiDiBus boosters.

The booster amplifies the drive commands and feeds the DCC traction current to the connected track via the connected feedback unit.

Operation without a track feedback, e.g. GBM16TS, is also possible.

### Can I connect a programming track (ServiceMode) with the BiDiB-IF2?

No. The BiDiB-IF2 does not have a programming track connection for service mode programming. A ReadyBoost with the 'ReadyBoostProg' extension firmware is required for this older CV programming type.

A programming track can be connected to the DCC output of the ReadyBoost and the firmware can be changed to 'ReadyBoostProg' using the BiDiB tool 'BiDiB-Wizard' - see the 'ReadyBoost' manual.

### Can I programme on the main track with the BiDiB-IF2 (POM)?

Yes, but railcom-compatible boosters and feedback devices are required for reading (e.g. GBMboost Node with GBM16T or ReadyBoost and GBM16TS). The BiDiB-IF2 supports the reading and writing of CVs in system operation from any railcom-compatible decoder that supports Channel 1 & 2.

#### Note:

In BiDiB, a distinction is made between a DCC generator (which generates the drive commands) and a booster (which amplifies the drive commands with drive current). The BiDiB-IF2 has a double function, it is an interface for BiDiB modules and a DCC generator, but it is not a booster. You still need an external booster, such as ReadyBoost or GBMboost.



## 07. Connection setup with a computer

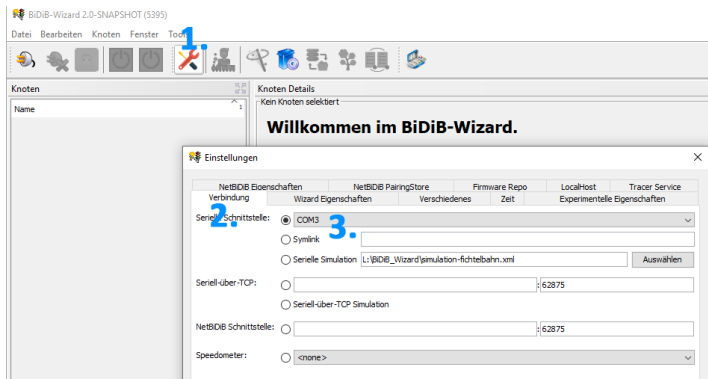
The **BiDiB-Wizard 2** is a Java program for displaying and configuring the BiDiB modules on the BiDiBus. The current tool version **BiDiB-Wizard 2** can be downloaded free of charge from our BiDiB-Wiki at <https://wiki.fichtelbahn.de> (in the overview tree under 'Programme für BiDiB' / 'BiDiB Wizard').

### Note:

The new automated BiDiB node configurator for ReadyLine modules is only available with the new **BiDiB Wizard 2** version. Wizard version 1 also works with the modules, but has functional restrictions.

### 07.1 Establishing a connection with the BiDiB-Wizard

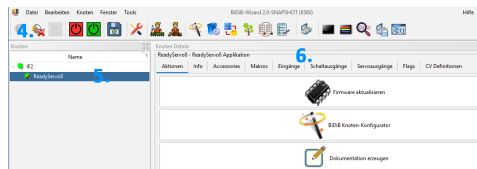
The BiDiB interface (BiDiB-IF2 or GBMboost Master) is connected to the computer through a virtual serial port (via USB). To establish a connection the **correct serial port (3.)** has to be selected under **Edit (1.)/ Preferences (2.)**.



### Note:

Only one program can access a serial port simultaneously. If the railway controlling program is using the serial port this connection has to be terminated before the BiDiB-Wizard can make use of the serial port.

By clicking on the button with the **plug symbol** (4.) the connection will be initiated and all connected nodes will be loaded and shown in the **node tree view** (5.).



By double clicking on a **node in the node tree view** (5.) this node will be loaded and its functions and options will be shown in the **node detail window** (6.).

This example shows the following window for the “ReadyServo8” module:

### 1. Easy to use - Node-configurator for beginners

...simple and fast, with a menu interface ‘BiDiB Node - Configurator’ most standard use cases are set up automatically.

|            | Description  |
|------------|--|
| Activities | <b>Update Firmware</b><br>You can use this button to update the firmware (see Firmware update on page 10)              |
| Activities | <b>BiDiB Node Configurator</b><br>You can use this button to load sample applications (see Firmware update on page 13) |

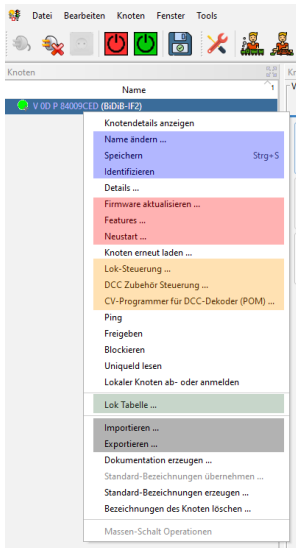
### 2. Customised macro configuration - for experienced users

...configure the application according to your own wishes without specifications, individually with the help of macros

|                   | Description   |
|-------------------|---|
| Activities        | <b>Update firmware</b><br><b>BiDiB Node Configurator</b>              |
| Info              | Technical information about the module                                |
| Accessories       | Test the assignment of macros and their sequences / configurations    |
| Makros            | memory cells for each individual action, using the macro step chain   |
| Inputs            | 8 inputs with the states ON / OFF                                     |
| Switching outputs | 8 switching outputs for switching its ON / OFF states                 |
| Servo outputs     | 8 servo outputs and positioning properties, position up / down, speed |
| Flags             | Display internal flags for macro programming                          |
| CV Definitions    | Reading and writing of device-specific CV settings                    |

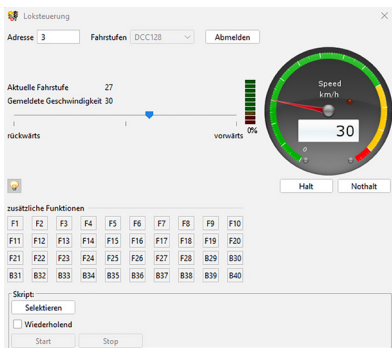
## 07.2 Functions of the BiDiB-IF2 in the BiDiB Wizard

After connecting, the BiDiB interface 'BiDiB-IF2' is displayed in the node list in the BiDiB wizard. Right-click on the element to open a selection window with numerous functions and settings for the module.



|                          | Description   |
|--------------------------|---|
| Change label             | An individual module name can be assigned for the allocation of identical BiDiB nodes |
| Save                     | Changed settings can be transferred to the module and then stored                     |
| Identify                 | Let the IDENT LED on the module flash (to locate a module)                            |
| Update firm-ware         | Update module firmware from repository or manually from ZIP file                      |
| Features                 | Device settings of the module   |
| Restart                  | The module is restarted and all BiDiB nodes connected to it are read out again.       |
| Loco controller          | Integrated software hand held controller for controlling DCC loco or car decoders     |
| DCC accessory controller | Window for switching DCC accessory addresses (DCC turnout decoder)                    |
| CV programmer (POM)      | CV programmer for DCC decoder (POM)   |
| Lok table                | Table of all active DCC decoders in the locomotive memory of the DCC command station  |
| Import                   | Import existing backup  |
| Export                   | Create a backup of all settings   |

## 07.3 DCC Loco controller with the BiDiB Wizard



Individual locomotives or cars can be controlled via the Loco controller, which can be opened in a separate window.

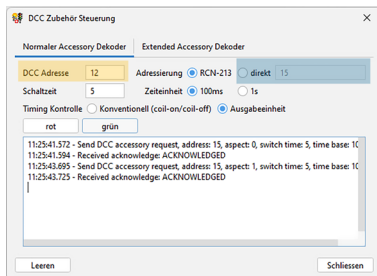
Several windows can be opened at the same time.

After entering the DCC address, the speed can be set using the slider. A speed feedback (speed message from the decoder when RailCom is received) is displayed in the speedometer graphic.

## 07.4 DCC Accessory controller with the BiDiB Wizard

Classic DCC switching decoders (not BiDiB modules) can also be operated in a BiDiB system. These DCC decoders are connected to the booster output (e.g. ReadyBoost).

A DCC address can be entered in the 'DCC accessory control' window and the switching command can be sent using the 'red' and 'green' buttons.



The BiDiB Wizard offers further configuration options in regard to switching times, which may be necessary for some special DCC accessories.

### Note:

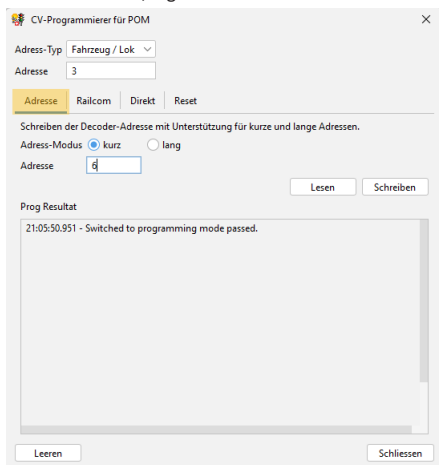
For reasons of compatibility between different manufacturers, there are 2 methods here:

- **RCN-213 standard:** In this case, the DCC address is sent with the offset +4. The first possible DCC address is 4 and is displayed as address 1. (Manufacturer: OpenDCC/FichtelBahn, TAMS, ESU, IB, Digikeijs,...).

- **direct standard:** No offset is used here and the set DCC address is sent directly. Shadow addresses 0-3 are also possible. (Manufacturer: Roco / Roco-Multimaus, ...)

## 07.5 CV programmer for POM

With the CV programmer for POM, settings of locomotive decoders can be read or written via POM commands (main track programming), if the decoder supports RailCom. To open the CV programmer for POM, the BiDiB-IF2 must be selected and 'CV programmer for DCC decoders (POM)' must be opened via the context menu. Alternatively, this dialogue can also be opened via the context menu on the 'occupied feedback sensor', e.g. on GBM16TS.



The screenshot shows the 'CV-Programmierer für POM' window. At the top, there is a dropdown menu for 'Adress-Typ' set to 'Fahrzeug / Lok'. Below it is an 'Adresse' field containing the number '3'. A row of buttons includes 'Adresse' (highlighted in yellow), 'Railcom', 'Direkt', and 'Reset'. A note reads: 'Schreiben der Decoder-Adresse mit Unterstützung für kurze und lange Adressen.' Below this is the 'Adress-Modus' section with radio buttons for 'kurz' (selected) and 'lang'. Another 'Adresse' field contains the number '6'. To the right are 'Lesen' and 'Schreiben' buttons. A 'Prog Resultat' section contains a text area with the message: '21:05:50.951 - Switched to programming mode passed.' At the bottom are 'Leeren' and 'Schliessen' buttons.

### Changing the DCC address

To change the decoder address of a locomotive, the current address of the locomotive must be entered in the first 'Address' field. For safety reasons, the current address should be read first. A successfully read address is displayed in the second 'Address' field. The new desired address is written to the decoder by changing the read address and then clicking on 'Write' via POM.

### Note:

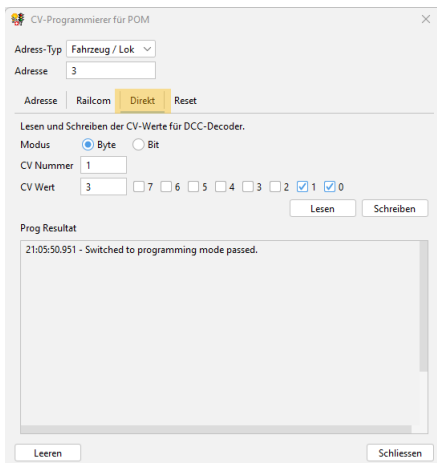
The response from the decoder may not be sent by the decoder or is possibly sent using the new decoder address, which leads to a timeout in the BiDiB Wizard because it is still set to the old decoder address. The BiDiB Wizard recognises this change and attempts to address the decoder at the new address, but only for short decoder addresses. If this attempt is successful, the new decoder address is entered as the address in the first window. The user must accept this automatic adjustment by clicking the 'Confirm' button in order to be able to carry out further write or read actions. After confirmation, the button becomes invisible again.

## Changing decoder CVs

The most important CVs for the RailCom channel 1 & 2 settings are listed in the 'RailCom' window.

In the 'Direct' window, each decoder CV can be read, changed and written individually. The procedure is identical to the description 'Changing the DCC address'.

In the last window 'Reset', the DCC decoder can be reset to the factory settings by writing the decoder reset value from the manufacturer.



## 07.6 Loco table in the BiDiB Wizard

The BiDiB-IF2 manages a **locomotive and accessory table** in which all active DCC addresses are listed with their values. This table has no effect or function, but can be helpful for troubleshooting in the event of support.

| Booster Tabelle |          | Konsole         |          | Lok Tabelle - IF2 |       |                 |                  |                   |                   |  |  |  |  |
|-----------------|----------|-----------------|----------|-------------------|-------|-----------------|------------------|-------------------|-------------------|--|--|--|--|
| Typ             | Lokliste | Abfragen        |          | Adresse           | 3     |                 |                  |                   |                   |  |  |  |  |
| Adresse         | Name     | Geschwindigkeit | Richtung | Fahrstufen        | Licht | Funktionen 1..4 | Funktionen 5..12 | Funktionen 13..20 | Funktionen 21..28 |  |  |  |  |
| 13              |          | 39              |          | DCC128            |       | □□□□            | □□□□□□□□         | □□□□□□□□          | □□□□□□□□          |  |  |  |  |
| 3               |          | 27              |          | DCC128            |       | □□□□            | □□□□□□□□         | □□□□□□□□          | □□□□□□□□          |  |  |  |  |

## 08. Module settings of the BiDiB-IF2

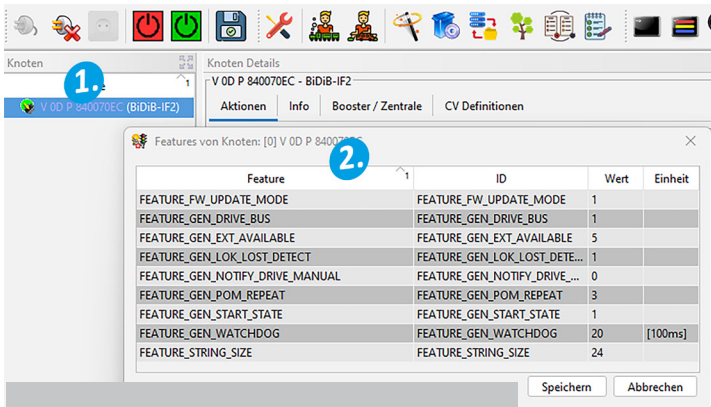
All settings that can be made on the BiDiB-IF2 can be accessed via the 'BiDiB-Wizard 2' configuration tool. It is not possible to make settings on the device itself.

### 08.1 Features of the BiDiB-IF2

The BiDiB modules provide the computer program (host) with their properties via a set of variables, the so-called **features**. Based on the features, the computer program can recognise the characteristics of the module (e.g. number of inputs of an occupancy detector, whether these ports can evaluate Railcom, ...).

All features that are supported by this node are listed in the following tables.

Right-click on the BiDiB-IF2 in the node list to open a dialog with additional entries. The 'Features' window can be opened here.



1

Knoten Details  
V OD P 840070EC - BiDiB-IF2

V OD P 840070EC (BiDiB-IF2)

Aktionen Info Booster / Zentrale CV Definitionen

2

Features von Knoten: [0] V OD P 840070EC

| Feature                         | ID                           | Wert | Einheit |
|---------------------------------|------------------------------|------|---------|
| FEATURE_FW_UPDATE_MODE          | FEATURE_FW_UPDATE_MODE       | 1    |         |
| FEATURE_GEN_DRIVE_BUS           | FEATURE_GEN_DRIVE_BUS        | 1    |         |
| FEATURE_GEN_EXT_AVAILABLE       | FEATURE_GEN_EXT_AVAILABLE    | 5    |         |
| FEATURE_GEN_LOK_LOST_DETECT     | FEATURE_GEN_LOK_LOST_DETE... | 1    |         |
| FEATURE_GEN_NOTIFY_DRIVE_MANUAL | FEATURE_GEN_NOTIFY_DRIVE_... | 0    |         |
| FEATURE_GEN_POM_REPEAT          | FEATURE_GEN_POM_REPEAT       | 3    |         |
| FEATURE_GEN_START_STATE         | FEATURE_GEN_START_STATE      | 1    |         |
| FEATURE_GEN_WATCHDOG            | FEATURE_GEN_WATCHDOG         | 20   | [100ms] |
| FEATURE_STRING_SIZE             | FEATURE_STRING_SIZE          | 24   |         |

Speichern Abbrechen

#### Note:

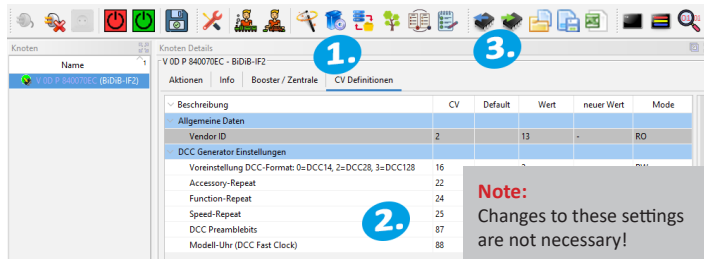
Changes to these settings may only be made after consultation with FichtelBahn technical support.

| Feature                         | Default | Description   |
|---------------------------------|---------|---|
| FEATURE_FW_UPDATE_MODE          | 1       | Value = 1, enables firmware update  |
| FEATURE_GEN_DRIVE_BUS           | 1       | Value = 1, activates the BiDiBus  |
| FEATURE_GEN_EXT_AVAILABLE       | 5       | Additional (protocol) properties of the track output  |
| FEATURE_GEN_LOK_LOST_DETECT     | 1       | Notification of lost locomotives switched on or off (value 1 = ON)  |
| FEATURE_GEN_NOTIFY_DRIVE_MANUAL | 0       | Notification for manual driving actions switched on or off  |
| FEATURE_GEN_POM_REPEAT          | 3       | Service mode  |
| FEATURE_GEN_START_STATE         | 1       | Status of the track output (DCC signal) after power up (switching on).<br><b>Value 0</b> = DCC signal is switched off, the automatic start of the booster is prevented.<br><b>Value 1</b> = DCC signal is switched on |
| FEATURE_GEN_WATCHDOG            | 20      | Time constant for watchdog - [unit = 100ms]<br>Value 0 = Watchdog is switched off<br>Value 20 = 20 x 100ms = 2 seconds (default)  |
| FEATURE_STRING_SIZE             | 24      | Maximum string length for string variables in namespace 0   |

## 08.2 CV register of the BiDiB-IF2

Click on 'CV Definitions' to display these CV registers (2).

The value can be read individually by right-clicking on the individual CV, then **Read CV** or all CVs of the module can be read by using the button (3). The new value is written back using the same procedure **CV write**.



The screenshot shows the 'CV Definitionen' window for the module 'V 00 P 840070EC - BiDiB-IF2'. The table lists various CVs with their descriptions, default values, and modes. A 'Note' box is overlaid on the bottom right of the table, stating: 'Note: Changes to these settings are not necessary!'.

| Beschreibung  | CV | Default | Wert | neuer Wert | Mode |
|---|----|---------|------|------------|------|
| <b>Allgemeine Daten</b>                               |    |         |      |            |      |
| Vendor ID   | 2  |         | 13   | -          | RO   |
| <b>DCC Generator Einstellungen</b>                    |    |         |      |            |      |
| Voreinstellung DCC-Format: 0=DCC14, 2=DCC28, 3=DCC128 | 16 |         |      |            | RM   |
| Accessory-Repeat                                      | 22 |         |      |            |      |
| Function-Repeat                                       | 24 |         |      |            |      |
| Speed-Repeat  | 25 |         |      |            |      |
| DCC Preamblebits                                      | 87 |         |      |            |      |
| Modell-Uhr (DCC Fast Clock)                           | 88 |         |      |            |      |



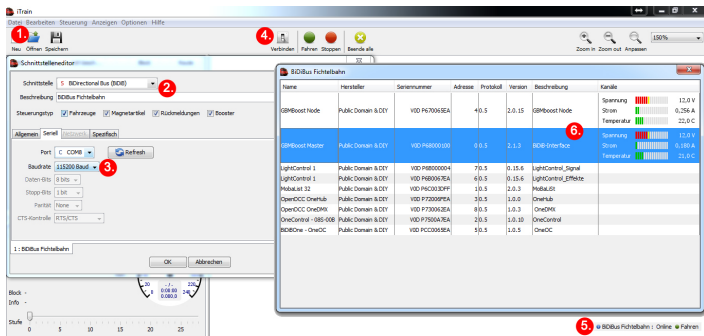
|             |                       |   |
|-------------|-----------------------|---|
| <b>CV16</b> | Value                 | <b>DCC generator (command station): Format of the speed steps</b>           |
|             | 0                     | Format DCC-14   |
|             | <b>2</b><br>(Default) | <b>Format DCC-28</b>  |
|             | 3                     | Format DCC-128  |
| <b>CV22</b> | Value                 | <b>DCC generator (command station): Repetition rate of turnout commands</b> |
|             | <b>2</b><br>(Default) | The DCC command for turnout commands is repeated n times in succession      |
| <b>CV24</b> | Value                 | <b>DCC generator (command station): Repetition rate of function keys</b>    |
|             | <b>0</b><br>(Default) | The DCC command for function keys is repeated n times in succession         |
| <b>CV25</b> | Value                 | <b>DCC generator (command station): Repetition rate of speed step</b>       |
|             | <b>2</b><br>(Default) | The DCC command for speed step is repeated n times in succession            |

The remaining CVs are placeholders for identical CV structures and have no further user-definable function in this module.

## 09. Configurations in the control program

The following explanation uses the **iTrain** control program as an example. The procedure is similar for **RocRail**, **WinDigiPet** or **Modellstellwerk** programs.

The window for configuring the interface opens via **Edit / Interface editor** (1.). The **BiDirectional Bus (BiDiB)** (2.) needs to be selected in the drop-down menu and a user-defined interface name can be entered. This name is important if several command stations are connected. In the next step (3.), the **corresponding serial port** of the connected interface is selected with the correct baudrate of **115200 baud**. After closing the window, communication with the interface can be established via the **Connect icon** (4.).



The screenshot shows the iTrain software interface. On the left, the 'Schnittstelleneditor' window is open, showing configuration options for a 'BiDirectional Bus (BiDiB)'. The 'Beschreibung' field is set to 'BiDiBus Fichtelbahn'. The 'Port' is set to 'COM8' and the 'Baudrate' is set to '115200 Baud'. A green dot in the status bar indicates a successful connection. On the right, the 'BiDiBus Fichtelbahn' table displays the following data:

| Name                 | Hersteller          | Seriennummer  | Adresse | Protokoll | Version | Beschreibung         | Kanäle   |
|----------------------|---------------------|---------------|---------|-----------|---------|----------------------|--|
| BiDiBoot Node        | Public Domain & DEY | VID F67039SEA | 40.5    | 2.0.15    | 2.0.15  | BiDiBoot Node        | Spannung: 12.0 V<br>Strom: 0.356 A<br>Temperatur: 22.0 C |
| BiDiBoot Master      | Public Domain & DEY | VID F6800100  | 0.0.5   | 3.1.3     |         | BiDi Boot Master     | Spannung: 12.0 V<br>Strom: 5.180 A<br>Temperatur: 21.0 C |
| LightControl 1       | Public Domain & DEY | VID P80000004 | 70.5    | 0.15.6    |         | LightControl_Signal  |  |
| LightControl 2       | Public Domain & DEY | VID P800007EA | 60.5    | 0.15.6    |         | LightControl_Effekte |  |
| Module 32            | Public Domain & DEY | VID F603033FP | 10.5    | 2.0.3     |         | Module 32            |  |
| OpenDCC OverHub      | Public Domain & DEY | VID F720007EA | 10.5    | 1.0.0     |         | OverHub              |  |
| OpenDCC OneDMX       | Public Domain & DEY | VID F73003SEA | 80.5    | 1.0.3     |         | OneDMX               |  |
| OneControl - 085-008 | Public Domain & DEY | VID F75004SEA | 10.5    | 1.0.10    |         | OneControl           |  |
| BiDiOne - OneDC      | Public Domain & DEY | VID FCC003SEA | 0.0.5   | 1.0.5     |         | OneDC                |  |

As soon as a connection to the interface over USB has been established, the indicator in the status display changes from **OFFLINE** to **ONLINE** (5.). This is also confirmed by a green dot. All connected BiDiB nodes are loaded by the computer program and displayed in a node table. This table can be accessed by double-clicking on this status bar.

In addition to the **BiDiB unique ID**, the node table also displays the **user-defined name**, the **software version** of the module and the **BiDiBus level** (bus branching using a ReadyHUB node).

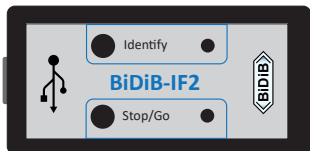
## 10. Buttons on the BiDiB-IF2

### Identify button in operation:

If there is a BiDiB connection to the computer, an 'I'm here' command is sent to the computer. This command highlights the corresponding module in the node view and the local Ident LED flashes purple. If there is no connection to the computer, the Ident LED flashes red.

### Identify button pressed during start-up:

The interface does not start in the operating mode, but remains in the bootloader. A firmware update can now be carried out via the BiDiB wizard. (see Firmware update).



### Stop/Go button (short press):

The command station is set to the '**Stop**' status. To do this, the locomotive commands are set to speed step 0 for a short period of time (soft stop). Turnout commands can still be sent. The traction current on the track remains active.

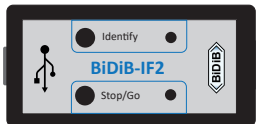
If the BiDiB-IF2 module is in 'Stop' status, the command station is switched on again when the button is pressed again. The LED changes to green (status '**DCC ON**').

### Stop/Go button (long press):







An emergency shutdown is performed, the command station is switched off and changes from '**DCC ON**' status to '**OFF**' status. As a result, the connected boosters also switch off due to a missing input signal.







If the BiDiB-IF2 module is in 'OFF' status, the command station is switched on by pressing the button again. The LED changes to green (status '**DCC ON**').

## 11. LED indication on BiDiB-IF2









### 11.1 Operating modes

| Identify LED:   |  |
|---|--|
|  | No connection to USB - no power supply available (check the connection or replace the USB cable)   |
|  | Module has not yet received any data from the computer and is waiting for a response (check the driver installation in the Device Manager)   |
|  | Connection to the computer has been established correctly  |
|  | Connection available - Identify mode has been activated  |
|  | Red lights up briefly if the Identify button has been pressed and there is no connection to the computer. Red flashes after ID if there was (recently) a computer connection but the button press could not be sent (due to system stopped/disabled) |
|  | Colour change - internal program error, the processor was stopped (contact FichtelBahn support).   |

| Stop/Go LED:  |  |
|---|--|
|                        | <b>DCC ON</b> is switched on and is in normal operation  |
|                        | <b>SOFTSTOP</b> is activated - all vehicles are reduced to speed step 0 (in about 2s), after which the interface automatically switches to the STOP state. This procedure prevents derailments when the system stops.  |
|                        | <b>Soft stop</b> was triggered by the watchdog monitoring. All speed steps are reduced to 0.   |
|  <b>continuous</b>    | <b>STOP</b> - all speed commands are immediately switched to speed step 0. The traction current on the track remains active (booster ON), DCC turnout decoders can be controlled and programming commands can be sent. With the GO command, the last known speed steps are sent again. |
|  <b>fast flashing</b> | <b>immediate stop</b> was triggered by the watchdog monitoring. All speed steps are abruptly switched to speed step 0.   |
|  <b>slow flashing</b> | <b>OFF</b> - the DCC traction current has been switched off and all boosters are OFF. No DCC turnout decoders can be controlled either.  |

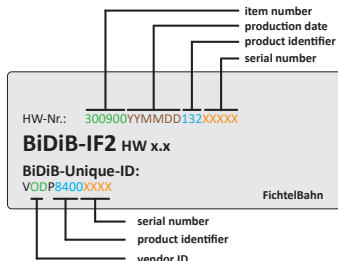
## 11.2 Fehlerzustände

| Identify LED:   | Stop/Go LED:  |   |
|---|---|---|
| 10x flashing<br> |              | <b>The bootloader is missing on the module.</b><br>The BiDiB interface is functional, but please contact FichtelBahn support anyway.                              |
|                  | flashing<br> | <b>The EEPROM is faulty.</b><br>The BiDiB interface is not functional - carry out a firmware update by holding down the Identify button when starting the module. |
|                  | flashing<br> | <b>Earth fault on GO button</b>   |

## 12. Background knowledge

### 12.1 What is a BiDiB-Unique-ID?

For working with the BiDiBus all BiDiB modules must have a Unique-ID which can be found as a label on the casing of the BiDiB-IF2.

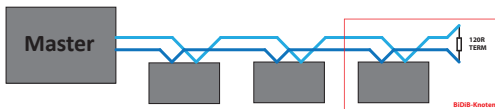


The Unique-ID is a unique identifier. This identifier enables the system to find the module regardless of its position within the BiDiBus. The BiDiB-System has a kind of 'telephone book' where to find a module.

Memorisable names can be given to each module with a host program (=computer railway controlling program). The Unique-ID is the link between the given name on the computer and the module.

### 12.2 What is needed for bus termination?

The BiDiBus is a RS485 two wire connection which has been especially developed for high speed data transfer over long distances. This type of connection is used in an increasing number of industrial installations. Due to the properties high data rates can be achieved over a length of up to 200 m.



To guarantee an error free communication at this high data rates it is necessary to terminate the BiDiBus to avoid reflexions.

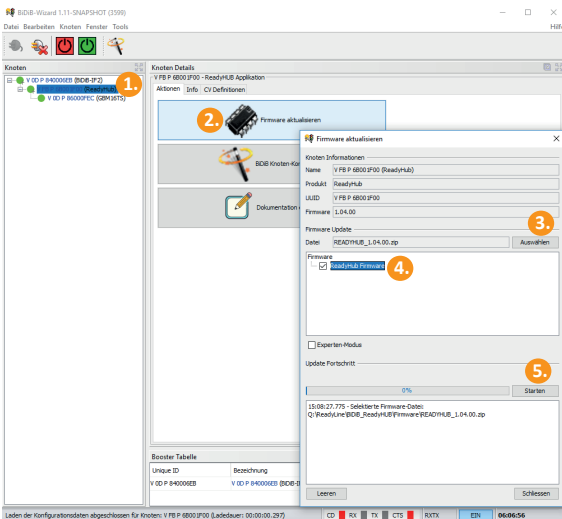
The terminating resistor of 120 Ohms is part of every BiDiB module and is activated by fitting the corresponding jumper.

## 13. Firmware update

### 13.1 Function update

To keep the module compatible with new developments it is possible to conduct a firmware update through the BiDiBus. Start the Tool 'BiDiB-Wizard' and double click on the entry 'BiDiB-IF2' (1.) in the tree view. The BiDiB-IF2 node will be loaded and displayed in the right window.

(The illustration shows a different module name, but the function is identical).



Click on the button 'Update firmware' (2.). In the new window choose the firmware zip file (3.) which can be loaded from the FichtelBahn website or which is provided by the 'BiDiB Wizard' tool via the integrated firmware repository. Tick the check box (4.) for the desired firmware and proceed by clicking 'Start' (5.).

## 13.2 Update under error conditions

In case of a faulty FLASH or EEPROM or a failed firmware update the module can be started in the bootloader mode manually. With the bootloader mode it is possible to redo an update with the tool 'BiDiB-Wizard'.

To do so disconnect the module from the power supply (**USB**) and press and hold pressed the button (**IDENT**) while reconnecting the power supply (**USB**).

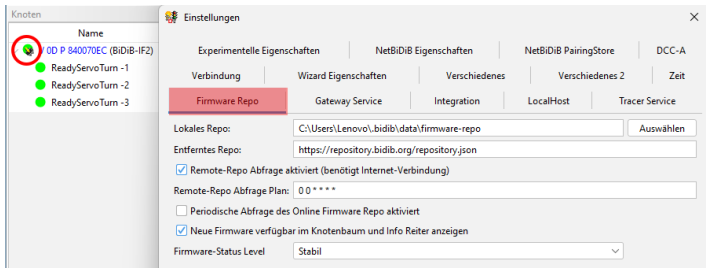
In the tree view appears a module with the name 'BiDiB-IF2 Bootloader' (1.). This is a safety function to be able to redo the function update (see '13. Firmware update' on page 23).

## 13.2 Firmware Repository - automatic firmware download

In addition to the classic method of downloading a **ZIP file** from our website, a new firmware version can also be provided by the BiDiB Wizard.

The BiDiB Wizard also indicates in the node list that new firmware is available for this module.

The settings for the repository are made under "Settings" and in the "Firmware Repo" window.



The screenshot shows the 'Einstellungen' (Settings) window of the BiDiB Wizard. On the left, a tree view shows a node 'OD P 840070EC (BiDiB-IF2)' with a red circle around its icon. The main window has several tabs: 'Experimentelle Eigenschaften', 'NetBiDiB Eigenschaften', 'NetBiDiB PairingStore', 'DCC-A', 'Verbindung', 'Wizard Eigenschaften', 'Verschiedenes', 'Verschiedenes 2', 'Zeit', 'Firmware Repo', 'Gateway Service', 'Integration', 'LocalHost', and 'Tracer Service'. The 'Firmware Repo' tab is active, showing the following settings:

- Lokales Repo: C:\Users\Lenovo\bidib\data\firmware-repo (Auswählen)
- Entferntes Repo: <https://repository.bidib.org/repository.json>
- Remote-Repo Abfrage aktiviert (benötigt Internet-Verbindung)
- Remote-Repo Abfrage Plan: 0 0 \* \* \* \*
- Periodische Abfrage des Online Firmware Repo aktiviert
- Neue Firmware verfügbar im Knotenbaum und Info Reiter anzeigen
- Firmware-Status Level: Stabil

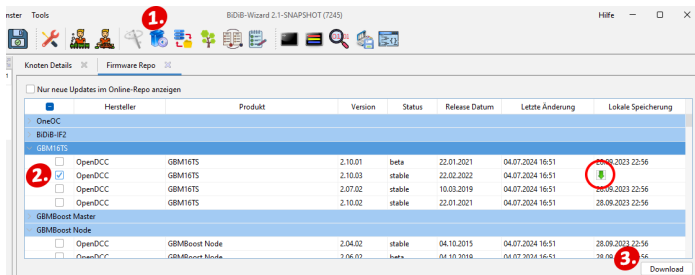


| Option  | Description  |
|---|--|
| Remote Repo Check enabled                               | When the BiDiB Wizard is started, the remote repo is queried and a status message is saved locally. There is no automatic download of firmware or an update of modules. An internet connection is required for this query. |
| Periodic check of remote Firmware Repo enabled          | This query is only necessary if the tool is open for several days and a query should therefore be made every day at midnight, for example.   |
| Show new firmware available in node tree and info panel | Modules in the node tree are marked to indicate that a new update is available for this module. An entry is also added to the BiDiB Wizard task list.  |
| Firmware Status Level                                   | Here you can select the firmware status level that the information should be provided for (Stable, Beta, None).  |

The **Firmware Repo** is opened via the icon Repo (1.) and all BiDiB modules are listed in the table with firmware version, status and release date. New firmware files that have not yet been downloaded can be selected (2.) and saved locally in the repo folder on the local computer. (3.)

After downloading, this firmware version is automatically available for selection under 'Firmware update' of the affected module.

**The BiDiB Wizard does not carry out firmware updates automatically; each update must be initiated manually.**



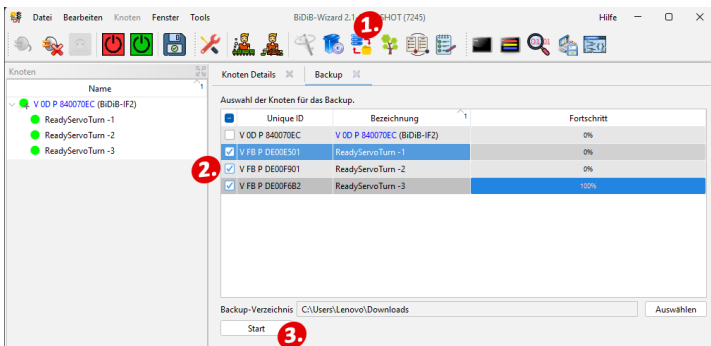
|                                     | Hersteller | Produkt       | Version | Status | Release Datum | Letzte Änderung  | Lokale Speicherung |
|-------------------------------------|------------|---------------|---------|--------|---------------|------------------|--------------------|
| OneOC                               |            |               |         |        |               |                  |                    |
| BiDiB-IF2                           |            |               |         |        |               |                  |                    |
| GBM16TS                             |            |               |         |        |               |                  |                    |
| <input type="checkbox"/>            | OpenDCC    | GBM16TS       | 2.10.01 | beta   | 22.01.2021    | 04.07.2024 16:51 | 28.09.2023 22:56   |
| <input checked="" type="checkbox"/> | OpenDCC    | GBM16TS       | 2.10.03 | stable | 22.02.2022    | 04.07.2024 16:51 | 28.09.2023 22:56   |
| <input type="checkbox"/>            | OpenDCC    | GBM16TS       | 2.07.02 | stable | 10.03.2019    | 04.07.2024 16:51 | 28.09.2023 22:56   |
| <input type="checkbox"/>            | OpenDCC    | GBM16TS       | 2.10.02 | stable | 22.01.2021    | 04.07.2024 16:51 | 28.09.2023 22:56   |
| GBMBoost Master                     |            |               |         |        |               |                  |                    |
| GBMBoost Node                       |            |               |         |        |               |                  |                    |
| <input type="checkbox"/>            | OpenDCC    | GBMBoost Node | 2.04.02 | stable | 04.10.2015    | 04.07.2024 16:51 | 28.09.2023 22:56   |
| <input type="checkbox"/>            | OpenDCC    | GBMBoost Node | 2.06.03 | beta   | 04.10.2016    | 04.07.2024 16:51 | 28.09.2023 22:56   |

### Note:

Always make a backup of the module before updating the firmware. Further information on this can be found in chapter '14. Node backup' on page 26.

## 14. Node backup

There are numerous settings and configurations on each BiDiB module, including program sequences that use macros to control LEDs, servos or drives. **This data can be damaged or lost during a firmware update, which is why a data backup is recommended before every update.** This backup also helps in the event of a module defect and can be restored to the new module without the need to redo the configuration.



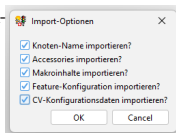
Click on the 'Backup from nodes' button (1.). A new window opens. All modules that are currently connected to the interface are displayed here. You can select the desired modules (2.) and choose a backup folder for this data backup. Click on the 'Start' button (3.) to execute the backup and display the progress.

### How can a backup be restored?

Only a backup can be created in this window. Double-click on the module in the node tree and then right-click to find the 'Import' and 'Export' entries. Export is the same as the backup window, except that each backup can be initiated individually here.

To restore the backup, click on 'Import' and select the data backup. In the following window, certain settings can be deselected.

**All import options must be selected for a complete restore.**



## 15. Support case and further help

For any further questions please contact our support center: <https://doctor.fichtelbahn.de>

A defective device can be sent in for repair with ticket number and error description. In case of warranty you will receive a replacement or we will repair it for free. If the damage does not fall under the product warranty, we charge a maximum of 50% of the current sales price for the costs of the repair. The lump sum for a review or repair is at least 25 euros. We reserve the right to refuse the repair of an assembly if this is not technically possible or uneconomical, there are no additional costs.



### 15.1 Troubleshooting

#### No connection to the computer possible

If no connection can be established, please check in the device manager of your computer whether the required driver has been installed correctly.

If there is a driver conflict, this is displayed with an exclamation mark.

If the appropriate driver has not been installed automatically by the operating system, you can download the driver from the FTDI manufacturer:

<https://ftdichip.com/drivers/vcp-drivers/>

## 16. Warranty Information

We voluntarily grant a two year warranty period starting with the purchase date of the original buyer. This period ends also three years after manufacturing. The warranty provided doesn't affect the consumer's statutory rights. This warranty covers manufacturing defects in materials and workmanship at no charge. We reserve the right to repair, replace or refund the selling price. Any further claims shall be excluded. Claims for consequential damages or product liability shall only be accepted according to the statutory regulations. Following this operating instructions is a prerequisite for the warranty to be valid. Warranty claims become void under the following circumstances: modification of the circuit, repair attempts, incorrect operation or damage by negligent treatment or misuse.

## 17. Declaration of Conformity

Hereby, FichtelBahn declares that the module „BiDiB-IF2“ is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: [www.fichtelbahn.de/declaration.html](http://www.fichtelbahn.de/declaration.html)

## 18. WEEE directive and packaging regulations

This product is in compliance with the requirements of EU directive regarding waste from electronic and electrical equipment (WEEE).

**WEEE registration number: DE 52732575**

Do not dispose this products with domestic waste. Local regulations may provide for separate collection of electrical products from the household or at municipal waste sites.



This product is in compliance with the requirements of the German packing regulations "VerpackG" from 01/01/2019.

**VerpackG number: DE2189339488295**

RailCom® is the registered trade mark of:  
Lenz Elektronik GmbH | Vogelsang 14 | DE-35398 Gießen  
To improve the readability of the text, we have refrained from referring to the term whenever it is used.



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