

**TURCK**

Your Global Automation Partner

# TX400 HMI/PLC Series

Instructions for Use

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# 1 About these instructions

These instructions describe the setup, functions and use of the product and help you to operate the product according to its intended purpose. Read these instructions carefully before using the product. This will prevent the risk of personal injury and damage to property. 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 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.



### **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.

## 1.2 Other documents

The following additional documents are available online at [www.turck.com](http://www.turck.com)

- Data sheet
- Quick Start Guide
- Declarations of conformity (current version)
- Approvals

## 1.3 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](mailto:techdoc@turck.com).

## 2 Notes on the product

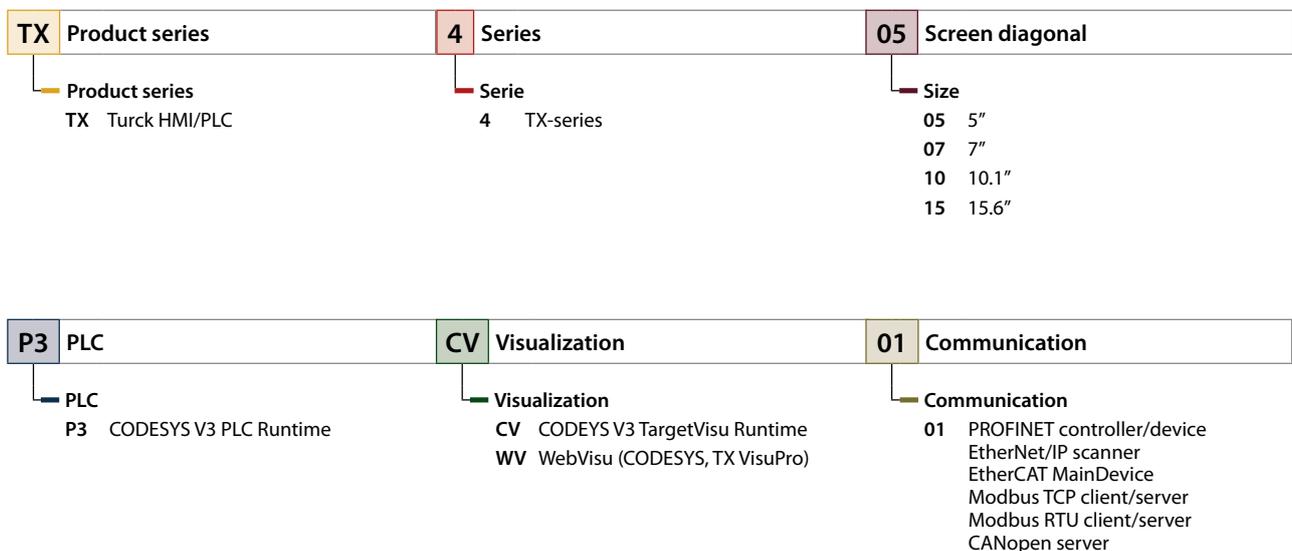
### 2.1 Product identification

These instructions apply to the following HMIs:

- TX405-P3CV01 (ID: 100051167)
- TX407-P3CV01 (ID: 100051168)
- TX410-P3CV01 (ID: 100051169)
- TX415-P3CV01 (ID: 100051170)

#### 2.1.1 Type code

**TX 4 05 P3 - CV 01**



### 2.2 Scope of delivery

The delivery consists of the following:

- TX400
- Power supply connector
- Connector for serial interface
- Mounting brackets
- Quick Start Guide

### 2.3 Turck service

Turck supports you in your projects – from the initial analysis right through to the commissioning of your application. The Turck product database at [www.turck.com](http://www.turck.com) offers you several software tools for programming, configuring or commissioning, as well as data sheets and CAD files in many export formats.

For the contact details of our branches worldwide, please see page [▶ 31].

## 3 For your safety

The product is designed according to state of the art technology. Residual hazards, however, still exist. Observe the following safety instructions and warnings in order to prevent danger to persons and property. Turck accepts no liability for damage caused by failure to observe these safety instructions.

### 3.1 Intended use

The HMIs (Human Machine Interfaces) of the TX400 family are used to control, operate and monitor machine processes.

The device must 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 instructions

- The device must only be fitted, installed, operated, parameterized and maintained by trained and qualified personnel.
- Only use the device in compliance with the applicable national and international regulations, standards and laws.
- The device meets the EMC requirements for the industrial areas. When used in residential areas, take measures to prevent radio frequency interference.

## 4 Product description

The front of the device is designed in protection class IP66, the rear of the housing in IP20.

Two Ethernet ports are available for the connection to Ethernet.

The serial port is used to communicate with a PLC or with field devices with RS232 or RS485 interface. The TX400 communicates with other field devices via the CAN interface. A USB host port is used for external storage media.

The TFT wide screen color display of the devices is designed as a capacitive multi-touch touch screen.

Device variants:

Device	Display size	Processor	Memory
TX405	5"	64 bit RISC quad core, 1.6 GHz	4 GB Flash, 2048 MB RAM
TX407	7"		
TX410	10"		
TX415	15"		

### 4.1 Device overview

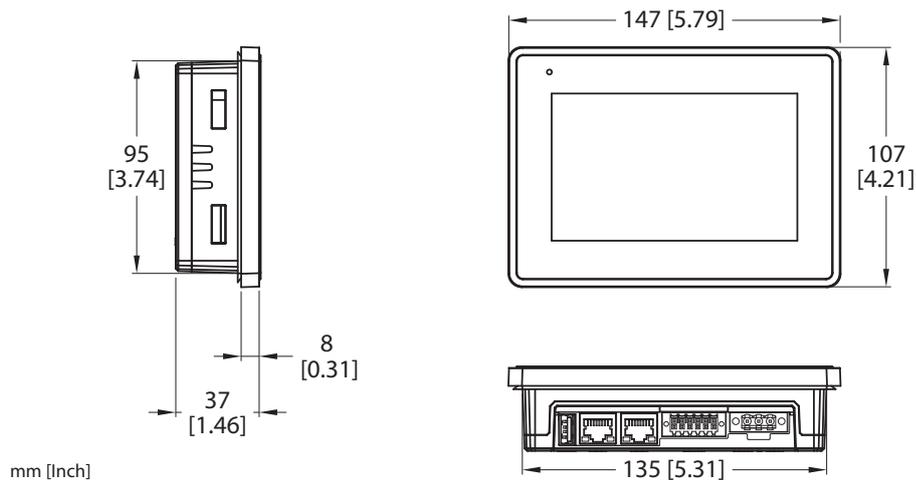
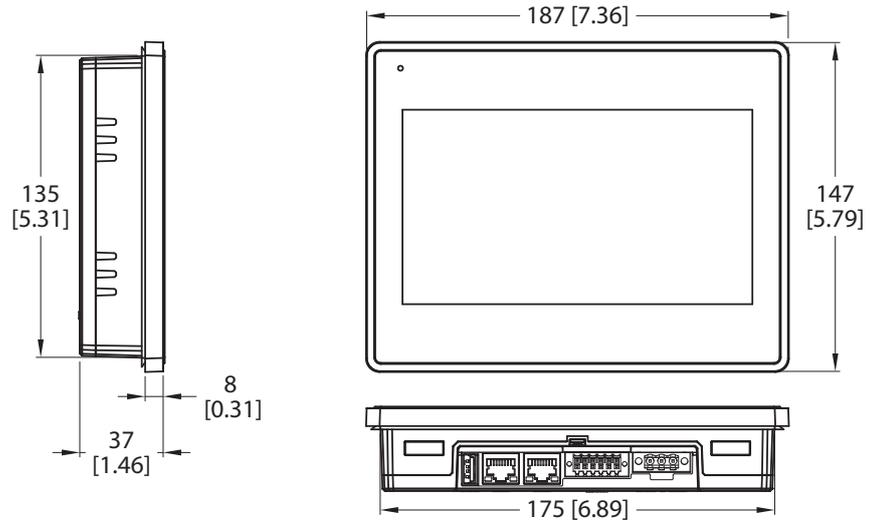
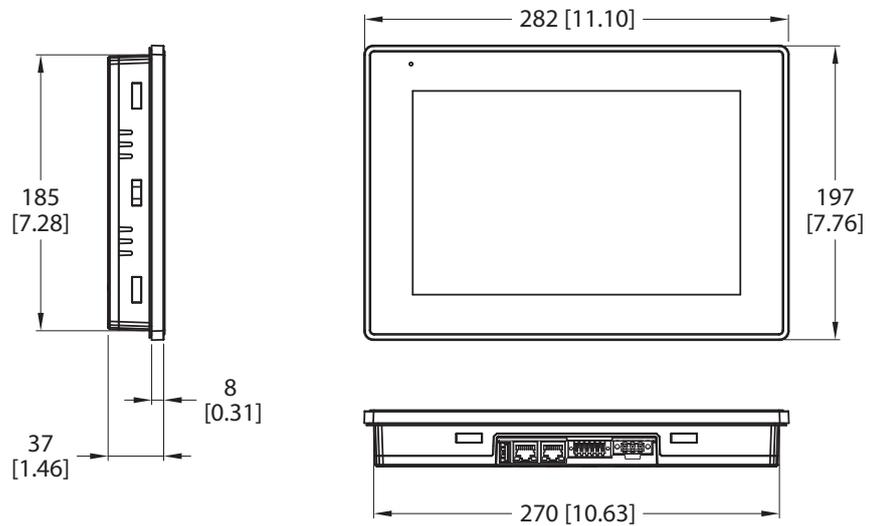


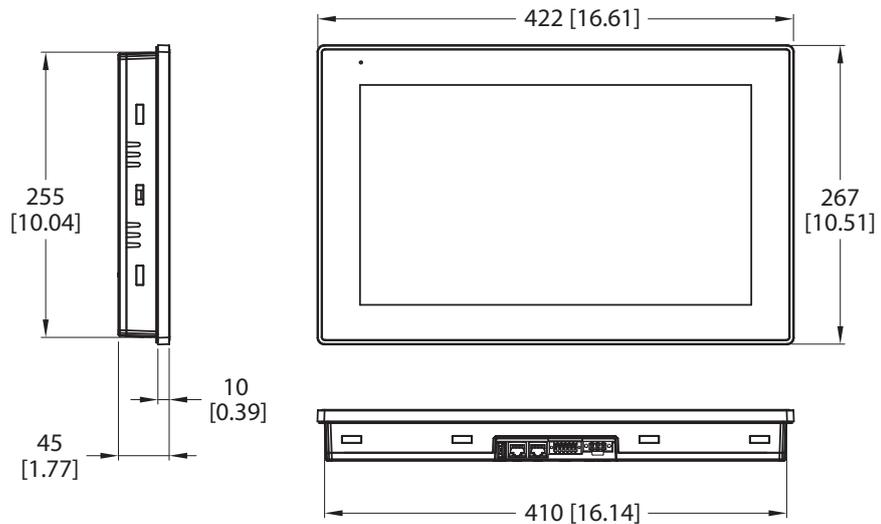
Fig. 1: Dimensions TX405



mm [Inch]  
Fig. 2: Dimensions TX407



mm [Inch]  
Fig. 3: Dimensions TX410



mm [Inch]  
Fig. 4: Dimensions TX415

## 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 manufacturers

## 4.3 Functions and operating modes

The CODESYS V3 PLC of the TX400 devices has the functions PROFINET controller, EtherCAT MainDevice, EtherNet/IP scanner and Modbus TCP as well as Modbus RTU client. Additionally the devices of the TX400 HMIs can be used as PROFINET device, Modbus TCP as well as Modbus RTU server.

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
- CAN communication

### 4.3.1 Interfaces

The device has the following interfaces:

- Ethernet ports: 2 × 10/100 Mbit
- Serial interface/CAN interface
- USB port

### 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 Power supply

ID	Type	Description
100002938	TX-PSC	TX power supply onnector

## 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.

The devices are inserted into a flat mounting plate with a corresponding installation cut-out.



### NOTE

The technical data in the appendix of these operating instructions contain information on the size of the required installation cut-out.

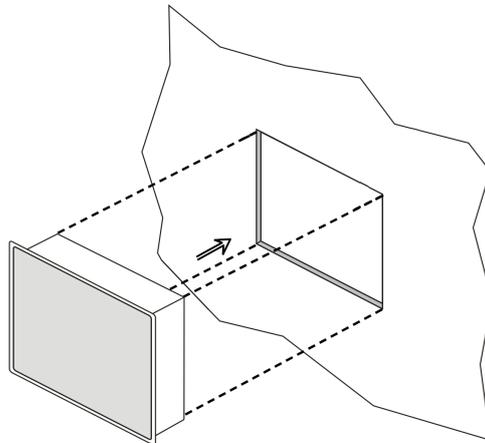


Fig. 5: TX400 – Installation

### 5.1 Fasten devices in the mounting cutout

The devices are fixed in the mounting cutout with mounting brackets.

- ▶ Mount the brackets as follows.

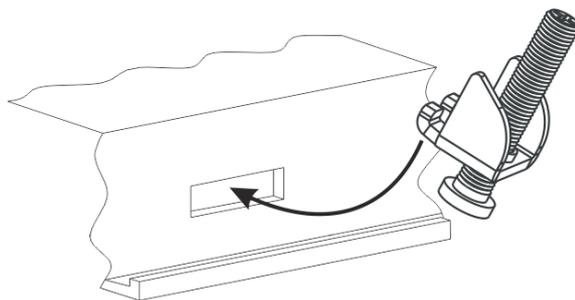


Fig. 6: Insert the brackets

- ▶ Tighten the fastening screws until the brackets are firmly in contact with the device. The minimum tightening torque to guarantee protection class IP66 is 0.75 Nm.

## 5.2 Grounding the device

The unit has to be grounded.

- ▶ Ground the device via the grounding screw on the back of the housing or via terminal 3 on the power supply connection.
- ▶ Observe the minimum cable cross-section of 1.5 mm<sup>2</sup> for the grounding 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.

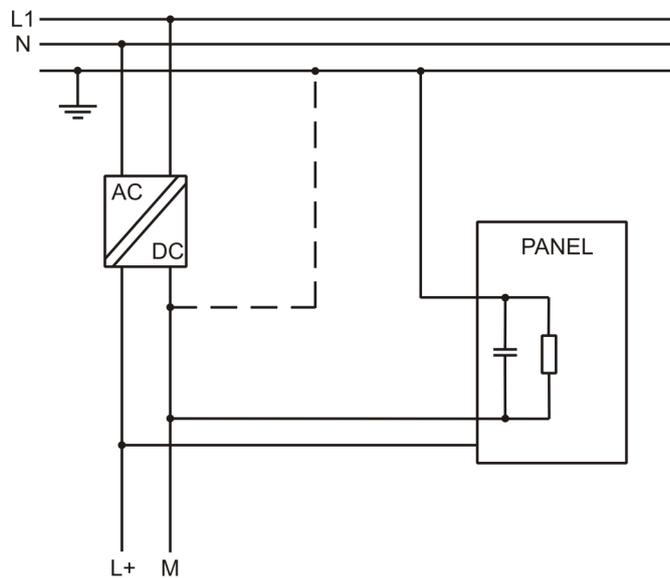


Fig. 7: Power supply – wiring

## 6 Connecting

- ▶ Ensure that the power supply is of sufficient capacity to operate the device.

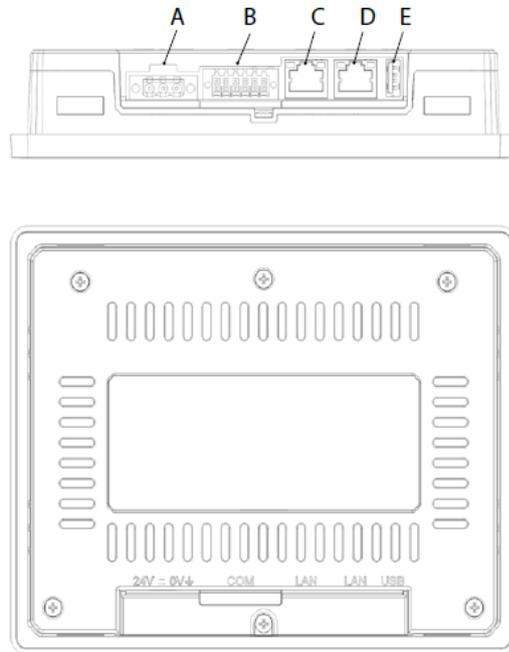


Fig. 8: Connectors TX4...

Connector	Description
A	Power supply
B	Serial interface/CAN interface
C	Ethernet port (10/100 Mbps)
D	Ethernet port (10/100 Mbps)
E	USB ports, V2.0, max. 500 mA

### 6.1 Connecting the power supply

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

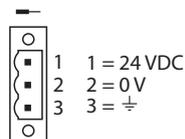


Fig. 9: Power supply connector TX...



#### NOTE

The power connector is part of the scope of delivery and can be ordered as spare part [▶ 9].

## 6.2 Connecting the device to Ethernet

For the connection to Ethernet, the devices have two RJ45 Fast Ethernet sockets.

Default settings of the Ethernet ports

ETH0:	DHCP
ETH1:	IP address: 192.168.1.254
	Subnet mask: 255.255.255.0

## 6.3 Connecting external devices to the serial interface/CAN interface

The combined interface (serial/CAN) is used for communication with a PLC or a device of a different type. The type of serial interface is determined in the programming software. The connection cable must be selected to match the device to be connected.

- ▶ Connect serial devices or CAN devices according to the pin assignment.

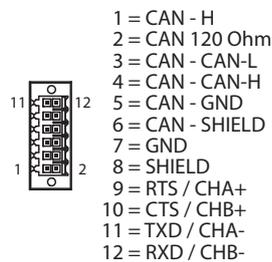


Fig. 10: Serial interface/CAN interface



### NOTE

To activate the CAN terminating resistor (120 Ω), pin 1 and pin 2 have to be bridged externally. The GND and CAN-GND pins are isolated from each other. SHIELD is connected internally to earth via terminal 3 of the voltage supply connection.

## 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 Using the touchscreen

- ▶ Before initial operation, check that the touch screen is working properly.
- ▶ Do not use sharp or pointed objects (screwdrivers, etc.) to operate the touch screen.

### 7.3 Initial commissioning

The Ethernet port ETH0 is set to DHCP by default. The IP address of Ethernet port ETH1 is set to 192.168.1.254 by default. During initial commissioning, the IP address for ETH0 can be set via the system settings on the touch screen of the device, via a DHCP server in the network, via Turck Automation Suite (TAS) or via the Turck Service Tool. In addition, the device can also be addressed directly via the IP address of ETH1 using a web browser, Turck Automation Suite (TAS) or the Turck Service Tool.

#### 7.3.1 User management

To prevent unauthorized access to the system, it is necessary to enter secure passwords for the two users "user" and "admin" during initial commissioning.

Passwords must meet the following minimum requirements:

- at least 8 characters
  - at least 1 lowercase and 1 uppercase letter
  - at least 1 number
  - at least 1 special character
- ▶ Enter, confirm and save the password for the user "user".
  - ▶ Enter, confirm and save the password for the user "admin".

The screenshot shows a web browser window titled "Authentication". At the top right, there are "RELOAD" and "ADMIN" buttons. A yellow banner at the top states: "Password change is required at first access. NOTE: system will reboot upon completion". Below this, the heading "[1/2] Choose a password for user 'user'" is displayed. On the left, there are two input fields: "New Password" and "Confirm Password", both containing masked characters. Below these fields is a "Change Password" button with a gear icon. On the right side, a list of password requirements is shown: "Passwords are required to include:" followed by four bullet points: "At least 8 characters in total", "At least one lower case and one upper case letter", "At least one numeric character", and "At least one special character (eg. # ! @ ?)".

Fig. 11: Assigning admin password

⇒ The device performs a restart.

## 7.4 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-in to the device as administrator (s. User management [▶ 14]).

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://IP/machine\\_config](https://IP/machine_config)

**Example access:**

[https://192.168.1.24/machine\\_config](https://192.168.1.24/machine_config)

## 7.5 Setting the IP address

The IP address can be set via the system settings on the touch screen of the device or via the device's web server. The IP address via which the device is connected to the PC via Ethernet can also be set via the Turck Service Tool or via the Turck Automation Suite (TAS).

### 7.5.1 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**.

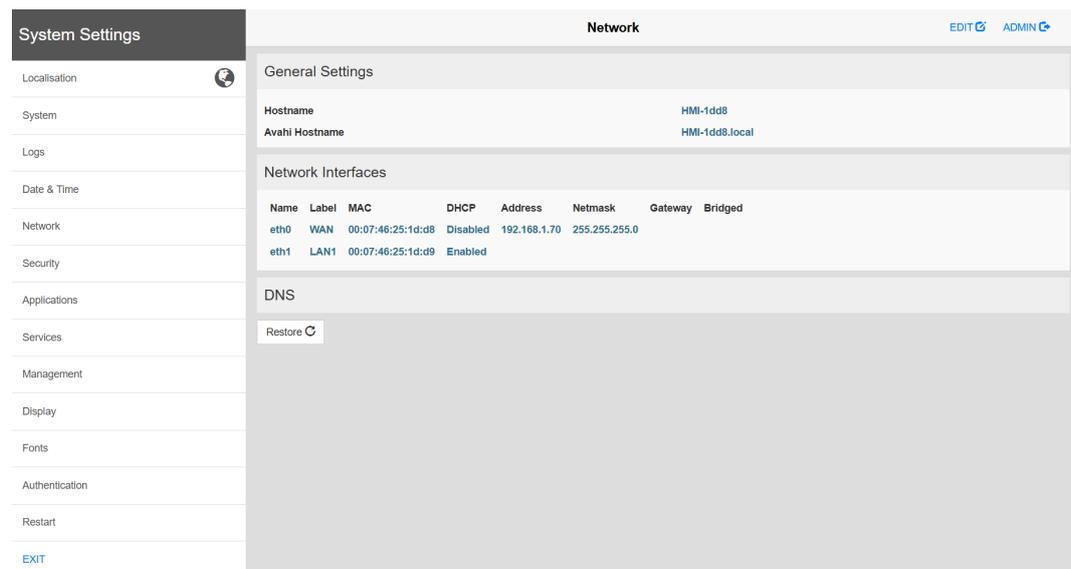


Fig. 12: Web server, system settings

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

The screenshot shows the 'System Settings' web interface. On the left is a sidebar menu with options: Localisation, System, Logs, Date & Time, Network, Security, Applications, Services, Management, Display, Fonts, Authentication, Restart, and EXIT. The main content area is titled 'System Settings' and contains 'General Settings' and 'Network Interfaces' sections. In 'General Settings', 'Hostname' is 'HMI-1dd8' and 'Avahi Hostname' is 'HMI-1dd8.local'. The 'Network Interfaces' section has a table with columns: Name, Label, MAC, DHCP, Address, Netmask, Gateway, and Bridged. Two interfaces are listed: 'eth0' (WAN, 00:07:46:25:1d:d8, DHCP off, Address 192.168.1.70, Netmask 255.255.255.0) and 'eth1' (LAN1, 00:07:46:25:1d:d9, DHCP on). A 'DNS' section with a 'Restore' button is also visible.

Name	Label	MAC	DHCP	Address	Netmask	Gateway	Bridged
eth0	WAN	00:07:46:25:1d:d8	<input type="checkbox"/>	192.168.1.70	255.255.255.0		
eth1	LAN1	00:07:46:25:1d:d9	<input checked="" type="checkbox"/>				

Fig. 13: Web server, network interface

## 7.5.2 Adjusting network settings via TAS (Turck Automation Suite)



### NOTE

The IP address can only be assigned using TAS if the switch is connected to the PC via one of its LAN ports. Connection to a WAN port is not possible.

- ▶ Connect the device to a PC via the Ethernet interface.
- ▶ Open TAS.
- ▶ Click **Scan network**.

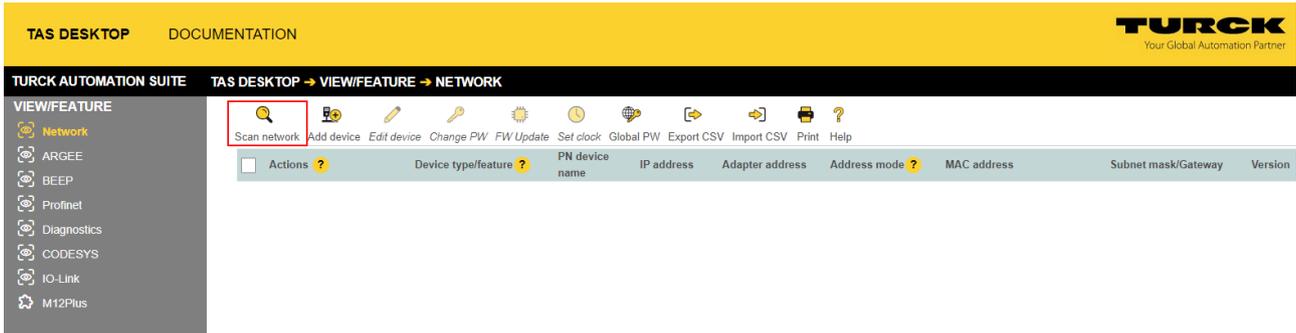


Fig. 14: Home screen in TAS

⇒ TAS shows the connected devices.

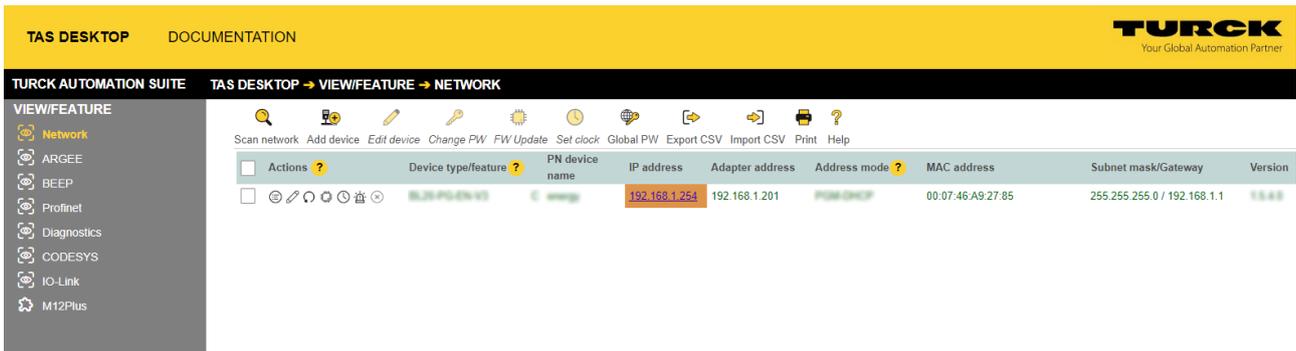


Fig. 15: Found devices in TAS

- ▶ Select the relevant device (check box).
- ▶ Click **Edit device**.



Fig. 16: Selecting the device in TAS



**NOTE**

By clicking on the IP address of the device, the configuration view of the device can be opened either in TAS or on the device website.

- ▶ Change the device name, the IP address and the network mask if necessary.
- ▶ Save changes by clicking on **APPLY**.

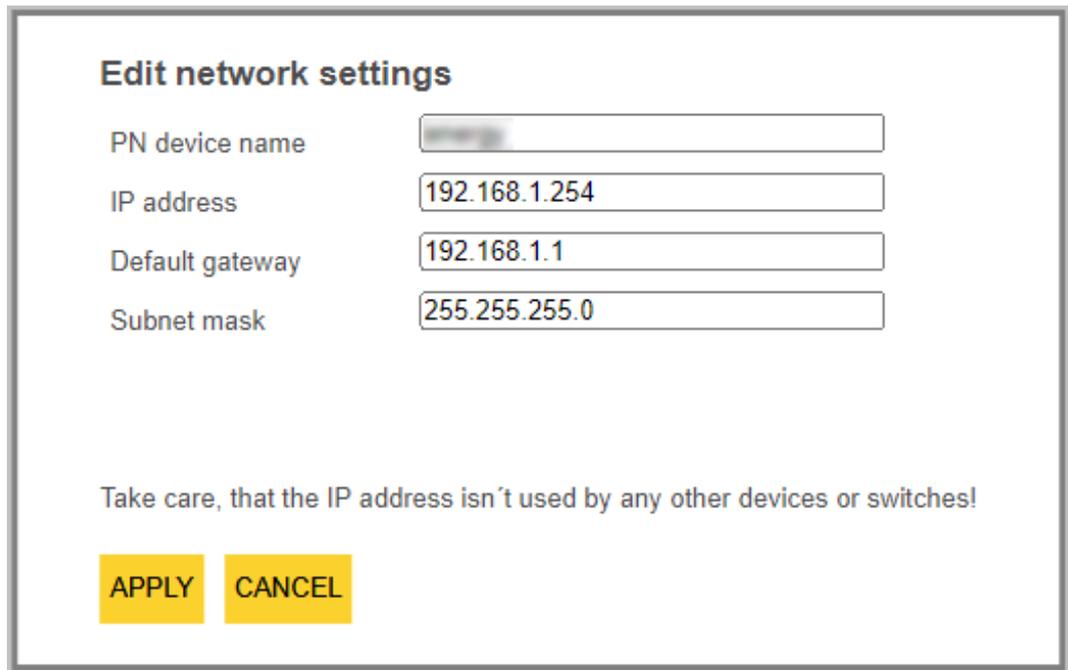


Fig. 17: Changing network settings in TAS



**NOTE**

An IP address assigned via TAS is not stored permanently in the switch.

### 7.5.3 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].

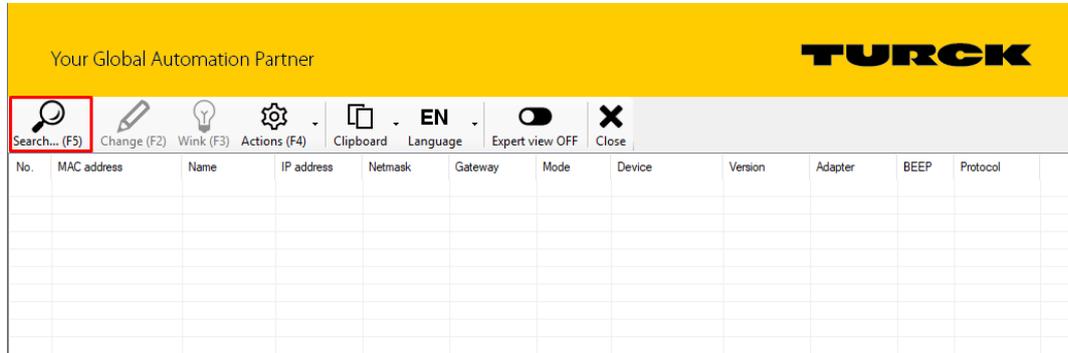


Fig. 18: Turck Service Tool – home screen

⇒ Turck Service Tool shows the connected devices.



**NOTE**

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

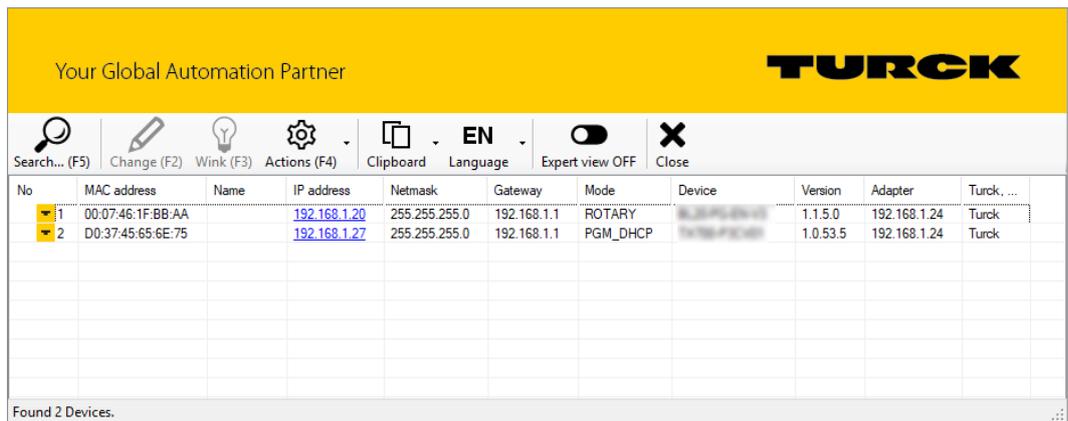


Fig. 19: Turck Service Tool – found devices

- ▶ 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**.

The screenshot shows a dialog box titled "Change device configuration" with a close button (X) in the top right corner. The dialog is divided into several sections:

- Device name:** A text input field that is currently empty.
- IP configuration:** A section containing four input fields:
  - MAC address:** Contains the value "D0:37:45:65:6E:75".
  - IP address:** Contains the value "192.168.1.131".
  - Netmask:** Contains the value "255.255.255.0".
  - Gateway:** Contains the value "0.0.0.0".
- Set IP configuration temporarily:** A checkbox that is currently unchecked.
- Status messages:** A large, empty text area.
- Buttons:** Two buttons are located at the bottom: "Set in device" (highlighted with a blue border) and "Cancel".

Fig. 20: Turck Service Tool – changing the IP configuration

## 7.6 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](http://www.turck.com).

### Prerequisites

- CODESYS (≥ V 3.5.19.0) and the package "TXxxx HMI/PLC series" for the HMI/PLCs have to be installed on a PC computer running Microsoft Windows.

### 7.6.1 Supported protocol functions

Protocol	Controller/client	Device/server
PROFINET	Yes	Yes
EtherNet/IP	Yes	-
Modbus TCP	Yes	Yes
Modbus RTU	Yes	Yes
CANopen	Yes	-
EtherCAT	Yes	-
OPC-UA	-	Yes

### 7.6.2 Access to the CODESYS WebVisu

The CODESYS WebVisu is accessed via port 8085:

<http://<<IP address>>:8085/webvisu.htm>

Example:

<http://192.168.1.40:8085/webvisu.htm>

## 8 Configuring

The devices have an integrated User interface and a web server 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.

Initial commissioning is done by local access to the system settings via the touch screen on the device. If the "System Settings" button is not displayed on the home screen, the device must be restarted in "Tap-Tap mode" (see "Recovery operation" in "Adapting the system settings" [▶ 23]).

### 8.1 Configuring the system settings

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

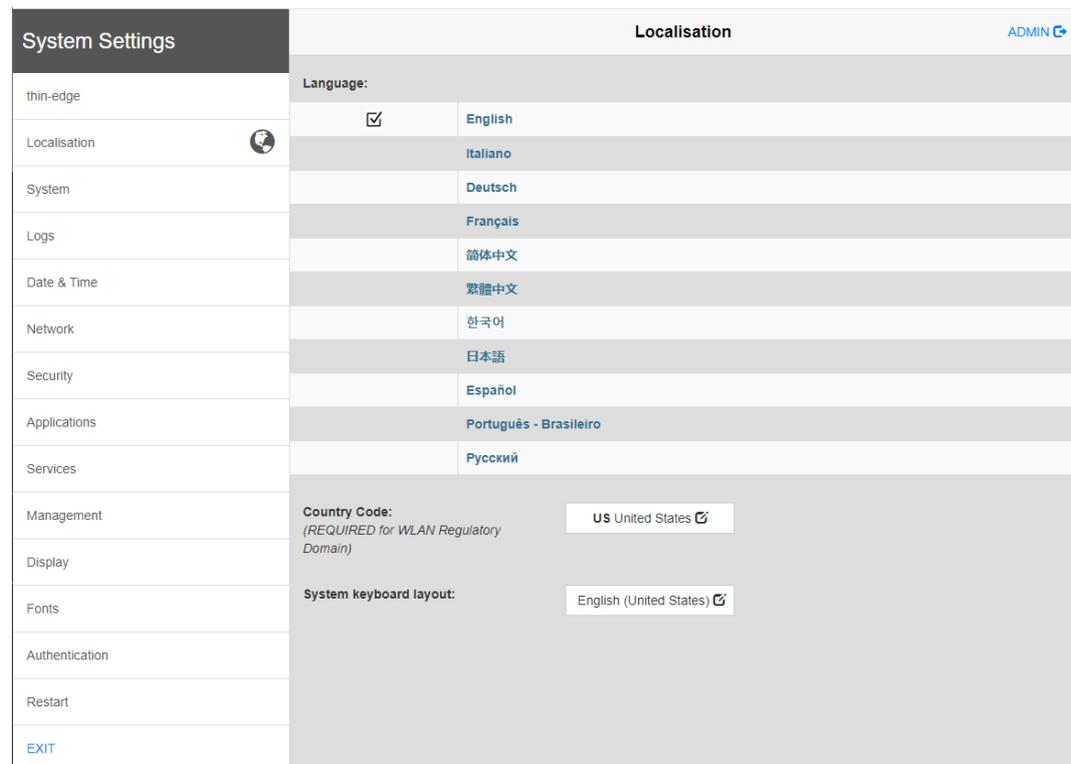


Fig. 21: System settings

Two operating modes are available for the system settings:

Mode	Usage
User mode	<ul style="list-style-type: none"> <li>■ Device with TX VisuPro runtime</li> <li>■ Device in delivery state</li> </ul>
System Mode	<p>In addition to the options in user mode, the system mode includes additional commands for system upgrade and recovery.</p> <ul style="list-style-type: none"> <li>■ Device without TX VisuPro runtime</li> <li>■ Device with software error</li> </ul>

### Edit system settings in user mode

Status device	Description
Factory default status	▶ Open the <b>System Settings</b> .
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 <b>System Settings</b> .

### Edit system settings in System mode

Status device	Description
Standard state	<p>If no TX VisuPro runtime is running on the device:</p> <p><b>User mode</b></p> <ul style="list-style-type: none"> <li>▶ Open the <b>System Settings</b>.</li> </ul> <p><b>System Mode</b></p> <ul style="list-style-type: none"> <li>▶ Without TX VisuPro runtime: Restart the device via <b>Restart</b> → <b>Config. Restart OS</b>.</li> <li>▶ With TX VisuPro runtime: Open the context menu and select <b>System Settings</b>.</li> <li>▶ To recall the context menu: Press and hold the unused area of the touch screen for at least 2 s.</li> <li>▶ Restart the device via <b>Restart</b> → <b>Config. Restart OS</b>.</li> </ul>
Recovery operation	<p>If the device is not responsive, use the so-called "tap-tap" procedure:</p> <ul style="list-style-type: none"> <li>▶ Touch the surface of the touch screen several times with a typing frequency of at least 2 Hz immediately after switching on the device.</li> </ul> <p>⇒ When the sequence is detected, the message "Tap Tap detected, Going to Config Mode" will appear on the display.</p>

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

Setting	Description
Localization	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 to the IP address of the Ethernet interface and all other network settings like DNS, Gateway, DHCP, Host name, routing and bridging.
Security	Contains passwords and certificates that are required by the applications used.
Applications	Listing and managing the applications loaded on the HMI. The "App management" is used to load new applications, update or remove applications that are already installed and define the application start sequence.
Services	Activate/deactivate services (e.g. OpenSSH server, bridge, cloud, router, SNMP, logging)

Setting	Description
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.
Display	Configuring the automatic backlight, adjusting the brightness, changing the display orientation
Fonts	Shows the currently used fonts and enables the installation of user-defined fonts.
Authentication	Configuration of 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.
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.

## 9 Operating

### 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
Flashing	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 Maintenance

Dust layers on the display can lead to static electricity.

- ▶ To avoid dust layers on the display: Clean the device at regular intervals with a soft cloth and a neutral soap product.
- ▶ Do not use solvents.

## 12 Repair

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

### 12.1 Returning devices

If a device has to be returned, bear in mind that only devices with a decontamination declaration will be accepted. This is available for download at <https://www.turck.de/en/return-service-6079.php> and must be completely filled in, and affixed securely and weather-proof to the outside of the packaging.

## 13 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.

## 14 Technical data

	TX405-P3CV01	TX407-P3CV01
<b>Device</b>		
ID	100051167	100051168
<b>Display/touch</b>		
Display	TFT Color	TFT Color
Touch	Capacitive	Capacitive
Active screen	5"	7"
Resolution (pixel)	800 × 480 WVGA	1024 × 600 WSVGA
Format	16: 9	16: 9
Brightness	400 Cd/m <sup>2</sup> typ.	400 Cd/m <sup>2</sup> typ.
Dimming	Yes (up to 0 %)	Yes (up to 0 %)
<b>System</b>		
CPU	64 bit RISC quad core, 1.6 GHz	64 bit RISC quad core, 1.6 GHz
Operating system	Linux RT	Linux RT
Flash	4 GB	4 GB
RAM	2048 MB	2048 MB
Expansion memory	1 × USB host port	1 × USB host port
Real Time Clock	Yes (battery-backed)	Yes (battery-backed)
Buzzer	Yes	Yes
<b>SPS data</b>		
Programming	CODESYS V3, V 3.5.19.20	CODESYS V3, V 3.5.19.20
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Programming interface	Ethernet	Ethernet
Program memory	20000 kByte	20000 kByte
Non-volatile memory	63 kByte	63 kByte
<b>Interfaces</b>		
Ethernet RJ45	2 × 10/100 Mbit	2 × 10/100 Mbit
Serial Interface (configurable)	1 × RS232/RS485/RS422	1 × RS232/RS485/RS422
CAN interface	1	1
USB port	1 × Host V2.0, max. 500 mA	1 × Host V2.0, max. 500 mA
<b>Power supply</b>		
Rated value	24 VDC (SELV or Class 2)	24 VDC (SELV or Class 2)
Admissible voltage range	10...32 VDC	10...32 VDC
Current consumption at 24 VDC	0.9 A	0.9 A
<b>Dimensions</b>		
Housing (W × H)	147 × 107 mm	187 × 147 mm
Installation cut-out (W × H)	136 × 96 mm	176 × 136 mm
Installation depth (D)	29 + 8 mm	29 + 8 mm
Weight	0.5 kg	0.7 kg

	TX410-P3CV01	TX415-P3CV01
<b>Device</b>		
ID	100051169	100051170
<b>Display/touch</b>		
Display	TFT Color	TFT Color
Touch	Capacitive	Capacitive
Active screen	10.1"	15.6"
Resolution (pixel)	1280 × 800 WXGA	1920 × 1080 Full HD
Format	16: 9	16: 9
Brightness	400 Cd/m <sup>2</sup> typ.	350 Cd/m <sup>2</sup> typ.
Dimming	Yes (up to 0 %)	Yes (up to 0 %)
<b>System</b>		
CPU	64 bit RISC quad core, 1.6 GHz	64 bit RISC quad core, 1.6 GHz
Operating system	Linux RT	Linux RT
Flash	4 GB	4 GB
RAM	2048 MB	2048 MB
Expansion memory	USB	USB
Real Time Clock	Yes (battery-backed)	Yes (battery-backed)
Buzzer	Yes	Yes
<b>SPS data</b>		
Programming	CODESYS V3, V 3.5.19.20	CODESYS V3, V 3.5.19.20
Programming languages	IEC 61131-3 (IL, LD, FBD, SFC, ST)	IEC 61131-3 (IL, LD, FBD, SFC, ST)
Programming interface	Ethernet	Ethernet
Program memory	20000 kByte	20000 kByte
Non-volatile memory	63 kByte	63 kByte
<b>Interfaces</b>		
Ethernet RJ45	2 × 10/100 Mbit	2 × 10/100 Mbit
Serial Interface (configurable)	1 × RS232/RS485/RS422	1 × RS232/RS485/RS422
CAN interface	1	1
USB port	1 × Host V2.0, max. 500 mA	1 × Host V2.0, max. 500 mA
<b>Power supply</b>		
Rated value	24 VDC (SELV or Class 2)	24 VDC (SELV or Class 2)
Admissible voltage range	10...32 VDC	10...32 VDC
Current consumption at 24 VDC	1.1 A	2 A
<b>Dimensions</b>		
Housing (W × H)	282 × 197 mm	422 × 267 mm
Installation cut-out (W × H)	271 × 186 mm	411 × 256 mm
Installation depth (D)	29 + 8 mm	35 + 10 mm
Weight	1.3 kg	3.2 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.

**Environmental conditions**

Operating temperature (surrounding air temperature)	-20...+55 °C (vertical installation)	EN 60068-2-14
Storage temperature	-30...+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 mm <sub>p-p</sub> 9...150 Hz, 1 g	EN 60068-2-6
Shock	± 50 g, 11 ms, 3 pulses per axis	EN 60068-2-27

## 15 Turck branches — contact data

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