Your Global Automation Partner

TURCK

TX700S/D/Q
PLC and IIoT Edge Controller

Instructions for Use

Table of Contents

1 About These Instructions

These operating instructions describe the structure, functions and the use of the product and will help you to operate the product as intended. Read these instructions carefully before using the product. This is to avoid possible damage to persons, property or the device. Retain the instructions for future use 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 written for suitably qualified and trained personnel and must be read carefully by anyone entrusted with the mounting, commissioning, operation, maintenance, disassembly or disposal of the device.

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

1.2 Explanation of symbols used

The following symbols are used in these instructions:

	**DANGER** DANGER indicates a dangerous situation with high risk of death or severe injury if not avoided.
	**WARNING** WARNING indicates a dangerous situation with medium risk of death or severe injury if not avoided.
	**CAUTION** CAUTION indicates a dangerous situation of medium risk which may result in minor or moderate injury if not avoided.
	**NOTICE** NOTICE indicates a situation which may lead to property damage if not avoided.
	**NOTE** NOTE indicates tips, recommendations and useful information on specific actions and facts. The notes simplify your work and help you to avoid additional work.
▶	**CALL TO ACTION** This symbol denotes actions that the user must carry out.
⇨	**RESULTS OF ACTION** This symbol denotes relevant results of actions.

1.3 Other documents

The following additional documents are available online at **www.turck.com**

- Data sheet
- Quick Start Guide

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 Notes on the Product

2.1 Product identification

These instructions apply to the following IIoT edge controllers:

- TX700S-P3WV01
- TX700D-P3WV01
- TX700Q-P3WV01

2.1.1 Type label

The Type label is located on the back of the device.

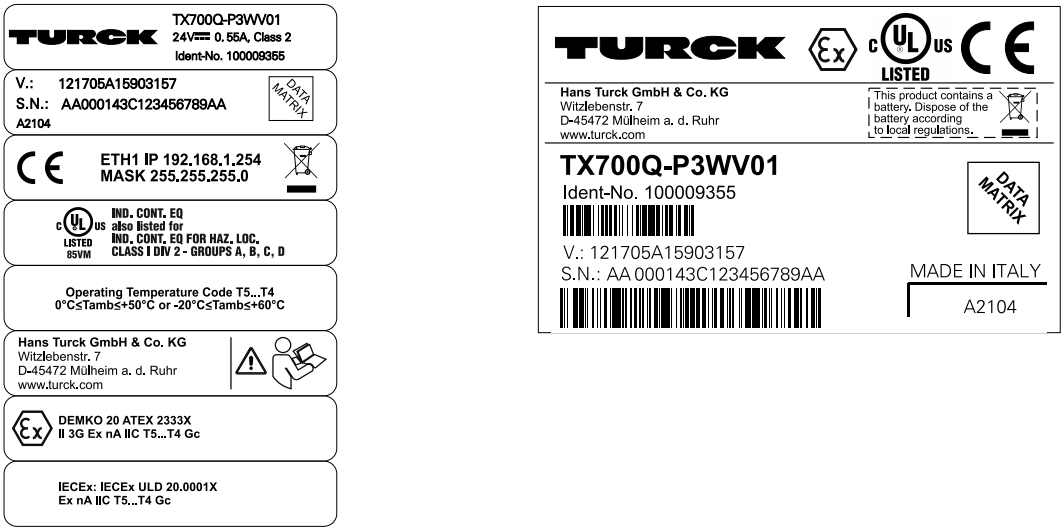

Fig. 1: Type label TX700Q (example)

Type designation	TX700Q
Ident no.	100009355
Year/week of production	A2104
Serial number (S.N.)	AA…
Internal version ID of the product (V)	121…

2.1.2 Type code

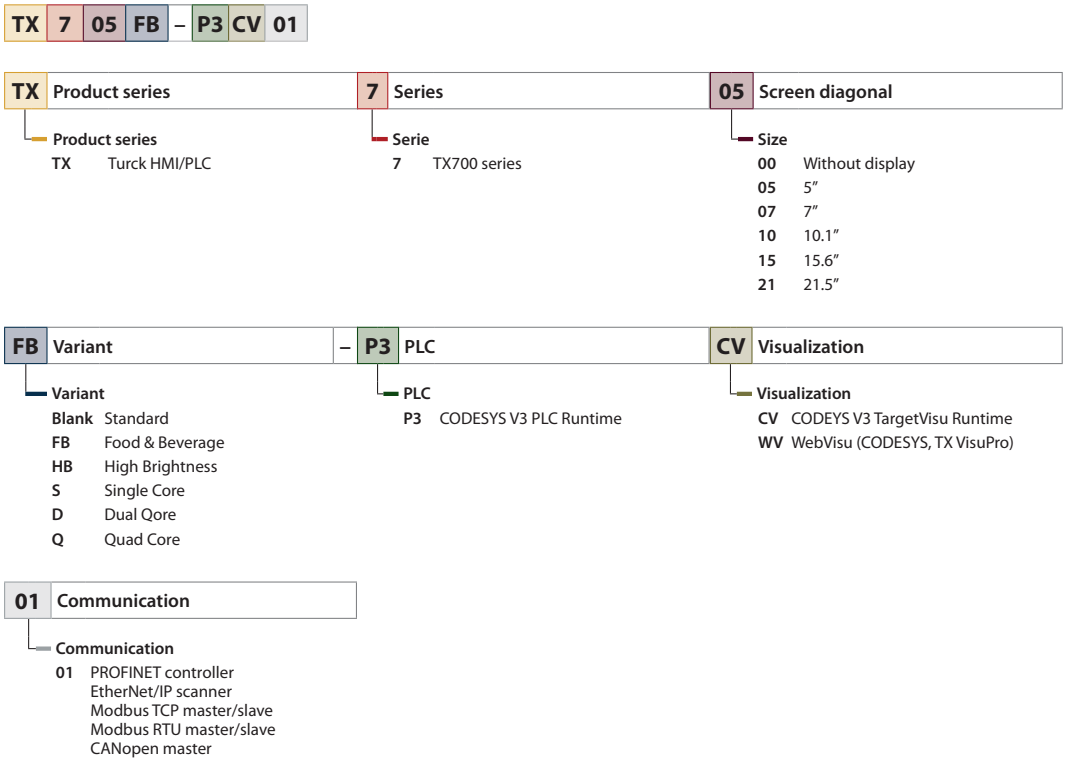

Fig. 2: Type code TX700

2.2 Scope of delivery

- TX700
- Power supply connector
- Connector for serial interface
- Quick-Start Guide

2.3 Legal requirements

The device is subject to the following EC directives:

- 2014/30/EU (electromagnetic compatibility)
- 2011/65/EU (RoHS Directive)
- 2014/34/EU (ATEX Directive)

2.4 Manufacturer and service

Hans Turck GmbH & Co. KG
Witzlebenstraße 7
45472 Mülheim an der Ruhr
Germany

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats. You can access the product database at the following address: **www.turck.de/products**

For further inquiries in Germany contact the Sales and Service Team on:

- Sales: +49 208 4952-380
- Technology: +49 208 4952-390

Outside Germany, please contact your local Turck representative.

3 For Your Safety

The product is designed according to state-of-the-art technology. However, residual risks still exist. Observe the following warnings and safety notices to prevent damage to persons and property. Turck accepts no liability for damage caused by failure to observe these warning and safety notices.

3.1 Intended use

The IIoT edge controllers of the TX700 family are used to control, operate and monitor machine processes. The devices are used for control tasks in automation applications in the IIoT environment.

The IIoT edge controller collects data in the application, pre-processes it locally, filters it and sends relevant data to the Internet or to a central IIoT platform or cloud.

The devices may only be used as described in these instructions. Any other use is not in accordance with the intended use. Turck accepts no liability for any resulting damage.

3.2 General safety notes

- The device may only be assembled, installed, operated, parameterized and maintained by professionally-trained personnel.
- The device may only be used in accordance with applicable national and international regulations, standards and laws.

3.3 Notes on Ex protection

- Observe national and international regulations for explosion protection.
- When using the device in explosion-protection circuits, the user must have a working knowledge of explosion protection (EN 60079-14 etc.).
- Use the device only within the permissible operating and ambient conditions (see approval data and Ex approval specifications).
- This device is an open device and must be installed in a housing suitable for the environment, so that the inner part of the device is only accessible by means of a tool.
- Do not disconnect the device in an ignitable atmosphere when energized.
- Do not open the device when energized.
- Do not remove Ethernet connections, USB devices and SD cards in an ignitable atmosphere.
- Do not remove the battery in an ignitable atmosphere.
- Switch-off the device before replacing or wiring extension modules.

3.4 Note on explosion protection (USA and Canada only)

- The device is approved for operation in hazardous areas only in the USA and Canada and does not have ATEX approval.
- The device is suitable for the use in Class 1, Division 2, groups A, B, C and D hazardous locations or for the use in non-hazardous locations.
- The Power, input and output (I/O) wiring has to be done in accordance with Class I, Division 2 and in accordance with the authority having jurisdictions. For U.S. in accordance with Article 501.10 (B) of the National Electrical Code, NFPA 70 and for Canada in accordance with Section 18-1J2 of Canadian Electrical Code.
- Use only components that meet Class 1, Division 2 certification.
- Disconnect the device from the power supply before replacing or connecting plug-in modules.
- Do not disconnect the device in an ignitable atmosphere when energized.

3.5 Conditions resulting from ATEX and IECEx approval (use in Zone 2)

- Only use the device in an area of not more than pollution degree 2 as defined in IEC/EN 60664-1.
- Install the device in an enclosure with a protection class of at least IP54 in accordance with IEC/EN 60079-0.
- Only disconnect and connect circuits when no voltage is applied.

4 Product Description

The device is designed in protection class IP20.

For the connection to Ethernet, two (TX700S) or three (TX700D and TX700Q) Ethernet ports are available.

The serial port is used to communicate with a PLC or with field devices with RS232 or RS485 interface. Plug-in modules with different functions (digital and analog I/Os, CAN master, PROFIBUS-DP slave, RS232 and RS485 interface, UMTS modem, etc.) can be connected via the extension slots. A USB host port and an SD card slot are provided for using external storage media.

The devices are designed as CODESYS V3 PLC and IIoT edge controller.

Device types:

- TX700S-P3WV01:
  IP20 CODESYS V3 PLC and IIoT edge controller, WebVisu, single core A8 1 GHz, 2 Ethernet ports, 4 GB flash, 512 MB RAM
- TX700D-P3WV01:
  IP20 CODESYS V3 PLC and IIoT edge controller, WebVisu, dual core A9, 800 MHz, 3 Ethernet ports, 4 GB Flash, 1 GB RAM
- TX700Q-P3WV01:
  IP20 CODESYS V3 PLC and IIoT edge controller, WebVisu, quad core A9 800 MHz, 3 Ethernet ports, 8 GB flash, 2 GB RAM

4.1 Device overview

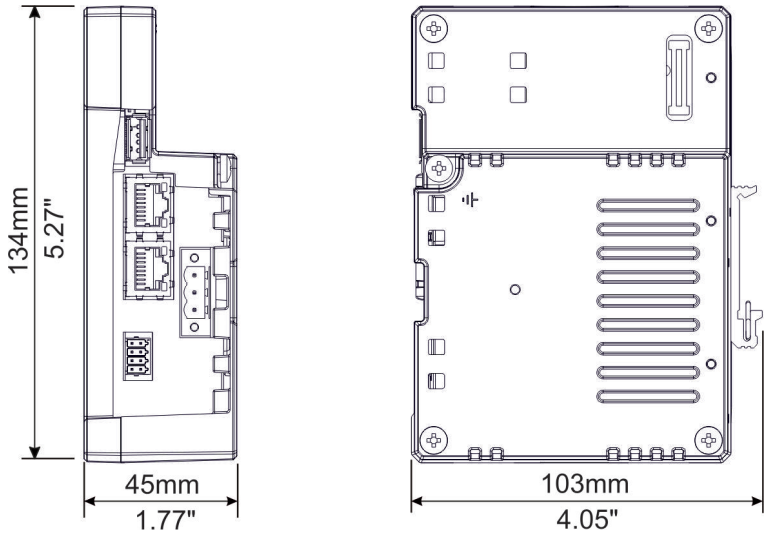

Fig. 3: TX700S

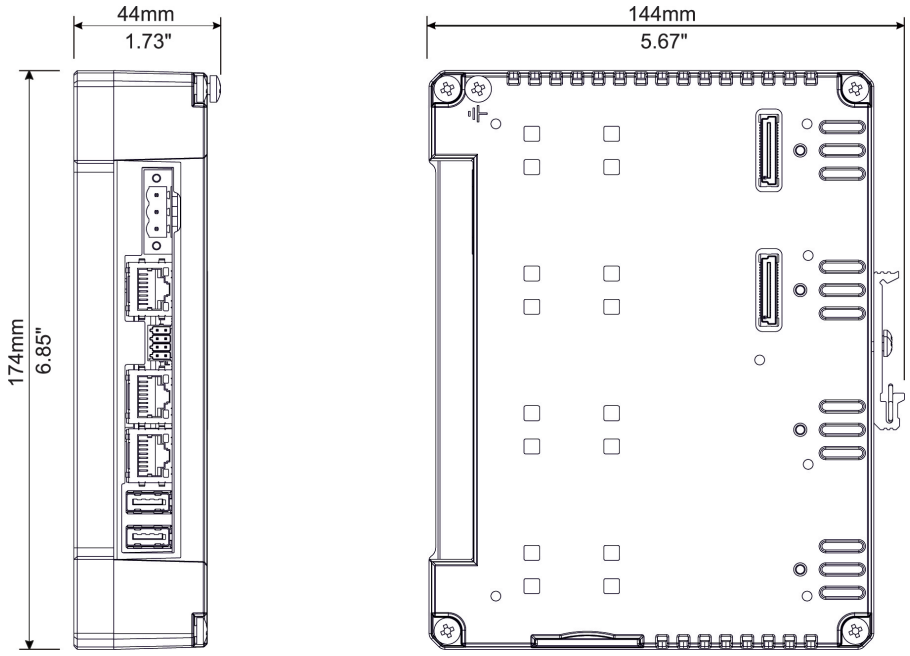

Fig. 4: TX700D/TX700Q

4.2 Properties and features

- Gateway function with OPC UA Server and Client (with TX VisuPro)
- Safe connection to Turck Cloud with complete network isolation
- MQTT for connecting all common cloud systems (with TX VisuPro)
- CODESYS V3 PLC runtime with selection of the most important I/O protocols
- CODESYS V3 WebVisu or TX VisuPro WebVisu
- TX VisuPro HMI protocols for connecting control systems of all common manufactuers
- Optional extension modules for I/Os and further communication interfaces

4.3 Functions and operating modes

The CODESYS V3 control of the devices has the functions PROFINET controller, EtherNet/IP scanner and Modbus TCP as well as Modbus RTU master. Additionally the TX700 IIoT edge controller can be used as Modbus TCP as well as Modbus RTU slave.

The devices combine all functions of a PLC with the functions and interfaces of the TX VisuPro software.

Additional functions

- Ethernet TCP/IP or UDP/IP communication
- OPC UA server (with CODESYS or TX VisuPro)
- OPC UA client and MQTT (with TX VisuPro)
- Serial communication via RS232, RS485 and RS422

4.3.1 Interfaces

The device has the following interfaces:

- Ethernet ports
  - TX700S: 2 × 10/100 Mbit
  - TX700D/TX700Q: 2 × 10/100 Mbit, 1 × 10/100/1000 Mbit
- Extension slots for plug-in modules
  - TX700S: 1 slot for max. 2 plug-in modules
  - TX700D/TX700Q: 2 slots for max. 4 plug-in modules
- Serial interface
- Slot for SD card
- USB port

Compatible SD cards

Specification	
Supported types	SD, SDHC
Format	FAT, FAT32
Max. size	Limited by FAT32 specifications ≤ 4 GB for a single file ≤ 32 GB

Compatible USB devices

Specification	
Format	FAT, FAT32
Max. size	Limited by FAT32 specifications ≤ 4 GB for a single file ≤ 32 GB

4.4 Accessories

4.4.1 Plug-in extension modules

Ident no.	Type	Description
6828210	TX-CAN	CAN interface
6828203	TX-IO-DX06	■ 8 digital inputs, 24 VDC, pnp ■ 6 digital outputs, 24 VDC, 0.5 A, pnp ■ 1 × relay output, NO
6828201	TX-IO-XX03	■ 20 digital inputs, 24 VDC, pnp ■ 12 digital outputs, 24 VDC, 0.5 A, pnp ■ 8 × analog inputs, U, I, RTD, TC ■ 4 × analog outputs, U, I
100002598	TX-RS485	Serial interface for RS485/RS422 communication
100002599	TX-RS232	Serial interface for RS232 communication
100004786	TX-EXTEND	Bus extension, electromechanical adapter for the use of the plug-in module TX-IO-XX03
100009535	TX-UMTS	Wireless modem plug-in (2G, 3G)
100010167	TX-DP-S	PROFIBUS-DP slave, 12 Mbaud

4.4.2 Power supply

Ident No.	Type	Description
100002938	TX-PSC	TX power supply onnector

4.4.3 USB accessory

Ident No.	Type	Description
6827389	USB 2.0 EXTENSION 5M	USB 2.0 extension cable, male (A) to female (A), 5 m
6827390	USB 2.0 EXTENSION ACTIVE 5M	USB 2.0 extension cable, male (A) to female (A), with active repeater, 5 m

NOTE
You will find further accessory products under www.turck.com.

5 Installing

NOTICE
Operation in residential and commercial areas
Electromagnetic disturbances!

- ▶ When operating the devices in residential and commercial areas, observe the measured values according to IEC 61000-6-3.

5.1 Installation instructions

- The devices may only be used in areas with a maximum pollution degree of 2 according to IEC/EN 60664-1.
- The devices must be installed in a housing with a protection class of at least IP54 according to IEC/EN 60079-15.

5.2 Mounting the device on a DIN rail

- ▶ Insert the device into the top-hat rail from below and turn it upwards until the upper locking hook engages on the top-hat rail.
- ▶ Mount the device in a position that ensures ventilation of the device. Do not cover the ventilation slots.

5.3 Installing plug-in modules

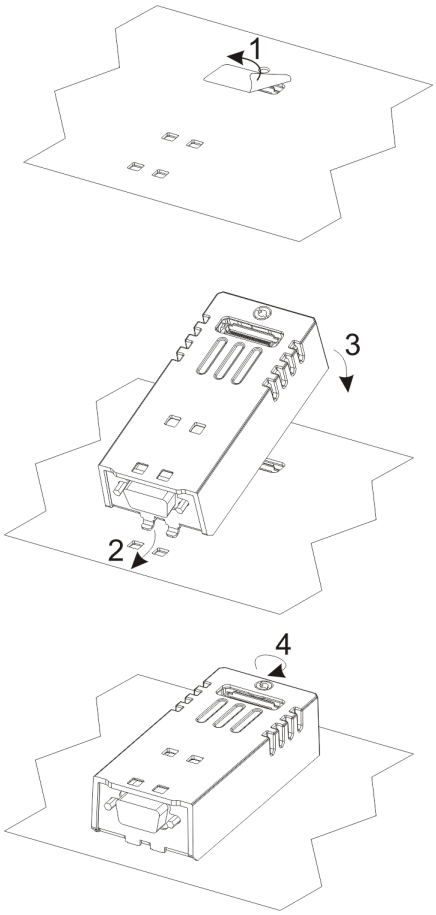

Fig. 5: Installing plug-in modules
(e. g. TX-CAN, TX-IO-DX06)

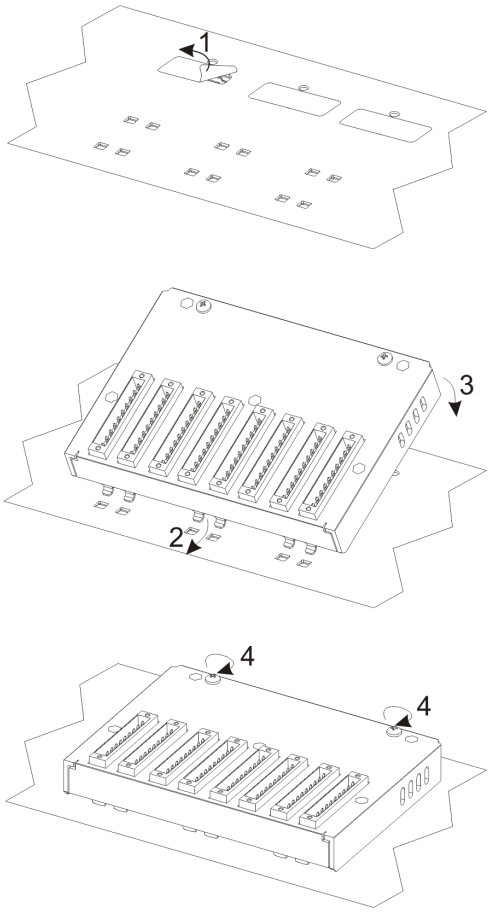

Fig. 6: Installing plug-in modules
(e. g. TX-IO-XX03)

5.4 Grounding the device

- Connect terminal 3 of the supply connector to the ground terminal.

General instructions for device grounding

- All the electronic devices in the control system must be properly grounded.
- Carry out grounding according to the applicable regulations.
- Ground the device to minimize noise effects from electromagnetic interference.
- Ground the unit via the grounding screw near the power supply connection.

Grounding the power supply

The power supply circuit may be floating or grounded.

- To ground the supply circuit, connect the ground wire to the protective earth as shown in the following figure (dotted line).
- If the supply circuit is not grounded, the unit itself is internally connected to ground (1 MΩ resistor with 4.7 nF capacitor connected in parallel).
- The power supply must have double or reinforced insulation.

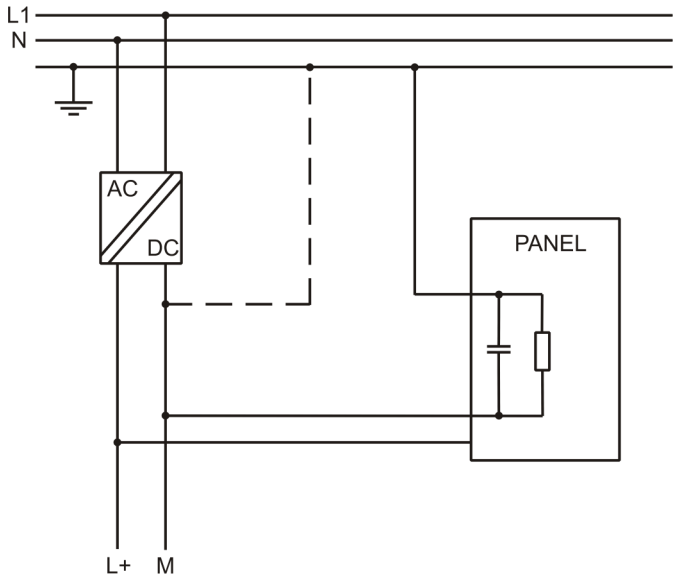

Fig. 7: Power supply – wiring

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6 Connecting

NOTE
Devices of protection class III according to EN 61140 or Class 2 according to UL standards: All connections are SELV connections.

DANGER
Ignitable atmosphere
Explosion by ignitable sparks
- ▶ Do not disconnect the device in an ignitable atmosphere when energized.
- ▶ Disconnect the device from the power supply before replacing or connecting modules.

- ▶ Observe notes on explosion protection.
- ▶ Provide transient protection at the supply terminals set to a maximum of 140 % of the peak value of the rated voltage.
- ▶ Ensure that the power supply is of sufficient capacity to operate the device.

6.1 Connecting TX700S

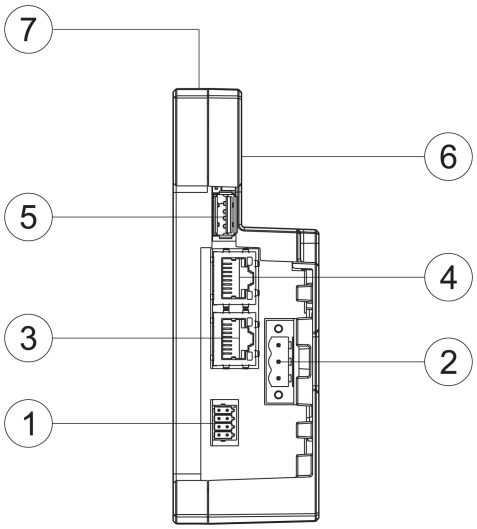

Fig. 8: TX700S – connectors

Port	Description
1	Serial interface
2	Power supply
3	Ethernet port 1 (10/100 Mbps)
4	Ethernet port 0 (10/100 Mbps)
5	USB port, V2.0, max. 500 mA
6	Extension slot for plug-in modules
7	SD card slot

6.2 Connecting TX700D/Q

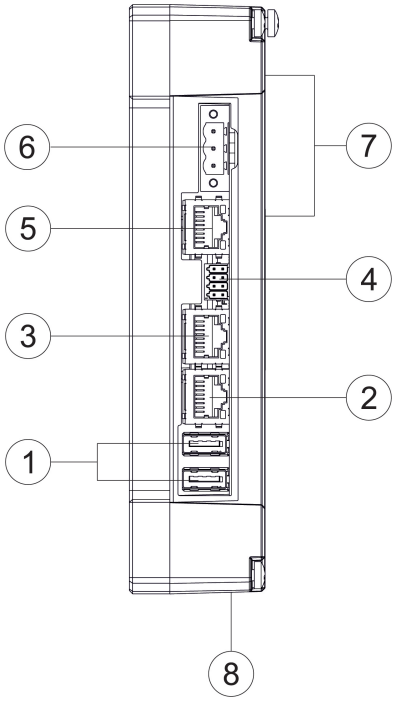

Fig. 9: TX700D/Q – connectors

Port	Description
1	USB port, V2.0, max. 500 mA
2	Ethernet port 2 (10/100 Mbps)
3	Ethernet port 1 (10/100 Mbps)
4	Serial interface
5	Ethernet port 0 (10/100/1000 Mbps)
6	Power supply
7	2 extension slots for plug-in modules
8	SD card slot

6.3 Connecting the power supply

DANGER
Wrong selection of power supply
Danger to life due to overvoltage and electric shock!
- ▶ Only operate the device on SELV voltage sources according to the European standard or on Class 2 voltage sources according to the UL standard.

▶ Connect the device to the voltage supply according to the following figure.

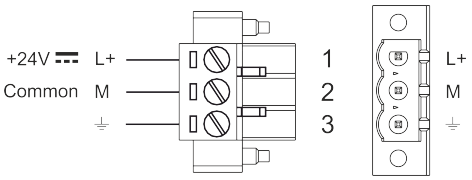

Fig. 10: Power connectorTX7…

NOTE
The power connector is part of the scope of delivery and can be ordered as spare part [▷ 14].

6.4 Connecting the device to Ethernet

For the connection to Ethernet, the TX700S has two RJ45 Fast Ethernet sockets. The devices TX700D and TX700Q have two RJ45 Fast Ethernet sockets and one RJ45 Gigabit Ethernet socket.

▶ Connect the device to Ethernet using a standard Ethernet cable. Use a Gigabit-capable Ethernet cable to connect the devices to a Gigabit network.

Default settings of the Ethernet ports

ETH0/WAN:	DHCP
ETH1/LAN:	IP address: 192.168.1.254
	Subnet mask: 255.255.255.0
ETH2/LAN:	DHCP (TX700D and TX700Q only)

6.5 Connecting external devices to the serial interface

The serial port is used to communicate with a PLC or with another type of device. The following standards are available at the serial interface: The type of serial interface is determined in the programming software. The connection cable must be selected to match the device to be connected.

- RS232
- RS422
- RS485

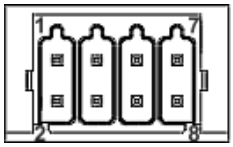

Fig. 11: Serial interface

Pin	RS232	RS482/422
1	RxD	CHB-
2	TxD	CHA-
3	CTS	CHB+
4	RTS	CHA+
5	+5 VDC output	+5 VDC output
6	GND	GND
7	n. c.	n. c.
8	Shield	Shield

NOTE
To operate in RS485, pins 1 and 2 as well as pins 3 and 4 must be connected externally.

6.6 Connecting plug-in modules

The TX700 IIoT edge controller allow the use of several optional in modules. Several module configurations are possible.

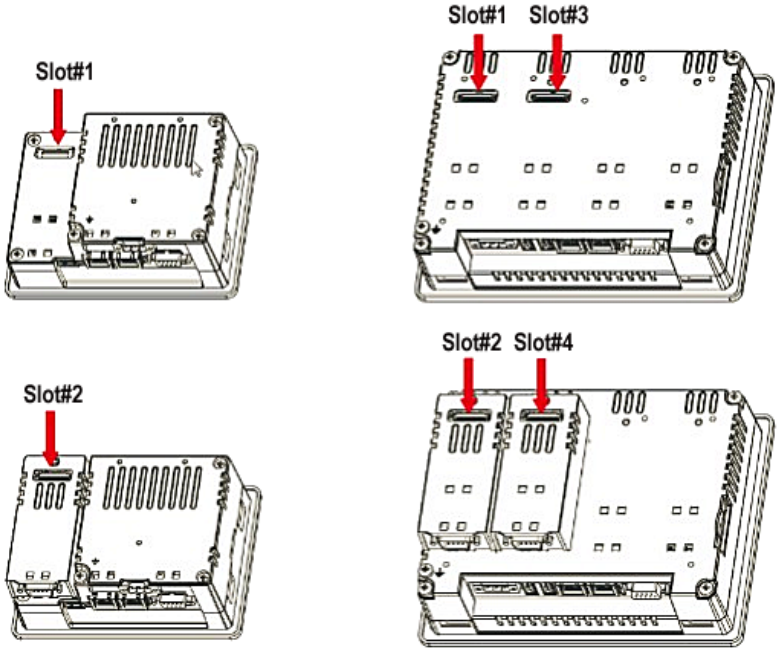

Fig. 12: Slots for plug-in modules

Slot 2 and slot 4 are available only if the plug-in module has bus extension connector.

Each slot has three communication channels:

- 1 serial interface
- 1 CAN interface
- 1 SPI interface

NOTE
It is not possible to stack two modules that are using the same type of interface.

The following table shows, which plug-in module and how many plug-in modules can be used at which device:

Module	Application	Max. number of modules	Interface type/ communication interface	Bus extension connector
TX-CAN	CAN	■ 1 for TX700S ■ 2 for TX700D and TX700Q	CAN	Yes
TX-RS485	RS485/RS422		Serial	Yes
TX-RS232	RS232		Serial	Yes
TX-IO-DX06	Compact I/O		SPI	No
TX-IO-XX03	Multifunction I/O	1 TX700S: TX-EXTEND or other extension module with extension slot necessary	SPI	No

Module	Application	Max. number of modules	Interface type/ communication interface	Bus extension connector
TX-DP-S	PROFIBUS-DP slave	1	SPI	No
TX-UMTS	UMTS modem		Serial	Yes
TX-EXTEND	Extension module	1 for TX700S	None	Yes

The column max. modules refers to the max. number of modules which can be plugged into the HMI (all slots).

6.6.1 Slot assignment – CAN port

Physical interface	CODESYS parameter „network"
Slot 1	Network 0
Slot 2	Network 0
Slot 3	Network 1
Slot 4	Network 1

6.6.2 Slot assignment – serial interfaces

Physical interface	CODESYS parameter "Device/Interface Parameter"	CODESYS parameter "Modbus COM/COM Port"
local serial COM port	Mode COM1	COM Port 1
Slot 1	Mode COM2	COM Port 2
Slot 2	Mode COM2	COM Port 2
Slot 3	Mode COM3	COM Port 3
Slot 4	Mode COM3	COM Port 3

Slot 1 to Slot 4 refer to the extension slots on the rear of the device.

7 Commissioning

7.1 Charging the battery

The device is equipped with a rechargeable lithium battery, which is not user replaceable.

The following information is maintained by the battery:

- Hardware real-time clock (date and time)

▶ Charge the battery for at least 48 hours before using the device for the first time.

When the battery is fully charged, it guarantees data backup at 25 °C for three months.

7.2 Initial commissioning

The IP address of Ethernet port ETH1 is set to 192.168.1.254 by default. The web server (System Settings) can be opened via this IP address using a web browser or the Turck Service Tool.

7.3 Web server login

▶ Open the web server using the device's IP address.
▶ Connect via https://IP.
IP = current IP address of the TX... device
▶ Log on to the device as administrator:
Default user: admin
Default passwort: admin

If the simple link causes a conflict with an already active WebVisu application, the system settings can also be accessed directly via the following link:

https://192.168.1.254/machine_config

Username: admin
Password: admin

The IP address 192.168.1.254 is the IP address at Ethernet port ETH1 in the delivery state. If the IP address for Ethernet port ETH1 has already been changed, than the current IP address of the port is entered here.

7.4 Setting the IP address

The IP address can be set via the device's web server or via the Turck Service Tool.

7.4.1 Setting the IP address via the web server

- ▶ Log in to the device's web server as described under "Web server login".
- ▶ Edit the network setting via **System Settings** → **Network** → **Edit**.

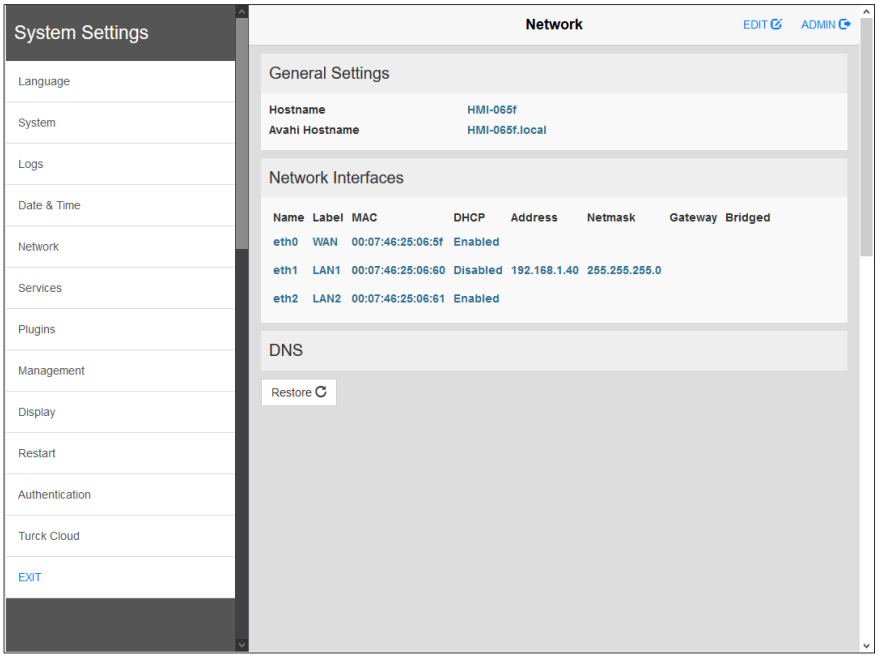

Fig. 13: Webserver – system settings

- ▶ Set the IP address, the subnet mask, etc. under **Network interface** and **save** the changes.

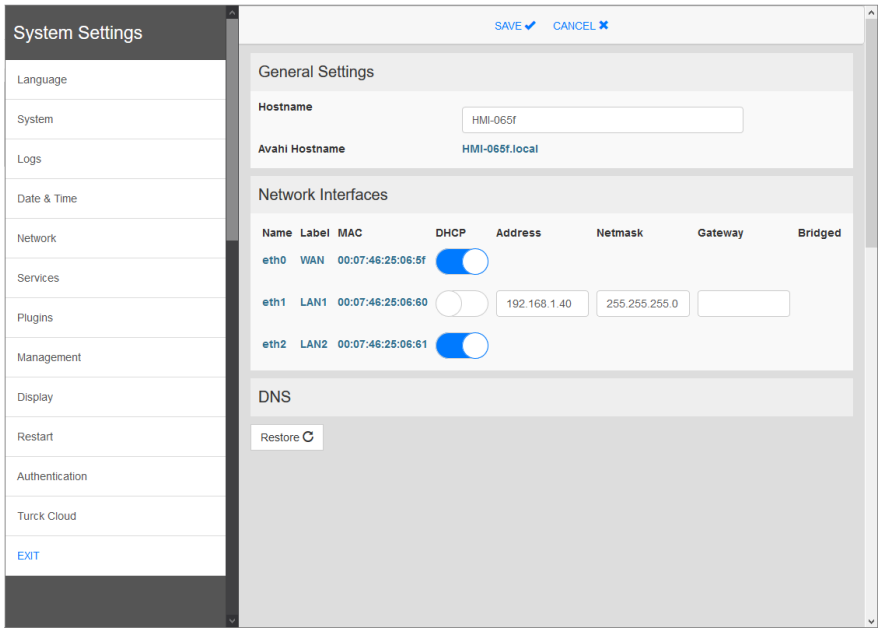

Fig. 14: Webserver – network interface

7.4.2 Setting the IP address via Turck Service Tool

- Connect the device to the PC via the Ethernet interface.
- Open Turck Service Tool.
- Click **Search** or press [F5].

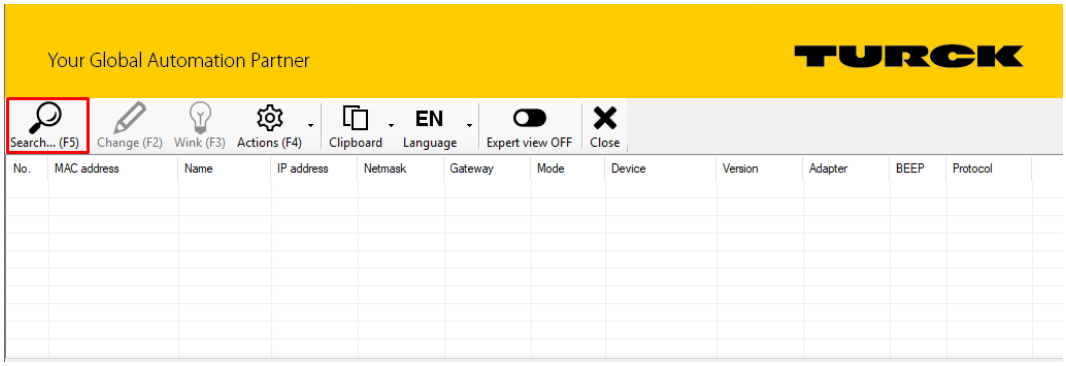

Fig. 15: Turck Service Tool – home screen

⇨ Turck Service Tool shows the connected devices.

NOTE
Clicking the device's IP address opens the web server.

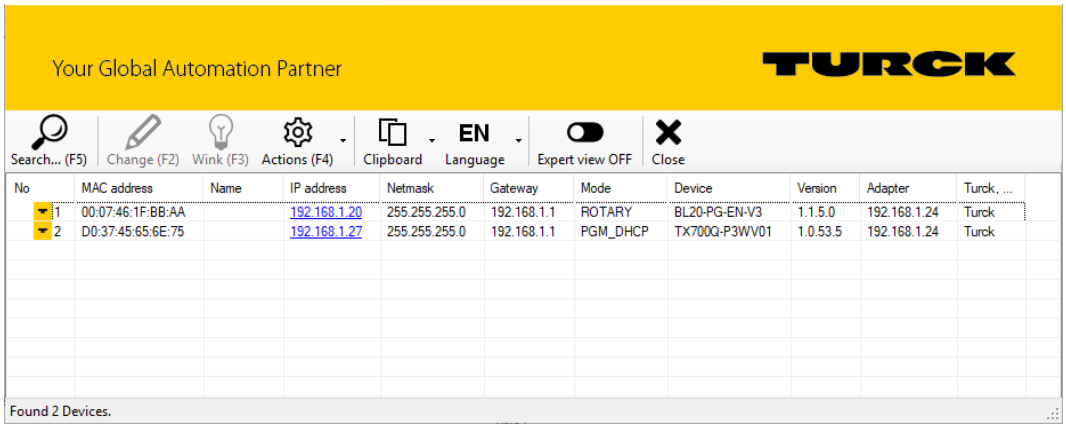

Fig. 16: Turck Service Tool – found devices

- ▶ Click on the desired device.
- ▶ Click **Change** or press [F2].
- ▶ Change the IP address and the net mask, if necessary.
- ▶ Accept the changes with **Set in device**.

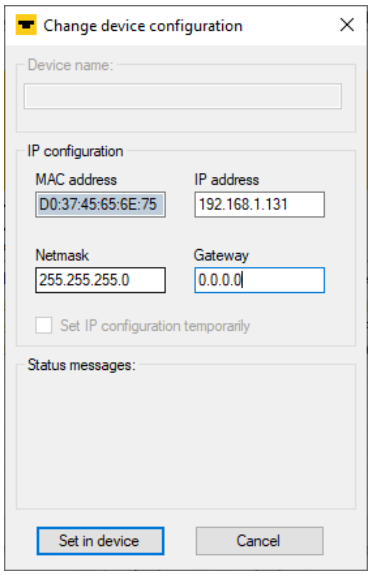

Fig. 17: Turck Service Tool – changing the IP configuration

7.5 Programming with CODESYS

The devices are delivered with a pre-installed CODESYS runtime.

The CODESYS software as well as the CODESYS package for the devices can be downloaded from www.turck.com.

Prerequisites

- CODESYS (≥ V 3.5.14.0) and the package“TXxxx HMI/PLC series” for the device have to be installed on a PC running Microsoft Windows.

7.6 Programming with TX VisuPro

Prerequisites

- For programming the HMI/PLCs with TX VisuPro, the software tool has to be installed on a PC computer running Microsoft Windows.
- If the WebVisu of TX VisuPro is to be used instead of the CODESYS-WebVisu, the TX VisuPro-Runtime must be installed first.
- Before installing TX VisuPro, the existing CODESYS runtime has to be deleted.

- ▶ To delete the currently installed runtime, run the following command:
  System Settings → Management → Data → Clear

7.6.1 Transferring TX VisuPro to the device

There are two options to transfer a TX VisuPro runtime project to a device:

- Via Ethernet
- Via a USB stick

Project transfer via Ethernet

- ▶ Connect the HMI device to the computer with an Ethernet network.
- ▶ Execute the command **Run/Download** in TX VisuPro. You may have to ensure that the proper firewall policy has been configured in the computer to allow TX VisuPro to access the network.

Project transfer via a USB stick

- ▶ Create an update package with TX VisuPro and copy it to a USB stick.

8 Configuring

The devices have an integrated a webserver for configuring the system. The user interface is based on HTML pages accessible via port 443 using a Web browser (Firefox V.79 Chrome V.44 or higher). Alternatively, the system settings can be called and operated via a VNC client. To use the VNC client, the VNC service must be activated in the system settings.

The initial commissioning must be carried out via access by web server see “Web server-Login“ [▶ 23].

8.1 Configuring the system settings

The available options can be selected from the navigation menu on the left side of the screen.

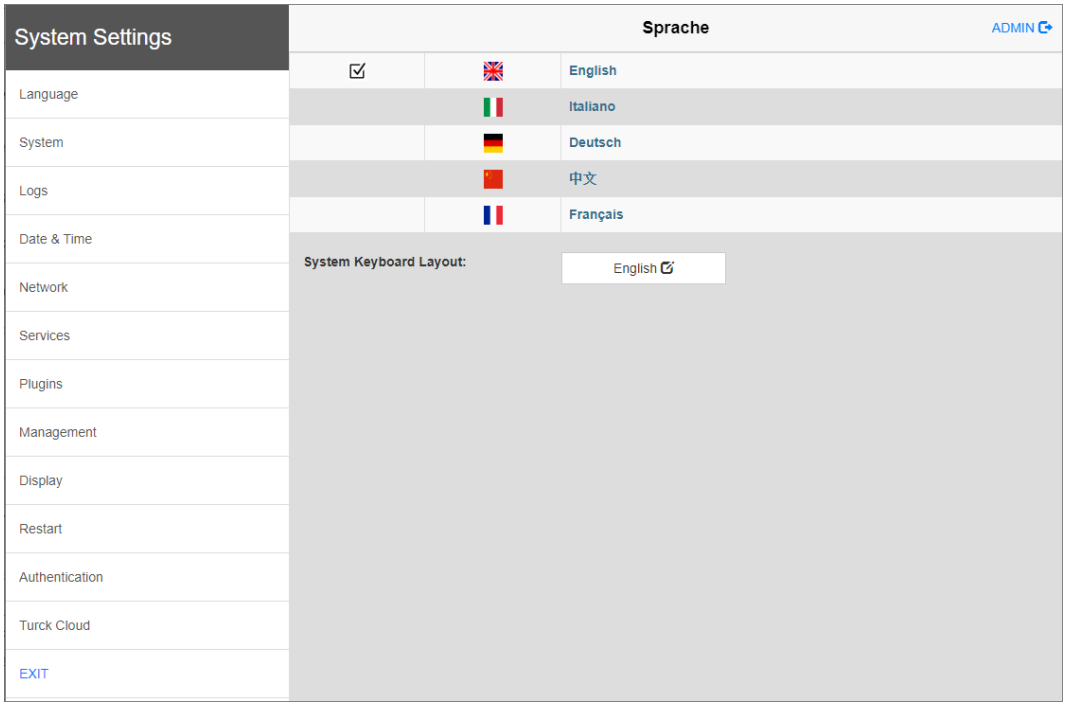

Fig. 18: System settings

System settings has two operating modes:

Mode	Usage
User mode	■ Device with TX VisuPro runtime ■ Device in delivery state
System Mode	In addition to the options in user mode, the system mode includes additional commands for system upgrade and recovery. ■ Device without TX VisuPro runtime ■ Device with software error

Edit system settings in user mode

Status device	Description
Factory default status	▶ Open the **system settings**.
TX VisuPro runtime running	▶ Press and hold the unused area of the touch screen for at least 2 s. ▶ Open the context menu and select **System Settings**.

Edit the system settings in system mode

Status device	Description
Standard	If no TX VisuPro runtime is running on the device: **User mode** ▶ Open the **System Settings**. **System Mode** ▶ Device without TX VisuPro runtime: Restart the device via **Restart → Config. OS**. ▶ Device with TX VisuPro runtime: Open the context menu and select **System Settings**. ▶ To open the context menu: Press and hold the unused area of the touch screen for at least 2 s. ▶ Restart the device via **Restart → Config. OS**.
Recovery operation	If the device is not responsive, use the so-called “tap-tap” procedure. ▶ Touch the surface of the touch screen several times with a typing frequency of at least 2 Hz immediately after switching on the device. ⇨ When the sequence is detected, the message "Tap Tap detected, Going to Config Mode" will appear on the display.

The basic settings for the device are made in the system settings.

Setting	Description
Language	Configuration of the language used for the **System Settings** menu.
System	Information about platform, status and timers (“like System on time, “backlight on time”)
Logs	Activating and exporting persistent log for BSP
Date & Time	Date and time, including time zone and NTP Server
Network	Configuration of the IP address of the Ethernet interface and the other network settings like DNS, gateway, DHCP, host name, routing and bridging.
Services	Activate/deactivate services (e.g. OpenSSH server, bridge, cloud, router, SNMP, logging)
Management	Update of BSP components (Main OS, Config OS, Boot loader, XLoader), check for partitions consistence, update of splash screen, information about usage and size of partitions. The update of Main OS is available only in System Mode, the update of Config OS is only in User Mode.
Restart	Restarts the device By default, the device is restarted in user mode via the "Main OS" option. The "Configuration OS" option restarts the device directly in **System Settings** in system Mode.
Authentication	Configuration ot the password for the administrator ("admin") and for the standard user ("user”). The administrator has full access to the system settings (updates of the BSP and other system components). The standard user has some restrictions.

9 Operating

DANGER
Changing components
Explosion hazard – Suitability for Class 1, Division 2 possibly impaired

- When replacing components, make sure that the suitability of the device for Class 1, Division 2 is not affected.
- Only use components that are suitable for use in Class 1, Division 2.
- If necessary, take measures to restore suitability for Class 1, Division 2.

9.1 LED displays

The device has the following LED displays:

- Status of the Ethernet ports

LED orange (left LED)	Meaning
off	No Ethernet connection
On	Ethernet connection established

LED green (right LED)	Meaning
On	No data transfer
Blinking	Data transfer

10 Troubleshooting

If the device does not function as expected, first check whether ambient interference is present. If there is no ambient interference present, check the connections of the device for faults.

If there are no faults, there is a device malfunction. In this case, decommission the device and replace it with a new device of the same type.

11 Repair

The device must not be repaired by the user. The device must be decommissioned if it is faulty. Observe our return acceptance conditions when returning the device to Turck.

11.1 Returning devices

Returns to Turck can only be accepted if the device has been equipped with a Decontamination declaration enclosed. The decontamination declaration can be downloaded from
https://www.turck.de/en/retoure-service-6079.php
and must be completely filled in, and affixed securely and weather-proof to the outside of the packaging.

12 Disposal

The device is equipped with a rechargeable lithium battery, which is not user replaceable.

- For disposal, open the back of the device and remove the battery.

The device the lithium battery must be disposed of properly in accordance with WEEE Directive 2012/19/EU and does not belong in normal household waste.

13 Technical Data

	TX700S-P3WV01	TX700D-P3WV01	TX700Q-P3WV01
Device			
Ident-No.	100009353	100009354	100009355
System			
CPU	ARM CortexA8, single core , 1 GHz	ARM Cortex-A9, dual core 800 MHz	ARM Cortex-A9, dual core 800 MHz
Operating system	Linux RT		
Flash	4 GB	4 GB	8 GB
RAM	512 MB	1 GB	2 GB
Expansion memory	USB/SD card	USB/SD card	USB/SD card
Real Time Clock	Yes (battery-backed)	Yes (battery-backed)	Yes (battery-backed)
Accuracy RTC (at 25 °C)	< 100 ppm	< 100 ppm	< 100 ppm
Buzzer	Yes	Yes	Yes
PLC data			
Programming	CODESYS V3	CODESYS V3	CODESYS V3
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)	IEC 61131-3 (IL, LD, FBD, SFC, ST)	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Programming interface	Ethernet	Ethernet	Ethernet
Program memory	20 MB	20 MB	20 MB
Non-volatile memory	63 kByte	63 kByte	63 kByte
Interfaces			
Ethernet ports	2 × 10/100 Mbit	1 × 10/100/1000 Mbit 2 × 10/100 Mbit	1 × 10/100/1000 Mbit 2 × 10/100 Mbit
Serial ports (configurable)	1 × RS232/RS485/RS422		
USB Host port	1 × Host V2.0, max. 500 mA	2 × Host V2.0, max. 500 mA	2 × Host V2.0, max. 500 mA
SD card	Yes	Yes	Yes
Extension slot (plug-in)	1	2	2
▪ Max. number of plug-in modules	2	4	4
Power supply			
Rated value	24 VDC (SELV or Class 2)	24 VDC (SELV or Class 2)	24 VDC (SELV or Class 2)
Admissible voltage range	18…32 VDC	18…32 VDC	18…32 VDC
Current consumption at 24 VDC	0.35 A	0.5 A	0.55 A
Dimensions			
Housing (H × D)	134 ×102 mm	174 × 144 mm	174 × 144 mm
Width on DIN rail	45 mm	44 mm	44 mm
Weight	0.56 kg	0.65 kg	0.65 kg

NOTE
For applications requiring compliance with EN 61131-2 and specifically in reference to 10 ms voltage dips, the minimum power supply voltage is 18 VDC.

Protection class		
Complete device	IP20	EN 60529
Environmental conditions		
Operating temperature (surrounding air temperature)	-20…+60 °C (vertical installation) Plug-in modules and USB devices may limit the maximum temperature to +50 °C	EN 60068- 2- 14
Storage temperature	-20…+70 °C	EN 60068-2-1 EN 60068-2-2 EN 60068-2-14
Operating and storage humidity	5…85 % RH, non condensing	EN 60068-2-30
Vibrations	5…9 Hz, 7 mmp-p 9…150 Hz, 1 g	EN 60068-2-6
Shock	± 50 g, 11 ms, 3 pulses per axis	EN 60068-2-27
Electromagnetic Compatibility (EMC)		
Radiation interference	Class A	CISPR 22, CISPR 16-2-3
Immunity		EN 61000-4-2
Electrostatic discharge	8 kV (air electrostatic discharge) 4 kV (contact electrostatic discharge)	
Radiation, high frequency, electromagnetic fields	80 MHz …1 GHz, 10 V/m 1.4 GHz … 2 GHz, 3 V/m 2 GHz … 2.7 GHz, 1 V/m	EN 61000-4-3
Burst	± 2 kV DC power port ± 1 kV signal line	EN 61000-4-4
Overvoltage	± 0.5 kV DC power port (line to earth) ± 0.5 kV DC power port (line to line) ± 1 kV signal line (line to earth)	EN 61000-4-5
Interference from high-frequency fields	0.15…80 MHz, 1 V	EN 61000-4-6
Power frequency magnetic field immunity test	Housing: 50/60Hz, 30A/m	EN 61000-4-8
Voltage dips, short interruptions, voltage fluctuations	Port: AC mains; Level: 100 % duration: 1 cycle and 250 cycles (50 Hz) 40 % duration: 10 cycles (50 Hz) 70 % duration: 25 cycles (50 Hz) phase: 0°…180°	
Test executed on the 230 VAC side of the power supply		EN 61000-4-11
	Port: DC mains 0 % duration: 10 ms 20 fields × 1 s	
Test executed on the 24 VDC of the EUT		EN 61000-4-29

14 Appendix: Approvals and markings

Approvals	Marking according to ATEX directive	EN 60079-0/-15/-31
ATEX approval no.: DEMKO 20 ATEX 2333X	Ex II 3 G	Ex nA IIC T5…T4 Gc
IECEx approval no.: IECEx ULD 20.0001X		Ex nA IIC T5…T4 Gc

Ambient temperature $T_{amb.}$: -20…+60 °C,
0…+50 °C when installed with plug-in module model TX-IO-XX03

Max. ambient temperature	Temperature Class
-20…+60 °C	T4
0…+50 °C	T5

Approvals	
CE	Immunity/emission ■ For industrial environments: EN 61000-6-2 EN 61000-6-4 ■ For residential, business and commercial areas and small businesses: EN 61000-6-1 EN 61000-6-3 ■ For marine environments: EN 60945
	EN 61000-4-29
	EN 60079-0
	EN 6007915
UL	cULus (UL File No. E484727) ■ UL 61010-1, 3rd Edition and UL 61010-2-201, 1st Edition ■ CAN/CSA C22.2 No. 61010-1, 3rd Edition and CAN/CSA C22.2 No. 61010-2-201:14
	cULus (UL File No. E484803) ■ Class I, Division 2, Groups A, B, C and D

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