Brief Operating Instructions
Ecograph T RSG35

Data manager

These Brief Operating
Instructions are not a
substitute for the Operating
Instructions. For further
information on the product,
see:

- www.endress.com/
  deviceviewer
- Smartphone/tablet:
  Endress+Hauser
  Operations app

Endress+Hauser

People for Process Automation

Table of contents

1   About this document

1.1   Document function

The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.

1.2   Symbols

1.2.1   Safety symbols

⚠ DANGER

This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

⚠ WARNING

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

⚠ CAUTION

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE

This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.2.2   Electrical symbols

Symbol	Meaning
⎓	Direct current
∼	Alternating current
⎓∼	Direct current and alternating current
⏚	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
⏚	**Protective earth (PE)** Ground terminals that must be connected to ground prior to establishing any other connections. The ground terminals are located on the interior and exterior of the device: • Interior ground terminal: protective earth is connected to the mains supply. • Exterior ground terminal: device is connected to the plant grounding system.

1.2.3   Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
✅	**Permitted** Procedures, processes or actions that are permitted.	✅✅	**Preferred** Procedures, processes or actions that are preferred.
❌	**Forbidden** Procedures, processes or actions that are forbidden.	🛈	**Tip** Indicates additional information.
📖	Reference to documentation	📄	Reference to page
🖼	Reference to graphic	1., 2., 3....	Series of steps
↳	Result of a step	👁	Visual inspection

1.2.4   Symbols in graphics
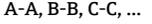
Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers	1., 2., 3....	Series of steps
A, B, C, ...	Views	A-A, B-B, C-C, ...	Sections
⚠EX	Hazardous area	⌦	Safe area (non-hazardous area)

2   Basic safety instructions

The reliable and safe operation of the device is only ensured if the user reads these Operating Instructions and complies with the safety instructions they contain.

2.1   Requirements for the personnel

The personnel must fulfill the following requirements for its tasks:
▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
▶ Are authorized by the plant owner/operator.
▶ Are familiar with federal/national regulations.
▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
▶ Follow instructions and comply with basic conditions.

2.2   Intended use

ℹ️ The device is designed for installation in a panel and must only be operated in an installed state.

The device is intended for the electronic capture, display, recording, analysis, remote transmission and archiving of analog and digital input signals in non-hazardous areas.

2.2.1   Product liability

The manufacturer does not accept any responsibility for damage that results from non-designated use and from failure to comply with the instructions in this manual.

2.3   Workplace safety

For work on and with the device:
▶ Wear the required personal protective equipment according to federal/national regulations.

2.4   Operational safety

Damage to the device!
▶ Operate the device in proper technical condition and fail-safe condition only.
▶ The operator is responsible for the interference-free operation of the device.

2.5   Product safety

This state-of-the-art device is designed and tested in accordance with good engineering practice to meet operational safety standards. It left the factory in a condition in which it is safe to operate.

It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU declaration of conformity. The manufacturer confirms this by affixing the CE mark.

2.6   Safety information for desktop version (option)

- The mains plug should only be inserted into a socket with a ground contact.
- The protective effect may not be suspended by an extension cable without a protective ground.
- Relay outputs: U (max) = 30 V_{eff} (AC)/60 V (DC)

2.7   IT security

The manufacturer only provides a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

3 Product description

3.1 Product design

This device is best suited for the electronic acquisition, display, recording, analysis, remote transmission and archiving of analog and digital input signals.

The device is intended for installation in a panel or cabinet. Operation in a desktop or field housing is possible as an option.

4 Incoming acceptance and product identification

4.1 Incoming acceptance

On receipt of the delivery:

1. Check the packaging for damage.
   ↳ Report all damage immediately to the manufacturer.
     Do not install damaged components.
2. Check the scope of delivery using the delivery note.
3. Compare the data on the nameplate with the order specifications on the delivery note.
4. Check the technical documentation and all other necessary documents, e.g. certificates, to ensure they are complete.

If one of the conditions is not satisfied, contact the manufacturer.

4.1.1 Product identification

The following options are available for identification of the device:
- Nameplate specifications
- Enter the serial number from the nameplate into *Device Viewer* (www.endress.com/deviceviewer): all the information about the device and an overview of the technical documentation supplied with the device are displayed.
- Enter the serial number from the nameplate into the *Endress+Hauser Operations app* or scan the 2-D matrix code (QR code) on the nameplate with the *Endress+Hauser Operations app*: all the information about the device and the technical documentation pertaining to the device is displayed.

Nameplate

Do you have the correct device?

The nameplate provides you with the following information on the device:
- Manufacturer identification, device designation
- Order code
- Extended order code
- Serial number

- Tag name (TAG) (optional)
- Technical values such as supply voltage, current consumption, ambient temperature, communication-specific data (optional)
- Degree of protection
- Approvals with symbols
- Reference to Safety Instructions (XA) (optional)

▶ Compare the information on the nameplate with the order.

Name and address of manufacturer

Name of manufacturer:	Endress+Hauser Wetzer GmbH + Co. KG
Address of manufacturer:	Obere Wank 1, D-87484 Nesselwang or www.endress.com

4.2   Storage and transport

Note the following points:
The permitted storage temperature is −20 to +60 ℃ (−4 to +140 ℉)

🛈 Pack the device for storage and transportation in such a way that it is reliably protected against impact and external influences. The original packaging offers the best protection.

Avoid the following environmental influences during storage:
- Direct sunlight
- Proximity to hot objects
- Mechanical vibration
- Aggressive media

5   Installation

5.1   Installation requirements

NOTICE

Overheating due to buildup of heat in the device
▶ Always ensure adequate cooling of the device to prevent heat accumulation.

The device is designed for use in a panel in non-hazardous areas.

- Ambient temperature range: −10 to +50 ℃ (14 to 122 ℉)
- Climate class as per IEC 60654-1: Class B2
- Degree of protection at front: IP65 (NEMA Type 4x encl.
- Degree of protection at rear: IP20

5.1.1   Installation dimensions

- Installation depth: approx. 158 mm (6.22 in) for device incl. terminals and fastening clips
- Panel cutout: 138 to 139 mm (5.43 to 5.47 in) x 138 to 139 mm (5.43 to 5.47 in)
- Panel thickness: 2 to 40 mm (0.08 to 1.58 in)
- Angle of vision: from the midpoint axis of the display, 75˚ to the left and right, 65˚ above and below
- A minimum distance of 15 mm (0.59 in) between the devices must be observed if aligning the devices in the Y direction (vertically above one another). A minimum distance of 10 mm (0.39 in) between the devices must be observed if aligning the devices in the X direction (horizontally beside one another).
- Securing to DIN 43 834

5.2   Installing the measuring instrument

Mounting tool: A screwdriver is required for installation in the panel.
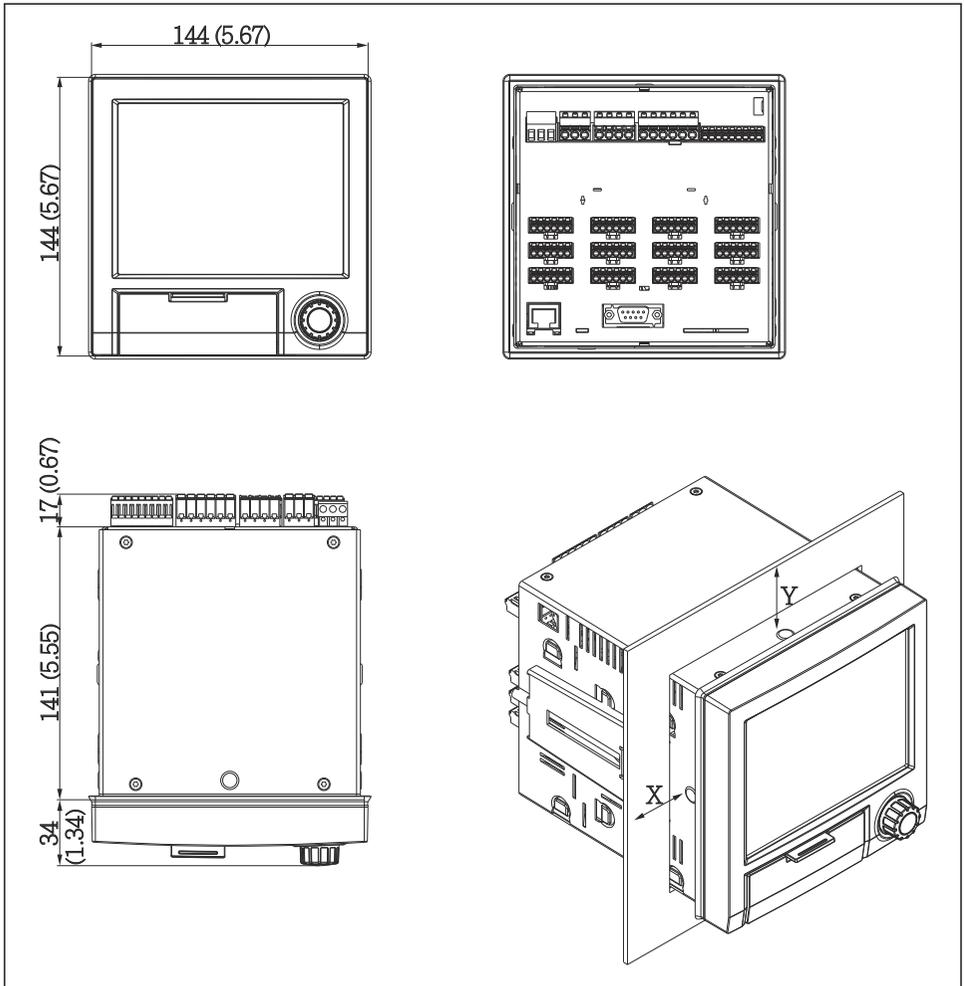
A0019301

⊞ *1   Panel mounting and dimensions in mm (inch)*

1.   Push the device through the panel cutout from the front. To avoid heat buildup, maintain a distance of > 15 mm (>0.59 in) from walls and other devices.

2.   Hold the device level and hook the fastening clips into the openings (1 x left, 1 x right).

3.   Evenly tighten the screws on the fasting clip using a screwdriver to guarantee a secure seal to the panel (torque 100 Ncm).

5.3   Post-installation check

- Is the sealing ring undamaged?
- Does the seal run all around the housing collar?
- Are the threaded rods properly tightened?
- Is the device fixed firmly in the center of the panel cutout?

6   Electrical connection

6.1   Connecting requirements

⚠ WARNING

Danger! Electric voltage
- ▶ The entire connection of the device must take place while the device is de-energized.
- ▶ The mixed connection of safety extra-low voltage and dangerous contact voltage at the relays is **not** permitted.
- ▶ Apart from the relays and the supply voltage, only energy-limited circuits according to IEC/EN 61010-1 may be connected.

Danger if protective ground is disconnected
- ▶ The protective ground connection must be established before all other connections.

NOTICE

Cable heat load
- ▶ Use suitable cables for temperatures that are 5 ℃ (9 ℉) above the ambient temperature.

Incorrect supply voltage can damage the device or cause malfunctions
- ▶ Before commissioning the device, make sure that the supply voltage matches the voltage specifications on the nameplate.

Check emergency shutdown for device
- ▶ Provide suitable switch or circuit breaker in building installation. This switch must be provided close to the device and marked as a circuit breaker.

Protect the device from overload
- ▶ An overload protection unit (rated current = 10 A) is required for the power cable.

Incorrect wiring may result in the device being destroyed
- ▶ Note terminal designation on the rear of the device.

Energy-rich transients in the case of long signal cables
- ▶ Connect a suitable overvoltage protection system in series upstream (HAW562).

6.2   Special connection instructions

6.2.1   Cable specifications

Cable specification, spring terminals

All connections on the rear of the device are designed as pluggable screw or spring terminal blocks with reverse polarity protection. The spring terminals are unlocked with a slotted screwdriver (size 0).

Note the following when connecting:
- Wire cross-section, auxiliary voltage output, digital I/O and analog I/O: max. 1.5 mm^2 (14 AWG) (spring terminals)
- Wire cross-section, mains: max. 2.5 mm^2 (13 AWG) (screw terminals)
- Wire cross-section, relays: max. 2.5 mm^2(13 AWG) (spring terminals)
- Stripping length: 10 mm (0.39 in)

> 🛈 No ferrules must be used when connecting flexible wires to spring terminals.

Shielding and grounding

Optimum electromagnetic compatibility (EMC) can only be guaranteed if the system components and the cables - both sensor and communication cables - are shielded and the shielding forms as complete a cover as possible. A shielded cable must be used for sensor cables that are longer than 30 m (100 ft). A shield coverage of 90% is ideal. Make sure that the communication cables and sensor cables do not cross when routing them. Connect the shielding as often as possible to the reference ground to ensure optimum EMC protection for the different communication protocols and the connected sensors.

To comply with requirements, three different types of shielding are possible:
- Shielding at both ends
- Shielding at one end on the supply side with capacitance termination at the device
- Shielding at one end on the feed side

The best results are achieved in installations with shielding at one end on the supply side (without capacitance termination at the device). Appropriate internal device wiring measures must be taken to allow unrestricted operation when EMC interference is present. These measures have been taken into account for this device. Operation in the event of disturbance variables as per NAMUR NE21 is thus guaranteed.

Observe national installation requirements and guidelines during installation. Where there are large differences in potential between the individual grounding points, only one point of the shielding is connected directly with the reference ground.

> 🛈 If the shielding of the cable is grounded at more than one point in systems without potential matching, mains frequency equalizing currents can occur. These can damage the signal cable and significantly impact signal transmission. In such cases, the shield of the signal cable should be grounded on one side only and must not be connected to the ground terminal of the housing. The unconnected shield must be insulated.

6.3　Connecting the device

6.3.1　Supply voltage

Power unit type	Terminal		
	A0019103		
100 to 230 V$_{AC}$	L+	N-	PE
	Phase L	Zero conductor N	Ground
24 V AC/DC	L+	N-	PE
	Phase L or +	Zero conductor N or -	Ground

6.3.2　Relays

Type	Terminal (max. 250 V, 3 A)				
	A0019103				
Alarm relay 1	R11	R12	R13		
	Change-over contact	Normally closed contact (NC) [1]	Normally open contact (NO) [2]		
Relays 2 to 6				Rx1	Rx2
				Switching contact	Normally open contact (NO [2])

1)　NC = normally closed (breaker)
2)　NO = normally open (maker)

6.3.3   Digital inputs, auxiliary voltage output

Type	Terminal			
	A0019103			
Digital inputs 1 to 6	D11 to D61	GND1		
	Digital input 1 to 6 (+)	Ground (-) for digital inputs 1 to 6		
Auxiliary voltage output, not stabilized, max. 250 mA			24 V Out -	24 V Out +
			- Ground	+ 24 V (±15%)

### 6.3.4   Analog inputs

The first digit (x) of the two-digit terminal number corresponds to the associated channel:

Type	Terminal					
	A0019303					
	x1	x2	x3	x4	x5	x6
Current/pulse/frequency input [1]					(+)	(-)
Voltage > 1 V		(+)				(-)
Voltage ≤ 1 V				(+)		(-)
Resistance thermometer RTD (2-wire)	(A)					(B)
Resistance thermometer RTD (3-wire)	(A)			b (sense)		(B)
Resistance thermometer RTD (4-wire)	(A)		a (sense)	b (sense)		(B)
Thermocouples TC				(+)		(-)

1)   If a universal input is used as a frequency or pulse input and the voltage is > 2.5 V, a series resistor must be used in series connection with the voltage source. Example: 1.2 kΩ series resistor at 24 V

6.3.5 Connection example: Auxiliary voltage output as transmitter power supply for 2-wire sensors
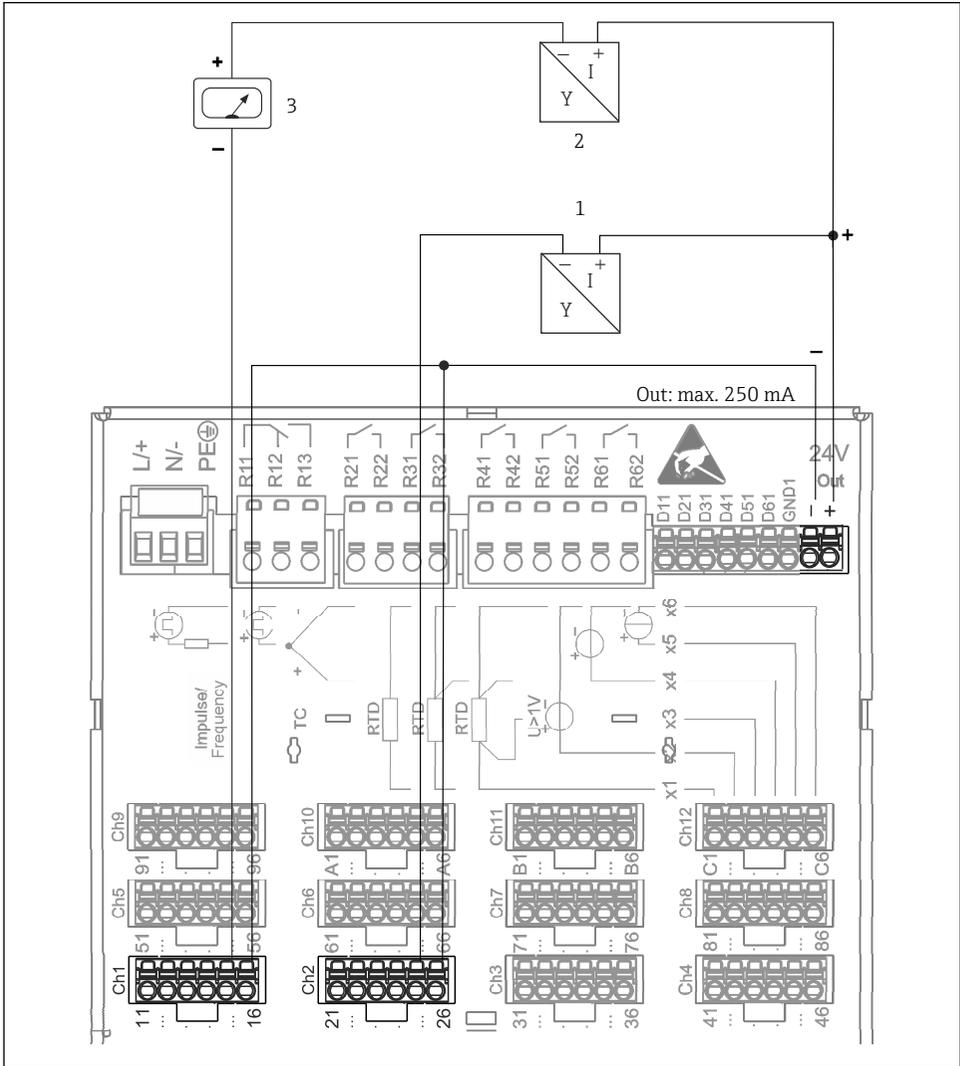
A0020259

🖾 *2*   *Connection of the auxiliary voltage output when using as a transmitter power supply for 2-wire sensors in the current measuring range. (When connecting channel CH3-12, see pin assignment CH1-2.)*

1   Sensor 1 (e.g., Cerabar from Endress+Hauser)
2   Sensor 2
3   External indicator (optional) (e.g., RIA16 from Endress+Hauser)

6.3.6 Connection example: Auxiliary voltage output as transmitter power supply for 4-wire sensors
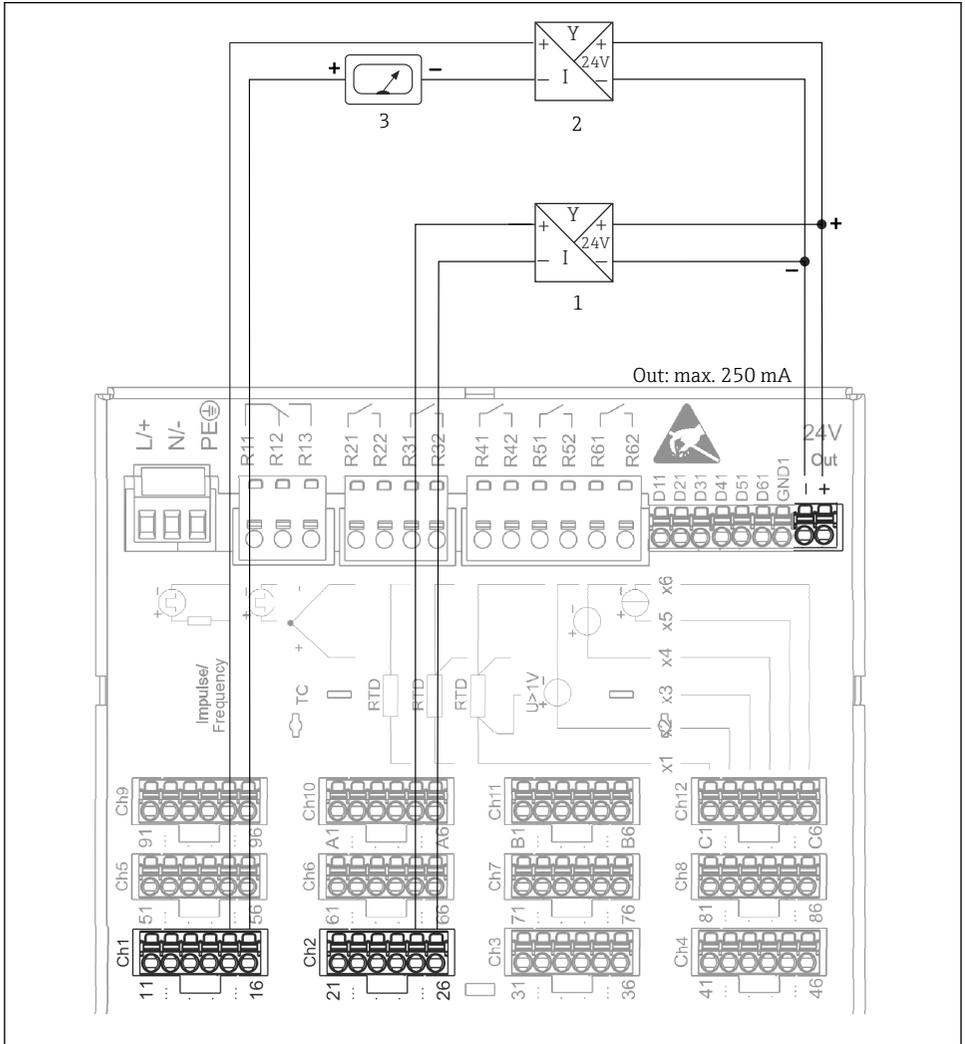

A0020260

🖻 3   *Connection of the auxiliary voltage output when using as a transmitter power supply for 4-wire sensors in the current measuring range. (When connecting channel CH3-12, see pin assignment CH1-2.)*

1   Sensor 1 (e.g., Thermophant T TTR31 from Endress+Hauser)
2   Sensor 2
3   External indicator (optional) (e.g., RIA16 from Endress+Hauser)

6.3.7 Option: RS232/RS485 interface (rear of device)

ℹ️ Use shielded signal cables for serial interfaces.

A combined RS232/RS485 connection is available on a shielded SUB D9 socket at the rear of the device. This can be used for data transfer and to connect a modem. For communication via modem, we recommend an industrial modem with a watchdog function.
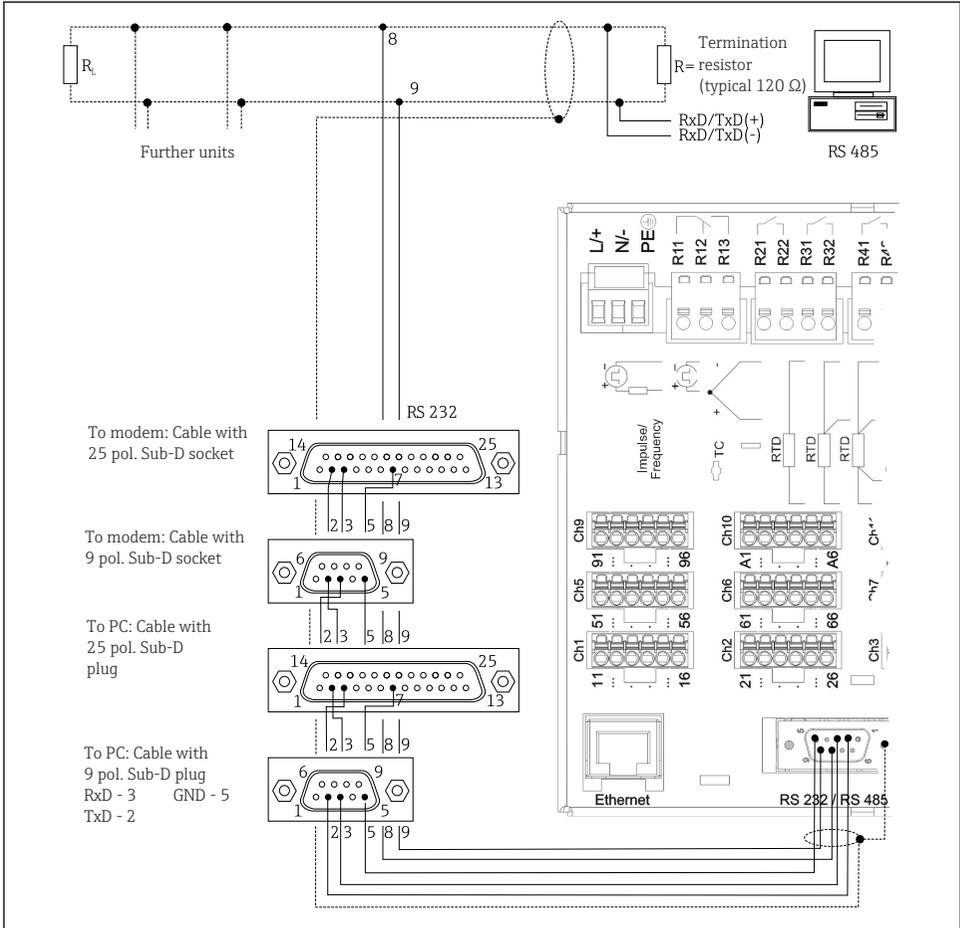
A0019305-EN

Type	Pin of the SUB-D9 socket								
	1	2	3	4	5	6	7	8	9
RS232 assignment		TxD (data output)	RxD (data input)		GND				

Type	Pin of the SUB-D9 socket							
RS485 assignment				GND			RxD/TxD −	RxD/TxD +
Unoccupied connections should be left empty. Maximum cable length: RS232: 2 m (6.6 ft) RS485: 1 000 m (3 280 ft)								

> Only one interface can be used at any one time (RS232 or RS485).

6.3.8   Ethernet connection (rear of device)

The Ethernet interface can be used to integrate the device into a PC network (TCP/IP Ethernet) via a hub or switch. A standard patch cable (e.g., CAT5E) can be used for the connection. Using DHCP, the device can be fully integrated into an existing network without the need for additional configuration. The device can be accessed from every PC in the network.

- Standard: 10/100 Base T/TX (IEEE 802.3)
- Socket: RJ-45
- Max. cable length: 100 m
- Galvanic isolation

Meaning of the LEDs
Beneath the Ethernet connection (see rear of device) there are two light emitting diodes which indicate the status of the Ethernet interface.
- Yellow LED: link signal; is lit when the device is connected to a network. If this LED is not lit, communication is not possible.
- Green LED: Tx/Rx; flashes irregularly if the device is transmitting or receiving data.

6.3.9   Option: Ethernet Modbus TCP slave

The Modbus TCP interface is used to connect to higher-ranking SCADA systems (Modbus master) to transmit all measured values and process values. Up to 12 analog inputs and 6 digital inputs can be transmitted via Modbus and stored in the device. The Modbus TCP interface is physically identical to the Ethernet interface.

6.3.10   Option: Modbus RTU slave

The Modbus RTU (RS485) interface is galvanically isolated and is used to connect to higher-level systems to transmit all measured values and process values. Up to 12 analog inputs and 6 digital inputs can be transmitted via Modbus and stored in the device. Connection is via the combined RS232/RS485 interface.

> Modbus TCP and Modbus RTU cannot be used at the same time.

6.3.11   Connections at front of device

USB connection type A (host)

A USB 2.0 port is available on a shielded USB-A socket at the front of the device. A USB stick can be connected to this interface as a storage medium. An external keyboard or USB hub may also be connected.

USB connection type B (function)

A USB 2.0 port is available on a shielded USB-B socket at the front of the device. This can be used to connect the device to a laptop for communication.

ℹ️ USB-2.0 is compatible with USB-1.1 and USB-3.0, i.e., communication is possible.

Information on USB devices

Requirements with regard to an external USB hub

The USB devices are detected by the "plug-and-play" function. If several devices of the same type are connected, only the USB device that was connected first is available. Settings for the USB devices are made in the setup. A maximum of 8 external USB devices (incl. USB hub) can be connected if they do not exceed the maximum load of 500 mA. If overloaded, the corresponding USB devices are automatically disabled.

Requirements with regard to the USB stick

There is no guarantee that all manufacturers' USB sticks will function faultlessly. An industrial grade SD card is recommended to ensure the reliable recording of data.

ℹ️ The USB stick must be formatted to FAT/FAT32. NTFS format is not readable. The system supports only USB sticks with max. 32 GB.

ℹ️ Do not connect the USB stick to the device via a USB hub. Interference from other USB devices may result in data loss.

Requirements with regard to an external USB keyboard

The system only supports keyboards which can be addressed using generic drivers (HID keyboard - Human Interface Device). Special buttons are not supported (e.g., the Windows button). Users can only enter characters that are available in the input character set of the device. All unsupported characters are rejected. It is not possible to connect a wireless keyboard. The following keyboard layouts are supported: DE, CH, FR, USA, USA International, UK, IT. See setting under "Setup -> Advanced setup -> System -> Keyboard layout".

Requirements with regard to the SD card

Industrial grade SD-HC cards with max. 32 GB are supported.

ℹ️ Use only the industrial grade SD cards described in the "Accessories" section of the Operating Instructions. These have been tested by the manufacturer and are guaranteed to function correctly in the device.

ℹ️ The SD card must be formatted to FAT/FAT32. NTFS format is not readable.

6.4   Post-connection check

Device condition and specifications	Notes
Are cables or the device damaged?	Visual inspection
Electrical connection	**Notes**
Does the supply voltage match the information on the nameplate?	-
Are all terminals firmly engaged in their correct slot?	-
Are the mounted cables strain-relieved?	-
Are the power supply and signal cables correctly connected?	See connection diagram and rear of device.

7   Operating options

7.1   Overview of operating options

The device can be operated directly on site with the navigator and USB keyboard/mouse or via interfaces (serial, USB, Ethernet) and operating tools (web server); FieldCare/DeviceCare configuration software).

7.2 Measured value display and operating elements
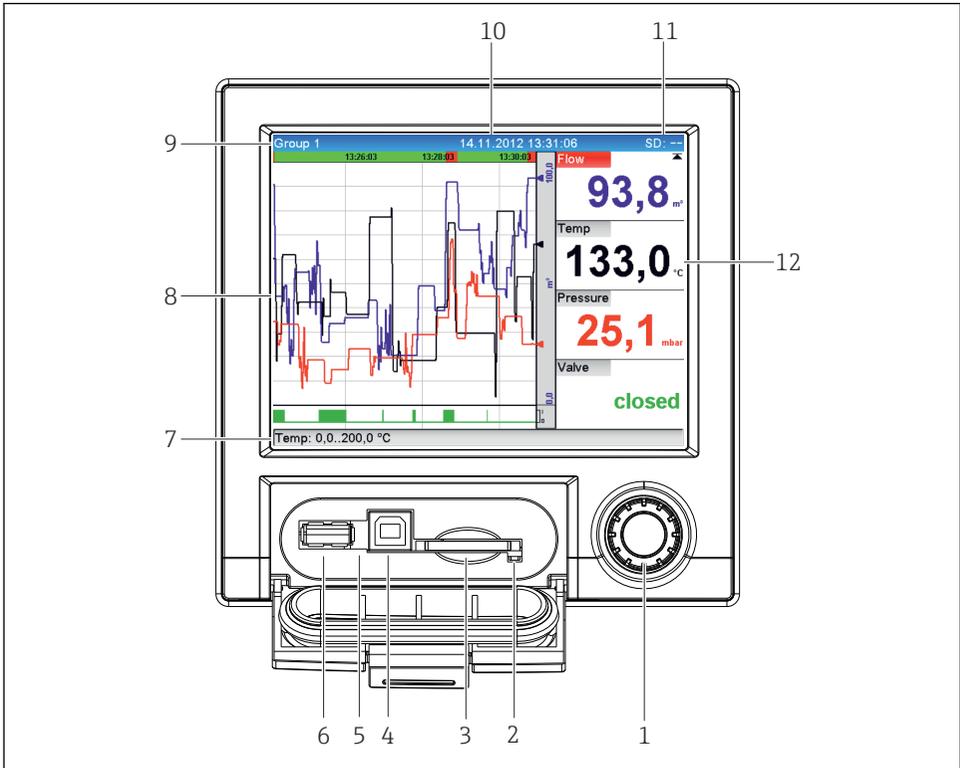
A0047011

🖼 *4   Front of device with open flap*

Item no.	Operating function (display mode = display of measured values) (Setup mode = operation in the Setup menu)
1	"Navigator": Jog/shuttle dial for operating with additional press/hold function. In display mode: turn the dial to switch between the various signal groups. Press the dial to display the main menu. In setup mode or in a selection menu: Turn the dial anticlockwise to move the bar or the cursor up or to the left, changes the parameter. Turning clockwise moves the bar or cursor down or clockwise, changes parameter. Press briefly (<2 sec.) = Select highlighted function, parameter change starts (ENTER key). ℹ️ Access online help: Press and hold navigator (>3 sec.) to show information on the selected function. To quit the menu immediately, press and hold "Back" (>3 sec.) in the navigator. The device switches to display mode.
2	LED at SD slot. Orange LED lit when the device is accessing the SD card. **Do not remove the SD card if the LED is lit! Risk of data loss!**

Item no.	Operating function (display mode = display of measured values) (Setup mode = operation in the Setup menu)
3	Slot for SD card
4	USB-B socket "Function", e.g., to connect to a PC or laptop
5	Green LED lit: power supply present
6	USB-A socket "Host", e.g., for USB memory stick or external keyboard
7	In display mode: alternating status display (e.g., set zoom range) of the analog or digital inputs in the appropriate color of the channel. In setup mode: different information can be displayed here depending on the display type.
8	In display mode: window for measured value display (e.g., curve display). In setup mode: displays the operating menu
9	In display mode: current group name, type of analysis In setup mode: name of the current operating item (dialog title)
10	In display mode: displays current date/time In setup mode: --
11	In display mode: alternating display indicating the percentage space on the SD card or USB stick that has already been used. Status symbols are also displayed in alternation with the memory information (see the following table). In setup mode: the current "direct access" operating code is displayed
12	In display mode: the current measured values are displayed and, in the event of an error/alarm condition, the status is displayed. In the case of counters, the type of counter is displayed as a symbol (see the following table). ⓘ If a measuring point has limit value status, the corresponding channel identifier is highlighted in red (quick detection of limit value violations). During a limit value violation and device operation, the acquisition of measured values continues uninterrupted.

7.3   Access to operating menu via local display

Using the "Navigator" (jog/shuttle dial with additional press/hold function), all settings can be made directly on site at the device.

7.4   Device access via operating tools

Device configuration and measured value retrieval can also be done via interfaces. The following tools are available for this purpose:

Operating tool	Functions	Access via
Field Data Manager (FDM) analysis software, SQL database support	• Export of saved data (measured values, analyses, event logbook) • Visualization and processing of saved data (measured values, analyses, event logbook) • Safe archiving of exported data in an SQL database	RS232/RS485, USB, Ethernet

Web server (integrated into the device; access via browser)	• Displays the current and historical data and measured value curves via the web browser • Easy configuration without additional installed software • Remote access to device and diagnostic information	Ethernet, or Ethernet over USB
OPC server (optional)	The following instantaneous values can be provided: • Analog channels • Digital channels • Mathematics • Totalizer	RS232/RS485, USB, Ethernet
FieldCare/DeviceCare configuration software	• Device configuration • Loading and saving of device configurations (upload/download) • Documentation of the measuring point	USB, Ethernet

The configuration of device-specific parameters is described in detail in the Operating Instructions.

Download the required drivers at: www.endress.com/download

8 System integration

8.1 Integrating the measuring instrument into the system

For detailed information on fieldbus system integration, see the Operating Instructions.

8.1.1 General information

The device has (optional) fieldbus interfaces for exporting process values. Measured values and statuses can also be transmitted to the device via fieldbus.

Note: Counters cannot be transferred.

Depending on the bus system, alarms and faults occurring during data transmission are displayed (e.g., status byte).

The process values are transmitted in the same units that are used to display the values on the device.

9 Commissioning

9.1 Function check

Perform the following checks prior to commissioning:
• "Post-installation check" checklist → 🖹 10.
• "Post-connection check" checklist → 🖹 19.

9.2   Switching on the measuring instrument

After the operating voltage is applied, the green LED lights up and the device is ready for operation.

If you are commissioning the device for the first time, program the setup as described in the following sections of the Operating Instructions.

If you are commissioning a device that is already configured or preset, the device starts measuring immediately as defined in the settings. The values of the channels currently activated are shown on the display.

> Remove the protective film from the display as this would otherwise affect the readability of the display.

9.3   Configuring the operating language

Factory setting: English or ordered local language

Calling the main menu, configuring the operating language:

1. Press the navigator.

2. The main menu appears on the display with the "Sprache/Language" option.

3. To change the set language: Press the navigator, turn the navigator to select the desired language and press the navigator to apply the change.

4. Use "Back" or "ESC" to quit the main menu.

The operating language has been changed.

> The function ✗ "Back" appears at the end of each menu/submenu.
>
> Press "Back" briefly to go up one level in the menu structure.
>
> To quit the menu immediately and return to the measured value display, press and hold "Back" (>3 sec.). The changes made are accepted and saved.

9.4   Configuring the measuring instrument (Setup menu)

Access to the setup is enabled when the device leaves the factory and can be locked in various ways, e.g., by entering a 4-digit access code or via role-based password protection.

When locked, basic settings can be checked but not changed. The device can also be put into operation and configured via the PC.

Device configuration options:
- Setup directly at the device (panel-mounted device only)
- Setup via SD card or USB stick by transferring the parameters stored on it
- Setup via web server using Ethernet or Ethernet over USB
- Setup via FieldCare/DeviceCare configuration software

> **Information on configuration using FieldCare/DeviceCare configuration software**
> - Offline configuration: Most of the parameters are available (depending on the device configuration).
> - Online configuration: Only parameters labeled "Online configuration" are available.

9.4.1 Step-by-step: to the first measured value

Procedure and necessary settings:

1. Check the date/time in the main menu under **"Setup"** and set it if necessary.

2. Configure settings for the interfaces and communication in the main menu under **"Setup -> Advanced setup -> Communication".**

3. Create universal or digital inputs in the main menu under **"Setup -> Advanced setup -> Inputs -> Universal inputs/Digital inputs"**: **Add input: select "Universal input x"** or **"Digital input x"** with which the input signal should be detected. Then select and configure the new input that has been created.

4. Activate relays or analog outputs (optional) in the main menu under **"Setup -> Advanced setup -> Outputs"**.

5. Assign activated inputs to a group in the main menu under **"Setup -> Advanced setup -> Application -> Signal groups -> Group x"**.

6. Use "Back" or "ESC" to quit the menu. The changes made are accepted and saved.

The device is in the measured value display mode and displays the measured values.

9.4.2 Step-by-step: setting or deleting the limit values

Procedure for setting limit values:

1. Open the limit values in the main menu under **"Setup -> Advanced setup -> Application -> Limits"**.

2. Add a limit value: select **"Yes"**.

3. Select and configure **"Limit value x".**

4. Use "Back" or "ESC" to quit the menu. The changes made are accepted and saved.

The device is in the measured value display mode and displays the measured values.

Procedure for deleting limit values:

1. Open the limit values in the main menu under **"Setup -> Advanced setup -> Application -> Limits"**.

2. Delete a limit value: select **"Yes"**.

3. Select the limit value to be deleted from the list.

4. Use "Back" or "ESC" to quit the menu. The changes made are accepted and saved.

The device is in the measured value display mode and displays the measured values.

9.4.3 Device setup

You can open the main menu by pressing the navigator during operation. Turn the navigator to navigate through the available menus. When the desired menu is displayed, press the navigator to open the menu.

In the **"Setup"** menu and in the **"Advanced setup"** submenu, you will find the **most important** settings for the device:

Parameter		Possible settings	Description
Change date/time		UTC time zone dd.mm.yyyy hh:mm:ss	Change the date and time.
Advanced setup			Advanced settings for the device, such as system settings, inputs, outputs, communication, application etc.
	System		Basic settings that are needed to operate the device (e.g., date/time, security, memory management, messages, etc.)
	Inputs		Settings for the analog and digital inputs.
	Outputs		Settings only required if outputs (e.g., relays or analog outputs) are to be used.
	Communication		Settings required if the USB, RS232/RS485 or Ethernet interface of the device is to be used (PC operation, serial data export, modem operation, etc.). The different interfaces (USB, RS232/RS485, Ethernet) can be operated in parallel. However, simultaneous use of the RS232 and RS485 interface is not possible.
	Application		Various application-specific settings (e.g., group settings, limit values etc.).

For a detailed overview of all the operating parameters, please refer to the Appendix of the Operating Instructions.

9.4.4 Setup via SD card or USB stick

An existing device configuration ("Setup data" *.DEH) from another Ecograph T RSG35 or from FieldCare/DeviceCare can be uploaded directly to the device.

Import new setup directly at the device: The function used to load the setup data can be found in the main menu under **"Operation -> SD card (or USB stick) -> Load setup -> Select directory -> Next"**.

9.4.5 Setup via web server

To configure the device via the web server, connect the device to a PC via Ethernet (or Ethernet over USB).

Please observe the information and communication settings for Ethernet and the web server in the Operating Instructions.

To configure the device via a web server, you must have Administrator or Service access. ID and password administration is performed in the main menu under **"Setup -> Advanced setup -> Communication -> Ethernet -> Configuration Web server -> Authentication"**.

ID default value: admin; Password: admin

Note: Change the password during commissioning.

Establishing a connection and setup

Procedure for setting up a connection:

1. Connect the PC to the device via Ethernet (or Ethernet over USB).
2. Start the browser on the PC; enter the IP address: http://<IP address> to open the web server for the device. Note: Leading zeros in IP addresses must not be entered (e.g., enter 192.168.1.11 instead of 192.168.001.011).
3. Enter ID and password, and confirm each by clicking "OK" (see also the "Web server" section of the Operating Instructions).
4. The web server shows the instantaneous value display of the device. In the web server taskbar, click **"Menu -> Setup -> Advanced setup"**.
5. Start parameter configuration.

Procedure to establish a direct connection via Ethernet (point-to-point connection):

1. Configure the PC (depends on operating system): e.g., IP address: 192.168.1.1; subnet mask: 255.255.255.0; gateway: 192.168.1.1
2. Disable DHCP on the device.
3. Define the communication settings on the device: e.g., IP address: 192.168.1.2; subnet mask: 255.255.255.0; gateway: 192.168.1.1
4. Start the browser on the PC; enter the IP address: http://<IP address> to open the web server for the device. Note: Leading zeros in IP addresses must not be entered (e.g., enter 192.168.1.11 instead of 192.168.001.011).
5. Enter ID and password, and confirm each by clicking "OK".
6. The web server shows the instantaneous value display of the device. In the web server taskbar, click **"Menu -> Setup -> Advanced setup"**.
7. Start parameter configuration.

A crossover cable is not required.

Continue with device configuration in accordance with the Operating Instructions for the device. The complete Setup menu, i.e., all of the parameters listed in the Operating Instructions, can also be found on the web server. After configuration, accept the setup with **"Save settings"**.

> **NOTICE**

Undefined switching of outputs and relays
▸ When configuring using a web server, the device may adopt undefined states. This may result in the undefined switching of outputs and relays.

9.4.6   Setup via FieldCare/DeviceCare configuration software

To configure the device using the configuration software, connect the device to a PC via USB or Ethernet.

🛈   Download at: www.endress.com/download

Establishing a connection and setup

Continue with device configuration in accordance with the Operating Instructions for the device.

The complete Setup menu, i.e. all the parameters listed in the Operating Instructions, can also be found in the configuration software.

> **NOTICE**

Undefined switching of outputs and relays
▸ During configuration using the configuration software, the device may assume undefined states. This may result in the undefined switching of outputs and relays.

9.5   Access protection and security concept

To protect the setup from unauthorized access following commissioning, there are many options to ensure access protection to the setup settings and the user entries. Access and authorizations can be configured and assigned passwords.

🛈   The user of the device is responsible for access protection and the security concept. In addition to the device functions listed, user policies and procedures, in particular, must also be applied (e.g., password allocation, password sharing, physical access barriers, etc.).

The following protection options and functionalities are available:
▪ Protection per control input
▪ Protection via access code
▪ Protection via user roles

In order to change any parameter, the correct code must first be entered or the device must be unlocked using the control input.

Setup lock via control input: The settings for the control input can be found in the main menu under **"Setup -> Advanced setup -> Inputs -> Digital inputs -> Digital input X -> Function: Control input; Action: Lock setup"**.

🛈   It is preferable to lock the setup using a control input.

Setting up an access code: The settings for the access code can be found in the main menu under **"Setup -> Advanced setup -> System -> Security -> Protected by -> Access code"**. Factory setting: "open access", i.e. can be changed at any time.

ℹ️ Make a note of the code and store in a safe place.

Setting up user roles: The settings for the user roles (operator, admin and service) are provided in the main menu under **"Setup -> Advanced setup -> System -> Security -> Protected by -> User roles"** . Factory setting: "open access", i.e. can be changed at any time.

ℹ️ Change the passwords during commissioning.

Make a note of the code and store in a safe place.

9.6   HTTPS web server setup

To operate the HTTPS web server, an X.509 certificate and a suitable private key must be installed on the device. For security reasons, installation is via a USB stick only.

ℹ️ The certificate that is preinstalled on the device when delivered from the factory should not be used.

ℹ️ Server certificates cannot be installed via the "USB stick/import SSL certificates" function!

Requirements
Private key:
- X.509 PEM file (Base64 encoded)
- RSA key with max. 2048 bit
- May not be password-protected

Certificate:
- X.509 file (Base64 encoded PEM or binary DER format)
- V3 incl. extension required
- Signed by a certification authority (CA) or sub-certification authorities (recommended), or self-signed

Certificate and private key can be created or converted using openssl (https://www.openssl.org) for example. Contact the IT administrator to create the corresponding data.

📖 Tip: More information on this topic is provided in our How To Videos
https://www.youtube.com/endresshauser

Installation:

1. Copy the private key onto a USB stick into the root directory. File name: **key.pem.**
2. Copy the certificate onto a USB stick into the root directory. File name: **cert.pem** or **cert.der.**
3. Connect the USB stick to the device. The private key and the certificate are installed automatically. The installation is logged in the event logbook.

4. Remove the USB stick using the **"Safe removal"** function.

ℹ️ **Notes:**
- Restart the device so the browser uses the new certificate.
- Delete the private key from the USB stick following installation.
- Keep the private key in a safe place.
- Use the private key and the certificate for one device only.
- To prevent unauthorized use, it is possible to disable the USB A port on the device. In this way, an attacker cannot replace the certificate or the private key ("Denial of Service"). Install a perimeter guard to prevent access to the device.

Checking certificates

Check the certificate via **"Main menu -> Diagnostics -> Device information -> SSL certificates"**. Select the " **Server certificate**" point under the certificate.

ℹ️ Replace the certificate in good time before it expires. The device will display a diagnostic message 14 days before the certificate expires.

Uninstalling certificates and the private key

Check the certificate via **"Main menu -> Diagnostics -> Device information -> SSL certificates"**. Select the " **Server certificate**" point under the certificate. Delete the certificate.

ℹ️ In this case, the preinstalled certificate is reused.

Using self-signed certificates

ℹ️ Self-signed certificates must be stored in the PC's certificate memory under "Trusted Root Certification Authorities" so that the browser does not display a warning.

Alternatively, an exception can be saved in the browser.

10 Maintenance

No special maintenance work is required for the device.

10.1 Cleaning

10.1.1 Cleaning of surfaces not in contact with the medium

- Recommendation: Use a lint-free cloth that is either dry or slightly dampened using water.
- Do not use any sharp objects or aggressive cleaning agents that corrode the surfaces (e.g. displays, housing) and seals.
- Do not use high-pressure steam.
- Observe the degree of protection of the device.

ℹ️ The cleaning agent used must be compatible with the materials of the device configuration. Do not use cleaning agents with concentrated mineral acids, bases or organic solvents.

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