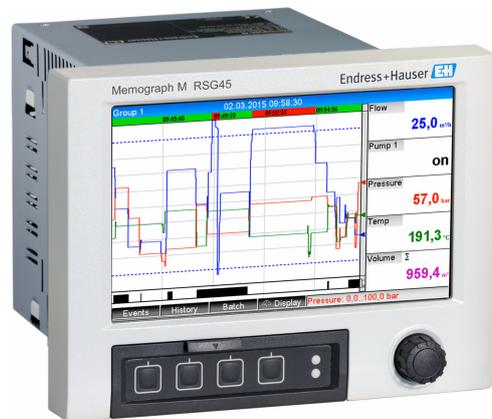


# Operating Instructions Memograph M RSG45

Data managers

Wastewater + RSB (rain spillway basin) option

Additional functions for water/wastewater software



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# 1 About this document

## 1.1 Document function

**NOTICE**

This manual contains an additional description for a special software option. These additional instructions are not a substitute for the Operating Instructions pertaining to the device!

- ▶ Refer to the Operating Instructions and other documentation for detailed information.

Available for all device versions via:

- Internet: [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)
- Smartphone/tablet: Endress+Hauser Operations app

## 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 Symbols for certain types of Information

Symbol	Meaning	Symbol	Meaning
	<b>Forbidden</b> Procedures, processes or actions that are forbidden.		<b>Tip</b> Indicates additional information.
	Reference to documentation		Reference to page
	Reference to graphic		Series of steps

## 1.3 Change history

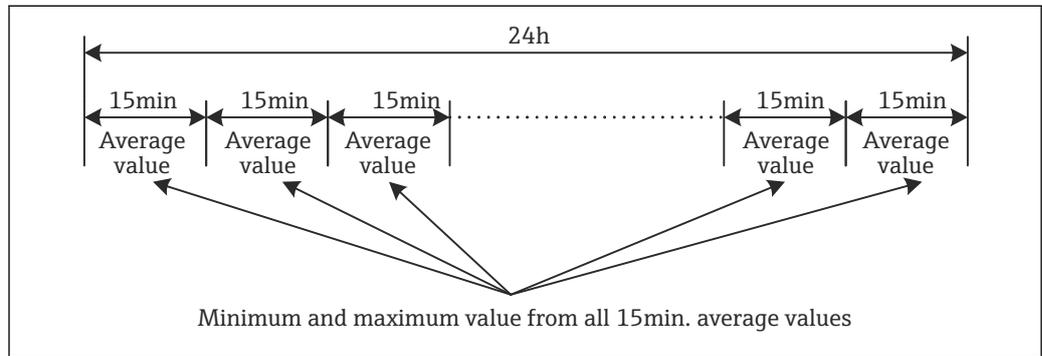
Device software Version/date	Software modifications	FDM analysis software version	Version of OPC server	Operating Instructions
V2.00.00/08.2015	Original software	V1.3.0 and higher	V5.00.03 and higher	BA01411R/01.15
V2.04.06/10.2022	Bug fixes	V1.6.3 and higher	V5.00.07 and higher	BA01411R/02.22-00
V2.04.09/05.2025	Bug fixes	V1.6.3 and higher	V5.00.07 and higher	BA01411R/03.25

## 2 Product description

The following functions are available in addition to the functions of the telealarm software:

### Recording of the highest and lowest values for the analog channels

The highest and lowest values of the analog channels are recorded based on x-minute average values (x is configurable: **From the instantaneous values**, **From x-min. average values**, **From x-hr. average values**). If **From the instantaneous values** is selected, a normal analysis (from the 100 ms values) is generated.

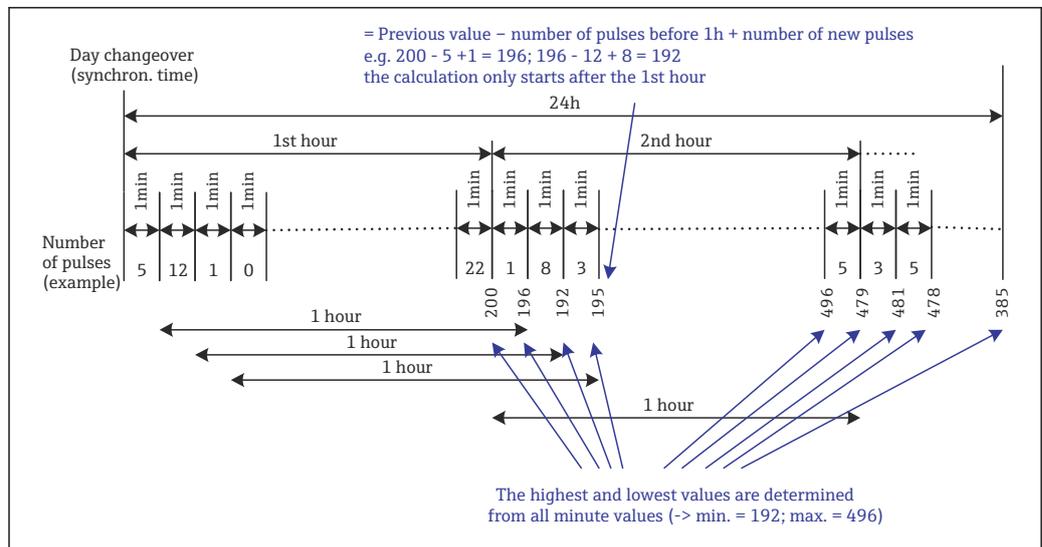


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1 Recording the highest and lowest values over one day (x = 15 min.)

### Recording of the floating highest and lowest values for quantities

The flow rate from the last hour is recorded every minute for each quantity channel and the daily, weekly, monthly and yearly highest/lowest value is determined on this basis. The time of the highest/lowest value is also recorded and saved. An exact load profile can be created from these values to detect abnormal daily situations.



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2 Recording of the floating highest and lowest values for quantities

### ■ Infiltration water analysis

To determine the infiltration water, the device calculates the quantity in a configurable timeframe. Infiltration water is a collective term used for water that does not belong in a wastewater channel and does not have to be treated in a sewage treatment plant. A timeframe can be configured in the Setup (e.g. from 03:00 to 04:00) during which an additional quantity recording is performed to determine the infiltration water, i.e. only the quantity that occurs during this timeframe is determined. This quantity is also displayed in daily, weekly, monthly and yearly analyses. The device can analyze the infiltration water for a maximum of 3 channels.

### ■ Monitoring of rain spillway basins (RSB)

All the relevant values for the reservoir and overflow are determined and saved in the event logbook for the rain spillway basins (RSB). The reservoir period is the length of time the water level in the basin is higher than the minimum water level. The set point violation (including date, time, duration, highest value and quantity) is recorded in an event message for upper analog set points (e.g. for overflow or reservoir). Alarm statistics are created for the basin overflow frequency.

## 2.1 Alarm statistics

The following data are determined via the signal analysis cycles:

- How often was the set point violated (frequency)  
Alternatively, the number of days during the analysis period on which at least one set point violation occurred can be recorded (e.g. required for the number of overflows in the rain spillway basin).
- How long was the set point violated in total (duration in operating hours format 0000h00:00)

The alarm statistics are generated for every active signal analysis. The alarm statistics function is switched off in the default settings.

 The alarm statistics function must be activated to monitor rain spillway basins (RSB). See the next section for a description.

In the case of externally controlled signal analysis, alarm statistics are not generated for the time the analysis is not active. The alarm statistics are only generated for **analog** set points (upper, lower or gradient). No statistics are generated for **set points at counter**.

 To determine the frequency, the system only reacts to the moment the set point is exceeded. If the set point is already violated at the time the analysis is started, the frequency value is NOT increased. The setting in the **Group days** parameter determines whether the number of set point violations or the days with a set point violation are counted.

Example: Set point constantly violated from 08:59:50 to 09:01:10, analysis cycle 1 minute:

Time span	Frequency	Duration
08:59:00 – 08:59:59	1	10 s
09:00:00 – 09:00:59	0	60 s
09:01:00 – 09:01:59	0	10 s

## 3 Device configuration, application setup

### 3.1 General programming guidelines

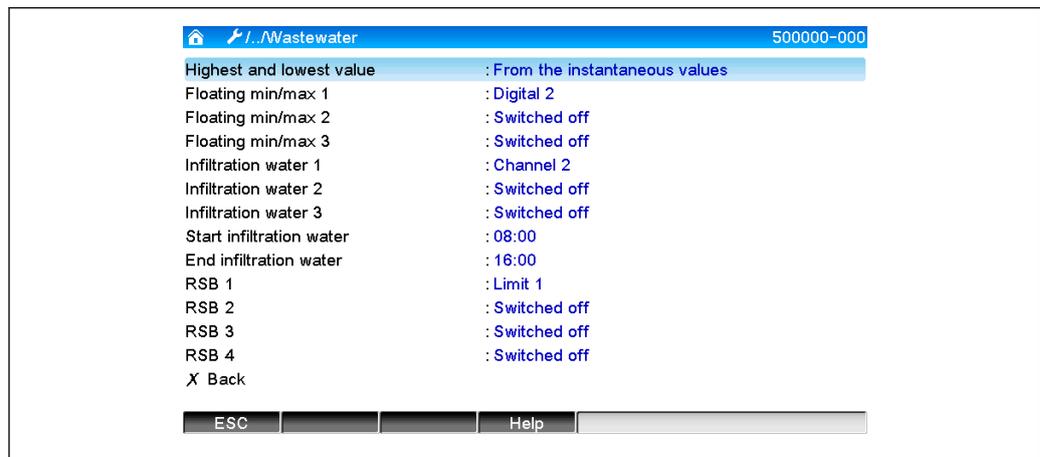
1. First install and configure the device as described in the Operating Instructions BA01338R. Observe all the safety instructions!

2. Make the additional settings needed for the wastewater application (see the next section).
3. Make the additional settings needed for the telealarm (see the additional description).
4. Configure the display, for example group the values to be displayed and select the display mode. See from Section 10 of the Operating Instructions.

### 3.2 Advanced setup → Application → Wastewater

Settings for using the device in the wastewater sector.

 Depending on the selected function, the device's user interface is adapted so that each time only required parameters have to be checked/set.



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 3 Application → Wastewater

"Application → Wastewater" menu items	Configurable parameters (factory settings are highlighted in bold)	Direct access code
Highest and lowest value	The highest and lowest values of the analog channels are determined from the current instantaneous values or from the ¼-hourly average values. <b>Note:</b> The highest and lowest values are determined for all the active analog channels. Following a change in this menu, signal analysis must be reset manually ( <b>Advanced setup → Application → Signal analysis → Reset to zero</b> ) so that the highest and lowest values are correctly generated. Picklist: <b>From the instantaneous values</b> , From x-min. average values, From x-hr. average values	500000/000
Floating min/max 1 Floating min/max 2 Floating min/max 3	To determine the highest and lowest values for quantities, the quantity of the last 60 minutes is recorded every minute. An exact load profile can be created from these values to detect abnormal daily situations. Select the channel for which the floating min/max value should be determined. Picklist: <b>Switched off</b> , Analog input x, Digital input x, Maths x <b>Note:</b> Totalization must be active in the case of an analog channel. The function must be set to pulse counter in the case of a digital channel. For maths channels, the result must be a counter or totalized.	500001/000 500002/000 500003/000
Infiltration water 1 Infiltration water 2 Infiltration water 3	To determine the infiltration water, the device calculates the quantity in a configurable timeframe. Infiltration water is a collective term used for water that does not belong in a wastewater channel and does not have to be treated in a sewage treatment plant. Select the channel for which the infiltration water should be determined. Picklist: <b>Switched off</b> , Analog input x, Digital input x, Maths x <b>Note:</b> Totalization must be active in the case of an analog channel. The function must be set to pulse counter, counter or quantity from time in the case of a digital channel. For maths channels, the result must be a counter or totalized.	500004/000 500005/000 500006/000
Start infiltration water	Starting time for recording the quantity for determining infiltration water. Input: HH:MM; factory setting: <b>00:00</b>	500007/000

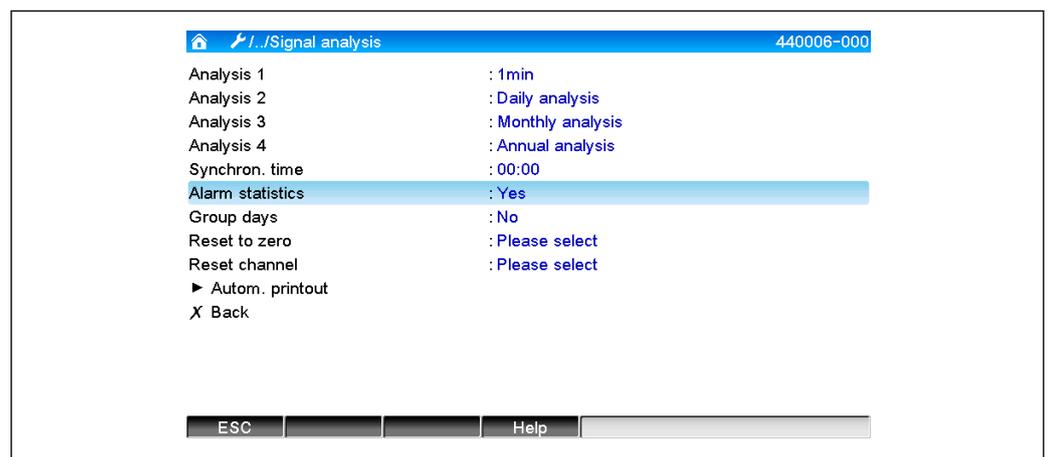
"Application → Wastewater" menu items	Configurable parameters (factory settings are highlighted in bold)	Direct access code
End infiltration water	End time for recording the quantity for determining infiltration water. Input: HH:MM; factory setting: <b>00:00</b>	500008/000
RSB 1 RSB 2 RSB 3 RSB 4	All the relevant values for the reservoir and overflow are determined and saved in the event logbook for the rain spillway basins (RSB). Here, select the set point which causes reservoir or overflow to begin if the value is exceeded, and causes reservoir or overflow to end when the value is undershot. Picklist: <b>Switched off</b> , Set point x	500009/000 500010/000 500011/000 500012/000

### 3.3 Advanced setup → Application → Signal analysis (alarm statistics)

Settings in order to obtain signal analyses for user-definable time ranges/cycles and the function to manually reset the signal analyses.

**i** Only settings relevant for the wastewater option are described here. For all the other signal analysis functions, see the Operating Instructions.

Depending on the selected function, the device's user interface is adapted so that each time only required parameters have to be checked/set.



4 Application → Signal analysis → Alarm statistics

"System → Signal analysis" menu items	Configurable parameters (factory settings are highlighted in bold)	Direct access code
<b>Alarm statistics</b>	<p>The following data can be determined via the signal analysis cycles (e.g. daily analysis):</p> <ul style="list-style-type: none"> <li>▪ How often was the set point violated (frequency)</li> <li>▪ How long was the set point violated (duration in operating hours format 0000h00:00)</li> </ul> <p>Picklist: <b>No</b>, Yes</p> <p> ▪ The alarm statistics are generated for every active signal analysis. In the case of externally controlled signal analysis, alarm statistics are not generated for the time the analysis is not active.</p> <ul style="list-style-type: none"> <li>▪ The alarm statistics are only generated for <b>analog</b> set points (upper, lower or gradient). No statistics are generated for <b>set points at counter</b>.</li> <li>▪ Set points can be set for the data of the alarm statistics. These set points can monitor the frequency or duration of set point violation for the analysis duration. Configuration under <b>Advanced setup → Application → Set points → Set point x → Channel or Type</b> (see Operating Instructions).</li> <li>▪ <b>Yes</b> should be selected here for the <b>Rain spillway basin RSB</b> option.</li> </ul>	440006/000
<b>Group days</b> (only if <b>Alarm statistics - Yes</b> )	<p>Set how often the weekly, monthly or yearly analyses should be calculated.</p> <p><b>No</b>: Each individual set point violation is counted.  <b>Yes</b>: Records the number of days during the analysis period on which at least one set point violation occurred (e.g. required for the number of overflows in the rain spillway basin even if the overflow already started on the previous day).</p> <p>Picklist: <b>No</b>, Yes</p> <p> <b>Yes</b> should be selected here for the <b>Rain spillway basin RSB</b> option.</p>	440008/000

 The modified settings do not take effect until you return to display mode (measured value display) after parameterization. Exit the operating menus by repeatedly pressing the **Back** menu item. Up to this point, the device still works with the previous data.

### 3.4 Example: Recording of reservoir and overflow events at the rain spillway basin

#### 3.4.1 Step-by-step: reservoir

1. Set the upper set point (e.g. set point 1) to the level (e.g. universal input 1) under **Setup → Advanced setup → Application → Set points → Set point 1**.  
↳ The reservoir event begins when this set point is exceeded.
2. Set **RSB 1** to this set point under **Setup → Advanced setup → Application → Wastewater → RSB 1: set point 1**.

#### 3.4.2 Step-by-step: overflow

1. Set the linearization table to the overflow level (e.g. universal input 2) under **Setup → Advanced setup → Inputs → Universal inputs → Universal input 2 → Linearization → Points**.
2. Activate totalization for the overflow amount of the corresponding channel under **Setup → Advanced setup → Inputs → Universal inputs → Universal input 2 → Totalization**.
3. Set the upper set point (e.g. set point 2) to the overflow amount of the corresponding channel under **Setup → Advanced setup → Application → Set points → Set point 2**.  
↳ The overflow event begins when this set point is exceeded.
4. Set **RSB 2** to this set point under **Setup → Advanced setup → Application → Wastewater → RSB 2: set point 2**.

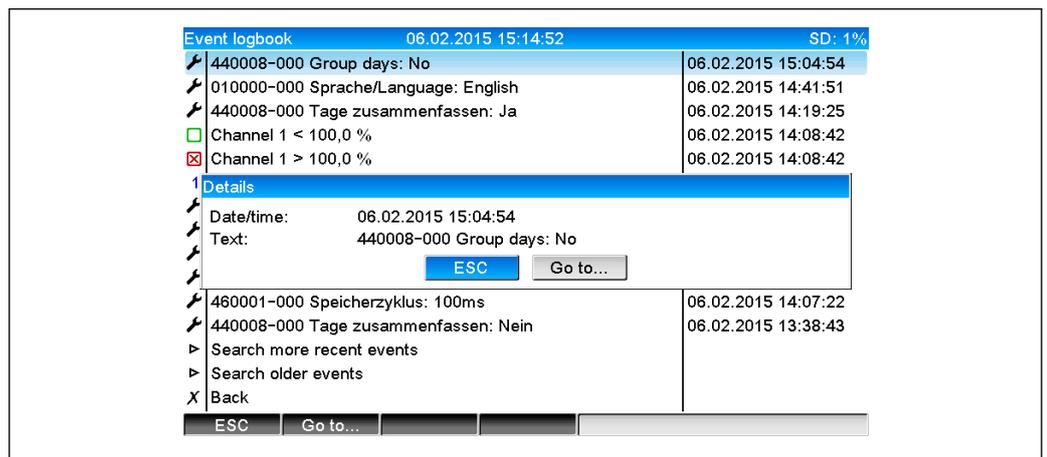
### 3.4.3 Recording the duration and frequency

- ▶ Activate monthly, annual and alarm statistics under **Setup** → **Advanced setup** → **Application** → **Signal analysis**.

## 3.5 Use during operation

### 3.5.1 The event logbook

During operation, the event logbook can be called up in the measured value display by pressing softkey 1 (user-definable) or via **Main menu** → **Diagnostics** → **Event logbook**:



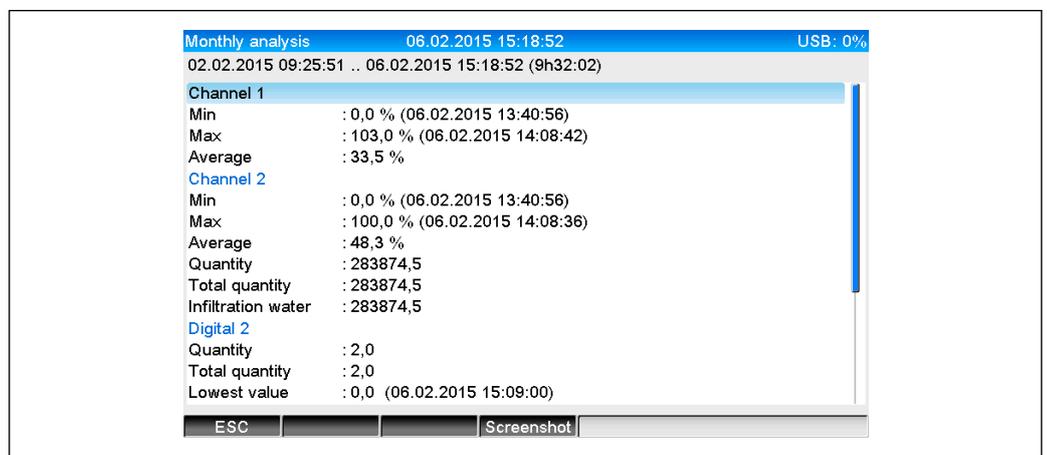
5 Event logbook

All the set point violations for the reservoir and overflow of the rain spillway basin (RSB) can be viewed here. For this, select the relevant entry in the event logbook and press softkey 3 **Details**.

To return to instantaneous value display, press softkey 1 **ESC**.

### 3.5.2 Signal analysis

During operation, signal analysis can be called up in the measured value display via **Main menu** → **Operation** → **Signal analysis**:



6 Operation → Signal analysis

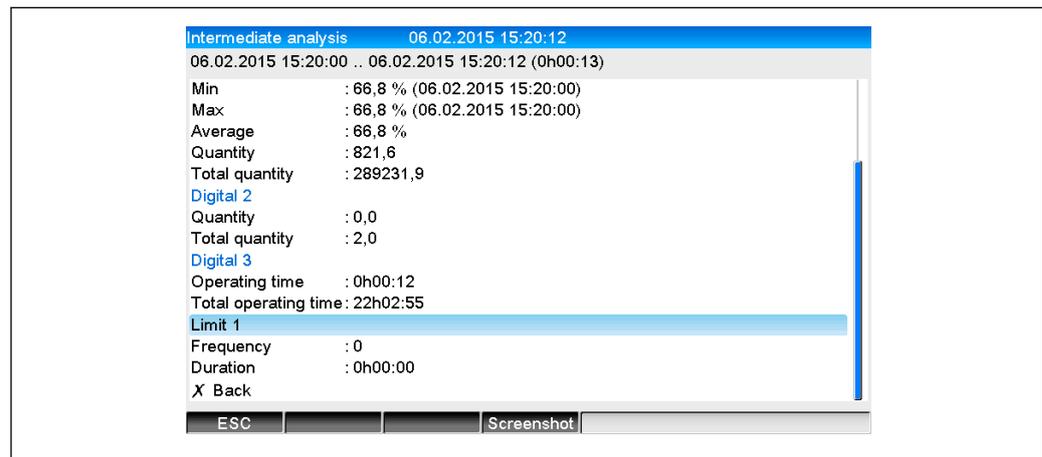
In addition to the normal quantities, the highest and lowest values (incl. dimension) can be displayed here for the channels for which the highest and lowest values are determined. The highest and lowest values are displayed in the completed analyses.

The infiltration water is displayed both in the current intermediate analysis and in the completed analyses.

To return to instantaneous value display, press softkey 1 **ESC**.

### 3.5.3 Alarm statistics in signal analysis

During operation, signal analysis with alarm statistics can be called up in the measured value display via **Main menu** → **Operation** → **Signal analysis**:



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7 Signal analysis with alarm statistics

The alarm statistics (frequency/duration) are displayed here in addition to the selected signal analysis (see Operating Instructions).

To return to instantaneous value display, press softkey 1 **ESC**.

**i** The alarm statistics are reset via normal signal analysis **Advanced setup** → **Application** → **Signal analysis** → **Reset to zero**.

The data of the alarm statistics can also be displayed, printed out and exported with the Field Data Manager (FDM) PC software supplied.

## 4 Diagnostics and troubleshooting

The device informs you of faults or incorrect entries using plain text on the screen. During display operation (measured value display), the error codes are displayed in the upper right-hand corner of the screen.

### Version with navigator and front interfaces:

In addition, a red LED signals faults and flashes in the event of warnings or required maintenance.

**i** Detailed error messages and troubleshooting can be found in the **Diagnostics and troubleshooting** section of the Operating Instructions.





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