TURCK

Your Global Automation Partner

TBEN-L | TBEN-S | TBEC-L Firmware Update

Technical Support Document

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1 About these instructions

These instructions describe the firmware update for block I/O modules of the TBEN-S and TBEN-L product series via:

▪ The Turck Automation Suite (TAS)
▪ The web server
▪ FDT/DTM

and the firmware update of the block I/O modules of the TBEC-L product series via:

▪ TwinCAT
▪ CODESYS

Read the instructions carefully prior to performing the firmware update. This will prevent any material damage. Keep these instructions safe during the service life of the product. If the product is passed on, pass on these instructions as well.

1.1 Target groups

These instructions are intended for qualified personnel and must be read carefully by anyone operating and maintaining the device.

When using the device in Ex circuits, the user must also have an additional knowledge of explosion protection (IEC/EN 60079-14 etc.).

1.2 Explanation of symbols

The following symbols are used in these instructions:

⚠	**DANGER** DANGER indicates a hazardous situation with a high level of risk, which, if not avoided, will result in death or serious injury.
⚠	**WARNING** WARNING indicates a hazardous situation with a medium level of risk, which, if not avoided, will result in death or serious injury.
⚠	**CAUTION** CAUTION indicates a hazardous situation with a medium level of risk, which, if not avoided, will result in moderate or minor injury.
❗	**NOTICE** CAUTION indicates a situation which, if not avoided, may cause damage to property.
ℹ	**NOTE** NOTE indicates tips, recommendations and important information about special action steps and issues. The notes simplify your work and help you to avoid additional work.
▶	**MANDATORY ACTION** This symbol denotes actions that the user must carry out.
⇨	**RESULT OF ACTION** This symbol denotes the relevant results of an action.

1.3 Other documents

Besides this document the following material can be found on the Internet at **www.turck.com**:

- Data sheet
- Instructions for use
- EU Declaration of Conformity (current version)
- Approvals

1.4 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to **techdoc@turck.com**.

2 TBEN — performing a firmware update

The firmware of the device can be updated as follows:

- Via the Turck Automation Suite (TAS)
- Via the web server (depending on the device firmware version)
- Via FDT/DTM

2.1 Performing a firmware update via TAS

> **! NOTICE**
> Interruption of the power supply during the firmware update
> **Risk of device damage due to faulty firmware update**
> ▶ Do not interrupt the power supply during the firmware update.
> ▶ During the firmware update do not reset the power supply.
> ▶ Do not interrupt the Ethernet connection during the firmware update.

> **ℹ NOTE**
> The firmware update function in TAS is locked when the controller connection is active. The device must first be disconnected from the controller before performing the update.

Starting a firmware update for a device

▶ Open TAS.
▶ Open the network view.
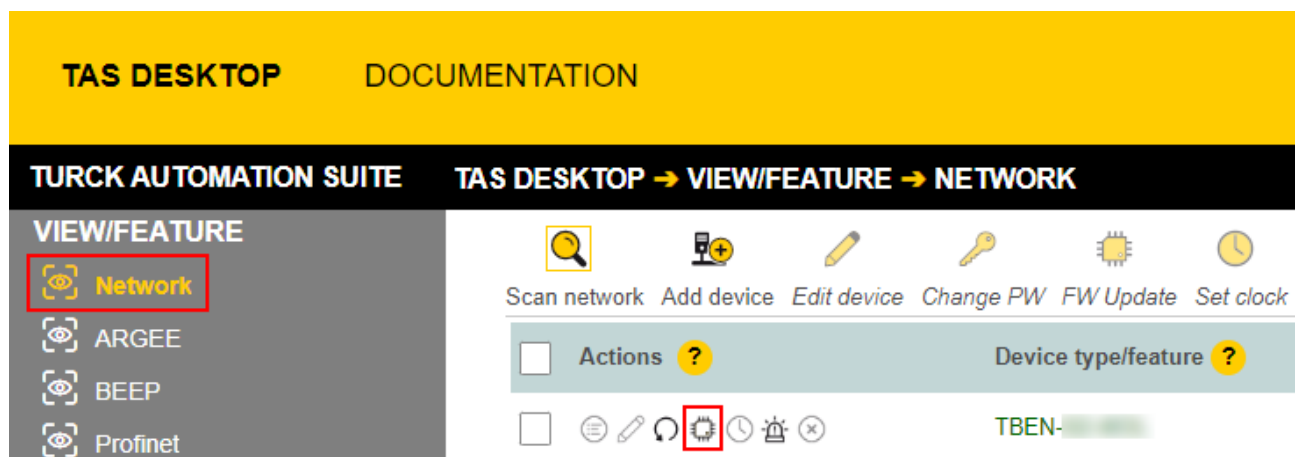▶ Select the device.
▶ Click **Firmware Update**.

Fig. 1: Firmware update network view

As an alternative to selecting a single device, it is also possible to select multiple devices. To do so, all devices to be updated must correspond to the same device type and be in the same TCP network.

This enables a firmware update to be performed for multiple devices at once.

Starting a firmware update for multiple devices

▶ In the network view, check the box for all desired devices.
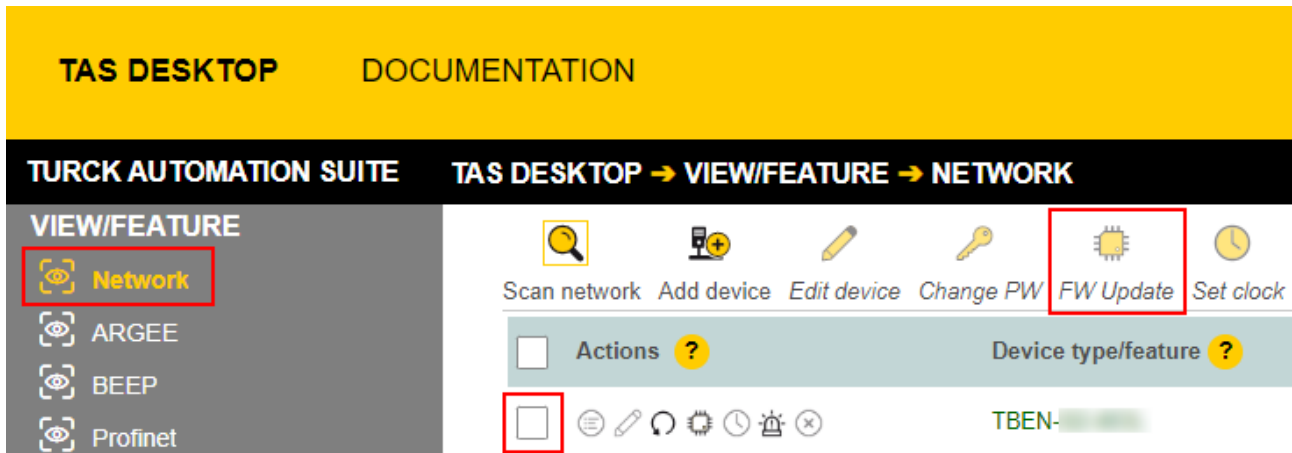▶ Click **FW update** in the header.

Fig. 2: Multiple selection in the firmware update network view

> **NOTE**
> For multiple devices of the same type, a global password can be set, which can be used to unlock all selected devices directly. This requires that all selected devices have the same device password and are in the same TCP network.

▶ Enter a global or device password. The default password is "password".
▶ Click **LOG IN**.
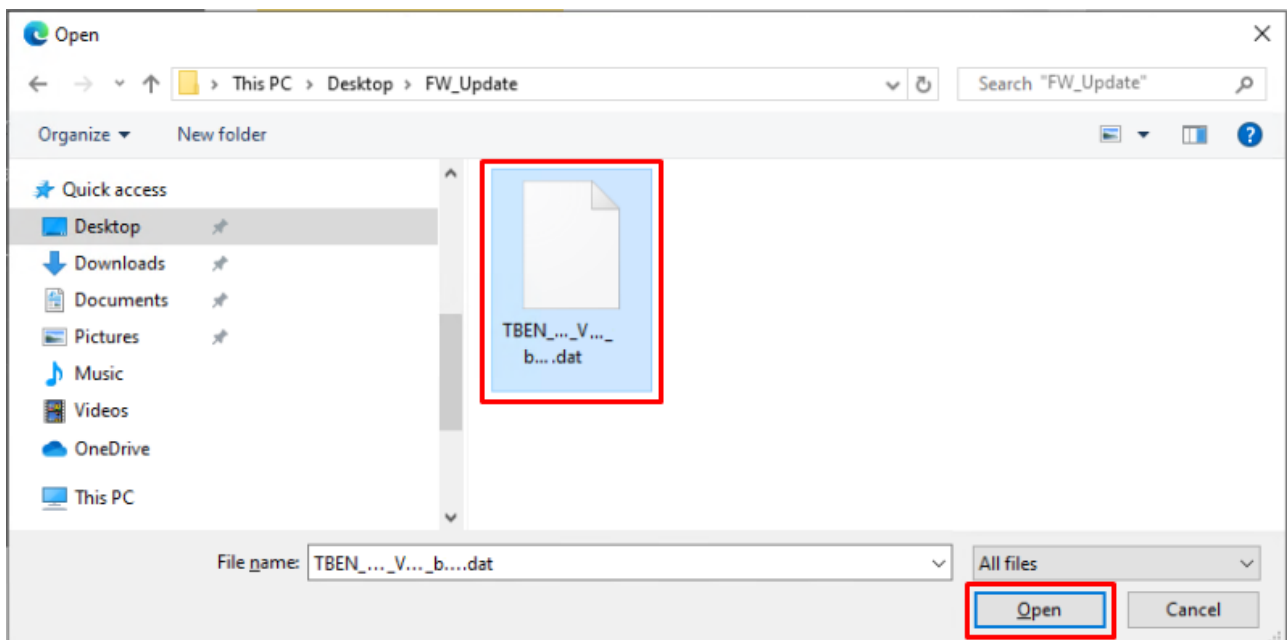▶ Click **SELECT FILE**.
▶ Open the directory of the firmware file.

Fig. 3: Selecting a firmware file

▶ Select a new firmware file and load it by clicking **Open.**

▶ Click **START** to start the firmware update.

Update device firmware of TBEN-S2-4IOL

Please enter device password for each device or set as global device password.

Global password		👁	LOGIN
192.168.1.254		👁	Switching To Bootloader ●◌●

Do not close the current browser window until the firmware update is complete.
Interrupting the loading process can result in damage to the equipment.

Firmware file: TBEN_S2_4IOL_01500029_V3.4.2.0_b1575.dat

SELECT FILE   START   CANCEL   CLOSE

Fig. 4: Firmware update progress

⇨ The progress of the firmware update is displayed.

2.2 Updating the firmware via web server

> **!** **NOTICE**
> Interruption of the power supply during the firmware update
> **Risk of device damage due to faulty firmware update**
> ▶ Do not interrupt the power supply during the firmware update.
> ▶ During the firmware update do not reset the power supply.
> ▶ Do not interrupt the Ethernet connection during the firmware update.

▶ Open the web server.

▶ Log on to the device as administrator. The default password for the web server is "password".

▶ Click **Firmware → SELECT FIRMWARE FILE**

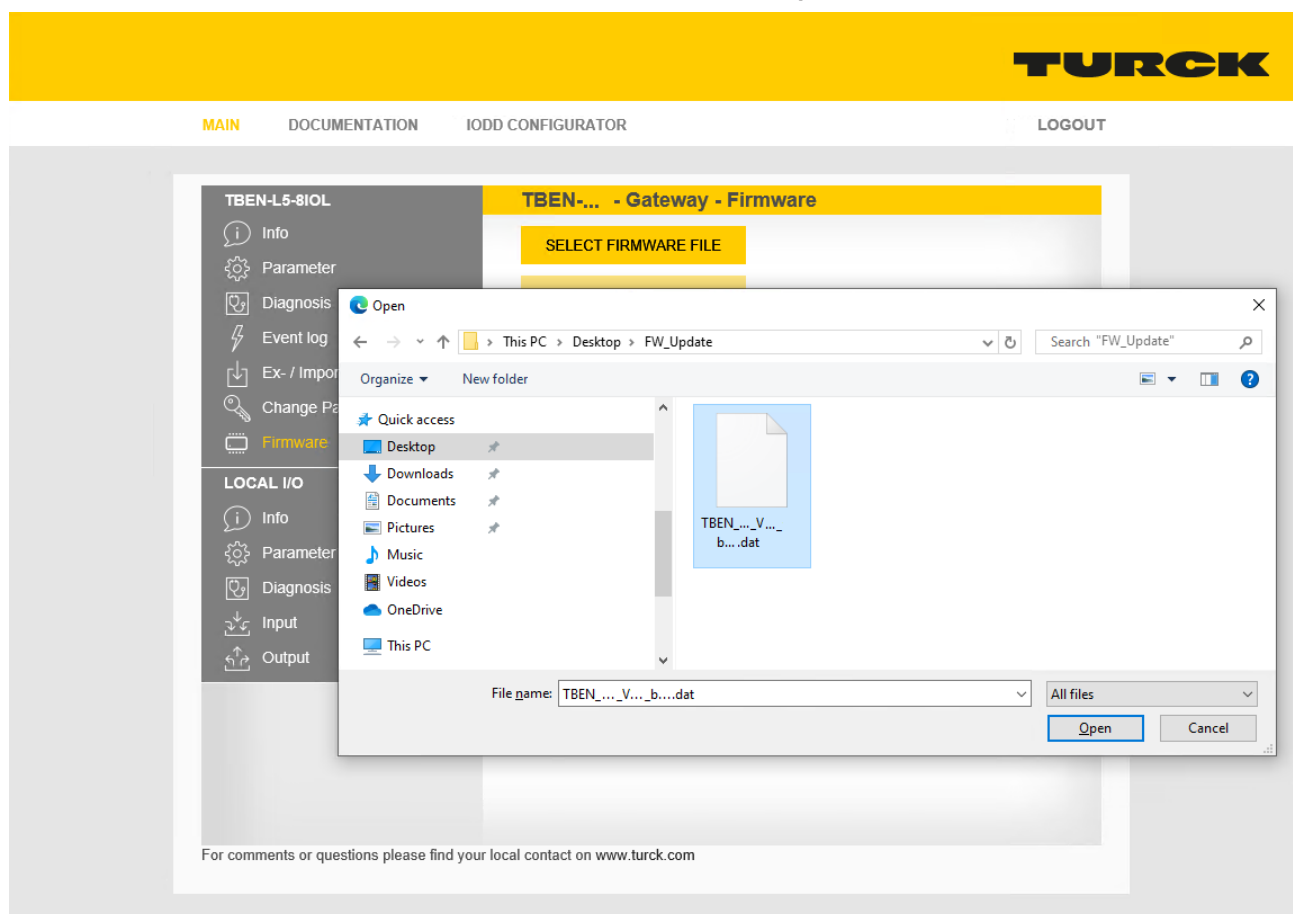▶ Select the new firmware file and load it via **Open**.

Fig. 5: Webserver – Selecting the firmware file
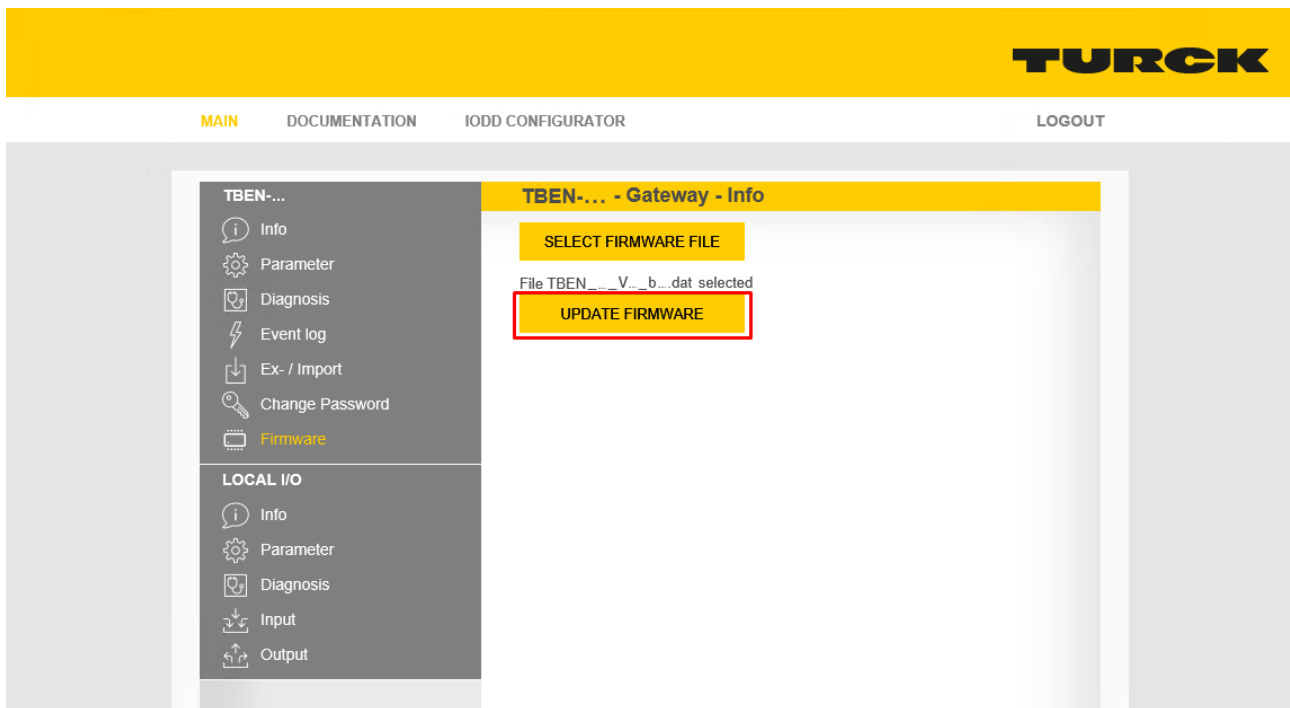
▶ Click **Update Firmware** and start the update.

Fig. 6: Webserver – Starting the firmware update
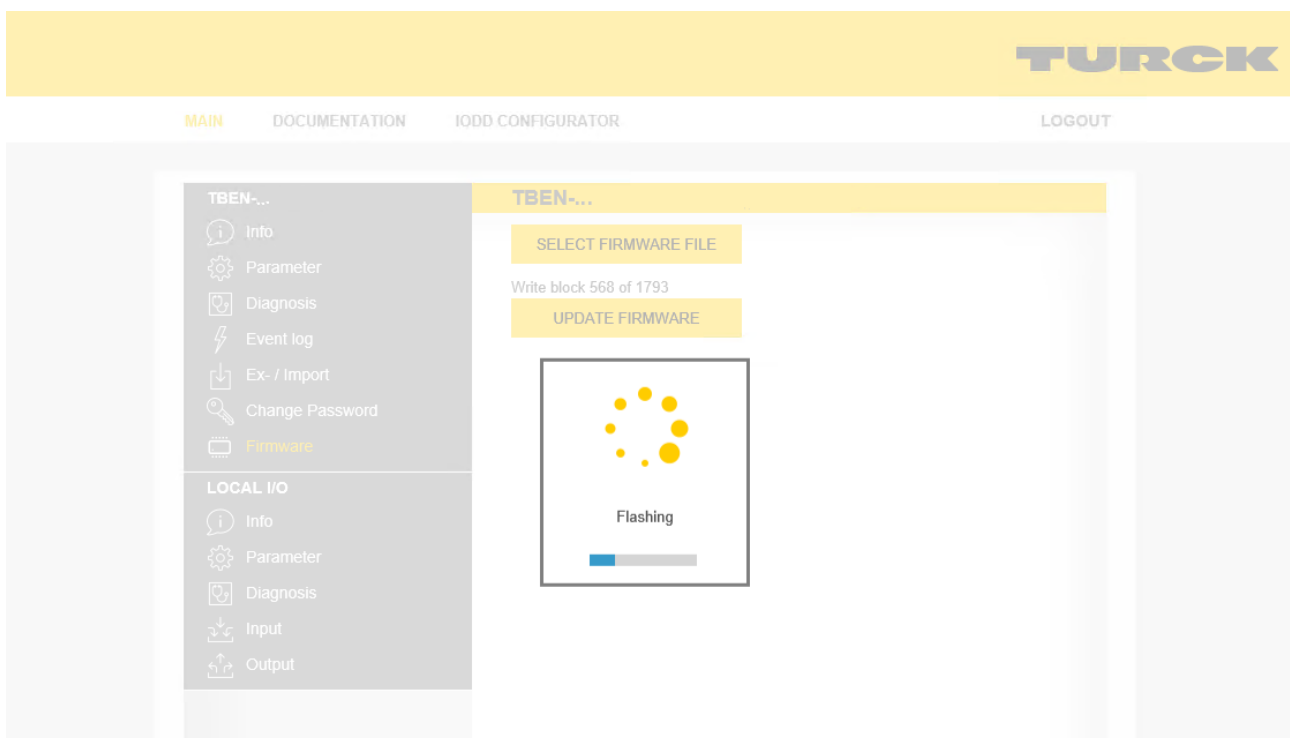
⇨ The progress of the firmware update is displayed.

Fig. 7: Webserver – Firmware update running

▶ Restart the device after the update process has been completed.

2.3 Updating the firmware via FDT/DTM

The firmware of the device can be updated via FDT/DTM. The FDT frame-application can be downloaded free of charge from **www.turck.com** .

> **!** **NOTICE**
> Interruption of the power supply during the firmware update
> **Risk of device damage due to faulty firmware update**
> ▶ Do not interrupt the power supply during the firmware update.
> ▶ During the firmware update do not reset the power supply.
> ▶ Do not interrupt the Ethernet connection during the firmware update.

Example: Update the Firmware with the PACTware FDT Frame Application

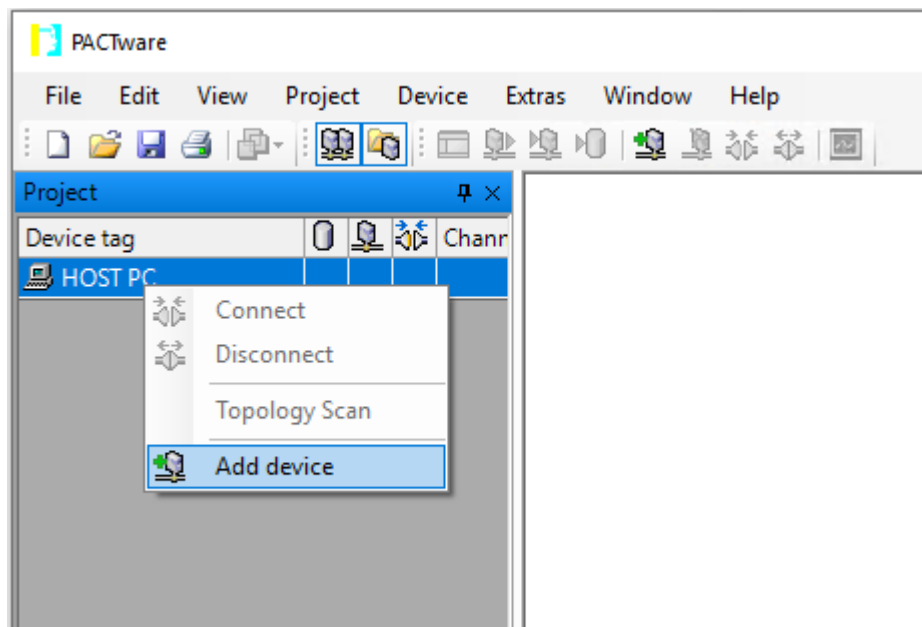▶ Launch PACTware.

▶ Right-click **HOST PC** → **Add device**.

Fig. 8: Adding a device in PACTware
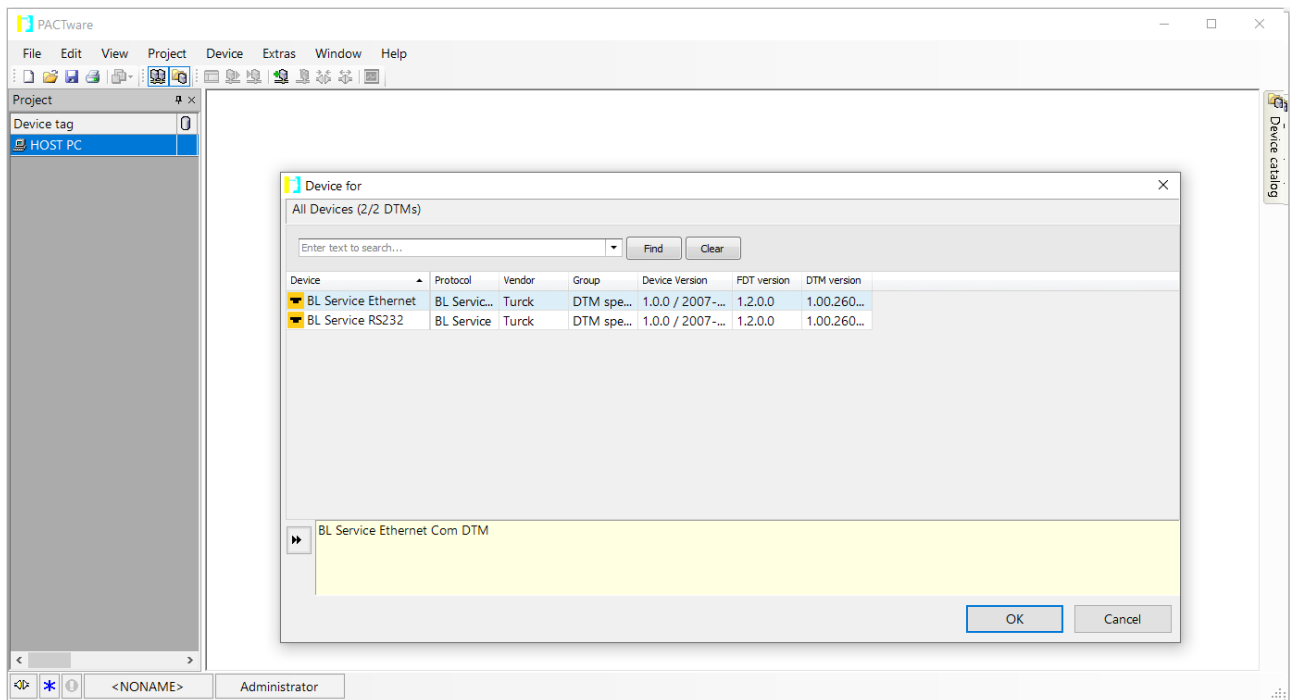
▶ Select **BL Service Ethernet** and confirm with **OK**.

Fig. 9: Selecting the Ethernet interface

▶ Double-click the connected device.
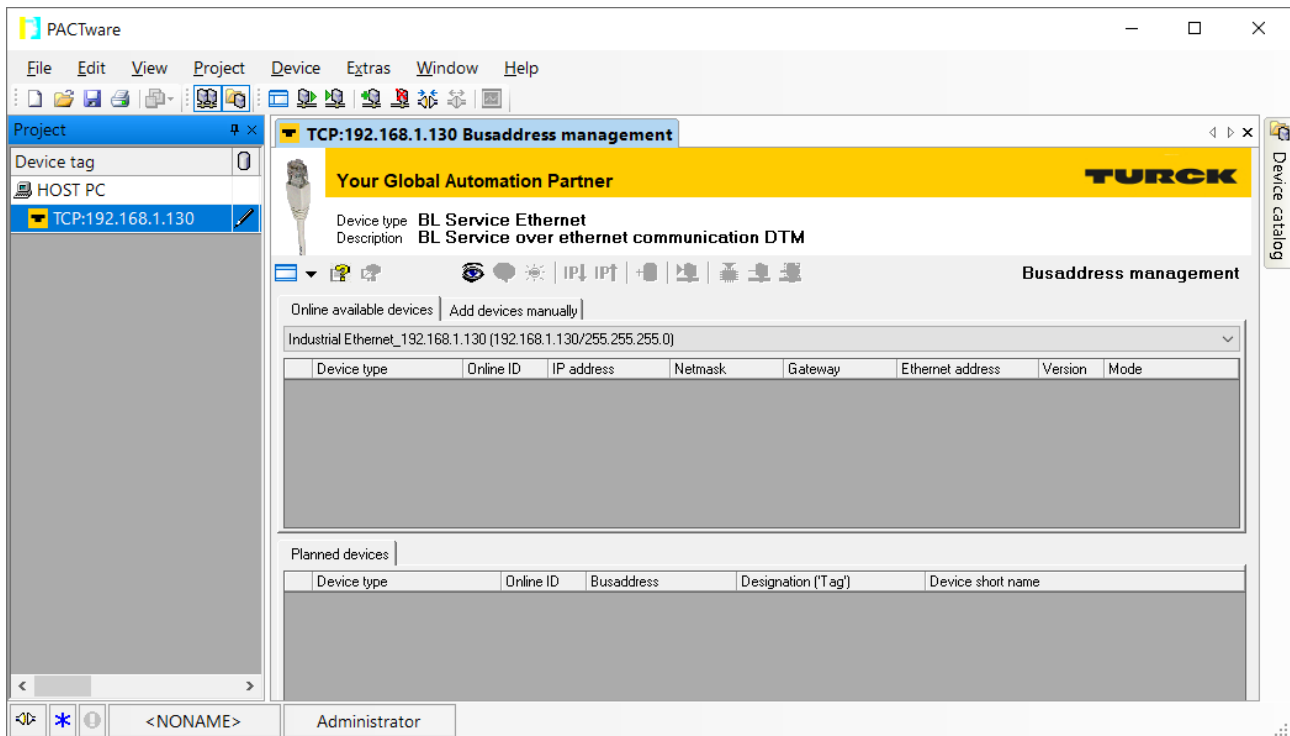
⇨ PACTware opens the bus address management.

Fig. 10: Opening the busaddress management

▶ Search for connected Ethernet devices: Click the **Search** icon.

▶ Select the required device.

▶ Click **Firmware Download** to start the firmware update.

▶ Select the storage location and confirm with **OK**.

⇨ PACTware shows the progress of the firmware update with a green bar at the bottom of the screen.

3 TBEC — performing a firmware update

The firmware update is performed according to the ETG specification ETG.5003.0002. The FoE protocol (File access over EtherCAT) is used for the firmware update of the device. The device must be in Bootstrap status for the update process. The firmware can be updated via TwinCAT or CODESYS. An update via an Omron controller is not possible.

The current firmware version of the device can be read from CoE index 0x100A Manufacturer Software Version, the current hardware version from CoE index 0x1009 Manufacturer Hardware Version.

3.1 Updating the firmware via TwinCAT

> **! NOTICE**
> Interruption of the power supply during the firmware update
> **Risk of device damage due to faulty firmware update**
> - ▶ Do not interrupt the power supply during the firmware update.
> - ▶ During the firmware update do not reset the power supply.
> - ▶ Do not interrupt the Ethernet connection during the firmware update.

Downloading the firmware file

The firmware file for the device is available as a free download from **www.turck.com**.

- ▶ Double-click **Box 1 (TBEC-LL-…)**.
- ▶ Click the tab **Online → Status Machine → Bootstrap**.
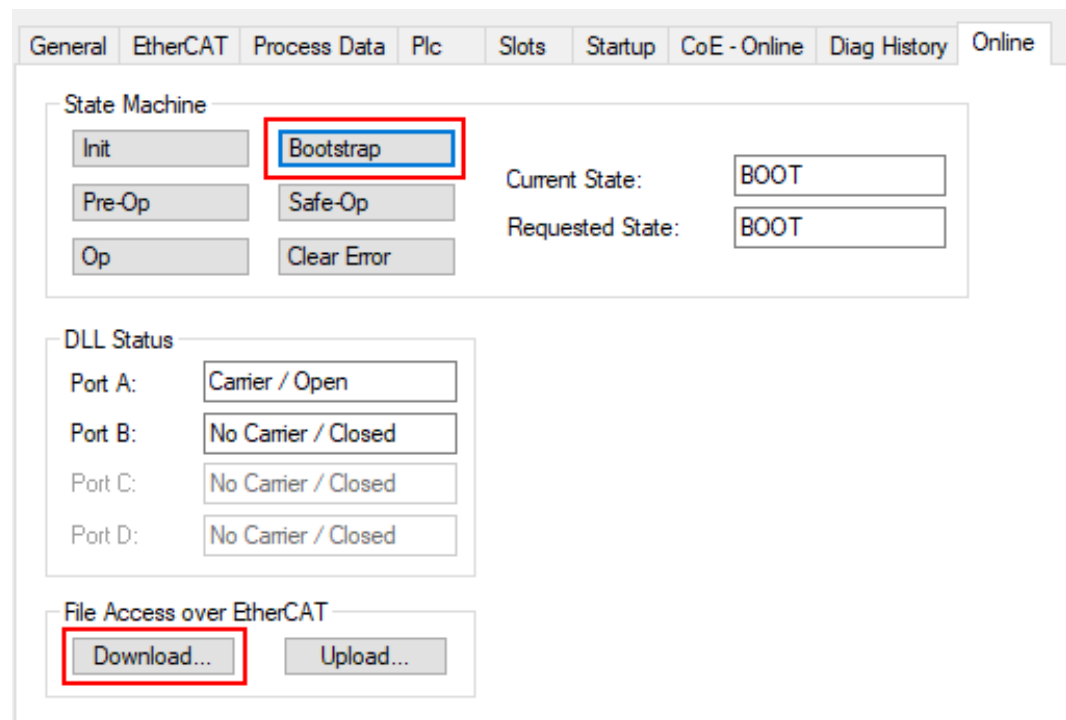- ▶ Click **File Access over EtherCAT → Download…**.

Fig. 11: Starting the firmware update

- ▶ In the new window, select the firmware file.
- ▶ Confirm with **OK**.
- ⇨ The firmware file is loaded into the flash memory of the device.
- ⇨ TwinCAT displays the download of the firmware file at the bottom of the screen with a progress bar.

Performing the update

- ▶ Click the tab **Online → Status Machine → Init**.
- ⇨ The update is performed.
- ⇨ When the update is complete, the device enters the normal operating mode.

3.2 Updating the firmware via CODESYS

> ⚠️ **NOTICE**
> Interruption of the power supply during the firmware update
> **Risk of device damage due to faulty firmware update**
> ▶ Do not interrupt the power supply during the firmware update.
> ▶ During the firmware update do not reset the power supply.
> ▶ Do not interrupt the Ethernet connection during the firmware update.

Requirements

- The EtherCAT master used supports the firmware update function.
- The device is logged in online.
- The **Expert settings** on the **General** tab are activated.
- The **Automatically restart slaves** option on the **General** tab is deactivated.

Downloading the firmware file

The firmware file for the device is available as a free download from **www.turck.com**.

- ▶ Double-click **TBEC_LL_… (TBEC-LL-…)**.
- ▶ Click the tab **Online → State Machine → Bootstrap**.
- ▶ Click **File access over EtherCAT → Download…**.
- ▶ Select the firmware file in the new window → **Open**.
- ⇨ The firmware file is loaded into the flash memory of the device.
- ⇨ CODESYS displays the download of the firmware file with a green progress bar.

Performing the update

- ▶ Click the tab **Online → State Machine → Init**.
- ⇨ The update is performed.
- ⇨ When the update is complete, the device enters the normal operating mode.

- ▶ Activate the **Automatically restart slaves** option on the **General** tab.

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