KA01132R/09/EN/04.21

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# Brief Operating Instructions Ecograph T, RSG35

Universal Data Manager



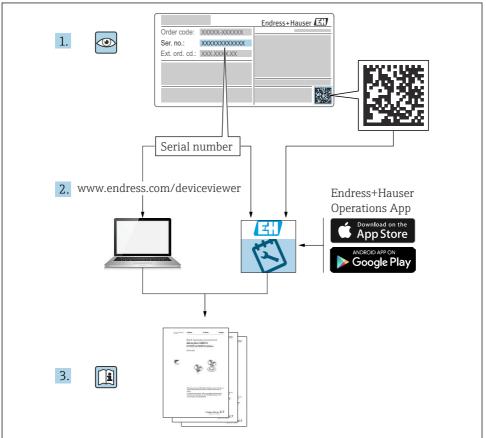
These Instructions are Brief Operating Instructions; they are not a substitute for the Operating Instructions pertaining to the device.

For detailed information, refer to the Operating Instructions and other documentation.

Available for all device versions via:

- Internet: www.endress.com/deviceviewer
- Smart phone/Tablet: Endress+Hauser Operations App





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# 1 About this document

# 1.1 Document function

These instructions contain all the essential information from incoming acceptance to initial commissioning.

#### **Integrated Operating Instructions**

At the push of a button, the device displays operating instructions directly on the screen. This manual complements the operating instructions in the device and explains what is not directly described in the operating instructions.

## 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 dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

#### **A**CAUTION

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

#### NOTICE

This symbol contains information on procedures and other facts which do not result in personal injury.

#### 1.2.2 Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
	<b>Permitted</b> Procedures, processes or actions that are permitted.		<b>Preferred</b> Procedures, processes or actions that are preferred.
	Forbidden Procedures, processes or actions that are forbidden.	i	Tip Indicates additional information.
Ĩ	Reference to documentation		Reference to page
	Reference to graphic	1., 2., 3	Series of steps
4	Result of a step		Visual inspection

#### 1.2.3 Symbols in graphics

Symbol	Meaning
1, 2, 3,	Item numbers
1. , 2. , 3	Series of steps
A, B, C,	Views
A-A, B-B, C-C,	Sections
≈→ 	Flow direction
<b>EX</b> A0011187	Hazardous area Indicates a hazardous area.
A0011188	Safe area (non-hazardous area) Indicates a non-hazardous area.

# 1.3 Terminology

To improve clarity, abbreviations or synonyms are used in these instructions for the following terms:

- Endress+Hauser:
   Term used in these instruction
- Term used in these instructions: "Manufacturer" or "Supplier" • Ecograph T RSG35:

Term used in these instructions: "Device" or "Measuring device"

# 2 Basic safety instructions

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

# 2.1 Requirements concerning the staff

The staff must fulfill the following requirements for their tasks:

- ▶ Trained staff: Must have a qualification which corresponds to their function and tasks.
- Authorized by the plant operator.
- ► Familiar with the national regulations.
- Before starting their work: Must have read and understood all instructions in the operating manual and supplementary documentation as well as the certificate (depending on the application).
- Must comply with all instructions and the regulatory framework.

# 2.2 Intended use

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

- The manufacturer accepts no liability for damages resulting from incorrect use or use other than that designated. It is not permitted to convert or modify the device in any way.
- The device is designed for installation in a panel and must only be operated in an installed state.

# 2.3 Workplace safety

For work on and with the device:

► Wear the required personal protective equipment according to national regulations.

If working on and with the device with wet hands:

• Due to the increased risk of electric shock, wear suitable gloves.

# 2.4 Operational safety

Risk of injury!

- Operate the device only if it is in proper technical condition, free from errors and faults.
- ► The operator is responsible for interference-free operation of the device.

#### Hazardous area

To eliminate danger to persons or the facility when the device is used in the hazardous area (e.g. explosion protection):

- Check the nameplate to verify if the device ordered can be put to its intended use in the hazardous area.
- ► Observe the specifications in the separate supplementary documentation that is an integral part of these instructions.

# 2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet stateof-the-art safety requirements, has been tested, and 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 EC directives listed in the device-specific EC Declaration of Conformity. The manufacturer confirms this by affixing the CE mark to the device.

# 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<sub>eff</sub> (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 goods, check the following points:

- Is the packaging or the content damaged?
- Is the delivery complete? Compare the scope of delivery against the information on your order form.

# 4.2 Scope of delivery

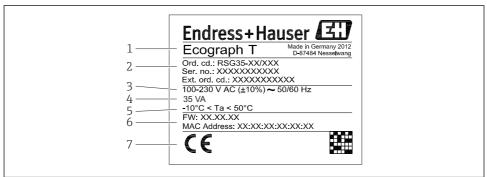
The scope of delivery of the device comprises:

- Device (with terminals, as per order)
- Panel-mounted device: 2 screw fastening clips
- USB cable
- Optional: industrial grade SD card (card is located in the SD slot behind the flap on the front of the device)
- "Field Data Manager (FDM)" analysis software on DVD (Essential, Demo or Professional version, depending on order)
- Delivery note
- Multilanguage Brief Operating Instructions, hard copy

# 4.3 Product identification

#### 4.3.1 Nameplate

Compare the nameplate with the following diagram:



A0019299

- 1 Device nameplate (example)
- 1 Device designation
- 2 Order code, serial number, extended order code
- 3 Power supply, mains frequency
- 4 Maximum power consumption
- 5 Temperature range
- 6 Software version; MAC address
- 7 Device approvals

#### 4.3.2 Name and address of manufacturer

Name of manufacturer:	Endress+Hauser Wetzer GmbH + Co. KG
Address of manufacturer:	Obere Wank 1, D-87484 Nesselwang
Model/type reference:	RSG35

#### 4.4 Storage and transport

Compliance with the permitted environmental and storage conditions is mandatory. Precise specifications are provided in the "Technical data" section.

Please note the following:

- Pack the device so that is protected against impact for storage and transport. The original packaging provides optimum protection.
- The permitted storage temperature is -20 to +60 °C (-4 to +140 °F)

# 5 Installation

# 5.1 Installation conditions

# NOTICE

#### Overheating due to buildup of heat in the device

► To avoid heat buildup, always ensure that the device is sufficiently cooled.

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

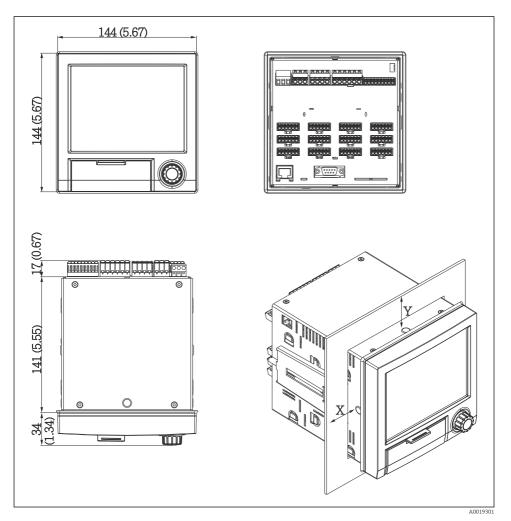
- Ambient temperature range: -10 to +50 °C (14 to 122 °F)
- Climate class as per IEC 60654-1: Class B2
- Degree of protection: IP65, NEMA 4 at front / IP20 rear of housing

#### 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 Mounting the measuring device

Mounting tool: For installation in the panel, all you need is a screwdriver.



2 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 ground connection must be made before all other connections.

#### NOTICE

#### Cable heat load

► Use suitable cables for temperatures of 5 °C (9 °F) above 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 (within easy reach) and marked as a circuit breaker.

Protect the device from overload

▶ Provide overload protection (nominal current = 10 A) for 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 lines

▶ Install suitable overvoltage protection (e.g. E+H HAW562) upstream.

# 6.2 Connecting instructions

#### 6.2.1 Cable specification

#### 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. This makes the connection very quick and easy. The spring terminals are unlocked with a slotted screwdriver (size 0).

Please note the following when connecting:

- Wire cross-section, auxiliary voltage output, digital I/O and analog I/O: max. 1.5 mm<sup>2</sup> (14 AWG) (spring terminals)
- Wire cross-section, mains: max. 2.5 mm<sup>2</sup> (13 AWG) (screw terminals)
- Wire cross-section, relays: max. 2.5 mm<sup>2</sup> (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, in particular, the lines - both sensor lines and communication lines - are shielded and the shield forms as complete a cover as possible. A shielded line must be used for sensor lines that are longer than 30 m. A shield coverage of 90% is ideal. In addition, make sure not to cross sensor lines and communication lines when routing them. Connect the shield 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 supply side

Experience shows that the best results with regard to EMC are achieved in most cases in installations with one-sided shielding 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.

Where applicable, national installation regulations and guidelines must be observed during the 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.

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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 or significantly impact signal transmission. In such cases the shielding of the signal cable is to be grounded on one side only, i.e. it may not be connected to the ground terminal of the housing. The shield that is not connected should be insulated!

#### 6.3 Connecting the measuring device

#### 6.3.1 Supply voltage

Power unit type			
			A0019103
100-230 VAC	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 Relay

Туре		Terminal (max. 250 V, 3 A)							
Alarm relay 1	R11	R12	R13						
	Changeover contact	Normally closed contact (NC) <sup>1)</sup>	Normally open contact (NO) <sup>2)</sup>						
Relay 2 to 6				Rx1	Rx2				
				Switching contact	Normally open contact (NO <sup>2)</sup> )				

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

2)

#### 6.3.3 Digital inputs; auxiliary voltage output

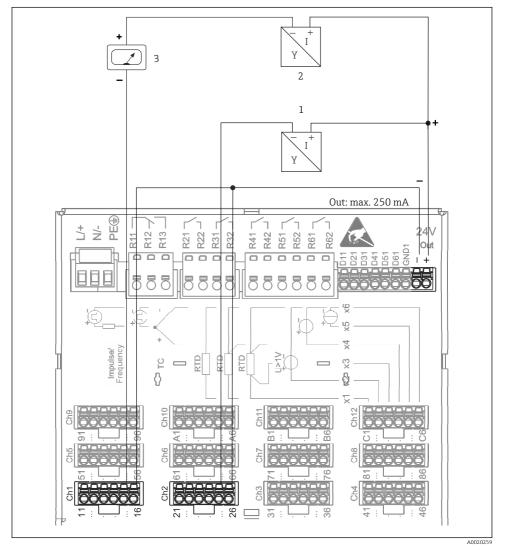
Туре			-1222222220 · +	
				A0019103
Digital input	D11 to D61	GND1		
1 to 6	Digital input 1 to 6 (+)	Ground (-) for digital inputs 1 to 6		
Auxiliary			24V Out -	24V Out +
voltage output, not stabilized, max. 250 mA			- Ground	+ 24V (±15%)

### 6.3.4 Analog inputs

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

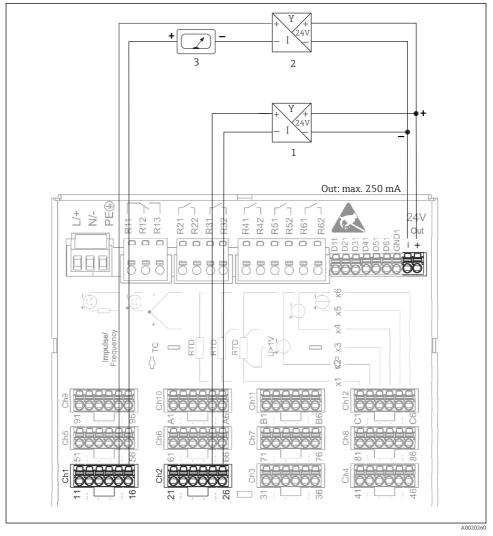
Туре	Terminal	x x x 0000 0000				A0019303
	x1	x2	x3	x4	x5	хб
Current/pulse/frequency input <sup>1)</sup>					(+)	(-)
Voltage > 1V		(+)				(-)
Voltage ≤ 1V				(+)		(-)
Resistance thermometer RTD (2-wire)	(A)					(B)
Resistance thermometer RTD (3-wire)	(A)			b (sense)		(B)
Resistance thermometer RTD (4-wire)	(A)		a (sense)	b (sense)		(B)
Thermocouples TC				(+)		(-)

<sup>1)</sup> 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:  $1.2 \text{ k}\Omega$  series resistor at 24 V



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

- 3 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

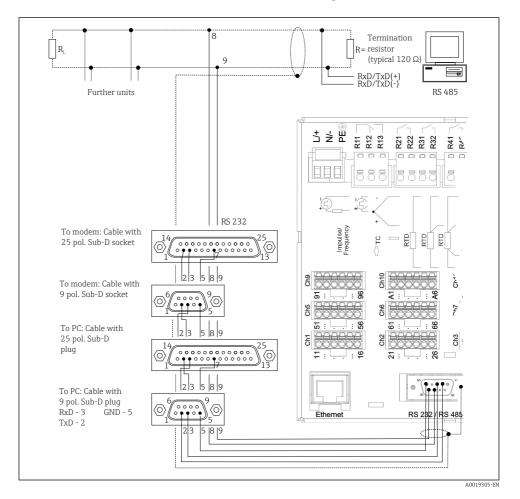
Connection of the auxiliary voltage output when using as a transmitter power supply for 4-wire sensors in the current measuring range. (When connecting channel CH3-12, see pin assignment CH1-2.)

- *Sensor 1 (e.g. temperature switch 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)

Use shielded signal lines 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.



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

Туре	Pin of the SUB-D9	Pin of the SUB-D9 socket						
RS485 assignment		GND RxD/TxD - RxD/TxD +						
Unoccupied cor Maximum cable RS232: 2 m (6. RS485: 1000 m	6 ft)	left empty.						



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 via a hub or switch into a PC network (TCP/ IP Ethernet). 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; test voltage: 500 V

#### 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 (test voltage: 500 V) and is used to connect to higher-ranking 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, for example, 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 for communication with a laptop, for example.



USB 2.0 is compatible with USB 1.1 or USB 3.0, i.e. communication is possible.

#### Information on USB devices

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 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. That is why an industrial grade SD card is recommended to ensure the reliable recording of data.

i

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



The USB stick must not be connected 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 keys are not supported (e.g. Windows keys). 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 for the SD card

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



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 faultlessly in the device.

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

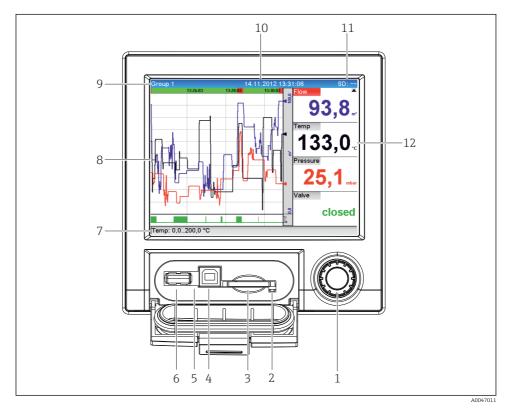
## 6.4 Post-connection check

Device condition and specifications	Notes		
Are cables or the device damaged?	Visual inspection		
Electrical connection	Notes		
Does the supply voltage match the specifications 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 Operation options

## 7.1 Overview of operation options

The device can be operated directly onsite 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

☑ 5 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 to the right, changes the parameter. Press briefly (<2 sec.) = Select highlighted function, parameter change starts (ENTER key).
	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 devices switches to Display mode.
2	LED at SD slot. Orange LED lit when the device writes to the SD card or reads it. 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 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 corresponding 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: Display of operating menu		
9	In Display mode: Current group name, analysis type		
	In Setup mode: Name of the current operating item (dialog title)		
10	In Display mode: Current date/time is displayed 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 the operating menu via the local display

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

# 7.4 Device access via operating tools

It is possible to configure the device and obtain measured values via interfaces. The following tools are available for this purpose:

Operating tool	Functions	Access via	
Field Data Manager (FDM) analysis software, SQL database support (included in the delivery)	<ul> <li>Export of saved data (measured values, analyses, event log)</li> <li>Visualization and processing of saved data (measured values, analyses, event log)</li> <li>Safe archiving of exported data in a SQL database</li> </ul>	RS232/RS485, USB, Ethernet	
Web server (integrated into the device; access via browser)	<ul> <li>Display of current and historical data and measured value curves via the Web browser</li> <li>Easy configuration without additional installed software</li> <li>Remote access to device and diagnostic information</li> </ul>	Ethernet, or Ethernet over USB	
OPC server (optional)	The following instantaneous values can be provided: <ul> <li>Analog channels</li> <li>Digital channels</li> <li>Mathematics</li> <li>Totalizer</li> </ul>	RS232/RS485, USB, Ethernet	
FieldCare/DeviceCare configuration software	<ul> <li>Device configuration</li> <li>Loading and saving of device configurations (upload/ download)</li> <li>Documentation of the measuring point</li> </ul>	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 device in the system

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

#### 8.1.1 General notes

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 or faults occurring during data transmission are displayed (e.g. status byte).

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

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# 9 Commissioning

## 9.1 Function check

Perform the following checks prior to commissioning:

- "Post-mounting check" checklist  $\rightarrow \square 11$ .
- "Post-connection check" checklist  $\rightarrow \cong 20$ .

## 9.2 Switching on the measuring device

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 Setting 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 device (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

#### 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
- Make 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.
- Activate relays or analog outputs (optional) in the main menu under "Setup -> Advanced setup -> Outputs"
- 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 main 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: set or delete the limit values

#### Procedure for setting limit values:

- 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 main 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:

- 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 main 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 e.g. 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.
	Communicatio n		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 parameter, 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, Administrator or Service authentication is required. 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: The password should be changed during commissioning!

#### Establishing a connection and setup

#### Procedure for setting up a connection:

- 1. Connect the device to the PC 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 the 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 the 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. Make 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 the 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 your 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 statuses! 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. modifications can always be made.



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. modifications can always be made.



The passwords should be changed 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.



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

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

#### Prerequisites

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), self-signed where necessary.

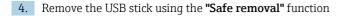
Certificate and private key can be created or converted using openssl (https://www.openssl.org) for example. Contact your IT administrator to create the corresponding files.



Tip: More information on this topic is provided in our How To Videos under 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.



### **Notes:**

- The device may have to be restarted for the browser to use 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"). If necessary, install a perimeter guard to prevent access to the device.

#### **Checking certificates**

You can check the certificate via **"Main menu -> Diagnostics -> Device information -> SSL certificates"**. For this purpose, select the **"Server certificate"** point under the certificate.



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

You can check the certificate via **"Main menu -> Diagnostics -> Device information -> SSL certificates"**. For this purpose, select the **"Server certificate"** point under the certificate. You can delete the certificate here.



In this case, the preinstalled certificate is reused.

#### Using self-signed certificates



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.



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# www.addresses.endress.com

