PCAN-Router Pro FD

6-Channel CAN FD Router with I/O and Data Logger

User Manual

Document version 1.2.1 (2020-03-24)

PEAK System

Relevant products

Product name	Model	Part number
PCAN-Router Pro FD		IPEH-002220

PEAK-System Technik GmbH
Otto-Roehm-Strasse 69
64293 Darmstadt
Germany

Phone: +49 (0)6151 8173-20
Fax: +49 (0)6151 8173-29

www.peak-system.com
info@peak-system.com

Document version 1.2.1 (2020-03-24)

Contents

1 Introduction

With six channels, the PCAN-Router Pro FD links the data traffic of modern CAN FD and classic CAN buses. Pluggable CAN transceiver modules allow flexible adaptation of each CAN channel to the respective requirements. In addition, the router is equipped with an analog input and four digital I/Os.

The CAN messages can be recorded on the internal memory or on an inserted memory card and later read out via the USB connection. With the PCAN-Router Pro FD the data flow of test benches and production plants can be managed, monitored, and controlled. The conversion from CAN to CAN FD or vice versa enables the integration of new CAN FD applications into existing CAN 2.0 networks.

The behavior of the PCAN-Router Pro FD can be programmed freely for specific applications. The firmware is created using the included development package with GNU compiler for C and C++ and is then transferred to the module via CAN. Various programming examples, such as message forwarding or recording, facilitate the implementation of own solutions.

1.1 Properties at a Glance

- 6 High-speed CAN channels (ISO 11898-2)
  - Complies with CAN specifications 2.0 A/B and FD
  - CAN FD support for ISO and Non-ISO standards
  - CAN FD bit rates for the data field (64 bytes max.) from 40 kbit/s up to 12 Mbit/s
  - CAN bit rates from 40 kbit/s up to 1 Mbit/s
  - NXP CAN transceiver TJA1043 with Wake-up

  - Alternative pluggable transceiver modules on request (details on page 13)

- CAN connections are D-Sub, 9-pin
- CAN termination switchable, separately for each CAN channel
- Wake-up function using separate input, CAN bus, or real-time clock
- 2 digital I/Os, each usable as digital input or output with High-side switch
- 2 digital I/Os, each usable as digital input or output with Low-side switch
- 1 analog input (0 - 33 V)
- Recording of CAN data and error frames
- Internal memory: 16 GByte pSLC eMMC
- SD card slot for additional memory
- USB connection for accessing the data memory (e.g. recorded log data)
- Conversion of logging data to various output formats using the Windows software PEAK-Converter
- Battery-buffered real-time clock (RTC), can also be used for wake-up
- Beeper
- Status LEDs for CAN channels, memory cards, and power supply
- Microcontroller STM32F765NIH6 (based on Arm® Cortex® M7)
- 32 MByte SDRAM in addition to microcontroller RAM
- Aluminum casing with flange

- 8 - 32 V power supply, protection against overvoltage and reverse polarity
- Slot for a backup battery for defined switch-off behavior (e.g. for log data saving)
- Optional on request:
  Ethernet interface via RJ-45 socket or BroadR-Reach® interface via D-Sub connector
- Extended operating temperature range from -40 to 85 °C (-40 to 185 °F)

1.2 Operation Requirements

- The transfer of the firmware via CAN requires a PEAK CAN interface

1.3 Scope of Supply

- PCAN-Router Pro FD in aluminum casing including mating connectors for I/O and power
- USB connector cable
- Windows development package with GCC ARM Embedded, flash program, and programming examples
- Conversion software PEAK-Converter for Windows 10, 8.1, 7 (32/64-bit)
- Manual in PDF format

2 Connectors

This chapter describes the connections on the front panel of the PCAN-Router Pro FD.

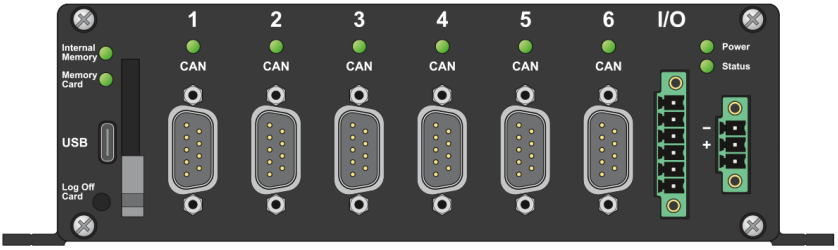


Figure 1: Pin assignment on the front panel of the PCAN-Router Pro FD

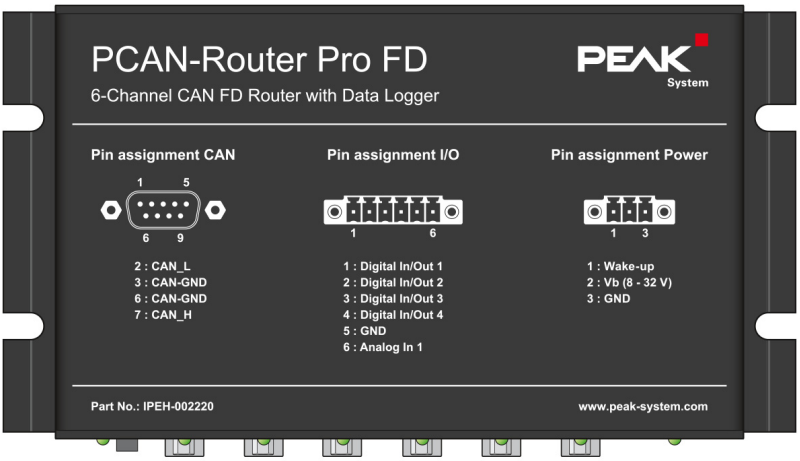


Figure 2: Description of the pin assignments on the top of the housing

2.1 Power Supply

For the operation of the PCAN-Router Pro FD a voltage source with nominal 12 V DC is required, 8 to 32 V are possible. The input is electronically protected with reverse polarity and overvoltage protection.

Note: The scope of delivery does not include a power supply unit for the power supply of the device. The device is not supplied via the USB connection to the PC.

The connection is made via the mating connector supplied (3-pole, type: Phoenix Contact MC1,5/2-STF-3,81) to which you can screw cable strands. The polarity is as follows:

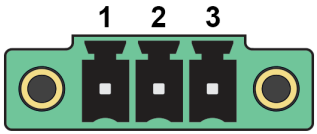


Figure 3: Power connector

Pin	Function	Description
1	Wake-up	3 to 32 V DC required for wake-up signal
2	V_b (8-32V)	Power supply with 8 to 32 V DC
3	GND	Ground

Pin 1 is only necessary for transceivers without wake-up function (see section 4.1) to switch on the device.

2.2 CAN over D-Sub Connectors

A high-speed CAN bus (ISO 11898-2) is connected to the 9-pin D Sub connector. The CAN assignment corresponds to the CiA® 303-1 specification.

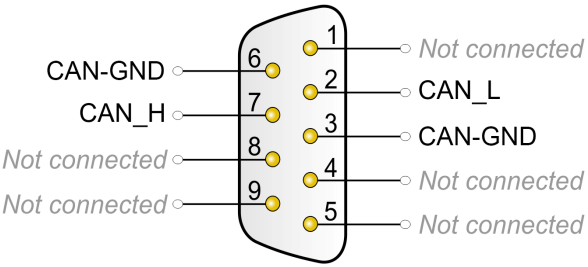


Figure 4: Pin assignment High-speed CAN

2.3 Inputs and Outputs (I/O)

The I/O connector has 4 digital inputs and outputs and one analog input. The connection is made via the supplied mating connector (6-pin, type: Phoenix Contact MC1.5/2-STF-3.81), to which you can screw cable strands.

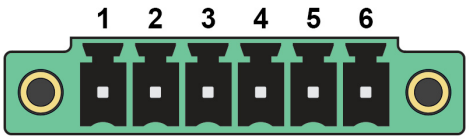


Figure 5: I/O connector

Pin	Name	Function
1	Digital In/Out 1	Digital input and output 1 (high-side)
2	Digital In/Out 2	Digital input and output 2 (high-side)
3	Digital In/Out 3	Digital input and output 3 (low-side)

Pin	Name	Function
4	Digital In/Out 4	Digital input and output 4 (low-side)
5	GND	Ground
6	Analog In 1	Analog input 1

2.4 Status LEDs

When a power supply is applied, the power LED lights up green. All other LEDs can be programmed with their own firmware. More details can be found in the supplied C code examples.

2.5 USB Connection

The internal memory and the external SD card of the PCAN-Router Pro FD can be accessed via a USB connection with a PC. The operating system on the PC integrates the memory card into the file management, for example as a mass storage device under Windows. Only FAT 32 is supported as the file system for the internal and external storage medium. Via the USB connection, for example, stored traces files can be accessed.

Note: Access to the USB connection via the CPU is not possible.

2.6 SD Card Slot

Optionally, a memory card can be inserted into the SD card slot. The SD card can be accessed via the USB connection.

3 Operation

3.1 Ensuring Power Supply

The PCAN-Router Pro FD must be supplied as standard with a nominal 12 V (8 to 32 V possible) DC voltage via the power connection.

Note: If you install a backup battery (see section 4.4) and it is charged, the device can also be operated without a power supply (e.g. in the event of a power failure).

3.2 Starting the PCAN-Router Pro FD

The PCAN-Router Pro FD is automatically switched on when the supply voltage is applied (power LED lights up). By default, six transceiver modules with wake-up function are installed.

If other transceiver modules without wake-up function are installed on request, an external wake-up signal via pin 1 of the power connector from 3 to 32 Volt is required (see section 4.1 on page 13).

4 Hardware Modifications

You can make various hardware adjustments on the board of the PCAN-Router Pro FD:

- Using an alternative CAN Transceiver module (section 4.1)
- Adapting the termination for a CAN bus (section 4.2)
- Changing the button cell for the real-time clock (section 4.3)

4.1 Alternative Transceiver Module

An alternative CAN transceiver module can be used for each of the six CAN connections. The **PCAN-Transceiver TJA1043** is preinstalled by default. The following alternative modules are supported:

Order number	Name	Transmission standard	Bit rate	Wake-up	Galvanic isolation
IPEH-001001	PCAN-Transceiver TJA1041	High-Speed-CAN ISO 11898-2	40 kbit/s to 1 Mbit/s	yes	no
IPEH-001002	PCAN-Transceiver PCA82C251	High-Speed-CAN ISO 11898-2	0 kbit/s to 1 Mbit/s	no	no
IPEH-001004	PCAN-Transceiver TH8056	Single-Wire-CAN SAE J2411	1.3 kbit/s to 40 or 100 kbit/s	yes	no
IPEH-001005	PCAN-Transceiver TJA1055	Low-Speed-CAN ISO 11898-3	20 kbit/s to 125 kbit/s	yes	no
IPEH-001006	PCAN-Transceiver TJA1044	High-Speed-CAN ISO 11898-2	25 kbit/s to 12 Mbit/s[1]	no	no
IPEH-001007	PCAN-Transceiver TJA1044-ISO	High-Speed-CAN ISO 11898-2	25 kbit/s to 12 Mbit/s[1]	no	yes
IPEH-001008 Default	**PCAN-Transceiver TJA1043**	**High-Speed-CAN ISO 11898-2**	**40 kbit/s to 12 Mbit/s[1]**	**yes**	**no**

[1] According to the CAN transceiver data sheet only CAN FD bit rates up to 5 Mbit/s are guaranteed with the specified timing.

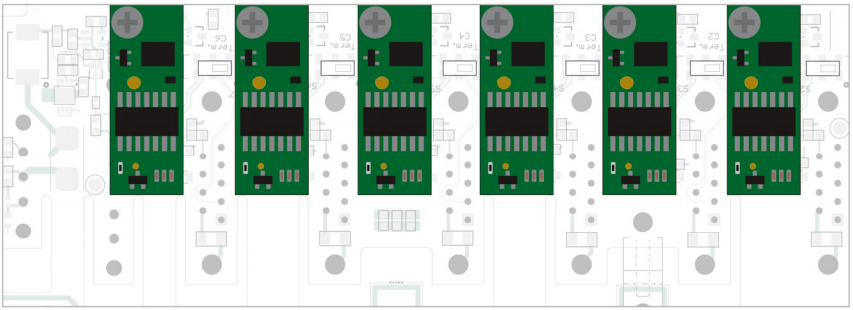


Figure 6: Positions of the transceiver modules for the six CAN FD channels

Attention! Electrostatic discharge (ESD) can damage or destroy components on the card. Take precautions to avoid ESD.

Do the following to change a transceiver module:

1. Disconnect the device from the power supply.
2. Remove the two upper screws on the front and back of the housing.
3. **BroadR-Reach® interface only:**
   Remove the mounting screws of the D-Sub connector on the back of the housing.
4. Pull out the housing cover.
5. **Only with backup battery installed:**
   Remove the backup battery.
6. Remove the screw on the board from the transceiver module to be replaced.
7. Remove the module from the front panel slot.
8. Plug the new transceiver module into the slot.
9. Fasten the module again with the screw.
10. **Only with backup battery installed:**
    Reinstall the backup battery and secure it with a cable tie.

11. Insert the housing cover.
12. **BroadR-Reach® interface only:**
    Fasten again the screws of the D-Sub connector at the rear of the housing.
13. Fasten the four screws to the front and rear of the housing.

When the PCAN-Router Pro FD is restarted, it automatically detects the type of CAN transceiver module used and sets the transmission standard (see table above) for the CAN channel accordingly.

Note: If one or more transceiver modules without wake-up function are installed in an adapted configuration, an external wake-up signal via pin 1 of the power connector is required. Only then will the device or the respective transceiver be powered on.

4.2 Setting the Termination for a CAN Bus

Depending on the CAN transceiver module used, you can use the **switch blocks** to set a CAN bus termination for the respective CAN 1 to CAN 6 (**C1** to **C6**) connection. On delivery, the switch blocks are set to **off**.

Tip: We recommend to do termination at the CAN cabling, for example with termination adapters (e.g. PCAN-Term). Thus, CAN nodes can be flexibly connected to the bus.

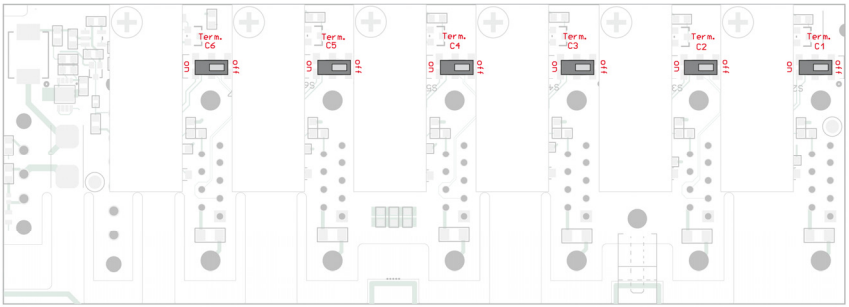


Figure 7: Positions of the switch blocks for CAN termination on the front board

Type of transceiver	Termination at switch position	
	Off	**On**
High-speed-CAN (ISO 11898-2) Transceiver installed by default.	none	120 Ω between CAN_L and CAN_H
Low-speed-CAN (ISO 11898-3) Transceiver only on request.	4.7 kΩ for CAN_L and CAN_H	1.1 kΩ for CAN_L and CAN_H
Single-Wire-CAN (SAE J2411) Transceiver only on request.	9.1 kΩ for CAN_SW	2.1 kΩ for CAN_SW

Attention! Electrostatic discharge (ESD) can damage or destroy components on the card. Take precautions to avoid ESD.

Do the following to activate the CAN termination:

1. Disconnect the device from the power supply.
2. Remove the two upper screws on the front and back of the housing.
3. Pull out the housing cover.
4. Use a slotted screwdriver and set the switch of the desired CAN channel from **off** to **on**.
5. Insert the housing cover.
6. Fasten the four screws to the front and back of the housing.

4.3 Changing the Button Cell for the Real-Time Clock (RTC)

The real-time clock (RTC) installed in the PCAN-Router Pro FD is supplied by a button cell of the IEC type CR1620 (3 V) as long as the device is switched off (without power supply).

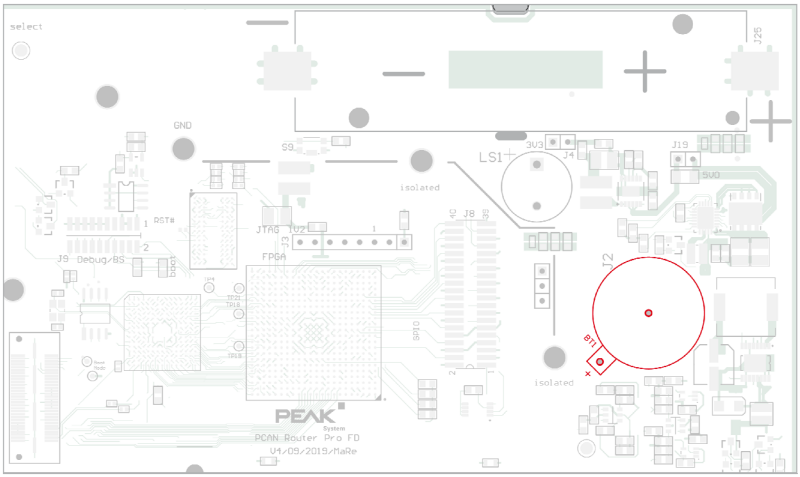


Figure 8: Position of the button cell for the real-time clock on the main board

A new button cell lasts several years. If the internal clock indicates an unexpected time, remove the button cell, and measure its voltage. The nominal voltage is 3.0 volts. If the measured voltage is lower than 2.5 volts, replace the button cell.

Attention! Electrostatic discharge (ESD) can damage or destroy components on the card. Take precautions to avoid ESD.

Do the following to replace the button cell:

1. Disconnect the device from the power supply.
2. Remove the two upper screws on the front and back of the housing.

3. Pull out the housing cover.
4. **Only with backup battery installed**:
   Remove the backup battery before replacing the button cell.
5. Carefully remove the button cell from the holder.
6. Insert the new button cell.
7. **Only with backup battery installed**:
   Replace the backup battery.
8. Insert the housing cover.
9. Fasten the four screws to the front and back of the housing.

4.4 Installing Backup Battery

On the board of the PCAN-Router Pro FD a backup battery in the form factor 18650 can be inserted, which must be protected against short circuit, overcharging, and deep discharge (Protection PCB). Thus, operation can be ensured during a power failure (power LED off).

The recharging of the backup battery must be programmed. A code example (C/C++) of this can be found in the supplied development package.

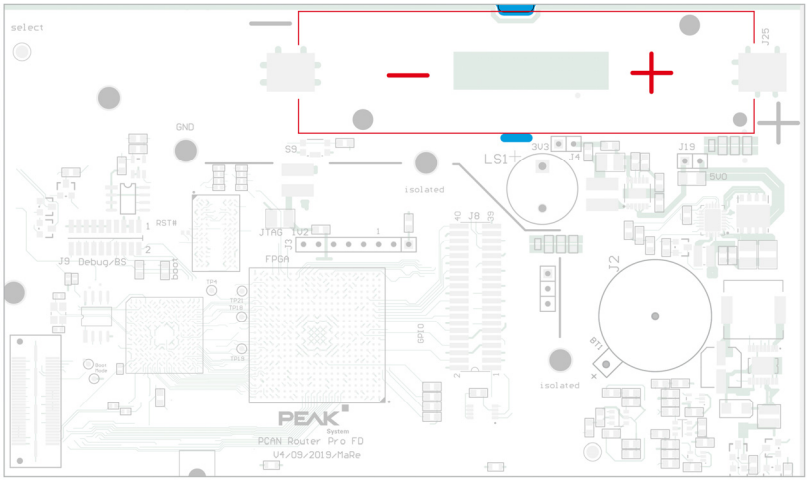


Figure 9: Position of the backup battery on the board

Attention! Electrostatic discharge (ESD) can damage or destroy components on the card. Take precautions to avoid ESD.

Do the following to install the backup battery:

1. Disconnect the device from the power supply.
2. Remove the eight screws at the front and back of the housing.
3. **Only with optional BroadR-Reach® interface:**
   Remove the two fastening screws of the D-Sub connector on the rear of the housing.
4. Remove the back panel and housing cover.
5. Pull the board out of the housing in the direction of the front side.
6. Insert the backup battery with integrated protection (form factor 18650) according to the polarity.
7. Fasten the battery with a cable tie in the recesses provided.

8. Push the board back into the first rail of the housing.
9. Replace the housing cover and the back panel.
10. **Only with optional BroadR-Reach® interface:**
    Fasten the two screws of the D-Sub connector to the rear of the housing.
11. Reinsert all eight housing screws.

Important note: Only use batteries with integrated PCB protection to avoid short circuit, overcharging, and deep discharge! We recommend using a lithium-ion battery such as the Soshine 18650 3600 mAh 3.7 V or comparable models.

5 Creating Own Firmware

With the help of the development package, you can program your own application-specific firmware for PEAK-System programmable hardware products.

Download of the development package:

URL: www.peak-system.com/quick/DLP-Router-Pro-FD

System Requirements:

- PC with Windows® 10 (32-/64-bit)
- CAN interface of the PCAN series to upload the firmware to your hardware via CAN

Content of the package:

- `Build Tools\`
  Tools for automating the build process
- `Compiler\`
  Compilers for the supported programmable products
- `Hardware\`
  Contains sub directories of the supported hardware which include several firmware examples. Use the examples for starting your own firmware development.
- `PEAK-Flash\`
  Windows tool for uploading the firmware to your hardware via CAN. Copy the directory to your PC and start the software without further installation.
- `LiesMich.txt` and `ReadMe.txt`
- `SetPath_for_VSCode.vbs`
  VBScript to modify the example directories for the Visual Studio Code IDE.

Do the following to create your own firmware:

1. Create a folder on your local PC. We recommend to use a local drive.
2. Copy the complete unzipped `PEAK-DevPack` directories into your folder, incl. all subs.

   No installation is required at all.
3. Run the script `SetPath_for_VSCode.vbs`. This script will modify the example directories for the Visual Studio Code IDE (https://code.visualstudio.com/).

   After that every example directory has a folder called `.vscode` containing the needed files with your local path information.
4. Now you can start Visual Studio Code which is available for free from Microsoft.
5. Select the folder of your project and open it.

   For example: `d:\PEAK-DevPack\Hardware\PCAN-Router Pro FD\Examples\01_ROUTING`
6. You can edit the C code and call `make clean`, `make all`, or compile single file via the menu **Terminal > Run Task**.
7. Create your firmware with `Make All`.

   The firmware is the `*.bin` in the sub directory `out` of your project folder.

6 Firmware Upload

A new version of the standard firmware can be transferred to the PCAN-Router Pro FD. The firmware upload is done via a CAN bus with the supplied Windows program PEAK-Flash.

6.1 System Requirements

In order for the PCAN-Router Pro FD to be equipped with new firmware, the following requirements must be given:

- CAN interface of the PCAN series for the computer (e.g. PCAN-USB FD)
- CAN cabling between the CAN interface and the PCAN-Router Pro FD with correct termination (120 at each end of the CAN bus)
- Operating system Windows 10, 8.1, or 7 (32/64-bit)

6.2 Preparing the Hardware

For an upload of new firmware via CAN, the CAN bootloader must be activated in the PCAN-Router Pro FD. The bootloader is started using the ID rotary switch on the back of the casing.

Do the following to prepare the hardware:

Figure 10: Rotary switch for setting the ID on the back of the housing

1. Turn the **ID** rotary switch on the back of the housing to position **F**. Use a slotted screwdriver, for example.

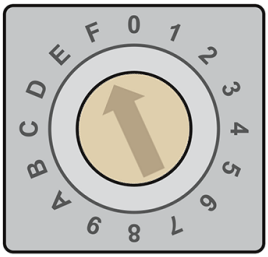


Figure 11: Turn the rotary switch on the rear of the housing to **F**.

2. Restart the device by interrupting the power supply for the change of the rotary switch to take effect.
3. Connect the CAN connector CAN 1 of the PCAN-Router Pro FD to a CAN interface installed on the computer (e.g. PCAN-USB FD).

Note: Ensure the correct termination of the CAN cabling (2 x 120).

6.3 Firmware Transfer

Do the following to transfer a new firmware with PEAK-Flash

1. The software PEAK-Flash is included in the development package, which you can download via the following link: www.peak-system.com/quick/DLP-Router-Pro-FD
2. Open the zip file and extract it to your local storage medium.
3. Run the `PEAK-Flash.exe`

   The program opens.

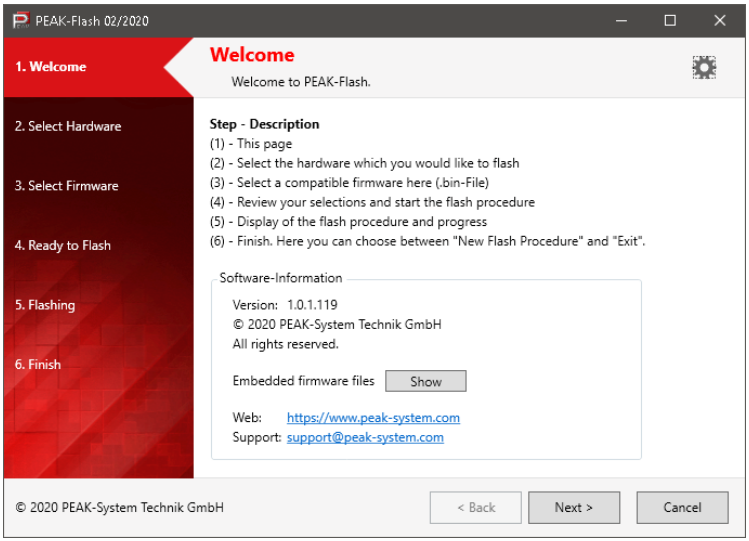


Figure 12: Main window of PEAK-Flash

4. Click the **Next** button.
5. Click on the **Modules connected to the CAN bus** radio button.
6. In the **Channels of connected CAN hardware** drop-down menu, select a CAN interface connected to the computer (e.g. PCAN-USB FD).
7. In the **Bit rate** drop-down menu, select the nominal bit rate available on the CAN bus.

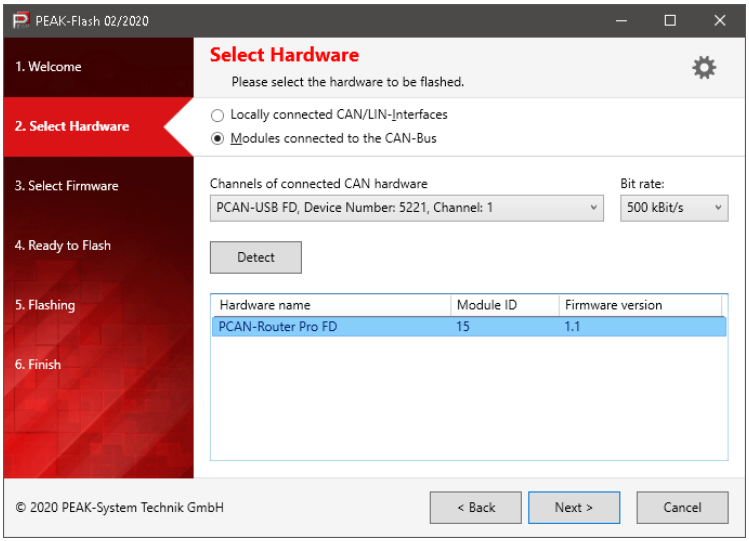


Figure 13: Hardware selection

8. Click on **Detect**.

   In the list, the **PCAN-Router Pro FD** appears together with the **Module ID** and **Firmware version**. If not, check whether a proper connection to the CAN bus with the appropriate nominal bit rate exists.

9. Click **Next**.

10. Select the **Firmware File** radio button and click **Select**.

11. Select the corresponding file (`*.bin`).

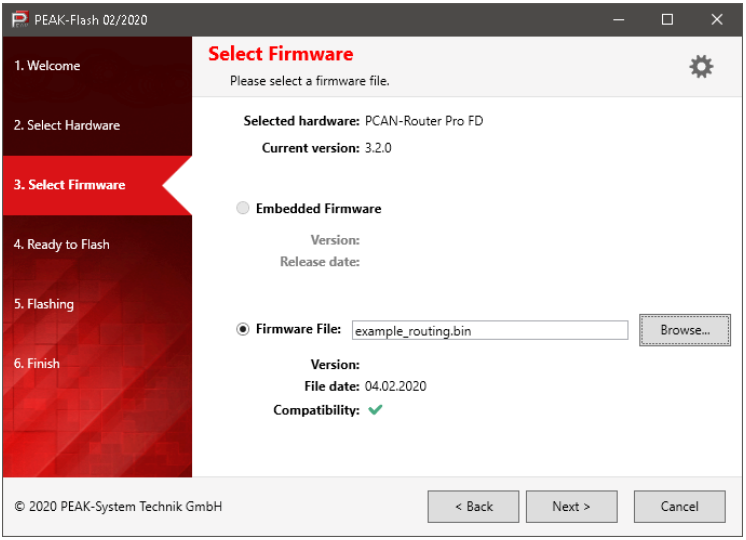


Figure 14: PCAN-Router Pro FD as **Hardware Profile**

12. Click **Next**.

    The **Ready to Flash** dialog appears.

13. Click **Start** to transfer the new firmware to the PCAN-Router Pro FD.

    The **Flashing** dialog appears.

14. After the process is complete, click **Next**.
15. You can exit the program.
16. Turn the rotary switch on the PCAN-Router Pro FD back to the previously set module ID.
17. Restart the device by interrupting the power supply for the change of the rotary switch to take effect.

You can now use the PCAN-Router Pro FD with the new firmware.

7 Technical Specifications

Connectors	
CAN	6 x D-Sub (m), 9 pins Assignment according to specification CiA® 303-1
USB	USB port type C Superspeed USB 3.0 Upstream
Inputs/outputs	Phoenix mating connector MC1.5/2-STF-3.81, 6-pin; 2 x digital input or output with high-side switch 2 x digital input or output with low-side switch 1 x analog input (0 - 33 V)
Power	Phoenix mating connector MC1.5/2-STF-3.81, 3-pole; overvoltage and reverse polarity protection
Ethernet or D-Sub (optional)	RJ-45 or BroadR-Reach® interface available on request only; self-created firmware required

CAN	
protocols	CAN FD ISO 11898-1:2015, CAN FD non-ISO, CAN 2.0 A/B
Physical transmission	ISO 11898-2 (High-speed CAN)
CAN bit rates	40 kbit/s - 1 Mbit/s
CAN FD bit rates	40 kbit/s - 12 Mbit/s[2]
Controller	FPGA implementation
Time stamp resolution	1 µs
Wake-up duration	16 ms
Standard transceiver	NXP TJA1043
Other Transceivers	on request
Internal termination	via internal switches, not activated at delivery
CAN-ID reserved for configuration transmission	7E7h

[2] According to the CAN transceiver data sheet only CAN FD bit rates up to 5 Mbit/s are guaranteed with the specified timing.

Analog inputs	
Count	1
Connectors	Analog In 1
Resolution A/D converter	12 bit
Input voltage maximum	+ 32 V
Input impedance	222 kΩ
Measuring range	0 – 33.3 V
Measurement resolution (per LSB)	8 mV
Measurement accuracy	± 0.3 % ± 6 LSB
Low pass	8 Hz

Digital inputs	
Count	4
Connectors	Digital In/Out 1 to 4
Input voltage maximum	0 to +32 V
Input current	<1 mA
Input impedance	133 kΩ
Input circuitry	Pull-down: 100 kΩ to ground
Switching threshold Low => High	> 2.7 V
Switching threshold High => Low	< 1.4 V
Low pass	50 Hz

Digital outputs	High-side	Low-side
Count	2	2
Connectors	Digital In/Out 1 bis 2	Digital In/Out 3 bis 4
Type	Highside / N-FET	Lowside / N-FET
Driver chip	ISP452HUMA1	AUIPS2052GTR
Output current nominal	0.7 A	0.9 A
Drop-out voltage with Inom	650 mV	max. 470 mV
Drop-out voltage at 200mA	420 mV	max. 100 mV
Drop-out voltage at 500mA	560 mV	max. 420 mV

Maximum output current (current limitation)	0,7 A minimal 1.5 A typically 2.4 A maximum	1.2 A minimal 1.8 A typically 3 A maximum
Protection	Overcurrent (0.7 - 2.4 A) and temperature protection (150° C)	Overcurrent (1.2 - 3 A) and temperature protection (165°C)
Maximum voltage	max. 32 V on load	

Power supply	
Supply voltage	12 V DC, 8 to 30 V DC possible
Current consumption	Idle: 400 mA Maximum: 1 A
Wake-up voltage	3 to 32 V DC at pin 1 of the power connector
Wake-up duration	16 ms
Auxiliary voltage RTC	Button cell CR1620 3.0 V
Slot for backup battery[3]	18650 form factor

Microcontroller	
Type	STM32F765NIH6 (based on Arm® Cortex® M7)
Clock frequency	200 MHz
Memory	32 MByte SDRAM
Firmware upload	via CAN (PCAN interface required)

Data logging	
Internal memory	16 GByte pSLC eMMC
External memory (optional)	SD card
Maximum file size	2 TByte
File system	FAT 32
Maximum size of a recording	4 GByte

[3] Only use batteries with integrated PCB protection to avoid short circuit, overcharging, and deep discharge! We recommend using a lithium-ion battery such as the Soshine 18650 3600 mAh 3.7 V or comparable models.

Data logging	
Recording format	Proprietary binary format (*.btrc), Conversion options with the supplied Windows program: - PCAN-Trace (*.trc) - Vector trace (*.asc) - comma separated values (*.csv)

Environment	
Operating temperature	-40 - 85 °C (-40 - 185 °F)
Temperature for storage and transport	-40 - 100 °C (-40 - 212 °F)
Relative Humidity	15 - 90 %, non-condensing
Protection class (IEC 60529)	IP20

Measures	
Size	190 x 104 x 55 mm (see also Dimension Drawing on page 35)
Weight (without battery and optional interface)	696 g
Weight with optional interface (without battery)	720 g

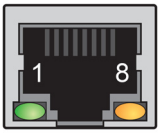
Conformity	
EMV	Directive 2014/30/EU DIN EN 61326-1:2013-07
RoHS 2	Directive 2011/65/EU DIN EN 50581 VDE 0042-12:2013-02

Appendix A Optional Interfaces

On request, the PCAN-Router Pro FD can be equipped with an Ethernet interface via an RJ-45 socket or with a BroadR-Reach® interface via a D-Sub connector.

Ethernet interface via RJ-45 Socket

Figure 15: Ethernet interface via RJ-45 socket on the back of the housing (only on request)



Pin	Signal
1	Tx+
2	Tx-
3	Rx+
4	-
5	-
6	Rx-
7	-
8	-
9	-

BroadR-Reach® Interface via D-Sub Connector

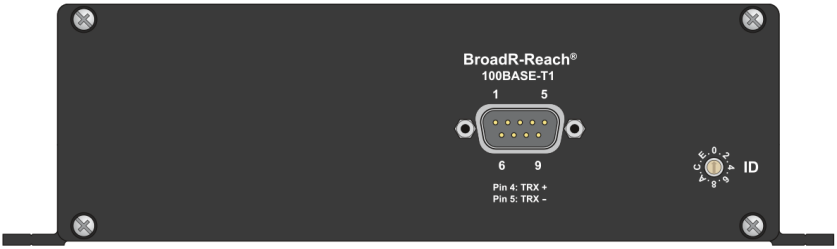
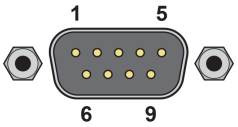


Figure 16: BroadR-Reach® interface via D-Sub connector on the back of the housing (only on request)



Pin	Signal
1	-
2	-
3	-
4	TRX+
5	TRX-
6	-
7	-
8	-
9	-

Appendix B CE Certificate

EU Declaration of Conformity

This declaration applies to the following product:

Product name: PCAN-Router Pro FD

Item number(s): IPEH-002220

Manufacturer: PEAK-System Technik GmbH
Otto-Roehm-Strasse 69
64293 Darmstadt
Germany

CE We declare under our sole responsibility that the mentioned product is in conformity with the following directives and the affiliated harmonized standards:

EU Directive 2011/65/EU (RoHS 2)

DIN EN 50581 VDE 0042-12:2013-02
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances;
German version EN 50581:2012

EU Directive 2014/30/EU (Electromagnetic Compatibility)

DIN EN 61326-1:2013-07
Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements (IEC 61326-1:2012);
German version EN 61326-1:2013

Darmstadt, 11 September 2019

Uwe Wilhelm, Managing Director

Appendix C Dimension Drawing

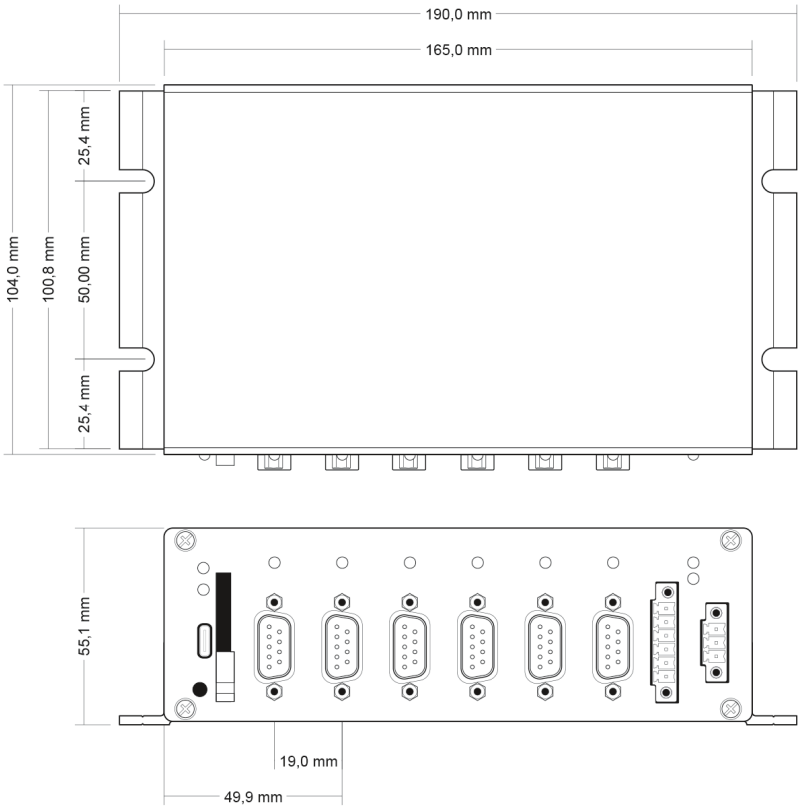


Figure 17: Dimension drawing PCAN-Router Pro FD

The figures do not correspond to the original size.

Appendix D Disposal Information (Battery)

The device and the battery it contains must not be disposed of with household waste. Remove the battery from the device for proper separate disposal.

The PCAN-Router Pro FD contains the following battery:

- 1 x button cell CR1620 3.0 V

Important Note: If you have installed a backup battery (form factor 18650), do not forget to dispose it properly.