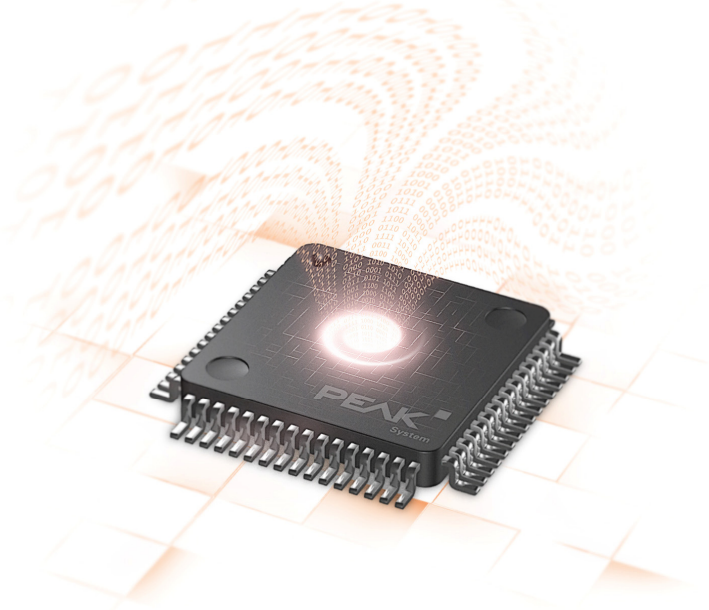
PCAN-Flash

Windows-Software for Flashing Firmware via CAN

Operation Instructions



Document version 1.0.0 (2013-05-27)

Products taken into account

Product Name	Model	Part number
PCAN-Flash	from version 2.0	
PCAN-Router	with D-Sub connectors with Phoenix connector opto-decoupled with D-Sub connectors	IPEH-002210 IPEH-002210-P IPEH-002211
PCAN-Router DR		IPEH-002213
PCAN-RS-232		IPEH-002100
PCAN-Router Pro		IPEH-002212
PCAN-MicroMod	module with evaluation board	IPEH-002080 + IPEH-002082
PCAN-MIO	Industrial Automotive	IPEH-002187 IPEH-002187-A (both from serial number 100)
MU-Thermocouple1 CAN		IPEH-002205

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Contents

1 Introduction

PCAN-Flash is a Windows program for flashing firmware via CAN. Thus, the firmware of several hardware products from PEAK-System can be updated.

These instructions cover the sequence of the flash process, from the preparation of the hardware to the actual flashing of the firmware with PCAN-Flash.

Hardware being supported by PCAN-Flash:

- PCAN-Router
- PCAN-Router DR
- PCAN-RS-232
- PCAN-Router Pro
- PCAN-MicroMod
- PCAN-MIO (from serial number 100)
- MU-Thermocouple1 CAN

1.1 System Requirements

Besides the hardware that shall be equipped with new firmware, you need the following:

- Computer with Windows 8, 7, Vista or XP (32/64-bit)
- CAN interface of the PCAN series (e.g. PCAN-USB) installed in/attached to the computer
- CAN cabling between the CAN interface and the hardware with proper termination (120 Ω on each end of the CAN bus)

2 Preparing the Hardware

In order to equip the hardware with new firmware via CAN, the CAN bootloader must be activated when powering on. Different preparations are necessary depending on the hardware.

Note: If your hardware works with configurations, those configurations that are currently on the hardware are going to be invalid after a firmware update and therefore will not be usable anymore. Make sure in advance that the configurations are available on your PC so that you are able to transfer them to your hardware again later on.

Perform the following steps for preparation of your hardware:

1. Switch the device off by disconnecting it from the power supply.
2. Perform the necessary modification of your hardware. It is described in the corresponding section (see table). Before the modification, remember the initial state, in order to be able to restore it after the firmware update.

Hardware	Modification	Section	Page
PCAN-Router	High level at Boot_CAN	2.1	6
PCAN-Router DR	Rotary switch "Bitrate" on F	2.2	7
PCAN-RS-232	High level at Boot_CAN	2.3	7
PCAN-Router Pro	ID rotary switch on F	2.4	8
PCAN-MicroMod	(none)	2.5	9
PCAN-MIO	ID rotary switch on F	2.6	9
MU-Thermocouple1 CAN	(none)	2.7	10

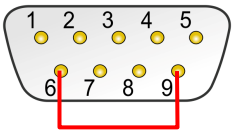
Tip: On some devices, the flash mode can alternatively be activated by software so that the hardware modification can be omitted. See corresponding notes in the section for the device.

3. Connect the CAN bus of the hardware with a CAN interface connected to the computer. Pay attention to the proper termination of the CAN cabling (2 x 120 Ω).
4. Switch on the hardware by applying a voltage supply.

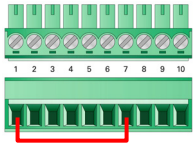
2.1 PCAN-Router

Preparation

Establish a connection between “Boot CAN1” and “+U_{b1}” or “+U_b” at the connectors of the PCAN-Router.



Connection at D-Sub connector CAN1
between the pins
6 (Boot CAN1) and 9 (+U_{b1})



Connection at the screw terminal block
between terminals
1 (+U_b) and 7 (Boot CAN1)

This preparation later applies the “Boot CAN1” connection with a high level.

Indicator for Flash Mode

LED „CAN1“ is on or blinks orange. LED „CAN2“ is orange.

Additional Information

Uploading firmware via CAN bus 2 is not possible.

Attention! Risk of short circuit! A CAN cable with D-Sub connectors must not have a connection on pin 6, as it can be seen on 1:1 cables, for example. At other CAN nodes (e.g. a CAN interface of the PCAN series) this line may be applied to the mass. Damage or destruction of the electronics is a possible consequence.

2.2 PCAN-Router DR

Preparation

On the front, turn the rotary switch „Bitrate“ to setting F.

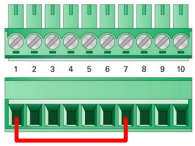
Indicator for Flash Mode

LEDs CAN 1 and CAN 2 are blinking.

2.3 PCAN-RS-232

Preparation

Establish a connection between “Boot CAN” and “+U_b” at the connectors of the PCAN-RS-232.



Connection at the screw terminal block
between terminals 1 (+U_b) and 7 (Boot CAN1)

This preparation later applies the “Boot CAN” connection with a high level.

Indicator for Flash Mode

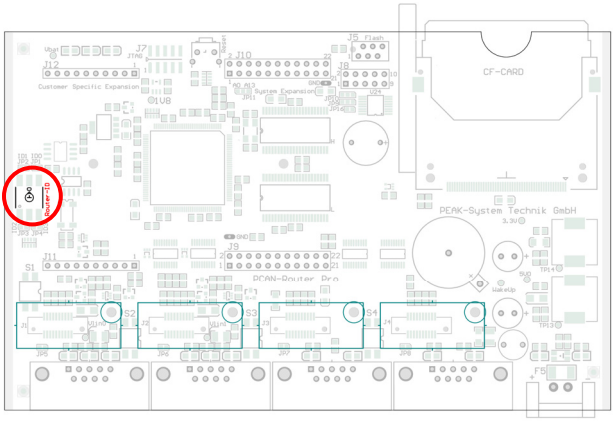
The LED is blinking orange.

2.4 PCAN-Router Pro

Tip: If the PCAN-Router Pro is operated with **standard firmware**[1], you can alternatively activate the CAN bootloader by PCAN-Flash just before the flash process. In this case, you don't need to do the following preparation.

Preparation

Along the top edge of the casing remove two screws on each the front and the rear of the PCAN-Router Pro. Afterwards take off the upper casing part. Now you can access the circuit board.



Position of the rotary switch on the circuit board of the PCAN-Router Pro

Turn the rotary switch “Router-ID” to F.

Indicator for Flash Mode

The “µC Status” LED stays off, the LEDs of the CAN connectors CAN 1 to CAN 4 are blinking.

[1] Standard firmware is the firmware provided by PEAK-System at delivery. In contrast, there may also be custom firmware on the PCAN-Router Pro.

Additional Information

After an update of the standard firmware, the “µC Status” LED blinks with increased frequency (2 Hz) indicating that no configuration is available. Re-transfer your configuration(s) to the PCAN-Router Pro with the PPCAN-Editor.

2.5 PCAN-MicroMod

Preparation

The PCAN-MicroMod can only be set to flash mode by PCAN-Flash just before the flash process. A modification of the hardware is not needed.

Indicator for Flash Mode

The LED on the MicroMod is blinking with short light phases.

Additional Information

After an update of the firmware, the LED on the PCAN-MicroMod blinks with increased frequency (2 Hz) indicating that no configuration is available. Re-transfer your configuration to the PCAN-MicroMod with the Windows program PCAN-MicroMod Configuration.

2.6 PCAN-MIO

Preparation

Turn the rotary switch for the module ID to F.

Indicator for Flash Mode

The status LED is blinking alternately red and green with increased frequency (4 Hz).

Additional Information

A firmware update via CAN is only possible with PCAN-MIO modules from serial number 100. Older hardware can be provided with new firmware at PEAK-System on request.

2.7 MU-Thermocouple1 CAN

Preparation

The measuring unit MU-Thermocouple1 CAN can only be set to flash mode by PCAN-Flash just before the flash process. A modification of the hardware is not needed.

Indicator for Flash Mode

The LED next to the power supply terminal is blinking red (2 Hz).

3 Preparing the Software

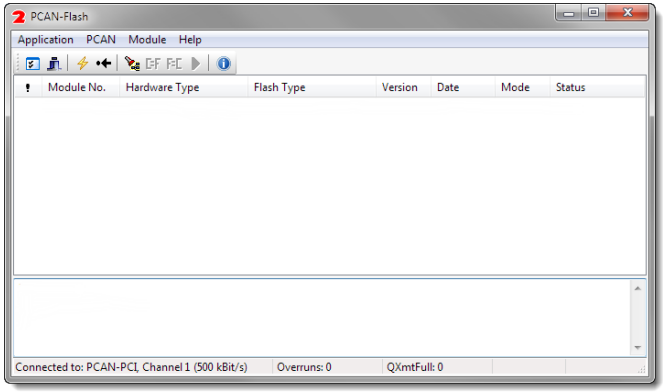
PCAN-Flash must be started from a data carrier which is also writable, otherwise the program's configuration (`PcanFlash.ini` file) cannot be saved. The program doesn't work properly if it is run from a DVD. This is reflected, for example, by and error message when selecting a CAN connection.

Make sure that the `PCAN-Flash` directory is located on a local hard disk, for example, (if necessary, copy it from DVD) and that there are write permissions in the directory, and execute PCAN-Flash from there.

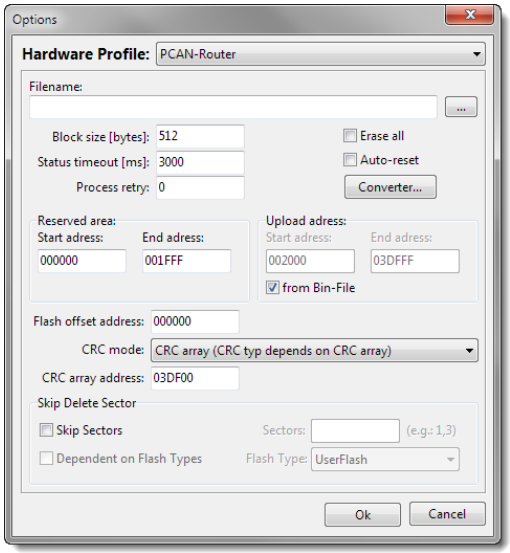
4 Flashing the Firmware

Do the following to flash the firmware for your hardware:

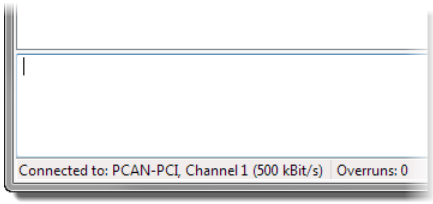
1. Run the program `PcanFlash.exe` under Windows from the local hard drive.



2. Click on the (Options) button in order to call up the dialog box.
3. From the **Hardware Profile** dropdown list, select your hardware (here: PCAN-Router).

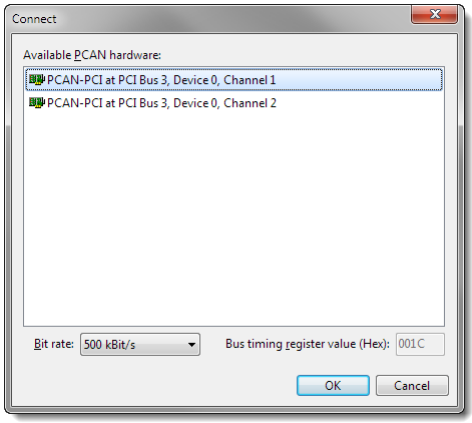


4. Click on the ... button next to the **File name** field in order to select the desired firmware file (`*.bin`) to be uploaded.
5. Click on the **OK** button.
6. Make sure that the PCAN-Flash program is connected with 500 kbit/s to the available CAN interface at the computer.



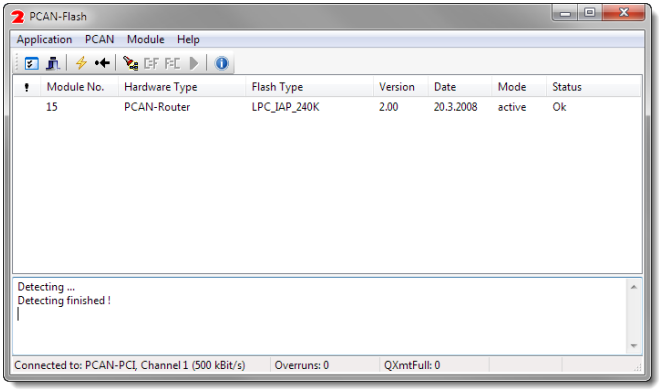
PCAN-Flash: Display of a connection in the status bar on the bottom.

If not, click the ⚡ (Connect) button in order to change the selection in the according dialog box.



7. Click the (Detect) button in order to detect the hardware connected to the CAN bus.

   An entry for your hardware appears in the main window (here: PCAN-Router).



8. Select the entry for your hardware.

Tip: On some devices, here is the point where you can start the CAN bootloader alternatively with PCAN-Flash instead by hardware modification. To do so, click the (Activate module) button.

9. Click the ▶ (Program) button in order to start uploading the new firmware to the PCAN-Router.

   Observe the status indication at the bottom of the window. The process was successful if the last message to appear is “Flashing of module(s) finished!”.

10. Disconnect the power supply from your hardware.
11. Undo the modification of the hardware that you've done before in chapter 2.

You can now use the hardware with the new firmware.