Description of Device Parameters

**Proline Cubemass 100**

PROFINET

Coriolis flowmeter
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1 Document information

1.1 Document function
The document is part of the Operating Instructions and serves as a reference for
dependent role, the "Operator" user role or the "Maintenance" user role is enabled.

For information on the arrangement of the parameters according to the structure of
the Operation menu, Setup menu, Diagnostics menu (→ 99), along with a brief
description, see the Operating Instructions for the device.
For information about the operating philosophy, see the "Operating philosophy" chapter in the device's Operating Instructions.
1.3.2 Structure of a parameter description

The individual parts of a parameter description are described in the following section:

<table>
<thead>
<tr>
<th>Complete parameter name</th>
<th>Write-protected parameter</th>
</tr>
</thead>
</table>

**Navigation**
- Navigation path to the parameter via the local display (direct access code) or Web browser
- Navigation path to the parameter via the operating tool
  The names of the menus, submenus and parameters are abbreviated to the form in which they appear on the display and in the operating tool.

**Prerequisite**
The parameter is only available under these specific conditions.

**Description**
Description of the parameter function.

**Selection**
List of the individual options for the parameter:
- Option 1
- Option 2

**User entry**
Input range for the parameter.

**User interface**
Display value/data for the parameter.

**Factory setting**
Default setting ex works.

**Additional information**
Additional explanations (e.g. in examples):
- On individual options
- On display values/data
- On the input range
- On the factory setting
- On the parameter function

1.4 Symbols used

1.4.1 Symbols for certain types of information

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip</td>
<td>Indicates additional information.</td>
</tr>
<tr>
<td>Reference to documentation</td>
<td></td>
</tr>
<tr>
<td>Reference to page</td>
<td></td>
</tr>
<tr>
<td>Reference to graphic</td>
<td></td>
</tr>
<tr>
<td>Operation via local display</td>
<td></td>
</tr>
<tr>
<td>Operation via operating tool</td>
<td></td>
</tr>
<tr>
<td>Write-protected parameter</td>
<td></td>
</tr>
</tbody>
</table>
1.4.2 Symbols in graphics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3 ...</td>
<td>Item numbers</td>
<td>A, B, C, ...</td>
<td>Views</td>
</tr>
<tr>
<td>A-A, B-B, C-C, ...</td>
<td>Sections</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Overview of the Expert operating menu

The following table provides an overview of the menu structure of the expert operating menu and its parameters. The page reference indicates where the associated description of the submenu or parameter can be found.

<table>
<thead>
<tr>
<th>Expert</th>
<th>Direct access</th>
<th>→ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Locking status</td>
<td>→ 11</td>
</tr>
<tr>
<td></td>
<td>Access status tooling</td>
<td>→ 12</td>
</tr>
<tr>
<td></td>
<td>Enter access code</td>
<td>→ 12</td>
</tr>
<tr>
<td>System</td>
<td>Display</td>
<td>→ 13</td>
</tr>
<tr>
<td></td>
<td>Diagnostic handling</td>
<td>→ 26</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
<td>→ 34</td>
</tr>
<tr>
<td>Sensor</td>
<td>Measured values</td>
<td>→ 38</td>
</tr>
<tr>
<td></td>
<td>System units</td>
<td>→ 44</td>
</tr>
<tr>
<td></td>
<td>Process parameters</td>
<td>→ 58</td>
</tr>
<tr>
<td></td>
<td>Measurement mode</td>
<td>→ 65</td>
</tr>
<tr>
<td></td>
<td>External compensation</td>
<td>→ 67</td>
</tr>
<tr>
<td></td>
<td>Calculated values</td>
<td>→ 72</td>
</tr>
<tr>
<td></td>
<td>Sensor adjustment</td>
<td>→ 76</td>
</tr>
<tr>
<td></td>
<td>Calibration</td>
<td>→ 86</td>
</tr>
<tr>
<td></td>
<td>Supervision</td>
<td>→ 87</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>→ 88</td>
</tr>
<tr>
<td></td>
<td>Web server</td>
<td>→ 88</td>
</tr>
</tbody>
</table>
Overview of the Expert operating menu

- **PROFINET configuration** → 91
- **PROFINET information** → 92
- **Application** → 93
  - Reset all totalizers → 93
  - **Totalizer 1 to 3** → 94
  - **Concentration** → 99
- **Diagnostics** → 99
  - Actual diagnostics → 99
  - Previous diagnostics → 100
  - Operating time from restart → 101
  - Operating time → 101
  - **Diagnostic list** → 102
  - **Event logbook** → 105
  - **Device information** → 108
- **I/O module** → 111
- **Sensor electronic module** → 112
- **Display module** → 112
- **Min/max values** → 113
- **Heartbeat** → 119
- **Simulation** → 119
3  **Description of device parameters**

In the following section, the parameters are listed according to the menu structure of the local display. Specific parameters for the operating tools are included at the appropriate points in the menu structure.

<table>
<thead>
<tr>
<th>Expert</th>
<th>Direct access</th>
<th>→ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Locking status</td>
<td>→ 11</td>
</tr>
<tr>
<td></td>
<td>Access status tooling</td>
<td>→ 12</td>
</tr>
<tr>
<td></td>
<td>Enter access code</td>
<td>→ 12</td>
</tr>
<tr>
<td></td>
<td>System</td>
<td>→ 13</td>
</tr>
<tr>
<td></td>
<td>Sensor</td>
<td>→ 38</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>→ 88</td>
</tr>
<tr>
<td></td>
<td>Application</td>
<td>→ 93</td>
</tr>
<tr>
<td></td>
<td>Diagnostics</td>
<td>→ 99</td>
</tr>
</tbody>
</table>

**Direct access**

**Navigation**  
Expert → Direct access

**Prerequisite**  
There is a local display with operating elements.

**Description**  
Input of the access code to enable direct access to the desired parameter via the local display. For this reason, each parameter is assigned a parameter number that appears in the navigation view on the right in the header of the selected parameter.

**User entry**  
0 to 65 535

**Additional information**  
The direct access code consists of a 4-digit number and the channel number, which identifies the channel of a process variable: e.g. 0914-1

- The leading zeros in the direct access code do not have to be entered.  
  Example: Input of "914" instead of "0914"
- If no channel number is entered, channel 1 is jumped to automatically.  
  Example: Enter **0914** → Assign process variable parameter
- If a different channel is jumped to: Enter the direct access code with the corresponding channel number.  
  Example: Enter **0914-3** → Assign process variable parameter
Locking status

Navigation

EMPL Expert → Locking status

Description
Displays the active write protection.

User interface

- Hardware locked
- Temporarily locked

Additional information

Display
If two or more types of write protection are active, the write protection with the highest priority is shown on the local display. In the operating tool all active types of write protection are displayed.

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the Locking status parameter (EMPL → 11).

"Hardware locked" option (priority 1)

The DIP switch for hardware locking is activated on the main electronics module. This locks write access to the parameters (e.g. via local display or operating tool).

Information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device.

"Temporarily locked" option (priority 2)

Write access to the parameters is temporarily locked on account of internal processes running in the device (e.g. data upload/download, reset etc.). Once the internal processing has been completed, the parameters can be changed once again.

Access status display

Navigation

EMPL Expert → Access stat.disp

Prerequisite

A local display is provided.

Description
Displays the access authorization to the parameters via the local display.

User interface

- Operator
- Maintenance

Factory setting

Operator
Additional information

Description

If the symbol appears in front of a parameter, it cannot be modified via the local display with the current access authorization.

Access authorization can be modified via the **Enter access code** parameter (→ 12).

For information on the **Enter access code** parameter, see the 'Disabling write protection via access code' section of the Operating Instructions for the device.

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 11).

Display

Information on access authorization is provided in the 'User roles and associated access authorization' and 'Operating concept' sections of the Operations Instructions for the device.

Access status tooling

Navigation

Expert → Access stat.tool

Description

Displays the access authorization to the parameters via the operating tool or Web browser.

User interface

- Operator
- Maintenance

Factory setting

Maintenance

Additional information

Description

Access authorization can be modified via the **Enter access code** parameter (→ 12).

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 11).

Display

Information on access authorization is provided in the 'User roles and associated access authorization' and 'Operating concept' sections of the Operations Instructions for the device.

Enter access code

Navigation

Expert → Ent. access code

Description

Use this function to enter the user-specific release code to remove parameter write protection.
3.1  "System" submenu

**Navigation**  
Expert → System

![Diagram of System menu]

- Display → 14
- Diagnostic handling → 26
- Administration → 34

3.1.1  "Display" submenu

**Navigation**  
Expert → System → Display

![Diagram of Display menu]

- Display language → 14
- Format display → 15
- Value 1 display → 16
- 0% bargraph value 1 → 17
- 100% bargraph value 1 → 18
- Decimal places 1 → 18
- Value 2 display → 19
- Decimal places 2 → 19
- Value 3 display → 20
- 0% bargraph value 3 → 20
- 100% bargraph value 3 → 21
- Decimal places 3 → 21
- Value 4 display → 21

**User entry**

0 to 9999
### Display language

**Navigation**

![Expert] System → Display → Display language

**Prerequisite**

A local display is provided.

**Description**

Use this function to select the configured language on the local display.

**Selection**

- English
- Deutsch *
- Français *
- Español *
- Italiano *
- Nederlands *
- Portuguesa *
- Polski *
- русский язык (Russian) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- Bahasa Indonesia *
- tiếng Việt (Vietnamese) *
- čeština (Czech) *

**Factory setting**

English (alternatively, the ordered language is preset in the device)

* Visibility depends on order options or device settings
**Format display**

**Navigation**

Expert → System → Display → Format display

**Prerequisite**

A local display is provided.

**Description**

Use this function to select how the measured value is shown on the local display.

**Selection**

- 1 value, max. size
- 1 bargraph + 1 value
- 2 values
- 1 value large + 2 values
- 4 values

**Factory setting**

1 value, max. size

**Additional information**

This setting only applies to normal operation.

- The Value 1 display parameter (→ 16) to Value 4 display parameter (→ 21) are used to specify which measured values are shown on the local display and in what order.

If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the Display interval parameter (→ 22).

Possible measured values shown on the local display:

"1 value, max. size" option

![1 value, max. size](image1)

"1 bargraph + 1 value" option

![1 bargraph + 1 value](image2)
"2 values' option

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>900.00 l/h</td>
<td>Mass flow</td>
</tr>
<tr>
<td>60.00 %</td>
<td>Volume flow</td>
</tr>
</tbody>
</table>

"1 value large + 2 values" option

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>900.00 l/h</td>
<td>Mass flow</td>
</tr>
<tr>
<td>60.00 %</td>
<td>Volume flow</td>
</tr>
<tr>
<td>5.98 kWh/Nm³</td>
<td>Density</td>
</tr>
</tbody>
</table>

"4 values' option

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>900.00 l/h</td>
<td>Mass flow</td>
</tr>
<tr>
<td>60.00 %</td>
<td>Volume flow</td>
</tr>
<tr>
<td>5.98 kWh/Nm³</td>
<td>Density</td>
</tr>
<tr>
<td>213.94 l</td>
<td>Temperature</td>
</tr>
</tbody>
</table>

Value 1 display

Navigation  
Expert → System → Display → Value 1 display

Prerequisite  
A local display is provided.

Description  
Use this function to select one of the measured values to be shown on the local display.

Selection  
- Mass flow
- Volume flow
- Corrected volume flow
- Target mass flow
- Carrier mass flow
- Density
- Reference density
- Concentration
- Temperature
- Carrier pipe temperature
- Electronic temperature
- Oscillation frequency
- Frequency fluctuation

* Visibility depends on order options or device settings
- Oscillation amplitude 0°
- Frequency fluctuation 0
- Oscillation damping 0
- Tube damping fluctuation 0
- Signal asymmetry
- Exciter current 0
- None
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Mass flow

**Additional information**

*Description*

If several measured values are displayed at once, the measured value selected here will be the first value to be displayed. The value is only displayed during normal operation.

The *Format display* parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

*Selection*

The unit of the displayed measured value is taken from the *System units* submenu (→ 44).

- Oscillation frequency
  Displays the current oscillation frequency of the measuring tubes. This frequency depends on the density of the medium.

- Oscillation amplitude
  Displays the relative oscillation amplitude of the measuring tubes in relation to the preset value. This value is 100 % under optimum conditions. The value can decrease in the event of low 4 to 20 mA loop currents and/or difficult media (two-phase, high viscosity or high gas velocity).

- Oscillation damping
  Displays the current oscillation damping. Oscillation damping is an indicator of the sensor's current need for excitation power.

- Signal asymmetry
  Displays the relative difference between the oscillation amplitude at the inlet and outlet of the sensor. The measured value is the result of production tolerances of the sensor coils and should remain constant over the life time of a sensor.

---

**0% bargraph value 1**

**Navigation**

Expert → System → Display → 0% bargraph 1

**Prerequisite**

A local display is provided.

**Description**

Use this function to enter the 0% bar graph value to be shown on the display for the measured value 1.

**User entry**

Signed floating-point number

* Visibility depends on order options or device settings
Description of device parameters

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**Factory setting**

Country-specific:
- 0 kg/h
- 0 lb/min

**Additional information**

*Description*

The **Format display** parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 44).

---

### 100% bargraph value 1

**Navigation**

Expert → System → Display → 100% bargraph 1

**Prerequisite**

A local display is provided.

**Description**

Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1.

**User entry**

Signed floating-point number

**Factory setting**

Depends on country and nominal diameter → 123

**Additional information**

*Description*

The **Format display** parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 44).

---

### Decimal places 1

**Navigation**

Expert → System → Display → Decimal places 1

**Prerequisite**

A measured value is specified in the **Value 1 display** parameter (→ 16).

**Description**

Use this function to select the number of decimal places for measured value 1.

**Selection**

- x
- x.x
- x.xx
- x.xxx
- x.xxxx

**Factory setting**

x.xx
**Description**

This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

---

**Value 2 display**

**Navigation**

Expert → System → Display → Value 2 display

**Prerequisite**

A local display is provided.

**Description**

Use this function to select one of the measured values to be shown on the local display.

**Selection**

For the picklist, see the Value 1 display parameter (→ 16)

**Factory setting**

None

**Additional information**

If several measured values are displayed at once, the measured value selected here will be the second value to be displayed. The value is only displayed during normal operation.

The Format display parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

**Selection**

The unit of the displayed measured value is taken from the System units submenu (→ 44).

---

**Decimal places 2**

**Navigation**

Expert → System → Display → Decimal places 2

**Prerequisite**

A measured value is specified in the Value 2 display parameter (→ 19).

**Description**

Use this function to select the number of decimal places for measured value 2.

**Selection**

- x
- x.x
- x.xx
- x.xxx
- x.xxxx

**Factory setting**

x.xx

**Additional information**

This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.
Value 3 display

Navigation

Expert → System → Display → Value 3 display

Prerequisite

A local display is provided.

Description

Use this function to select one of the measured values to be shown on the local display.

Selection

Picklist, see Value 1 display parameter (→ 16)

Factory setting

None

Additional information

Description

If several measured values are displayed at once, the measured value selected here will be the third value to be displayed. The value is only displayed during normal operation.

The Format display parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

Selection

The unit of the displayed measured value is taken from the System units submenu (→ 44).

0% bargraph value 3

Navigation

Expert → System → Display → 0% bargraph 3

Prerequisite

A selection has been made in the Value 3 display parameter (→ 20).

Description

Use this function to enter the 0% bar graph value to be shown on the display for the measured value 3.

User entry

Signed floating-point number

Factory setting

Country-specific:
- 0 kg/h
- 0 lb/min

Additional information

Description

The Format display parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the System units submenu (→ 44).
100% bargraph value 3

**Navigation**
Expert → System → Display → 100% bargraph

**Prerequisite**
A selection was made in the **Value 3 display** parameter (→ 20).

**Description**
Use this function to enter the 100% bar graph value to be shown on the display for the measured value 3.

**User entry**
Signed floating-point number

**Factory setting**
0

**Additional information**

*Description*
The **Format display** parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

*User entry*
The unit of the displayed measured value is taken from the **System units** submenu (→ 44).

Decimal places 3

**Navigation**
Expert → System → Display → Decimal places

**Prerequisite**
A measured value is specified in the **Value 3 display** parameter (→ 20).

**Description**
Use this function to select the number of decimal places for measured value 3.

**Selection**
- x
- x.x
- x.xx
- x.xxx
- x.xxxx

**Factory setting**
x.xx

**Additional information**

*Description*
This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Value 4 display

**Navigation**
Expert → System → Display → Value 4 display

**Prerequisite**
A local display is provided.
Description of device parameters

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Description
Use this function to select one of the measured values to be shown on the local display.

Selection
Picklist, see Value 1 display parameter (→ 16)

Factory setting
None

Additional information
Description
If several measured values are displayed at once, the measured value selected here will be the fourth value to be displayed. The value is only displayed during normal operation.

Information
The Format display parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

Selection
The unit of the displayed measured value is taken from the System units submenu (→ 44).

Decimal places 4

Navigation
Expert → System → Display → Decimal places 4

Prerequisite
A measured value is specified in the Value 4 display parameter (→ 21).

Description
Use this function to select the number of decimal places for measured value 4.

Selection
- x
- x.x
- x.xx
- x.xxx
- x.xxxx

Factory setting
x.xx

Additional information
Description
This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Display interval

Navigation
Expert → System → Display → Display interval

Prerequisite
A local display is provided.

Description
Use this function to enter the length of time the measured values are displayed if the values alternate on the display.

User entry
1 to 10 s
**Factory setting**  
5 s

**Additional information**  
*Description*
This type of alternating display only occurs automatically if the number of measured values defined exceeds the number of values the selected display format can display simultaneously.

- The **Value 1 display** parameter (→ 16) to **Value 4 display** parameter (→ 21) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 15).

---

**Display damping**

**Navigation**
Expert → System → Display → Display damping

**Prerequisite**
A local display is provided.

**Description**
Use this function to enter the reaction time of the local display to fluctuations in the measured value caused by process conditions.

**User entry**
0.0 to 999.9 s

**Factory setting**
0.0 s

**Additional information**  
*User entry*
A time constant is entered:
- If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.
- On the other hand, the display reacts more slowly if a high time constant is entered.

---

**Header**

**Navigation**
Expert → System → Display → Header

**Prerequisite**
A local display is provided.

**Description**
Use this function to select the contents of the header of the local display.

**Selection**
- Device tag
- Free text

**Factory setting**
Device tag

**Additional information**  
*Description*
The header text only appears during normal operation.
Description of device parameters

Proline Cubemass 100 PROFINET

1  Position of the header text on the display

**Selection**
Free text
Is defined in the **Header text** parameter (→ 24).

### Header text

**Navigation**
Expert → System → Display → Header text

**Prerequisite**
The **Free text** option is selected in the **Header** parameter (→ 23).

**Description**
Use this function to enter a customer-specific text for the header of the local display.

**User entry**
Max. 12 characters such as letters, numbers or special characters (e.g. @, %, /)

**Factory setting**
------------

**Additional information**

**Description**
The header text only appears during normal operation.

1  Position of the header text on the display

**User entry**
The number of characters displayed depends on the characters used.

### Separator

**Navigation**
Expert → System → Display → Separator

**Prerequisite**
A local display is provided.

**Description**
Use this function to select the decimal separator.
**Contrast display**

**Navigation**

Expert → System → Display → Contrast display

**Prerequisite**

A local display is provided.

**Description**

Use this function to enter a value to adapt the display contrast to the ambient conditions (e.g. the lighting or viewing angle).

**User entry**

20 to 80%

**Factory setting**

Depends on the display

---

**Backlight**

**Navigation**

Expert → System → Display → Backlight

**Prerequisite**

Order code for "Display; operation", option E 'SD03 4-line, illum.; touch control + data backup function".

**Description**

Use this function to switch the backlight of the local display on and off.

**Selection**

- Disable
- Enable

**Factory setting**

Enable

---

**Access status display**

**Navigation**

Expert → System → Display → Access stat.disp

**Prerequisite**

A local display is provided.

**Description**

Displays the access authorization to the parameters via the local display.

**User interface**

- Operator
- Maintenance

**Factory setting**

Operator
3.1.2 "Diagnostic handling" submenu

**Alarm delay**

**Navigation**  
Expert → System → Diagn. handling → Alarm delay

**Description**  
Use this function to enter the time interval until the device generates a diagnostic message.

The diagnostic message is reset without a time delay.

**User entry**  
0 to 60 s

**Factory setting**  
0 s

**Additional information**  
**Effect**  
This setting affects the following diagnostic messages:
- 046 Sensor limit exceeded
- 140 Sensor signal
- 144 Measuring error too high
- 190 Special event 1
- 191 Special event 5
- 192 Special event 9
- 830 Sensor temperature too high
- 831 Sensor temperature too low
- 832 Electronic temperature too high
- 833 Electronic temperature too low
- 834 Process temperature too high
- 835 Process temperature too low
- 843 Process limit
- 910 Tubes not oscillating
- 912 Medium inhomogeneous
- 913 Medium unsuitable
- 944 Monitoring failed
- 990 Special event 4
- 991 Special event 8
- 992 Special event 12

"Diagnostic behavior" submenu
Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the Diagnostic behavior submenu (→ 27).

The following options are available in the Assign behavior of diagnostic no. xxx parameters:

<table>
<thead>
<tr>
<th>Diagnostic behavior</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>The device stops measurement. The totalizers assume the defined alarm condition. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Warning</td>
<td>The device continues to measure. The measured value output via PROFINET and the totalizers are not affected. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Logbook entry only</td>
<td>The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→ 105) (Event list submenu (→ 107)) and not in alternation with the operational display.</td>
</tr>
<tr>
<td>Off</td>
<td>The diagnostic event is ignored, and no diagnostic message is generated or entered.</td>
</tr>
</tbody>
</table>

For a list of all the diagnostic events, see the Operating Instructions for the device.

Navigation

Expert → System → Diagn. handling → Diagn. behavior

[Diagnostic behavior]

Assign behavior of diagnostic no. 140 → 28
Assign behavior of diagnostic no. 046 → 28
Assign behavior of diagnostic no. 144 → 29
Assign behavior of diagnostic no. 832 → 29
Assign behavior of diagnostic no. 833 → 30
Assign behavior of diagnostic no. 140 (Sensor signal)

**Navigation**
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 140

**Description**
Use this function to change the diagnostic behavior of the diagnostic message **140 Sensor signal**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see

Assign behavior of diagnostic no. 046 (Sensor limit exceeded)

**Navigation**
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 046

**Description**
Use this function to change the diagnostic behavior of the diagnostic message **046 Sensor limit exceeded**.
Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 144 (Measuring error too high)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 144

Description
Use this function to change the diagnostic behavior of the diagnostic message 144 Measuring error too high.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Alarm

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 832 (Electronic temperature too high)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832

Description
Use this function to change the diagnostic behavior of the diagnostic message 832 Electronic temperature too high.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see
Description of device parameters

Proline Cubemass 100 PROFINET

Assign behavior of diagnostic no. 833 (Electronic temperature too low)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833

Description

Use this function to change the diagnostic behavior of the diagnostic message 833 Electronic temperature too low.

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see Assign behavior of diagnostic no. 834 (Process temperature too high)

Assign behavior of diagnostic no. 834 (Process temperature too high)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834

Description

Use this function to change the diagnostic behavior of the diagnostic message 834 Process temperature too high.

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see Assign behavior of diagnostic no. 835 (Process temperature too low)

Assign behavior of diagnostic no. 835 (Process temperature too low)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835

Description

Use this function to change the diagnostic behavior of the diagnostic message 835 Process temperature too low.

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see
Assign behavior of diagnostic no. 912 (Medium inhomogeneous)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 912

Description
Use this function to change the diagnostic behavior of the diagnostic message 912 Medium inhomogeneous.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 913 (Medium unsuitable)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 913

Description
Use this function to change the diagnostic behavior of the diagnostic message 913 Medium unsuitable.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 944 (Monitoring failed)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 944

Description
Use this function to change the diagnostic behavior of the diagnostic message 944 Monitoring failed.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see
Assign behavior of diagnostic no. 948 (Tube damping too high)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 948

Description
Use this function to change the diagnostic behavior of the diagnostic message 948 Tube damping too high.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 192 (Special event 9)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 192

Description
Use this function to change the diagnostic behavior of the diagnostic message 192 Special event 9.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 274 (Main electronic failure)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 274

Description
Use this function to change the diagnostic behavior of the diagnostic message 274 Main electronic failure.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see
Assign behavior of diagnostic no. 392 (Special event 10)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 392

Description
Use this function to change the diagnostic behavior of the diagnostic message 392 Special event 10.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 592 (Special event 11)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 592

Description
Use this function to change the diagnostic behavior of the diagnostic message 592 Special event 11.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see

Assign behavior of diagnostic no. 992 (Special event 12)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 992

Description
Use this function to change the diagnostic behavior of the diagnostic message 992 Special event 12.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning
Additional information

For a detailed description of the options available, see

3.1.3  "Administration" submenu

Navigation    Expert → System → Administration

```
Administration

Define access code

Device reset

Activate SW option

Software option overview
```

"Define access code" wizard

The Define access code wizard (→ 34) is only available when operating via the local display or Web browser.

If operating via the operating tool, the Define access code parameter (→ 35) can be found directly in the Administration submenu. There is no Confirm access code parameter if the device is operated via the operating tool.

```
Define access code

Define access code

Confirm access code
```

Define access code

```
Navigation    Expert → System → Administration → Def. access code → Def. access code

Description

Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the configuration of the device against any inadvertent changes via the local display or Web browser.

User entry

0 to 9999

Factory setting

0
Additional information

Description
The write protection affects all parameters in the document marked with the symbol. On the local display, the symbol in front of a parameter indicates that the parameter is write-protected.

The parameters that cannot be write-accessed are grayed out in the Web browser.

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the Enter access code parameter (→ 12).

If you lose the access code, please contact your Endress+Hauser Sales Center.

User entry
A message is displayed if the access code is not in the input range.

Factory setting
If the factory setting is not changed or 0 is defined as the access code, the parameters are not write-protected and the device configuration data can be modified. The user is logged on in the "Maintenance" role.

Confirm access code

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → System → Administration → Def. access code → Confirm code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Enter the defined release code a second time to confirm the release code.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 9999</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

Additional parameters in the "Administration" submenu

Define access code

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → System → Administration → Def. access code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the configuration of the device against any inadvertent changes via the operating tool.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 9999</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>
Additional information

Description

The write protection affects all parameters in the document marked with the symbol.

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the Enter access code parameter (→ 12).

If you lose the access code, please contact your Endress+Hauser Sales Center.

User entry

A message is displayed if the access code is not in the input range.

Factory setting

If the factory setting is not changed or 0 is defined as the access code, the parameters are not write-protected and the device configuration data can be modified. The user is logged on in the "Maintenance" role.

Device reset

Navigation

Expert → System → Administration → Device reset

Description

Use this function to choose whether to reset the device configuration - either entirely or in part - to a defined state.

Selection

- Cancel
- To delivery settings
- Restart device
- Delete factory data

Factory setting

Cancel

Additional information

"Cancel" option

No action is executed and the user exits the parameter.

"To delivery settings" option

Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting.

This option is not visible if no customer-specific settings have been ordered.

"Restart device" option

The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.

Activate SW option

Navigation

Expert → System → Administration → Activate SW opt.

Description

Use this function to enter an activation code to enable an additional, ordered software option.
**User entry**  Max. 10-digit string consisting of numbers.

**Factory setting**  0

**Additional information**  

> Endress+Hauser provides the corresponding activation code for the software option with the order.

**NOTICE!** This activation code varies depending on the measuring device and the software option. If an incorrect or invalid code is entered, this can result in the loss of software options that are already been activated. After commissioning the measuring device: in this parameter only enter activation codes which Endress+Hauser has provided (e.g. when a new software option was ordered). If an incorrect or invalid activation code is entered, enter the activation code from the parameter protocol again and contact your Endress+Hauser sales organization, quoting the serial number of your device.

**Example for a software option**

Order code for "Application package", option EB "Heartbeat Verification + Monitoring"

**Web browser**

Once a software option has been activated, the page must be loaded again in the Web browser.

---

**Software option overview**

**Navigation**  

- Expert → System → Administration → SW option overv.

**Description**

Displays all the software options that are enabled in the device.

**User interface**

- Heartbeat Verification
- Heartbeat Monitoring
- Concentration

**Additional information**

**Description**

Displays all the options that are available if ordered by the customer.

*Heartbeat Verification" option and "Heartbeat Monitoring" option*

Order code for "Application package", option EB "Heartbeat Verification + Monitoring"

*Concentration" option*

Order code for "Application package", option ED "Concentration" and option EF "Special density + concentration"
3.2 "Sensor" submenu

Navigation

Expert → Sensor

- Measured values
- System units
- Process parameters
- Measurement mode
- External compensation
- Calculated values
- Sensor adjustment
- Calibration
- Supervision

3.2.1 "Measured values" submenu

Navigation

Expert → Sensor → Measured val.

- Measured values
- Process variables
- Totalizer

"Process variables" submenu

Navigation


- Mass flow
- Volume flow
- Corrected volume flow
- Density
Mass flow

Description
Displays the mass flow that is currently measured.

User interface
Signed floating-point number

Additional information
Dependency

Volume flow

Description
Displays the volume flow currently calculated.

User interface
Signed floating-point number

Additional information
Dependency

Corrected volume flow

Description
Displays the corrected volume flow currently measured.

User interface
Signed floating-point number
Description of device parameters

Proline Cubemass 100 PROFINET

Additional information  
Dependency

1. The unit is taken from the Corrected volume flow unit parameter (→ 47)

Density

Navigation

Description
 Displays the density currently measured.

User interface
 Signed floating-point number

Additional information  
Dependency

1. The unit is taken from the Density unit parameter (→ 49)

Reference density

Navigation

Description
 Displays the reference density currently calculated.

User interface
 Signed floating-point number

Additional information  
Dependency

1. The unit is taken from the Reference density unit parameter (→ 49)

Temperature

Navigation

Description
 Displays the medium temperature currently measured.

User interface
 Signed floating-point number

Additional information  
Dependency

1. The unit is taken from the Temperature unit parameter (→ 50)
Pressure value

Navigation  

Description  
Displays the fixed or external pressure value.

User interface  
Signed floating-point number

Additional information  
Dependency

The unit is taken from the Pressure unit parameter (→  50)

Concentration

Navigation  

Prerequisite  
For the following order code:
"Application package", option ED 'Concentration'

The software options currently enabled are displayed in the Software option overview parameter (→  37).

Description  
Displays the concentration currently calculated.

User interface  
Signed floating-point number

Additional information  
Dependency

The unit is taken from the Concentration unit parameter.

Target mass flow

Navigation  

Prerequisite  
With the following conditions:
• Order code for "Application package", option ED 'Concentration'
• The WT-% option or the User conc. option is selected in the Concentration unit parameter.

The software options currently enabled are displayed in the Software option overview parameter (→  37).

Description  
Displays the mass flow currently measured for the target medium.

User interface  
Signed floating-point number

Additional information  
Dependency

The unit is taken from the Mass flow unit parameter (→  44)
Carrier mass flow

Navigation


Prerequisite

With the following conditions:
1. Order code for "Application package", option ED "Concentration"
2. The WT-% option or the User conc. option is selected in the Concentration unit parameter.

The software options currently enabled are displayed in the Software option overview parameter (→ 37).

Description

Displays the mass flow currently measured for the carrier medium.

User interface

Signed floating-point number

Additional information

Dependency

The unit is taken from the Mass flow unit parameter (→ 44)

"Totalizer" submenu

Navigation

Expert → Sensor → Measured val. → Totalizer

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 94) of the Totalizer 1 to 3 submenu:
1. Volume flow
2. Mass flow
3. Corrected volume flow
4. Target mass flow*
5. Carrier mass flow*

Description

Displays the current totalizer reading.

User interface

Signed floating-point number

* Visibility depends on order options or device settings
Additional information

Description

As it is only possible to display a maximum of 7 digits, the current counter value is the sum of the totalizer value and the overflow value from the Totalizer overflow 1 to 3 parameter if the display range is exceeded.

In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 98).

Display

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Totalizer operation mode parameter (→ 96).

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 95).

Example

Calculation of the current totalizer reading when the value exceeds the 7-digit display range:

- Value in the Totalizer value 1 parameter: 196845.7 m³
- Value in the Totalizer overflow 1 parameter: 1 · 10⁶ (1 overflow) = 1000000 [m³]
- Current totalizer reading: 1196845.7 m³

Totalizer overflow 1 to 3

Navigation

Expert → Sensor → Measured val. → Totalizer → Tot. overflow 1 to 3

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 94) of the Totalizer 1 to 3 submenu:

- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow
- Carrier mass flow

Description

Displays the current totalizer overflow.

User interface

Integer with sign

Additional information

Description

If the current reading has more than 7 digits, which is the maximum value range that can be displayed, the value above this range is given as an overflow. The current totalizer value is therefore the sum of the overflow value and the totalizer value from the Totalizer value 1 to 3 parameter

Display

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 95).

* Visibility depends on order options or device settings
Example
Calculation of the current totalizer reading when the value exceeds the 7-digit display range:
- Value in the Totalizer value 1 parameter: 196,845.7 m³
- Value in the Totalizer overflow 1 parameter: 2 \cdot 10^6 (2 overflows) = 2,000,000 [m³]
- Current totalizer reading: 2,196,845.7 m³

3.2.2 "System units" submenu

Navigation Expert → Sensor → System units

Mass flow unit

Mass unit

Volume flow unit

Volume unit

Corrected volume flow unit

Corrected volume unit

Density unit

Reference density unit

Temperature unit

Pressure unit

Date/time format

User-specific units

Mass flow unit

Navigation Expert → Sensor → System units → Mass flow unit

Description Use this function to select the unit for the mass flow.
### Selection

**SI units**
- g/s
- g/min
- g/h
- g/d
- kg/s
- kg/min
- kg/h
- kg/d
- t/s
- t/min
- t/h
- t/d

**US units**
- oz/s
- oz/min
- oz/h
- oz/d
- lb/s
- lb/min
- lb/h
- lb/d
- STOn/s
- STOn/min
- STOn/h
- STOn/d

**Custom-specific units**
- User mass/s
- User mass/min
- User mass/h
- User mass/d

### Factory setting

Country-specific:
- kg/h
- lb/min

### Additional information

**Result**
The selected unit applies for:
- Mass flow parameter (→ 39)

**Selection**

For an explanation of the abbreviated units: → 126
# Volume flow unit

**Navigation**

[Expert → Sensor → System units → Volume flow unit](#)

**Description**

Use this function to select the unit for the volume flow.

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm³/s</td>
<td>af/s</td>
<td>gal/s (imp)</td>
</tr>
<tr>
<td>cm³/min</td>
<td>af/min</td>
<td>gal/min (imp)</td>
</tr>
<tr>
<td>cm³/h</td>
<td>af/h</td>
<td>gal/h (imp)</td>
</tr>
<tr>
<td>cm³/d</td>
<td>af/d</td>
<td>gal/d (imp)</td>
</tr>
<tr>
<td>dm³/s</td>
<td>ft³/s</td>
<td>Mgal/s (imp)</td>
</tr>
<tr>
<td>dm³/min</td>
<td>ft³/min</td>
<td>Mgal/min (imp)</td>
</tr>
<tr>
<td>dm³/h</td>
<td>ft³/h</td>
<td>Mgal/h (imp)</td>
</tr>
<tr>
<td>dm³/d</td>
<td>ft³/d</td>
<td>Mgal/d (imp)</td>
</tr>
<tr>
<td>m³/s</td>
<td>fl oz/s (us)</td>
<td>bbl/s (imp;beer)</td>
</tr>
<tr>
<td>m³/min</td>
<td>fl oz/min (us)</td>
<td>bbl/min (imp;beer)</td>
</tr>
<tr>
<td>m³/h</td>
<td>fl oz/h (us)</td>
<td>bbl/h (imp;beer)</td>
</tr>
<tr>
<td>m³/d</td>
<td>fl oz/d (us)</td>
<td>bbl/d (imp;beer)</td>
</tr>
<tr>
<td>ml/s</td>
<td>gal/s (us)</td>
<td>bbl/s (imp;oil)</td>
</tr>
<tr>
<td>ml/min</td>
<td>gal/min (us)</td>
<td>bbl/min (imp;oil)</td>
</tr>
<tr>
<td>ml/h</td>
<td>gal/h (us)</td>
<td>bbl/h (imp;oil)</td>
</tr>
<tr>
<td>ml/d</td>
<td>gal/d (us)</td>
<td>bbl/d (imp;oil)</td>
</tr>
<tr>
<td>l/s</td>
<td>kgal/s (us)</td>
<td>bbl/s (us;liq.)</td>
</tr>
<tr>
<td>l/min</td>
<td>kgal/min (us)</td>
<td>bbl/min (us;liq.)</td>
</tr>
<tr>
<td>l/h</td>
<td>kgal/h (us)</td>
<td>bbl/h (us;liq.)</td>
</tr>
<tr>
<td>l/d</td>
<td>kgal/d (us)</td>
<td>bbl/d (us;liq.)</td>
</tr>
<tr>
<td>hl/s</td>
<td>Mgal/s (us)</td>
<td>bbl/s (us;beer)</td>
</tr>
<tr>
<td>hl/min</td>
<td>Mgal/min (us)</td>
<td>bbl/min (us;beer)</td>
</tr>
<tr>
<td>hl/h</td>
<td>Mgal/h (us)</td>
<td>bbl/h (us;beer)</td>
</tr>
<tr>
<td>hl/d</td>
<td>Mgal/d (us)</td>
<td>bbl/d (us;beer)</td>
</tr>
<tr>
<td>Mi/s</td>
<td>bbl/s (us;oil)</td>
<td>bbl/s (us;oil)</td>
</tr>
<tr>
<td>Mi/min</td>
<td>bbl/min (us;oil)</td>
<td>bbl/min (us;oil)</td>
</tr>
<tr>
<td>Mi/h</td>
<td>bbl/h (us;oil)</td>
<td>bbl/h (us;oil)</td>
</tr>
<tr>
<td>Mi/d</td>
<td>bbl/d (us;oil)</td>
<td>bbl/d (us;oil)</td>
</tr>
</tbody>
</table>

*Custom-specific units*

- User vol./s
- User vol./min
- User vol./h
- User vol./d

**Factory setting**

Country-specific:

- l/h
- gal/min (us)
Additional information

Result
The selected unit applies for:
Volume flow parameter (→ 39)

Selection

For an explanation of the abbreviated units: → 126

Volume unit

Navigation

Expert → Sensor → System units → Volume unit

Description
Use this function to select the unit for the volume.

Selection

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm³</td>
<td>af</td>
<td>gal (imp)</td>
</tr>
<tr>
<td>dm³</td>
<td>ft³</td>
<td>Mgal (imp)</td>
</tr>
<tr>
<td>m³</td>
<td>fl oz (us)</td>
<td>bbl (imp;beer)</td>
</tr>
<tr>
<td>ml</td>
<td>gal (us)</td>
<td>bbl (imp;oil)</td>
</tr>
<tr>
<td>l</td>
<td>kgal (us)</td>
<td>bbl (imp;oil)</td>
</tr>
<tr>
<td>hl</td>
<td>Mgal (us)</td>
<td>bbl (imp;beer)</td>
</tr>
<tr>
<td>Ml Mega</td>
<td>bbl (us;oil)</td>
<td>bbl (imp;oil)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custom-specific units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User vol.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Factory setting

Country-specific:
- l
- gal (us)

Additional information

Selection

For an explanation of the abbreviated units: → 126

Corrected volume flow unit

Navigation

Expert → Sensor → System units → Cor.volflow unit

Description
Use this function to select the unit for the corrected volume flow.
Selection

### SI units
- Nl/s
- Nl/min
- Nl/h
- Nl/d
- Nm³/s
- Nm³/min
- Nm³/h
- Nm³/d
- Sm³/s
- Sm³/min
- Sm³/h
- Sm³/d

### US units
- Sft³/s
- Sft³/min
- Sft³/h
- Sft³/d
- Sgal/s (us)
- Sgal/min (us)
- Sgal/h (us)
- Sgal/d (us)
- Sbbl/s (us;liq.)
- Sbbl/min (us;liq.)
- Sbbl/h (us;liq.)
- Sbbl/d (us;liq.)

### Imperial units
- Sgal/s (imp)
- Sgal/min (imp)
- Sgal/h (imp)
- Sgal/d (imp)

### Custom-specific units
- UserCrVol./s
- UserCrVol./min
- UserCrVol./h
- UserCrVol./d

**Factory setting**
- Country-specific:
  - Nl/h
  - Sft³/min

**Additional information**

- **Result**
  The selected unit applies for:
  **Corrected volume flow** parameter (→ 39)

- **Selection**
  For an explanation of the abbreviated units: → 126

### Corrected volume unit

**Navigation**
- Expert → Sensor → System units → Corr. vol. unit

**Description**
- Use this function to select the unit for the corrected volume.

**Selection**

### SI units
- Nl
- Nm³
- Sm³

### US units
- Sft³
- Sgal (us)
- Sbbl (us;liq.)

### Imperial units
- Sgal (imp)

**Custom-specific units**
- UserCrVol.

**Factory setting**
- Country-specific:
  - Nl
  - Sft³

**Additional information**

- **Selection**
  For an explanation of the abbreviated units: → 126
## Density unit

### Navigation

Expert → Sensor → System units → Density unit

### Description

Use this function to select the unit for the density.

### Selection

**SI units**
- g/cm³
- g/m³
- kg/dm³
- kg/l
- kg/m³
- SD4°C
- SD15°C
- SD20°C
- SG4°C
- SG15°C
- SG20°C

**US units**
- lb/ft³
- lb/gal (us)
- lb/bbl (us;liq.)
- lb/bbl (us;beer)
- lb/bbl (us;oil)
- lb/bbl (us;tank)

**Imperial units**
- lb/gal (imp)
- lb/bbl (imp;beer)
- lb/bbl (imp;oil)

*Custom-specific units*

User dens.

### Factory setting

**Country-specific:**
- kg/l
- lb/ft³

### Additional information

**Result**

The selected unit applies for:

**Density** parameter (→ 40)

#### Selection

- **SD** = specific density
  - The specific density is the ratio of the fluid density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F).

- **SG** = specific gravity
  - The specific gravity is the ratio of the fluid density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F).

ℹ️ For an explanation of the abbreviated units: → 126

## Reference density unit

### Navigation

Expert → Sensor → System units → Ref. dens. unit

### Description

Use this function to select the unit for the reference density.

### Selection

**SI units**
- kg/Nm³
- kg/Nl
- g/Scm³
- kg/Sm³

**US units**
- lb/Sft³
Description of device parameters

**Factory setting**
- Country-dependent
  - kg/Nl
  - lb/ft³

**Additional information**

*Result*

The selected unit applies for:
- **External reference density** parameter (→ 73)
- **Fixed reference density** parameter (→ 73)
- **Reference density** parameter (→ 40)

*Selection*

For an explanation of the abbreviated units: → 126

---

**Temperature unit**

**Navigation**

Expert → Sensor → System units → Temperature unit

**Description**

Use this function to select the unit for the temperature.

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>K</td>
<td>°R</td>
</tr>
</tbody>
</table>

**Factory setting**

Country-specific:
- °C
- °F

**Additional information**

*Result*

The selected unit applies for:
- **Maximum value** parameter (→ 114)
- **Minimum value** parameter (→ 114)
- **Maximum value** parameter (→ 115)
- **Minimum value** parameter (→ 115)
- **Maximum value** parameter (→ 116)
- **Minimum value** parameter (→ 116)
- **External temperature** parameter (→ 70)
- **Reference temperature** parameter (→ 73)
- **Temperature** parameter (→ 40)

*Selection*

For an explanation of the abbreviated units: → 126

---

**Pressure unit**

**Navigation**

Expert → Sensor → System units → Pressure unit

**Description**

Use this function to select the unit for the pipe pressure.
**Selection**

*SI units*
- Pa a
- kPa a
- MPa a
- bar
- Pa g
- kPa g
- MPa g
- bar g

*US units*
- psi a
- psi g

*Custom-specific units*
User pres.

**Factory setting**

Country-specific:
- bar a
- psi a

**Additional information**

*Result*

The unit is taken from:
- Pressure value parameter (→ 41)
- External pressure parameter (→ 69)
- Pressure value parameter (→ 68)

*Selection*

For an explanation of the abbreviated units: → 126

---

**Date/time format**

**Navigation**

Expert → Sensor → System units → Date/time format

**Description**

Use this function to select the desired time format for calibration history.

**Selection**

- dd.mm.yy hh:mm
- dd.mm.yy hh:mm am/pm
- mm/dd/yy hh:mm
- mm/dd/yy hh:mm am/pm

**Factory setting**

dd.mm.yy hh:mm

**Additional information**

*Selection*

For an explanation of the abbreviated units: → 126
"User-specific units" submenu

**Navigation**

Expert → Sensor → System units → User-spec. units

<table>
<thead>
<tr>
<th>User-specific units</th>
</tr>
</thead>
<tbody>
<tr>
<td>User mass text</td>
</tr>
<tr>
<td>User mass offset</td>
</tr>
<tr>
<td>User mass factor</td>
</tr>
<tr>
<td>User volume text</td>
</tr>
<tr>
<td>User volume offset</td>
</tr>
<tr>
<td>User volume factor</td>
</tr>
<tr>
<td>User corrected volume text</td>
</tr>
<tr>
<td>User corrected volume offset</td>
</tr>
<tr>
<td>User corrected volume factor</td>
</tr>
<tr>
<td>User density text</td>
</tr>
<tr>
<td>User density offset</td>
</tr>
<tr>
<td>User density factor</td>
</tr>
<tr>
<td>User pressure text</td>
</tr>
<tr>
<td>User pressure offset</td>
</tr>
<tr>
<td>User pressure factor</td>
</tr>
</tbody>
</table>

**User mass text**

**Navigation**

Expert → Sensor → System units → User-spec. units → Mass text

**Description**

Use this function to enter a text for the user-specific unit of mass and mass flow. The corresponding time units (s, min, h, d) for mass flow are generated automatically.

**User entry**

Max. 10 characters such as letters, numbers or special characters (@, %, /)

**Factory setting**

User mass
### Additional information

**Result**

The defined unit is shown as an option in the choose list of the following parameters:
- Mass flow unit parameter (→ 44)
- Mass unit parameter (→ 45)

**Example**

If the text CENT for "centner" is entered, the following options are displayed in the picklist for the Mass flow unit parameter (→ 44):
- CENT/s
- CENT/min
- CENT/h
- CENT/d

### User mass offset

**Navigation**

Expert → Sensor → System units → User-spec. units → Mass offset

**Description**

Use this function to enter the zero point shift for the user-specific mass and mass flow unit.

**User entry**

Signed floating-point number

**Factory setting**

0

**Additional information**

**Description**

Value in user-specific unit = (factor × value in base unit) + offset

### User mass factor

**Navigation**

Expert → Sensor → System units → User-spec. units → Mass factor

**Description**

Use this function to enter a quantity factor (without time) for the user-specific mass and mass flow unit.

**User entry**

Signed floating-point number

**Factory setting**

1.0

**Additional information**

**Example**

Mass of 1 Zentner = 50 kg → 0.02 Zentner = 1 kg → entry: 0.02
**User volume text**

**Navigation**

Expert → Sensor → System units → User-spec. units → Volume text

**Description**

Use this function to enter a text for the user-specific unit of volume and volume flow. The corresponding time units (s, min, h, d) for volume flow are generated automatically.

**User entry**

Max. 10 characters such as letters, numbers or special characters (@, %, /)

**Factory setting**

User vol.

**Additional information**

*Result*

The defined unit is shown as an option in the choose list of the following parameters:

- Volume flow unit parameter (→ 46)
- Volume unit parameter (→ 47)

*Example*

If the text GLAS is entered, the choose list of the Volume flow unit parameter (→ 46) shows the following options:

- GLAS/s
- GLAS/min
- GLAS/h
- GLAS/d

---

**User volume offset**

**Navigation**

Expert → Sensor → System units → User-spec. units → Volume offset

**Description**

Use this function to enter the offset for adapting the user-specific volume unit and volume flow unit (without time).

**User entry**

Signed floating-point number

**Factory setting**

0

**Additional information**

*Description*

Value in user-specific unit = (factor × value in base unit) + offset

---

**User volume factor**

**Navigation**

Expert → Sensor → System units → User-spec. units → Volume factor

**Description**

Use this function to enter a quantity factor (without time) for the user-specific volume and volume flow unit.

**User entry**

Signed floating-point number
Proline Cubemass 100 PROFINET

Description of device parameters

**Factory setting**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>User corrected volume text</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**User corrected volume text**

**Navigation**

Expert → Sensor → System units → User-spec. units → Corr. vol. text

**Description**

Use this function to enter a text for the user-specific unit of the corrected volume and corrected volume flow. The corresponding time units (s, min, h, d) for mass flow are generated automatically.

**User entry**

Max. 10 characters such as letters, numbers or special characters (@, %, /)

**Factory setting**

UserCrVol.

**Additional information**

The defined unit is shown as an option in the choose list of the following parameters:

- Correlated volume flow unit parameter (→ 47)
- Correlated volume unit parameter (→ 48)

**Example**

If the text GLAS is entered, the choose list of the Correlated volume flow unit parameter (→ 47) shows the following options:

- GLAS/s
- GLAS/min
- GLAS/h
- GLAS/d

**User corrected volume offset**

**Navigation**

Expert → Sensor → System units → User-spec. units → Corr. vol. offset

**Description**

Use this function to enter the offset for adapting the user-specific corrected volume unit and corrected volume flow unit (without time).

Value in user-specific unit = (factor × value in base unit) + offset

**User entry**

Signed floating-point number

**Factory setting**

0

**User corrected volume factor**

**Navigation**

Expert → Sensor → System units → User-spec. units → Corr. vol. factor

**Description**

Use this function to enter a quantity factor (without time) for the user-specific corrected volume unit and corrected volume flow unit.
User entry
Signed floating-point number

Factory setting
1.0

User density text

Navigation
Expert → Sensor → System units → User-spec. units → Density text

Description
Use this function to enter a text or the user-specific unit of density.

User entry
Max. 10 characters such as letters, numbers or special characters (@, %, /)

Factory setting
User dens.

Additional information
Result
The defined unit is shown as an option in the choose list of the Density unit parameter (→ 49).

Example
Enter text “CE_L” for centners per liter

User density offset

Navigation
Expert → Sensor → System units → User-spec. units → Density offset

Description
Use this function to enter the zero point shift for the user-specific density unit.

Value in user-specific unit = (factor × value in base unit) + offset

User entry
Signed floating-point number

Factory setting
0

User density factor

Navigation
Expert → Sensor → System units → User-spec. units → Density factor

Description
Use this function to enter a quantity factor for the user-specific density unit.

User entry
Signed floating-point number

Factory setting
1.0
### User pressure text

**Navigation**

Expert → Sensor → System units → User-spec. units → Pressure text

**Description**

Use this function to enter a text for the user-specific pressure unit.

**User entry**

Max. 10 characters such as letters, numbers or special characters (@, %, /)

**Factory setting**

User pres.

**Additional information**

*Result*

The defined unit is shown as an option in the choose list of the Pressure unit parameter (→ 50).

### User pressure offset

**Navigation**

Expert → Sensor → System units → User-spec. units → Pressure offset

**Description**

Use this function to enter the offset for adapting the user-specific pressure unit.

**User entry**

Signed floating-point number

**Factory setting**

0

### User pressure factor

**Navigation**

Expert → Sensor → System units → User-spec. units → Pressure factor

**Description**

Use this function to enter a quantity factor for the user-specific pressure unit.

**User entry**

Signed floating-point number

**Factory setting**

1.0

**Additional information**

*Example*

1 Dyn/cm² = 0.1 Pa → 10 Dyn/cm² = 1 Pa → user entry: 10
3.2.3 "Process parameters" submenu

**Navigation**


---

**Flow damping**

**Navigation**

Expert → Sensor → Process param. → Flow damping

**Description**

Use this function to enter a time constant for flow damping. Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.

**User entry**

0 to 100.0 s

**Factory setting**

0 s

**Additional information**

- Value = 0: no damping
- Value > 0: damping is increased

**Result**

The damping affects the following variables of the device:

- Outputs
- Low flow cut off → 58
- Totalizers → 94

---

**Density damping**

**Navigation**

Expert → Sensor → Process param. → Density damping

**Description**

Use this function to enter the time constant for density damping.
Proline Cubemass 100 PROFINET

Description of device parameters

User entry
0 to 999.9 s

Factory setting
0 s

Temperature damping

Navigation
Expert → Sensor → Process param. → Temp. damping

Description
Use this function to enter a time constant for temperature damping.

User entry
0 to 999.9 s

Factory setting
0 s

Flow override

Navigation

Description
Use this function to select whether to interrupt the evaluation of measured values. This is useful for the cleaning processes of a pipeline, for example.

Selection
- Off
- On

Factory setting
Off

Additional information
Result
This setting affects all the functions and outputs of the measuring device.

Description
Flow override is active
- The diagnostic message diagnostic message Δ.C453 Flow override is displayed.
- Output values
  - Output: Value at zero flow
  - Temperature: proceeding output
  - Totalizers 1-3: Stop being totalized
"Low flow cut off" submenu

**Navigation**

Expert → Sensor → Process param. → Low flow cut off

**Assign process variable**

- **Description**: Use this function to select the process variable for low flow cutoff detection.
- **Selection**:
  - Off
  - Mass flow
  - Volume flow
  - Corrected volume flow
- **Factory setting**: Mass flow

**On value low flow cutoff**

- **Prerequisite**: One of the following options is selected in the Assign process variable parameter (→ 60):
  - Mass flow
  - Volume flow
  - Corrected volume flow
- **Description**: Use this function to enter a switch-on value for low flow cutoff. Low flow cut off is activated if the value entered is not equal to 0 or pressure shock suppression is active → 61.
- **User entry**: Positive floating-point number
- **Factory setting**: Depends on country and nominal diameter → 123
Additional information

Dependency

The unit depends on the process variable selected in the Assign process variable parameter (→ 60).

Off value low flow cutoff

Navigation

Expert → Sensor → Process param. → Low flow cut off → Off value

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 60):

- Mass flow
- Volume flow
- Corrected volume flow

Description

Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value (→ 60).

User entry

0 to 100.0 %

Factory setting

50 %

Additional information

Example

<table>
<thead>
<tr>
<th>Q</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>Time</td>
</tr>
<tr>
<td>H</td>
<td>Hysteresis</td>
</tr>
<tr>
<td>A</td>
<td>Low flow cut off active</td>
</tr>
<tr>
<td>1</td>
<td>Low flow cut off is activated</td>
</tr>
<tr>
<td>2</td>
<td>Low flow cut off is deactivated</td>
</tr>
<tr>
<td>3</td>
<td>On value entered</td>
</tr>
<tr>
<td>4</td>
<td>Off value entered</td>
</tr>
</tbody>
</table>

Pressure shock suppression

Navigation


Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 60):

- Mass flow
- Volume flow
- Corrected volume flow
Use this function to enter the time interval for signal suppression (= active pressure shock suppression).

User entry
0 to 100 s

Factory setting
0 s

Pressure shock suppression is enabled
- Prerequisite:
  - Flow rate < on-value of low flow cut off
  or
  - Changing the flow direction
- Output values
  - Flow displayed: 0
  - Totalizer: the totalizers are pegged at the last correct value

Pressure shock suppression is disabled
- Prerequisite: the time interval set in this function has elapsed.
- If the flow also exceeds the switch-off value for low flow cut off, the device starts processing the current flow value again and displays it.

Example
When closing a valve, momentarily strong fluid movements may occur in the pipeline, which are registered by the measuring system. These totalized flow values lead to a false totalizer status, particularly during batching processes.
"Partially filled pipe detection" submenu

**Navigation**

Expert → Sensor → Process param. → Partial pipe det

**Assign process variable**

- **Partially filled pipe detection**
  - Assign process variable → § 63
  - Low value partial filled pipe detection → § 63
  - High value partial filled pipe detection → § 64
  - Response time part. filled pipe detect. → § 64
  - Maximum damping partial filled pipe det. → § 65

**Assign process variable**

**Navigation**

Expert → Sensor → Process param. → Partial pipe det → Assign variable

**Description**

Use this function to select a process variable to detect empty or partially filled measuring tubes.

For gas measurement: Deactivate monitoring due to low gas density.

**Selection**

- Off
- Density
- Reference density

**Factory setting**

Off

**Low value partial filled pipe detection**

**Navigation**

Expert → Sensor → Process param. → Partial pipe det → Low value

**Prerequisite**

One of the following options is selected in the **Assign process variable** parameter (→ § 63):

- Density
- Reference density

**Description**

Use this function to enter a lower limit value to enable detection of empty or partially filled measuring tubes. If the measured density falls below this value, monitoring is enabled.

**User entry**

Signed floating-point number

**Factory setting**

200
Additional information  

**User entry**

The lower limit value must be less than the upper limit value that is specified in the **High value partial filled pipe detection** parameter (→ 64).

The unit depends on the process variable selected in the **Assign process variable** parameter (→ 63).

**Limit value**

If the displayed value is outside the limit value, the measuring device displays the diagnostic message **S862 Partly filled pipe**.

---

### High value partial filled pipe detection

**Navigation**

Expert → Sensor → Process param. → Partial pipe det → High value

**Prerequisite**

One of the following options is selected in the **Assign process variable** parameter (→ 63):

- Density
- Reference density

**Description**

Use this function to enter an upper limit value to enable detection of empty or partially filled measuring tubes. If the measured density exceeds this value, detection is enabled.

**User entry**

Signed floating-point number

**Factory setting**

6000

**Additional information**  

**User entry**

The upper limit value must be greater than the lower limit value that is specified in the **Low value partial filled pipe detection** parameter (→ 63).

The unit depends on the process variable selected in the **Assign process variable** parameter (→ 63).

**Limit value**

If the displayed value is outside the limit value, the measuring device displays the diagnostic message **S862 Partly filled pipe**.

---

### Response time part. filled pipe detect.

**Navigation**

Expert → Sensor → Process param. → Partial pipe det → Response time

**Prerequisite**

One of the following options is selected in the **Assign process variable** parameter (→ 63):

- Density
- Reference density

**Description**

Enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message **S862 Partly filled pipe** to be triggered if the measuring pipe is empty or partially full.
Maximum damping partial filled pipe det.

**Navigation**

Expert → Sensor → Process param. → Partial pipe det → Max. damping

**Prerequisite**

One of the following options is selected in the Assign process variable parameter (→ 63):
- Density
- Reference density

**Description**

Use this function to enter a damping value to enable detection of empty or partially filled measuring tubes.

**User entry**

Positive floating-point number

**Factory setting**

0

**Additional information**

*Description*

If pipe damping (Testpoints submenu) exceeds the specified value, the measuring device presumes that the pipe is partially filled and the flow signal is set to 0. The measuring device displays the diagnostic message ΔS862 Partly filled pipe. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases.

*User entry*

The function is enabled only if the input value is greater than 0.

### 3.2.4 "Measurement mode" submenu

**Navigation**

Expert → Sensor → Measurement mode

<table>
<thead>
<tr>
<th>Measurement mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select medium</td>
</tr>
<tr>
<td>Select gas type</td>
</tr>
<tr>
<td>Reference sound velocity</td>
</tr>
<tr>
<td>Temperature coefficient sound velocity</td>
</tr>
</tbody>
</table>
Select medium

**Navigation**

Expert → Sensor → Measurement mode → Select medium

**Description**

Use this function to select the type of medium.

**Selection**

- Liquid
- Gas

**Factory setting**

Liquid

Select gas type

**Navigation**

Expert → Sensor → Measurement mode → Select gas type

**Prerequisite**

The **Gas** option is selected in the **Select medium** parameter (→ 66).

**Description**

Use this function to select the type of gas for the measuring application.

**Selection**

- Air
- Ammonia NH3
- Argon Ar
- Sulfur hexafluoride SF6
- Oxygen O2
- Ozone O3
- Nitrogen oxide NOx
- Nitrogen N2
- Nitrous oxide N2O
- Methane CH4
- Hydrogen H2
- Helium He
- Hydrogen chloride HCl
- Hydrogen sulfide H2S
- Ethylene C2H4
- Carbon dioxide CO2
- Carbon monoxide CO
- Chlorine Cl2
- Butane C4H10
- Propane C3H8
- Propylene C3H6
- Ethane C2H6
- Others

**Factory setting**

Methane CH4
Reference sound velocity

**Navigation**

Expert → Sensor → Measurement mode → Sound velocity

**Prerequisite**

The Others option is selected in the Select gas type parameter (→ 66).

**Description**

Use this function to enter the sound velocity of the gas at 0 °C (+32 °F).

**User entry**

1 to 99999.9999 m/s

**Factory setting**

0 m/s

Temperature coefficient sound velocity

**Navigation**

Expert → Sensor → Measurement mode → Temp. coeff. SV

**Prerequisite**

The Others option is selected in the Select gas type parameter (→ 66).

**Description**

Use this function to enter a temperature coefficient for the sound velocity of the gas.

**User entry**

Positive floating-point number

**Factory setting**

0 (m/s)/K

3.2.5 "External compensation" submenu

**Navigation**


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</table>
**Fail safe type of external temperature**

→  71

**Fail safe value of external temperature**

→  71

---

**Pressure compensation**

**Navigation**


**Prerequisite**

The **Gas** option is selected in the **Select medium** parameter (→  66).

**Description**

Use this function select the type of pressure compensation.

**Selection**

- Off
- Fixed value
- External value

**Factory setting**

Off

**Additional information**

Use this function select the type of pressure compensation. When selecting the **External value** option, the pressure value of the cyclical PROFINET communication is used. In addition, the "External pressure" compensation value must be incorporated into the analog output module.

Additional information: Operating Instructions, "Cyclical data transfer" section.

---

**Pressure value**

**Navigation**

Expert → Sensor → External comp. → Pressure value

**Prerequisite**

The **Fixed value** option is selected in the **Pressure compensation** parameter (→  68).

**Description**

Use this function to enter a value for the process pressure that is used for pressure correction.

**User entry**

Positive floating-point number

**Factory setting**

0 bar

**Additional information**

**User entry**

The unit is taken from the **Pressure unit** parameter (→  50)
**External pressure**

**Navigation**


**Prerequisite**

The **External value** option is selected in the **Pressure compensation** parameter (→ 68).

**Description**

Use this function to enter an external pressure value.

**User entry**

Positive floating-point number

**Factory setting**

0 bar

**Additional information**

*User entry*

The unit is taken from the **Pressure unit** parameter (→ 50)

---

**Fail safe type external pressure**

**Navigation**

Expert → Sensor → External comp. → Fail safe type

**Description**

Use this function to select the failsafe mode for the external density value.

**Selection**

- Fail safe value
- Fallback value
- Off

**Factory setting**

Off

**Additional information**

*Description*

If the status of the input or simulation value is BAD, the failsafe mode defined here is used.

*Selection*

- Fail safe value
  A substitute value is used. The substitute value is defined in the **Fail safe value of external pressure** parameter (→ 69).
- Fallback value
  The last valid value is used.
- Off option: The invalid value continues to be used.

---

**Fail safe value of external pressure**

**Navigation**

Expert → Sensor → External comp. → Fs val. pressure

**Prerequisite**

The **Fail safe value** option is selected in the **Fail safe type external pressure** parameter (→ 69).
Description: Use this function to enter a fixed pressure value that is used for the external pressure in the event of a device alarm.

User entry: Signed floating-point number

Factory setting: 0 bar

Additional information: In the event of a device alarm, the pressure value is displayed as an output value in the Pressure value parameter (→ 41).

Temperature mode


Description: Use this function to select the temperature mode.

Selection:
- Internal measured value
- External value

Factory setting: Internal measured value

Additional information: Use this function to select the type of temperature compensation. When selecting the External value option, the temperature value of the cyclical PROFINET communication is used. In addition, the "External temperature" compensation value must be incorporated into the analog output module. Additional information: Operating Instructions, "Cyclical data transmission" section.

External temperature


Prerequisite: The Temperature option is selected in the Temperature mode parameter (→ 70).

Description: Use this function to enter the external temperature.

User entry: -273.15 to 99 999 °C

Factory setting: 0 °C

Additional information: The unit is taken from the Temperature unit parameter (→ 50)
Fail safe type of external temperature

Navigation

Expert → Sensor → External comp. → FailSafeTypeTemp

Description

Use this function to select the failsafe mode for the external temperature value.

Selection

- Fail safe value
- Fallback value
- Off

Factory setting

Off

Additional information

Description

If the status of the input or simulation value is BAD, the failsafe mode defined here is used.

Selection

- Fail safe value
  A substitute value is used. The substitute value is defined in the Fail safe value of external temperature parameter (→ 71).
- Fallback value
  The last valid value is used.
- Off
  The invalid value continues to be used.

Fail safe value of external temperature

Navigation

Expert → Sensor → External comp. → FailSaValExtTemp

Prerequisite

The Fail safe value option is selected in the Fail safe type of external temperature parameter (→ 71).

Description

Use this function to enter a fixed temperature value that is used for the external pressure in the event of a device alarm.

User entry

Signed floating-point number

Factory setting

0 °C

Additional information

Description

In the event of a device alarm, the temperature value is displayed as an output value in the Temperature parameter (→ 40).
3.2.6 "Calculated values" submenu

**Navigation**  
Expert → Sensor → Calculated value

"Corrected volume flow calculation" submenu

**Navigation**  

**Corrected volume flow calculation**

**Navigation**  

**Description**  
Use this function to select the reference density for calculating the corrected volume flow.

**Selection**  
- Fixed reference density
- Calculated reference density
- Reference density by API table 53
- External reference density

**Factory setting**  
Calculated reference density

**Additional information**  
*Selection*  
Use this function to select the type of corrected volume flow calculation. When selecting the **External reference density** option, the reference density value of the cyclical
PROFINET communication is used. In addition, the “External reference density” compensation value must be incorporated into the analog output module.

Additional information: Operating Instructions, "Cyclical data transfer" section.

### External reference density

**Navigation**


**Description**

Use this function to enter the external reference density.

**User entry**

Floating point number with sign

**Factory setting**

0 kg/Nl

### Fixed reference density

**Navigation**


**Prerequisite**

In the Corrected volume flow calculation parameter (→ 72) the Fixed reference density option is selected.

**Description**

Use this function to enter a fixed value for the reference density.

**User entry**

Positive floating-point number

**Factory setting**

1 kg/Nl

**Additional information**

Dependency

The unit is taken from the Reference density unit parameter (→ 49)

### Reference temperature

**Navigation**


**Prerequisite**

In the Corrected volume flow calculation parameter (→ 72) the Calculated reference density option is selected.

**Description**

Use this function to enter a reference temperature for calculating the reference density.

**User entry**

−273.15 to 99 999 °C

**Factory setting**

Country-specific:

- +20 °C
- +68 °F
Additional information

Dependency

The unit is taken from the Temperature unit parameter (→ 50)

Reference density calculation

\[ p_n = \rho \cdot (1 + \alpha \cdot \Delta t + \beta \cdot \Delta t^2) \]

- \( p_n \): reference density
- \( \rho \): fluid density currently measured
- \( t \): fluid temperature currently measured
- \( t_N \): reference temperature at which the reference density is calculated (e.g. 20 °C)
- \( \Delta t \): \( t - t_N \)
- \( \alpha \): linear expansion coefficient of the fluid, unit = [1/K]; K = Kelvin
- \( \beta \): square expansion coefficient of the fluid, unit = [1/K^2]

Linear expansion coefficient

Navigation

Expert → Sensor → Calculated value → Corr. vol.flow. → Linear exp coeff

Prerequisite

In the Corrected volume flow calculation parameter (→ 72) the Calculated reference density option is selected.

Description

Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.

User entry

Signed floating-point number

Factory setting

0.0

Square expansion coefficient

Navigation


Description

For fluid with a non-linear expansion pattern: use this function to enter a quadratic, fluid-specific expansion coefficient for calculating the reference density.

User entry

Signed floating-point number

Factory setting

0.0
Fail safe type of external ref. density

Navigation  
Express → Sensor → Calculated value → Corr. vol.flow. → FailSaTypRefDens

Description  
Use this function to select the failsafe mode for the external reference density value.

Selection  
• Fail safe value
• Fallback value
• Off

Factory setting  
Off

Additional information  
Description  
If the status of the input or simulation value is BAD, the failsafe mode defined here is used.

Selection  
• Fail safe value  
A substitute value is used. The substitute value is defined in the Fail safe value of external ref. density parameter (→ 75).
• Fallback value  
The last valid value is used.
• Off  
The invalid value continues to be used.

Fail safe value of external ref. density

Navigation  
Express → Sensor → Calculated value → Corr. vol.flow. → FailSaValRefDens

Prerequisite  
The Fail safe value option is selected in the Fail safe type of external ref. density parameter (→ 75).

Description  
Use this function to enter a fixed reference density value that is used for the external reference density in the event of a device alarm.

User entry  
Signed floating-point number

Factory setting  
0 kg/Nl

Additional information  
Description  
In the event of a device alarm, the reference density value is displayed as an output value in the Reference density parameter (→ 40).
3.2.7 "Sensor adjustment" submenu

**Navigation**


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<td>▶ Process variable adjustment</td>
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</table>

**Installation direction**

**Navigation**


**Description**

Use this function to change the sign of the medium flow direction.

**Selection**

- Flow in arrow direction
- Flow against arrow direction

**Factory setting**

Flow in arrow direction

**Additional information**

Before changing the sign: ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor nameplate.

"Zero point adjustment" submenu

**Navigation**


<table>
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<tr>
<td>Progress</td>
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</tbody>
</table>
Zero point adjustment control

Navigation


Description

Use this function to select the start of the zero point adjustment.

Note conditions.

Selection

- Cancel
- Busy
- Zero point adjust failure
- Start

Factory setting

Cancel

Additional information

Description

- Cancel
  If zero point adjustment has failed, select this option to cancel zero point adjustment.
- Busy
  Is displayed during zero point adjustment.
- Zero point adjust failure
  Is displayed if zero point adjustment has failed.
- Start
  Select this option to start zero point adjustment.

Progress

Navigation


Description

The progress of the process is indicated.

User interface

0 to 100 %

"Density adjustment" wizard

Navigation


Density adjustment

 Density adjustment mode

 Density setpoint 1

 Density setpoint 2

 Execute density adjustment
Density adjustment mode

**Navigation**

**Description**
Use this function to select the method for field density adjustment.

**User interface**
- 1 point adjustment
- 2 point adjustment

**Factory setting**
1 point adjustment

**Additional information**

**Description**
Field density adjustment is performed to correct the factory setting on site.

For a detailed description on performing density adjustment

**Selection**
- The 1 point adjustment option shifts the values by an offset.
- The 2 point adjustment option shifts the values by an offset and a factor.

**Example**
A field density adjustment can compensate for the effects following abrasion or buildup.

**NOTE!**
The density coefficients C0 and C1 are read-only parameters and cannot be write-accessed.

Density setpoint 1

**Navigation**

**Description**
Use this function to enter the existing density value.

**User interface**
Input depends on the unit selected in the Density unit parameter (→ 49).

**Factory setting**
1 kg/l

**Additional information**

**Description**
For a detailed description on performing density adjustment
Density setpoint 2

**Navigation**


**Prerequisite**
The 2 point adjustment option is selected in the Density adjustment mode parameter.

**Description**
Use this function to enter the second density setpoint.

**User interface**
Input depends on the unit selected in the Density unit parameter (→ 49).

**Factory setting**
1 kg/l

**Additional information**
Description
For a detailed description on performing density adjustment

---

Execute density adjustment

**Navigation**


**Description**
Options for performing the density adjustment.

**User interface**
- Cancel
- Busy
- Ok
- Density adjust failure
- Measure density 1
- Measure density 2
- Calculate
- Restore original

**Factory setting**
Ok

**Additional information**
Selection
The options available for selection in this parameter depend on the Density adjustment submenu (→ 77) process.

Description
For a detailed description on performing density adjustment

---

Progress

**Navigation**


**Description**
The progress of the process is indicated.
### Density adjustment factor

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<td>有关执行密度调整的详细描述</td>
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</tbody>
</table>

**Description**

For a detailed description on performing density adjustment

**User interface**

This service parameter in the Wizard based on field adjustment (under process conditions) is a read-only parameter and cannot be write-accessed.

If a customer wants to adjust this value manually, this can be done via the **Density factor** parameter (→ 83), which is writable using the "Operator"/"Maintenance" user role.

**Navigation:**

Expert → Sensor → Sensor adjustm. → Variable adjust

**NOTE!**

The two parameters are taken into consideration sequentially, i.e. the CFM Block from field adjustment is considered first and then the manual change made by the customer.

> It is recommended that you always use only one of these two methods.

**Detailed information on the Density factor parameter** (→ 83) see the 'Description of Device Parameters' documentation

### Density adjustment offset

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<tbody>
<tr>
<td><strong>Description</strong></td>
<td>显示当前的密度校正偏移。</td>
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<tr>
<td><strong>Factory setting</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>有关执行密度调整的详细描述</td>
</tr>
</tbody>
</table>

**Description**

For a detailed description on performing density adjustment

**User interface**

This service parameter in the Wizard based on field adjustment (under process conditions) is a read-only parameter and cannot be write-accessed.
If a customer wants to adjust this value manually, this can be done via the **Density offset** parameter (→ 83), which is writable using the "Operator"/"Maintenance" user role.

**Navigation:**
Expert → Sensor → Sensor adjustm. → Variable adjust

**NOTE!**
The two parameters are taken into consideration sequentially, i.e. the CFM Block from field adjustment is considered first and then the manual change made by the customer.

▸ It is recommended that you always use only one of these two methods.

Detailed information on the **Density offset** parameter (→ 83) see the "Description of Device Parameters" documentation

---

**"Process variable adjustment" submenu**

**Navigation**
Expert → Sensor → Sensor adjustm. → Variable adjust

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<tr>
<td>Temperature offset</td>
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<tr>
<td>Temperature factor</td>
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</tbody>
</table>
### Mass flow offset

**Navigation**


**Description**

Use this function to enter the zero point shift for the mass flow trim. The mass flow unit on which the shift is based is kg/s.

**User entry**

Signed floating-point number

**Factory setting**

0 kg/s

**Additional information**

Description

Corrected value = (factor × value) + offset

### Mass flow factor

**Navigation**


**Description**

Use this function to enter a quantity factor (without time) for the mass flow. This multiplication factor is applied over the mass flow range.

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Description

Corrected value = (factor × value) + offset

### Volume flow offset

**Navigation**


**Description**

Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is m³/s.

**User entry**

Signed floating-point number

**Factory setting**

0 m³/s

**Additional information**

Description

Corrected value = (factor × value) + offset
Volume flow factor

**Navigation**


**Description**

Use this function to enter a quantity factor (without time) for the volume flow. This multiplication factor is applied over the volume flow range.

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Corrected value = (factor × value) + offset

Density offset

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset

**Description**

Use this function to enter the zero point shift for the density trim. The density unit on which the shift is based is kg/m³.

**User entry**

Signed floating-point number

**Factory setting**

0 kg/m³

**Additional information**

Corrected value = (factor × value) + offset

Density factor

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor

**Description**

Use this function to enter a quantity factor for the density. This multiplication factor is applied over the density range.

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Corrected value = (factor × value) + offset
Corrected volume flow offset

**Navigation**

**Description**
Use this function to enter the zero point shift for the corrected volume flow trim. The corrected volume flow unit on which the shift is based is 1 Nm³/s.

**User entry**
Signed floating-point number

**Factory setting**
0 Nm³/s

**Additional information**
*Description*
- Corrected value = (factor × value) + offset

---

Corrected volume flow factor

**Navigation**

**Description**
Use this function to enter a quantity factor (without time) for the corrected volume flow. This multiplication factor is applied over the corrected volume flow range.

**User entry**
Positive floating-point number

**Factory setting**
1

**Additional information**
*Description*
- Corrected value = (factor × value) + offset

---

Reference density offset

**Navigation**
Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. offset

**Description**
Use this parameter to enter the zero point shift for the reference density trim. The standard density unit on which the shift is based is 1 kg/Nm³.

**User entry**
Signed floating-point number

**Factory setting**
0 kg/Nm³

**Additional information**
*Description*
- Corrected value = (factor × value) + offset
Reference density factor

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor

**Description**

Use this function to enter a quantity factor (without time) for the reference density. This multiplication factor is applied over the reference density range.

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

*Description*

Corrected value = (factor × value) + offset

Temperature offset

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset

**Description**

Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is K.

**User entry**

Signed floating-point number

**Factory setting**

0 K

**Additional information**

*Description*

Corrected value = (factor × value) + offset

Temperature factor

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. factor

**Description**

Use this function to enter a quantity factor for the temperature. In each case, this factor refers to the temperature in K.

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

*Description*

Corrected value = (factor × value) + offset
3.2.8 "Calibration" submenu

**Navigation**  
Expert → Sensor → Calibration

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</thead>
<tbody>
<tr>
<td>Calibration factor</td>
</tr>
</tbody>
</table>

**Zero point**

**Navigation**  
Expert → Sensor → Calibration → Zero point

**Description**  
Use this function to enter the zero point correction value for the sensor.

**User entry**  
Signed floating-point number

**Factory setting**  
Depends on nominal diameter and calibration.

**Nominal diameter**

**Navigation**  
Expert → Sensor → Calibration → Nominal diameter

**Description**  
Displays the nominal diameter of the sensor.

**User interface**  
DNxx / x'

**Factory setting**  
Depends on the size of the sensor
Additional information

Description

The value is also specified on the sensor nameplate.

C0 to 5

Navigation

Expert → Sensor → Calibration → C0 to 5

Description

Displays the current density coefficients C0 to 5 of the sensor.

User interface

Signed floating-point number

Factory setting

0

Additional information

Description

A density trim can alter the calibration value of the density coefficient.

3.2.9 "Supervision" submenu

Navigation

Expert → Sensor → Supervision

Limit value measuring tube damping

Navigation

Expert → Sensor → Supervision → Limit tube damp.

Description

Use this function to enter a limit value for measuring tube damping.

User entry

Positive floating-point number

Factory setting

Positive floating-point number

Additional information

Limit value

- If the displayed value is outside the limit value, the measuring device displays the diagnostic message S948 Tube damping too high.
- For detecting inhomogeneous media, for example
## 3.3 "Communication" submenu

### Navigation

Expert → Communication

- Communication
  - Web server
    - Web server language → 88
  - PROFINET configuration → 91
  - PROFINET information → 92

### 3.3.1 "Web server" submenu

### Navigation

Expert → Communication → Web server

- Web server
  - Web server language → 88
  - MAC address → 89
  - IP address → 89
  - Subnet mask → 90
  - Default gateway → 90
  - Web server functionality → 90
  - Login page → 91

---

### Web server language

#### Navigation

Expert → Communication → Web server → Webserv.language

#### Description

Use this function to select the web server language setting.

#### Selection

- English
- Deutsch *
- Français *
- Español *
- Italiano *
- Nederlands *
- Portuguesa *

* Visibility depends on order options or device settings
MAC address

**Navigation**

Expert → Communication → Web server → MAC Address

**Description**

Displays the MAC address of the measuring device.

**User interface**

Unique 12-digit character string comprising letters and numbers

**Factory setting**

Each measuring device is given an individual address.

**Additional information**

*Example*

For the display format

00:07:05:10:01:5F

IP address

**Navigation**

Expert → Communication → Web server → IP address

**Description**

Displays the IP address of the device's web server.

**User interface**

4 octet: 0 to 255 (in the particular octet)

**Factory setting**

0.0.0.0

---

* Visibility depends on order options or device settings
1) Media Access Control
## Subnet mask

**Navigation**

[icon] Expert → Communication → Web server → Subnet mask

**Description**

Displays the subnet mask.

**User interface**

4 octet: 0 to 255 (in the particular octet)

**Factory setting**

0.0.0.0

## Default gateway

**Navigation**

[icon] Expert → Communication → Web server → Default gateway

**Description**

Displays the default gateway.

**User interface**

4 octet: 0 to 255 (in the particular octet)

**Factory setting**

0.0.0.0

## Web server functionality

**Navigation**


**Description**

Use this function to switch the Web server on and off.

**Selection**

- Off
- HTML Off
- On

**Factory setting**

On

**Additional information**

Description

Once disabled, the Web server functionality can be re-enabled only via the local display or the FieldCare operating tool.

**Selection**

- Off
  - The web server is completely disabled.
  - Port 80 is locked.
- HTML Off
  - The HTML version of the web server is not available.
- On
  - The complete functionality of the web server is available.
  - JavaScript is used.
  - The password is transferred in an encrypted state.
  - Any change to the password is also transferred in an encrypted state.
Login page

Navigation |  
---|---
Expert → Communication → Web server → Login page

Description | Use this function to select the format of the login page.

Selection
- Without header
- With header

Factory setting | With header

3.3.2 "PROFINET configuration" submenu

Navigation | Expert → Communication → PROFINET config.

Name of station

Navigation |  
---|---
Expert → Communication → PROFINET config. → Name of station

Description | Displays a unique name for the measuring point so it can be identified quickly within the plant.

User interface | Max. 240 characters such as lower-case letter or numbers

Factory setting | eh-cubemass100-xxxxx

Additional information

Description

The device tag corresponds to the device name ("Name Of Station" of PROFINET specification) The device name can be adjusted via DIP switch or the automation system.

Factory setting

Structure of the device tag:
- eh-cubemass100-xxxxx
  - eh: Endress+Hauser
  - cubemass: Instrument family
  - 100: Transmitter
  - xxxxx: Serial number of the device
Manufacturer-specific diagnostics

**Navigation**


**Description**

Use this function to enable the transfer of manufacturer-specific diagnostic events.

**Selection**

- Not active
- Active

**Factory setting**

Active

**Additional information**

Description

- Active
  - In addition to the PROFINET standard alarms, active manufacturing-specific diagnostic events are also transferred to the automation system. The diagnostic number and the error text of the respective diagnostic event are displayed.
- Not active
  - Only the PROFINET standard alarms are transferred to the automation system.

**Selection**

This selection affects PROFINET communication only.

Diagnostic events are displayed in the DTM or web server regardless of the selection made in this parameter. The PROFINET standard alarms (diagnosis and process) for the stack are also unaffected by the selected made.

### 3.3.3 "PROFINET information" submenu

**Navigation**

Expert → Communication → PROFINET info

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<tr>
<td></td>
</tr>
<tr>
<td>Device ID</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Device revision</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Device type**

**Navigation**

Expert → Communication → PROFINET info → Device type

**Description**

Use this function to display the device type (device type code).

**User interface**

Max. 16 characters, such as letters, numbers or special characters (e.g. @, %, /).
Factory setting  Cubemass 100

Device ID

Navigation  Expert → Communication → PROFINET info → Device ID
Description  Use this function to display the device ID.
User interface  0 to 65535

Device revision

Navigation  Expert → Communication → PROFINET info → Device revision
Description  Use this function to display the device revision.
User interface  0 to 65535
Additional information  Description
The device revision enables the correct assignment of device drivers to the device.

3.4 "Application" submenu

Navigation  Expert → Application

Reset all totalizers

Navigation  Expert → Application → Reset all tot.
Description  Use this function to reset all totalizers to the value 0 and restart the totaling process. This deletes all the flow values previously totalized.
Selection

- Cancel
- Reset + totalize

Factory setting

Cancel

Additional information

Selection

- Cancel
  No action is executed and the user exits the parameter.
- Reset + totalize
  All totalizers are reset to 0 and the totaling process is restarted.

3.4.1 "Totalizer 1 to 3" submenu

Navigation

Expert → Application → Totalizer 1 to 3

Assign process variable

- Off
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow *
- Carrier mass flow *

Factory setting

Mass flow

* Visibility depends on order options or device settings
Additional information

**Description**

If the option selected is changed, the device resets the totalizer to 0.

**Selection**

If the Off option is selected, only the Assign process variable parameter (→ 94) is displayed in the Totalizer 1 to 3 submenu. All other parameters in the submenu are hidden.

---

**Unit totalizer**

**Navigation**

Expert → Application → Totalizer 1 to 3 → Unit totalizer

**Prerequisite**

One of the following options is selected in the Assign process variable parameter (→ 94) of the Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow
- Carrier mass flow

**Description**

Use this function to select the unit for the process variable of totalizer 1-3.

**Selection**

* **SI units**
  - g
  - kg
  - t
  
* **US units**
  - oz
  - lb
  - STon

* **Custom-specific units**
  - User mass

  or

  * **SI units**
    - cm³
    - dm³
    - m³
    - ml
    - l
    - hl
    - Mi Mega

  * **US units**
    - af
    - ft³
    - fl oz (us)
    - gal (us)
    - kgal (us)
    - Mgal (us)
    - bbl (us;liq.)
    - bbl (us;beer)
    - bbl (us;oil)
    - bbl (us;tank)

  * **Imperial units**
    - gal (imp)
    - Mgal (imp)
    - bbl (imp;beer)
    - bbl (imp;oil)

  * **Custom-specific units**
    - User vol.

  or

* Visibility depends on order options or device settings
Description of device parameters

SI units
- N
- Nm³
- Sl
- Sm³

US units
- St³
- Sgal (us)
- Sbbl (us, liq.)

Imperial units
- Sgal (imp)

Custom-specific units
- UserCrVol.

Factory setting
Country-specific:
- kg
- lb

Additional information

Description
The unit is selected separately for each totalizer. The unit is independent of the option selected in the System units submenu (→ 44).

Selection
The selection depends on the process variable selected in the Assign process variable parameter (→ 94).

Totalizer operation mode

Navigation
Expert → Application → Totalizer 1 to 3 → Operation mode

Prerequisite
One of the following options is selected in the Assign process variable parameter (→ 94)Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow *
- Carrier mass flow *

Description
Use this function to select how the totalizer summates the flow.

Selection
- Net flow total
- Forward flow total
- Reverse flow total

Factory setting
Net flow total

Additional information
Selection
- Net flow total
  Positive and negative flow values are totalized and balanced against one another. Net flow is registered in the flow direction.
- Forward flow total
  Only the flow in the forward flow direction is totalized.
- Reverse flow total
  Only the flow against the forward flow direction is totalized (= reverse flow total).

* Visibility depends on order options or device settings
Control Totalizer 1 to 3

Navigation

Expert → Application → Totalizer 1 to 3 → Control Tot. 1 to 3

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 94) Totalizer 1 to 3 submenu:

- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow
- Carrier mass flow

Description

Use this function to select the control of totalizer value 1-3.

Selection

- Totalize
- Reset + hold
- Preset + hold
- Reset + totalize
- Preset + totalize
- Hold

Factory setting

Totalize

Additional information

Selection

- Totalize
  The totalizer is started or continues totalizing with the current counter reading.
- Reset + hold
  The totaling process is stopped and the totalizer is reset to 0.
- Preset + hold
  The totaling process is stopped and the totalizer is set to its defined start value from the Preset value parameter (→ 97).
- Reset + totalize
  The totalizer is reset to 0 and the totaling process is restarted.
- Preset + totalize
  The totalizer is set to the defined start value in Preset value parameter (→ 97) and the totaling process is restarted.

Preset value 1 to 3

Navigation

Expert → Application → Totalizer 1 to 3 → Preset value 1 to 3

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 94) Totalizer 1 to 3 submenu:

- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow
- Carrier mass flow

Description

Use this function to enter a start value for totalizer 1-3.

* Visibility depends on order options or device settings
User entry
Signed floating-point number

Factory setting
Country-specific:
- 0 kg
- 0 lb

Additional information
User entry
The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 95).

Example
This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

Failure mode

Navigation
Expert → Application → Totalizer 1 to 3 → Failure mode

Prerequisite
One of the following options is selected in the Assign process variable parameter (→ 94) Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow *
- Carrier mass flow *

Description
Use this function to select how a totalizer behaves in the event of a device alarm.

Selection
- Stop
- Actual value
- Last valid value

Factory setting
Stop

Additional information
Description
This setting does not affect the failsafe mode of other totalizers and the outputs. This is specified in separate parameters.

Selection
- Stop
  Totalizing is stopped in the event of a device alarm.
- Actual value
  The totalizer continues to count based on the current measured value; the device alarm is ignored.
- Last valid value
  The totalizer continues to count based on the last valid measured value before the device alarm occurred.

* Visibility depends on order options or device settings
3.4.2  "Concentration" submenu

For detailed information on the parameter descriptions for the Concentration application package: Special Documentation for the device

Navigation  ➔  Expert → Application → Concentration

3.5  "Diagnostics" submenu

Navigation  ➔  Expert → Diagnostics

Actual diagnostics  ➔  99
Previous diagnostics  ➔  100
Operating time from restart  ➔  101
Operating time  ➔  101
Diagnostic list  ➔  102
Event logbook  ➔  105
Device information  ➔  108
I/O module  ➔  111
Sensor electronic module  ➔  112
Display module  ➔  112
Min/max values  ➔  113
Heartbeat  ➔  119
Simulation  ➔  119

Actual diagnostics

Navigation  ➔  Expert → Diagnostics → Actual diagnos.

Prerequisite  A diagnostic event has occurred.
### Description
Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

### User interface
Symbol for diagnostic behavior, diagnostic code and short message.

### Additional information
**Display**
Additional pending diagnostic messages can be viewed in the **Diagnostic list** submenu (→ 102).

**Example**
For the display format:
F271 Main electronic failure

---

### Timestamp

#### Navigation
Expert → Diagnostics → Timestamp

#### Description
Displays the operating time when the current diagnostic message occurred.

#### User interface
Days (d), hours (h), minutes (m) and seconds (s)

#### Additional information
**Display**
The diagnostic message can be viewed via the **Actual diagnostics** parameter (→ 99).

**Example**
For the display format:
24d12h13m00s

---

### Previous diagnostics

#### Navigation
Expert → Diagnostics → Prev.diagnostics

#### Prerequisite
Two diagnostic events have already occurred.

#### Description
Displays the diagnostic message that occurred before the current message.

#### User interface
Symbol for diagnostic behavior, diagnostic code and short message.

#### Additional information
**Example**
For the display format:
F271 Main electronic failure
## Timestamp

**Navigation**

Expert → Diagnostics → Timestamp

**Description**
Displays the operating time when the last diagnostic message before the current message occurred.

**User interface**
Days (d), hours (h), minutes (m) and seconds (s)

**Additional information**

- **Display**
  - The diagnostic message can be viewed via the Previous diagnostics parameter (→ 100).
  - Example:
    - For the display format: 24d12h13m00s

## Operating time from restart

**Navigation**

Expert → Diagnostics → Time fr. restart

**Description**
Use this function to display the time the device has been in operation since the last device restart.

**User interface**
Days (d), hours (h), minutes (m) and seconds (s)

## Operating time

**Navigation**

Expert → Diagnostics → Operating time

**Description**
Use this function to display the length of time the device has been in operation.

**User interface**
Days (d), hours (h), minutes (m) and seconds (s)

**Additional information**

- **User interface**
  - The maximum number of days is 9999, which is equivalent to 27 years.
3.5.1  "Diagnostic list" submenu

Navigation  
Expert → Diagnostics → Diagnostic list

| Diagnostic list |
|-----------------|-----------------|
| Diagnostics 1   | → ☐ 102         |
| Diagnostics 2   | → ☐ 103         |
| Diagnostics 3   | → ☐ 103         |
| Diagnostics 4   | → ☐ 104         |
| Diagnostics 5   | → ☐ 105         |

Diagnostics 1

Navigation  
Expert → Diagnostics → Diagnostic list → Diagnostics 1

Description  
Displays the current diagnostics message with the highest priority.

User interface  
Symbol for diagnostic behavior, diagnostic code and short message.

Additional information  
Examples
For the display format:
- ☒ F271 Main electronic failure
- ☒ F276 I/O module failure

Timestamp

Navigation  
Expert → Diagnostics → Diagnostic list → Timestamp

Description  
Displays the operating time when the diagnostic message with the highest priority occurred.

User interface  
Days (d), hours (h), minutes (m) and seconds (s)

Additional information  
Display
The diagnostic message can be viewed via the Diagnostics 1 parameter (→ ☐ 102).

Example
For the display format:
24d12h13m00s
Diagnostics 2

Navigation
Expert → Diagnostics → Diagnostic list → Diagnostics 2

Description
Displays the current diagnostics message with the second-highest priority.

User interface
Symbol for diagnostic behavior, diagnostic code and short message.

Additional information
Examples
For the display format:
- F271 Main electronic failure
- F276 I/O module failure

Timestamp

Navigation
Expert → Diagnostics → Diagnostic list → Timestamp

Description
Displays the operating time when the diagnostic message with the second-highest priority occurred.

User interface
Days (d), hours (h), minutes (m) and seconds (s)

Additional information
Display
The diagnostic message can be viewed via the Diagnostics 2 parameter (→ 103).

Example
For the display format:
24d12h13m00s

Diagnostics 3

Navigation
Expert → Diagnostics → Diagnostic list → Diagnostics 3

Description
Displays the current diagnostics message with the third-highest priority.

User interface
Symbol for diagnostic behavior, diagnostic code and short message.

Additional information
Examples
For the display format:
- F271 Main electronic failure
- F276 I/O module failure
## Timestamp

**Navigation**  
Expert → Diagnostics → Diagnostic list → Timestamp

**Description**  
Displays the operating time when the diagnostic message with the third-highest priority occurred.

**User interface**  
Days (d), hours (h), minutes (m) and seconds (s)

**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 103).

*Example*  
For the display format:  
24d12h13m00s

### Diagnostics 4

**Navigation**  
Expert → Diagnostics → Diagnostic list → Diagnostics 4

**Description**  
Displays the current diagnostics message with the fourth-highest priority.

**User interface**  
Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**  
*Examples*  
For the display format:  
- ✗F271 Main electronic failure  
- ✗F276 I/O module failure

## Timestamp

**Navigation**  
Expert → Diagnostics → Diagnostic list → Timestamp

**Description**  
Displays the operating time when the diagnostic message with the fourth-highest priority occurred.

**User interface**  
Days (d), hours (h), minutes (m) and seconds (s)

**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Diagnostics 4** parameter (→ 104).

*Example*  
For the display format:  
24d12h13m00s
Diagnostics 5

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 5

**Description**

Displays the current diagnostics message with the fifth-highest priority.

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

*Examples*

For the display format:
- ⚠️ F271 Main electronic failure
- ⚠️ F276 I/O module failure

---

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

Displays the operating time when the diagnostic message with the fifth-highest priority occurred.

**User interface**

Days (d), hours (h), minutes (m) and seconds (s)

**Additional information**

*Display*

The diagnostic message can be viewed via the Diagnostics 5 parameter (→ 105).

*Example*

For the display format:
24d12h13m00s

---

### 3.5.2 "Event logbook" submenu

**Navigation**

Expert → Diagnostics → Event logbook

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<th>Event logbook</th>
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<tr>
<td>Filter options</td>
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</table>

→ 106

| Event list |

→ 107
Description of device parameters

Proline Cubemass 100 PROFINET

Filter options

Navigation
Expert → Diagnostics → Event logbook → Filter options

Description
Use this function to select the category whose event messages are displayed in the event list of the local display.

Selection
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)

Factory setting
All

Additional information
Description
The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:
- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

Filter options

Navigation
Expert → Diagnostics → Event logbook → Filter options

Description
Use this function to select the category whose event messages are displayed in the event list of the operating tool.

Selection
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)

Factory setting
All

Additional information
Description
The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:
- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required
“Event list” submenu

The Event list submenu is only displayed if operating via the local display. If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module. If operating via the Web browser, the event messages can be found directly in the Event logbook submenu.

Navigation

Expert → Diagnostics → Event logbook → Event list

Event list

Description

Displays the history of event messages of the category selected in the Filter options parameter (→ 106).

User interface

- For a 'Category I' event message
  Information event, short message, symbol for event recording and operating time when error occurred
- For a 'Category F, C, S, M' event message (status signal)
  Diagnostics code, short message, symbol for event recording and operating time when error occurred

Additional information

Description

A maximum of 20 event messages are displayed in chronological order.

If the advanced HistoROM function is enabled in the device, the event list can contain up to 100 entries.

The following symbols indicate whether an event has occurred or has ended:
- ☒: Occurrence of the event
- ☐: End of the event

Examples

For the display format:
- I1091 Configuration modified
  ☒ 24d12h13m00s
- F271 Main electronic failure
  ☐ 01d04h12min30s

HistoROM

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.
### 3.5.3 "Device information" submenu

**Navigation**

Expert → Diagnostics → Device info

---

#### Device tag

**Navigation**

Expert → Diagnostics → Device info → Device tag

**Description**

Displays a unique name for the measuring point so it can be identified quickly within the plant.

**User interface**

Max. 32 characters such as lower-case letter or numbers

**Factory setting**

eh-cubemass100-xxxxx

#### Serial number

**Navigation**

Expert → Diagnostics → Device info → Serial number

**Description**

Displays the serial number of the measuring device.

The number can be found on the nameplate of the sensor and transmitter.

**User interface**

A maximum of 11-digit character string comprising letters and numbers.
### Additional information

**Description**

- **Uses of the serial number**
  - To identify the measuring device quickly, e.g. when contacting Endress+Hauser.
  - To obtain specific information on the measuring device using the Device Viewer: www.endress.com/deviceviewer

### Firmware version

**Navigation**

- **Expert → Diagnostics → Device info → Firmware version**

**Description**

Displays the device firmware version installed.

**User interface**

Character string in the format xx.yy.zz

**Additional information**

- **Display**
  - The Firmware version is also located:
    - On the title page of the Operating instructions
    - On the transmitter nameplate

### Device name

**Navigation**

- **Expert → Diagnostics → Device info → Device name**

**Description**

Displays a unique name for the measuring point so it can be identified quickly within the plant.

**User interface**

Max. 32 characters such as lower-case letter or numbers

**Factory setting**

eh-cubemass100-xxxxx

### Order code

**Navigation**

- **Expert → Diagnostics → Device info → Order code**

**Description**

Displays the device order code.

**User interface**

Character string composed of letters, numbers and certain punctuation marks (e.g. /).

**Additional information**

- **Description**
  - The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.
The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

**Uses of the order code**

- To order an identical spare device.
- To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

### Extended order code 1

**Navigation**

Expert → Diagnostics → Device info → Ext. order cd. 1

**Description**

Displays the first part of the extended order code.

On account of length restrictions, the extended order code is split into a maximum of 3 parameters.

**User interface**

Character string

**Additional information**

*Description*

The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

### Extended order code 2

**Navigation**

Expert → Diagnostics → Device info → Ext. order cd. 2

**Description**

For displaying the second part of the extended order code.

**User interface**

Character string

**Additional information**

For additional information, see [Extended order code 1 parameter](#) (→ 110)

### Extended order code 3

**Navigation**

Expert → Diagnostics → Device info → Ext. order cd. 3

**Description**

For displaying the third part of the extended order code.

**User interface**

Character string

**Additional information**

For additional information, see [Extended order code 1 parameter](#) (→ 110)
**Configuration counter**

**Navigation**

Expert → Diagnostics → Device info → Config. counter

**Description**

Displays the number of parameter modifications for the device. When the user changes a parameter setting, this counter is incremented.

**User interface**

0 to 65535

---

**ENP version**

**Navigation**

Expert → Diagnostics → Device info → ENP version

**Description**

Displays the version of the electronic nameplate.

**User interface**

Character string

**Factory setting**

2.02.00

**Additional information**

This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.

---

### 3.5.4 "I/O module" submenu

**Navigation**

Expert → Diagnostics → I/O module

**Software revision**

Use this function to display the software revision of the module.

**User interface**

Positive integer
3.5.5  "Sensor electronic module" submenu

**Navigation**

Expert → Diagnostics → Sens. electronic

<table>
<thead>
<tr>
<th>Sensor electronic module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software revision</td>
</tr>
</tbody>
</table>

**Software revision**

**Navigation**


**Description**

Use this function to display the software revision of the module.

**User interface**

Positive integer

3.5.6  "Display module" submenu

**Navigation**

Expert → Diagnostics → Display module

<table>
<thead>
<tr>
<th>Display module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software revision</td>
</tr>
</tbody>
</table>

**Software revision**

**Navigation**

Expert → Diagnostics → Display module → Software rev.

**Description**

Use this function to display the software revision of the module.

**User interface**

Positive integer
3.5.7 "Min/max values" submenu

**Navigation**

Expert → Diagnostics → Min/max val.

**Description**

Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.

**Selection**

- Cancel
- Oscillation amplitude
- Oscillation amplitude 1 *
- Oscillation damping
- Torsion oscillation damping *
- Oscillation frequency
- Torsion oscillation frequency *
- Signal asymmetry

**Factory setting**

Cancel

**Additional information**

Selection

Detailed description of the options Oscillation frequency, Oscillation amplitude, Oscillation damping and Signal asymmetry: Value 1 display parameter (→ 16)

* Visibility depends on order options or device settings
"Electronic temperature" submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Electronic temp.

<table>
<thead>
<tr>
<th>Electronic temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>minimum value</td>
</tr>
<tr>
<td>→ 114</td>
</tr>
<tr>
<td>maximum value</td>
</tr>
<tr>
<td>→ 114</td>
</tr>
</tbody>
</table>

**Minimum value**

**Navigation**

Expert → Diagnostics → Min/max val. → Electronic temp. → Minimum value

**Description**

Displays the lowest previously measured temperature value of the main electronics module.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 50)

**Maximum value**

**Navigation**

Expert → Diagnostics → Min/max val. → Electronic temp. → Maximum value

**Description**

Displays the highest previously measured temperature value of the main electronics module.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 50)
“Medium temperature” submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Medium temp.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>115</td>
</tr>
<tr>
<td>Maximum value</td>
<td>115</td>
</tr>
</tbody>
</table>

**Description**

Displays the lowest previously measured medium temperature value.

**User interface**

Signed floating-point number

**Additional information**

Dependency

The unit is taken from the **Temperature unit** parameter (→ 50)

---

"Carrier pipe temperature" submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Carr. pipe temp.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>116</td>
</tr>
<tr>
<td>Maximum value</td>
<td>116</td>
</tr>
</tbody>
</table>

**Description**

Displays the highest previously measured medium temperature value.

**User interface**

Signed floating-point number

**Additional information**

Dependency

The unit is taken from the **Temperature unit** parameter (→ 50)
**Minimum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Minimum value

**Prerequisite**
Order code for 'Application package', option EB 'Heartbeat Verification + Monitoring'

**Description**
Displays the lowest previously measured temperature value of the carrier pipe.

**User interface**
Signed floating-point number

**Additional information**
Dependency
The unit is taken from the Temperature unit parameter (→ 50)

**Maximum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Maximum value

**Prerequisite**
Order code for 'Application package', option EB 'Heartbeat Verification + Monitoring'

**Description**
Displays the highest previously measured temperature value of the carrier pipe.

**User interface**
Signed floating-point number

**Additional information**
Dependency
The unit is taken from the Temperature unit parameter (→ 50)

"Oscillation frequency" submenu

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. frequency

<table>
<thead>
<tr>
<th>Oscillation frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
</tr>
<tr>
<td>Maximum value</td>
</tr>
</tbody>
</table>

**Minimum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. frequency → Minimum value

**Description**
Displays the lowest previously measured oscillation frequency.
Proline Cubemass 100 PROFINET  

Description of device parameters

**User interface**
Signed floating-point number

**Maximum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. frequency → Maximum value

**Description**
Displays the highest previously measured oscillation frequency.

**User interface**
Signed floating-point number

"Oscillation amplitude" submenu

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. amplitude

<table>
<thead>
<tr>
<th>Oscillation amplitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
</tr>
<tr>
<td>Maximum value</td>
</tr>
</tbody>
</table>

**Minimum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. amplitude → Minimum value

**Description**
Displays the lowest previously measured oscillation amplitude.

**User interface**
Signed floating-point number

**Maximum value**

**Navigation**
Expert → Diagnostics → Min/max val. → Oscil. amplitude → Maximum value

**Description**
Displays the highest previously measured oscillation amplitude.

**User interface**
Signed floating-point number
"Oscillation damping" submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Oscil. damping

**Minimum value**

**Description**
Displays the lowest previously measured oscillation damping.

**User interface**
Signed floating-point number

**Maximum value**

**Description**
Displays the highest previously measured oscillation damping.

**User interface**
Signed floating-point number

"Signal asymmetry" submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Signal asymmetry

**Minimum value**

**Maximum value**
### Minimum value

**Navigation**

Expert → Diagnostics → Min/max val. → Signal asymmetry → Minimum value

**Description**

Displays the lowest previously measured signal asymmetry.

**User interface**

Signed floating-point number

---

### Maximum value

**Navigation**

Expert → Diagnostics → Min/max val. → Signal asymmetry → Maximum value

**Description**

Displays the highest previously measured signal asymmetry.

**User interface**

Signed floating-point number

---

### 3.5.8 "Heartbeat" submenu

For detailed information on the parameter descriptions of the Heartbeat Verification application package, see the Special Documentation for the device

**Navigation**

Expert → Diagnostics → Heartbeat

---

### 3.5.9 "Simulation" submenu

**Navigation**

Expert → Diagnostics → Simulation

---

### Navigation

- Assign simulation process variable
- Process variable value
- Simulation device alarm

---
Assignment of simulation process variable

**Navigation**

Expert → Diagnostics → Simulation → Assign proc.var.

**Description**

Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the 'Function check' category (C) while simulation is in progress.

**Selection**

- Off
- Mass flow
- Volume flow
- Corrected volume flow
- Density
- Reference density
- Temperature
- Concentration *
- Target mass flow *
- Carrier mass flow *

**Factory setting**

Off

**Additional information**

*The simulation value of the process variable selected is defined in the Process variable value parameter (→ 120).*

Process variable value

**Navigation**

Expert → Diagnostics → Simulation → Proc. var. value

**Prerequisite**

One of the following options is selected in the Assign simulation process variable parameter (→ 120):

- Mass flow
- Volume flow
- Corrected volume flow
- Density
- Reference density
- Temperature
- Concentration *
- Target mass flow *
- Carrier mass flow *

* Visibility depends on order options or device settings
Description

Use this function to enter a simulation value for the selected process variable. Subsequent measured value processing and the signal output use this simulation value. In this way, users can verify whether the measuring device has been configured correctly.

User entry

Depends on the process variable selected

Factory setting

0

Additional information

User entry

The unit of the displayed measured value is taken from the System units submenu (→ 44).

Simulation device alarm

Navigation

Expert → Diagnostics → Simulation → Sim. alarm

Description

Use this function to switch the device alarm on and off.

Selection

• Off
• On

Factory setting

Off

Additional information

Description

The display alternates between the measured value and a diagnostic message of the “Function check” category (C) while simulation is in progress.

Diagnostic event category

Navigation

Expert → Diagnostics → Simulation → Event category

Description

Use this function to select the category of the diagnostic events that are displayed for the simulation in the Diagnostic event simulation parameter (→ 121).

Selection

• Sensor
• Electronics
• Configuration
• Process

Factory setting

Process

Diagnostic event simulation

Navigation

Expert → Diagnostics → Simulation → Diag. event sim.

Description

Use this function to select a diagnostic event for the simulation process that is activated.
### Selection
- Off
- Diagnostic event picklist (depends on the category selected)

### Factory setting
- Off

### Additional information
**Description**

For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter (→ 121).
4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>kg</td>
</tr>
<tr>
<td>Mass flow</td>
<td>kg/h</td>
</tr>
<tr>
<td>Volume</td>
<td>l</td>
</tr>
<tr>
<td>Volume flow</td>
<td>l/h</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>Nl</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>Nl/h</td>
</tr>
<tr>
<td>Density</td>
<td>kg/l</td>
</tr>
<tr>
<td>Reference density</td>
<td>kg/Nl</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>Pressure</td>
<td>bar a</td>
</tr>
</tbody>
</table>

4.1.2 Full scale values

The factory settings apply to the following parameters: 100% bar graph value 1

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>[kg/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>200</td>
</tr>
</tbody>
</table>

4.1.3 On value low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>On-value for liquid [kg/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.08</td>
</tr>
<tr>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>Switch-on value for gas [kg/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>2</td>
<td>0.1</td>
</tr>
</tbody>
</table>
### Country-specific factory settings

#### Proline Cubemass 100 PROFINET

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>Switch-on value for gas [kg/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.45</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

### 4.2 US units

Only valid for USA and Canada.

#### 4.2.1 System units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>lb</td>
</tr>
<tr>
<td>Mass flow</td>
<td>lb/min</td>
</tr>
<tr>
<td>Volume</td>
<td>gal (us)</td>
</tr>
<tr>
<td>Volume flow</td>
<td>gal/min (us)</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>ft³</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>ft³/min</td>
</tr>
<tr>
<td>Density</td>
<td>lb/ft³</td>
</tr>
<tr>
<td>Reference density</td>
<td>lb/ft³</td>
</tr>
<tr>
<td>Temperature</td>
<td>lb/ft³</td>
</tr>
<tr>
<td>Pressure</td>
<td>psi a</td>
</tr>
</tbody>
</table>

#### 4.2.2 Full scale values

The factory settings apply to the following parameters: 100% bar graph value 1

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>[lb/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>¹/₂₄</td>
<td>0.15</td>
</tr>
<tr>
<td>¹/₁₂</td>
<td>0.75</td>
</tr>
<tr>
<td>¹/₈</td>
<td>3.3</td>
</tr>
<tr>
<td>¹/₄</td>
<td>7.4</td>
</tr>
</tbody>
</table>

#### 4.2.3 On value low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>On-value for liquid [lb/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>¹/₂₄</td>
<td>0.003</td>
</tr>
<tr>
<td>¹/₁₂</td>
<td>0.015</td>
</tr>
<tr>
<td>¹/₈</td>
<td>0.066</td>
</tr>
<tr>
<td>¹/₄</td>
<td>0.15</td>
</tr>
<tr>
<td>Nominal diameter [in]</td>
<td>Switch-on value for gas [lb/min]</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>¹/₂₄</td>
<td>0.001</td>
</tr>
<tr>
<td>¹/₁₂</td>
<td>0.004</td>
</tr>
<tr>
<td>¹/₈</td>
<td>0.016</td>
</tr>
<tr>
<td>¹/₄</td>
<td>0.0375</td>
</tr>
</tbody>
</table>
## 5 Explanation of abbreviated units

### 5.1 SI units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>g/cm³, g/m³</td>
<td>Gram/volume unit</td>
</tr>
<tr>
<td></td>
<td>kg/dm³, kg/l, kg/m³</td>
<td>Kilogram/volume unit</td>
</tr>
<tr>
<td></td>
<td>SD4°C, SD15°C, SD20°C</td>
<td>Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).</td>
</tr>
<tr>
<td></td>
<td>SGA4°C, SGA15°C, SGA20°C</td>
<td>Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).</td>
</tr>
<tr>
<td>Pressure</td>
<td>Pa a, kPa a, MPa a</td>
<td>Pascal, kilopascal, megapascal (absolute)</td>
</tr>
<tr>
<td></td>
<td>bar</td>
<td>Bar</td>
</tr>
<tr>
<td></td>
<td>Pa g, kPa g, MPa g</td>
<td>Pascal, kilopascal, megapascal (relative/gauge)</td>
</tr>
<tr>
<td></td>
<td>bar g</td>
<td>Bar (relative/gauge)</td>
</tr>
<tr>
<td>Mass</td>
<td>g, kg, t</td>
<td>Gram, kilogram, metric ton</td>
</tr>
<tr>
<td>Mass flow</td>
<td>g/s, g/min, g/h, g/d</td>
<td>Gram/time unit</td>
</tr>
<tr>
<td></td>
<td>kg/s, kg/min, kg/h, kg/d</td>
<td>Kilogram/time unit</td>
</tr>
<tr>
<td></td>
<td>t/s, t/min, t/h, t/d</td>
<td>Metric ton/time unit</td>
</tr>
<tr>
<td>Reference density</td>
<td>kg/Nm³, kg/Nl, g/Scm³, kg/Sm³</td>
<td>Kilogram, gram/standard volume unit</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>Ni, Nm³, Sm³</td>
<td>Normal liter, normal cubic meter, standard cubic meter</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>Ni/s, Ni/min, Ni/h, Ni/d</td>
<td>Normal liter/time unit</td>
</tr>
<tr>
<td></td>
<td>Nm³/s, Nm³/min, Nm³/h, Nm³/d</td>
<td>Normal cubic meter/time unit</td>
</tr>
<tr>
<td></td>
<td>Sm³/s, Sm³/min, Sm³/h, Sm³/d</td>
<td>Standard cubic meter/time unit</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C, K</td>
<td>Celsius, Kelvin</td>
</tr>
<tr>
<td>Volume</td>
<td>cm³, dm³, m³</td>
<td>Cubic centimeter, cubic decimeter, cubic meter</td>
</tr>
<tr>
<td></td>
<td>ml, l, hl, ML Mega</td>
<td>Milliliter, liter, hectoliter, megaliter</td>
</tr>
<tr>
<td>Volume flow</td>
<td>cm³/s, cm³/min, cm³/h, cm³/d</td>
<td>Cubic centimeter/time unit</td>
</tr>
<tr>
<td></td>
<td>dm³/s, dm³/min, dm³/h, dm³/d</td>
<td>Cubic decimeter/time unit</td>
</tr>
<tr>
<td></td>
<td>m³/s, m³/min, m³/h, m³/d</td>
<td>Cubic meter/time unit</td>
</tr>
<tr>
<td></td>
<td>ml/s, ml/min, ml/h, ml/d</td>
<td>Milliliter/time unit</td>
</tr>
<tr>
<td></td>
<td>l/s, l/min, l/h, l/d</td>
<td>Liter/time unit</td>
</tr>
<tr>
<td></td>
<td>hl/s, hl/min, hl/h, hl/d</td>
<td>Hectoliter/time unit</td>
</tr>
<tr>
<td></td>
<td>ML/s, ML/min, ML/h, ML/d</td>
<td>Megaliter/time unit</td>
</tr>
<tr>
<td>Time</td>
<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
</tr>
</tbody>
</table>

### 5.2 US units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>lb/ft², lb/gal (us)</td>
<td>Pound/cubic foot, pound/gallon</td>
</tr>
<tr>
<td></td>
<td>lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank)</td>
<td>Pound/volume unit</td>
</tr>
<tr>
<td>Process variable</td>
<td>Units</td>
<td>Explanation</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Pressure</td>
<td>psi a</td>
<td>Pounds per square inch (absolute)</td>
</tr>
<tr>
<td></td>
<td>psi g</td>
<td>Pounds per square inch (gauge)</td>
</tr>
<tr>
<td>Mass</td>
<td>oz, lb, STon</td>
<td>Ounce, pound, standard ton</td>
</tr>
<tr>
<td>Mass flow</td>
<td>oz/s, oz/min, oz/h, oz/d</td>
<td>Ounce/time unit</td>
</tr>
<tr>
<td></td>
<td>lb/s, lb/min, lb/h, lb/d</td>
<td>Pound/time unit</td>
</tr>
<tr>
<td></td>
<td>STon/s, STon/min, STon/h, STon/d</td>
<td>Standard ton/time unit</td>
</tr>
<tr>
<td>Reference density</td>
<td>lb/St³⁹</td>
<td>Weight unit/standard volume unit</td>
</tr>
<tr>
<td>Corrected volume</td>
<td></td>
<td>Standard cubic foot, standard gallon, standard barrel</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td></td>
<td>Standard cubic foot/time unit</td>
</tr>
<tr>
<td></td>
<td>Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)</td>
<td>Standard gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Sbbbl/s (us;liq.), Sbbbl/min (us;liq.), Sbbbl/h (us;liq.), Sbbbl/d (us;liq.)</td>
<td>Barrel/time unit (normal liquids)</td>
</tr>
<tr>
<td>Temperature</td>
<td>°F, °R</td>
<td>Fahrenheit, Rankine</td>
</tr>
<tr>
<td>Volume</td>
<td>af</td>
<td>Acre foot</td>
</tr>
<tr>
<td></td>
<td>ft³</td>
<td>Cubic foot</td>
</tr>
<tr>
<td></td>
<td>fl oz (us), gal (us), kgal (us), Mgal (us)</td>
<td>Fluid ounce, gallon, kilogallon, million gallon</td>
</tr>
<tr>
<td></td>
<td>bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)</td>
<td>Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)</td>
</tr>
<tr>
<td>Volume flow</td>
<td>af/s, af/min, af/h, af/d</td>
<td>Acre foot/time unit</td>
</tr>
<tr>
<td></td>
<td>ft³/s, ft³/min, ft³/h, ft³/d</td>
<td>Cubic foot/time unit</td>
</tr>
<tr>
<td></td>
<td>fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)</td>
<td>Fluid ounce/time unit</td>
</tr>
<tr>
<td></td>
<td>gal/s (us), gal/min (us), gal/h (us), gal/d (us)</td>
<td>Gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)</td>
<td>Kilogallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)</td>
<td>Million gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)</td>
<td>Barrel/time unit (normal liquids)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Normal liquids: 31.5 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)</td>
<td>Barrel/time unit (beer)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beer: 31.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)</td>
<td>Barrel/time unit (petrochemicals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Petrochemicals: 42.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)</td>
<td>Barrel/time unit (filling tanks)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Filling tanks: 55.0 gal/bbl</td>
</tr>
<tr>
<td>Time</td>
<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem ( before midday), post meridiem (after midday)</td>
</tr>
</tbody>
</table>
## 5.3 Imperial units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>lb/gal (imp), lb/bbl (imp;beer),</td>
<td>Pound/volume unit</td>
</tr>
<tr>
<td></td>
<td>lb/bbl (imp;oil)</td>
<td></td>
</tr>
<tr>
<td>Corrected volume</td>
<td>Sgal (imp)</td>
<td>Standard gallon</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>Sgal/s (imp), Sgal/min (imp), Sgal/h (imp),</td>
<td>Standard gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Sgal/d (imp)</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>gal (imp), Mgal (imp)</td>
<td>Gallon, mega gallon</td>
</tr>
<tr>
<td></td>
<td>bbl (imp;beer), bbl (imp;oil)</td>
<td>Barrel (beer), barrel (petrochemicals)</td>
</tr>
<tr>
<td>Volume flow</td>
<td>gal/s (imp), gal/min (imp), gal/h (imp),</td>
<td>Gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>gal/d (imp)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mgal/s (imp), Mgal/min (imp), Mgal/h (imp),</td>
<td>Mega gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Mgal/d (imp)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bbl/s (imp;beer), bbl/min (imp;beer),</td>
<td>Barrel /time unit (beer)</td>
</tr>
<tr>
<td></td>
<td>bbl/h (imp;beer), bbl/d (imp;beer)</td>
<td>Beer: 36.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (imp;oil), bbl/min (imp;oil),</td>
<td>Barrel/time unit (petrochemicals)</td>
</tr>
<tr>
<td></td>
<td>bbl/h (imp;oil), bbl/d (imp;oil)</td>
<td>Petrochemicals: 34.97 gal/bbl</td>
</tr>
<tr>
<td>Time</td>
<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem (before midday), post meridiem(after midday)</td>
</tr>
</tbody>
</table>
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