Description of Device Parameters

Proline Promass 100

PROFINET

Coriolis flowmeter
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1 About this document

1.1 Document function
The document is part of the Operating Instructions and serves as a reference for parameters, providing a detailed explanation of each individual parameter of the Expert operating menu.

It is used to perform tasks that require detailed knowledge of the function of the device:
- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

1.2 Target group
The document is aimed at specialists who work with the device over the entire life cycle and perform specific configurations.

1.3 Using this document

1.3.1 Information on the document structure
The document lists the submenus and their parameters according to the structure from the Expert menu (→ 8), which is displayed when the "Maintenance" user role is enabled.
Additional information regarding:
- The arrangement of the parameters according to the menu structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu with a brief description: Operating Instructions
- Operating concept of the operating menus: 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><img src="image" alt="Tip" /></td>
<td>Indicates additional information.</td>
</tr>
<tr>
<td><img src="image" alt="Reference" /></td>
<td>Reference to documentation</td>
</tr>
<tr>
<td><img src="image" alt="Reference" /></td>
<td>Reference to page</td>
</tr>
<tr>
<td><img src="image" alt="Reference" /></td>
<td>Reference to graphic</td>
</tr>
<tr>
<td><img src="image" alt="Operation" /></td>
<td>Operation via local display</td>
</tr>
<tr>
<td><img src="image" alt="Operation" /></td>
<td>Operation via operating tool</td>
</tr>
<tr>
<td><img src="image" alt="Write-protected" /></td>
<td>Write-protected parameter</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>

1.5  Documentation

1.5.1  Standard documentation

Operating Instructions

<table>
<thead>
<tr>
<th>Measuring device</th>
<th>Documentation code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promass A 100</td>
<td>BA01424D</td>
</tr>
<tr>
<td>Promass E 100 (8E1B**-...)</td>
<td>BA01426D</td>
</tr>
<tr>
<td>Promass E 100 (8E1C**-...)</td>
<td>BA01715D</td>
</tr>
<tr>
<td>Promass F 100</td>
<td>BA01427D</td>
</tr>
<tr>
<td>Promass G 100</td>
<td>BA01433D</td>
</tr>
<tr>
<td>Promass H 100</td>
<td>BA01428D</td>
</tr>
<tr>
<td>Promass I 100</td>
<td>BA01429D</td>
</tr>
<tr>
<td>Promass O 100</td>
<td>BA01430D</td>
</tr>
<tr>
<td>Promass P 100</td>
<td>BA01431D</td>
</tr>
<tr>
<td>Promass S 100</td>
<td>BA01432D</td>
</tr>
<tr>
<td>Promass X 100</td>
<td>BA01437D</td>
</tr>
</tbody>
</table>

1.5.2  Supplementary device-dependent documentation

Special Documentation

<table>
<thead>
<tr>
<th>Content</th>
<th>Documentation code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on the Pressure Equipment Directive</td>
<td>SD01614D</td>
</tr>
<tr>
<td>Concentration Measurement</td>
<td>SD01503D</td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>SD01493D</td>
</tr>
<tr>
<td>Web server</td>
<td>SD01823D</td>
</tr>
</tbody>
</table>
2 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>Module</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFINET config.</td>
<td>96</td>
</tr>
<tr>
<td>PROFINET info</td>
<td>97</td>
</tr>
<tr>
<td>Application</td>
<td>99</td>
</tr>
<tr>
<td>Reset all tot.</td>
<td>99</td>
</tr>
<tr>
<td>Totalizer 1 to n</td>
<td>99</td>
</tr>
<tr>
<td>Viscosity</td>
<td>104</td>
</tr>
<tr>
<td>Concentration</td>
<td>105</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>105</td>
</tr>
<tr>
<td>Actual diagnos.</td>
<td>106</td>
</tr>
<tr>
<td>Prev.diagnostics</td>
<td>106</td>
</tr>
<tr>
<td>Time fr. restart</td>
<td>107</td>
</tr>
<tr>
<td>Operating time</td>
<td>107</td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>108</td>
</tr>
<tr>
<td>Event logbook</td>
<td>111</td>
</tr>
<tr>
<td>Device info</td>
<td>114</td>
</tr>
<tr>
<td>I/O module</td>
<td>117</td>
</tr>
<tr>
<td>Sens. electronic</td>
<td>118</td>
</tr>
<tr>
<td>Display module</td>
<td>118</td>
</tr>
<tr>
<td>Min/max val.</td>
<td>119</td>
</tr>
<tr>
<td>Heartbeat</td>
<td>128</td>
</tr>
<tr>
<td>Simulation</td>
<td>128</td>
</tr>
</tbody>
</table>
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.

![Expert]

**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 65535

**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 "0914" instead of "914"
- If no channel number is entered, channel 1 is jumped to automatically. Example: Enter 0914 → Assign variable parameter
- If a different channel is jumped to: Enter the direct access code with the corresponding channel number. Example: Enter 0914-3 → Assign variable parameter
Locking status

Navigation  
Diagram  Expert → Locking status

Description  
Displays the active write protection.

User interface  
- Hardware locked
- Temp. 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 (→ 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.

"Temp. 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 stat.disp

Navigation  
Diagram  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
Description of device parameters

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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 **Ent. access code** parameter (→ 12).
- For information on the **Ent. 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 stat.tool**

**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**

- Access authorization can be modified via the **Ent. 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.

---

**Ent. 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

```
  ▶ System
    ▶ Display  →  13
    ▶ Diagn. handling  →  27
    ▶ Administration  →  35
```

3.1.1 "Display" submenu

*Navigation*  
Expert → System → Display

```
  ▶ Display
    Display language  →  14
    Format display  →  15
    Value 1 display  →  17
    0% bargraph 1  →  18
    100% bargraph 1  →  19
    Decimal places 1  →  19
    Value 2 display  →  19
    Decimal places 2  →  20
    Value 3 display  →  20
    0% bargraph 3  →  21
    100% bargraph 3  →  21
    Decimal places 3  →  22
    Value 4 display  →  22
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decimal places 4</td>
<td>23</td>
</tr>
<tr>
<td>Display interval</td>
<td>23</td>
</tr>
<tr>
<td>Display damping</td>
<td>24</td>
</tr>
<tr>
<td>Header</td>
<td>24</td>
</tr>
<tr>
<td>Header text</td>
<td>25</td>
</tr>
<tr>
<td>Separator</td>
<td>25</td>
</tr>
<tr>
<td>Contrast display</td>
<td>26</td>
</tr>
<tr>
<td>Backlight</td>
<td>26</td>
</tr>
<tr>
<td>Access stat.disp</td>
<td>26</td>
</tr>
</tbody>
</table>

**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(Ru) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- Bahasa Indonesia *
- tiếng Việt (Viet) *
- 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.
- Bargr. + 1 value
- 2 values
- Val. large+2val.
- 4 values

Factory setting

1 value, max.

Additional information

Description

The display format (size, bar graph etc.) and number of measured values displayed simultaneously (1 to 4) can be configured. This setting only applies to normal operation.

- The Value 1 display parameter (→ 17) to Value 4 display parameter (→ 22) 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 (→ 23).
Possible measured values shown on the local display:

"1 value, max." option

![Image of 1 value, max. option]

"Bargr. + 1 value" option

![Image of Bargr. + 1 value option]

"2 values" option

![Image of 2 values option]

"Val. large+2val." option

![Image of Val. large+2val. option]

"4 values" option

![Image of 4 values option]
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
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0
- Osc. damping 0
- Osc. damping 1 *
- Damping fluct 0
- Damping fluct 1
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *
- Sensor integrity *
- None
- Totalizer 1
- Totalizer 2
- Totalizer 3

Factory setting

Mass flow

* Visibility depends on order options or device settings
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.

Dependency

The unit of the displayed measured value is taken from the System units submenu (→ 48).

Selection

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

- Oscil. amplitude option
  Displays the relative oscillation amplitude of the measuring tubes in relation to the preset value. This value is 100 % under optimum conditions.

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

- Signal asymmetry option
  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 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

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 (→ 48).
100% bargraph 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 → 132

**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 (→ 48).

Decimal places 1

**Navigation**

Expert → System → Display → Decimal places 1

**Prerequisite**

A measured value is specified in the Value 1 display parameter (→ 17).

**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

**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 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 (→ 17)

Factory setting
None

Additional information
Description
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.

Dependency
The unit of the displayed measured value is taken from the System units submenu (→ 48).

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
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 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
For the picklist, see the Value 1 display parameter (→ 17)

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
(→ 48).

0% bargraph 3

Navigation
Expert → System → Display → 0% bargraph 3

Prerequisite
A selection was 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
(→ 48).

100% bargraph 3

Navigation
Expert → System → Display → 100% bargraph 3

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
Description of device parameters

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Additional information

Description

The **Format display** parameter (\(\rightarrow\) 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 (\(\rightarrow\) 48).

---

**Decimal places 3**

**Navigation**

Expert → System → Display → Decimal places 3

**Prerequisite**

A measured value is specified in the **Value 3 display** parameter (\(\rightarrow\) 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**

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**

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 (\(\rightarrow\) 17)

**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.

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 (→ 48).

Decimal places 4

Navigation

Expert → System → Display → Decimal places 4

Prerequisite

A measured value is specified in the Value 4 display parameter (→ 22).

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 (→ 17) to **Value 4 display** parameter (→ 22) 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 a time constant for 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*

Use this function to enter a time constant (PT1 element 1) for display damping:

- 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.

Damping is switched off if 0 is entered (factory setting).

### 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.

---

1) proportional transmission behavior with first order delay
1 Position of the header text on the display

Selection

- Device tag
  Is defined in the Device tag parameter (→ 114).
- Free text
  Is defined in the Header text parameter (→ 25).

Header text

Navigation  
Expert → System → Display → Header text

Prerequisite

In the Header parameter (→ 24), the Free text option is selected.

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.

Separator

Navigation  
Expert → System → Display → Separator

Prerequisite

A local display is provided.
Description of device parameters

Proline Promass 100 PROFINET

Description
Use this function to select the decimal separator.

Selection
- . (point)
- , (comma)

Factory setting
. (point)

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

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

Selection
- Disable
- Enable

Factory setting
Enable

Access stat.disp

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
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 Ent. access code parameter \( \rightarrow \) 12.

For information about the Ent. access code parameter: see the 'Disabling write protection via the access code' section of the Operating Instructions for the device.

If additional write protection is active, this restricts the current access authorization even further.

Display
Detailed 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.

3.1.2 "Diagn. handling" submenu

Navigation \( \rightarrow \)  Expert \( \rightarrow \) System \( \rightarrow \) Diagn. handling

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

Result
This setting affects the following diagnostic messages:
- 046 Sensor limit
- 140 Sensor sig.asym.
- 144 MeasErrorTooHigh
- 190 Special event 1
- 191 Special event 5
- 192 Special event 9
Description of device parameters

- 830 Sensor temp.
- 831 Sensor temp.
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.
- 843 Process limit
- 910 Tube not oscill.
- 912 Medium inhomog.
- 913 Medium unsuitab.
- 944 MonitoringFailed
- 990 Special event 4
- 991 Special event 8
- 992 Special event 12

"Diagn. 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 Diagn. behavior submenu (→  28).

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 only</td>
<td>The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→  111) (Event list submenu (→  113)) 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

<table>
<thead>
<tr>
<th>► Diagn. behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic no. 140 →  29</td>
</tr>
<tr>
<td>Diagnostic no. 046 →  29</td>
</tr>
<tr>
<td>Diagnostic no. 144 →  30</td>
</tr>
<tr>
<td>Diagnostic no. 832 →  30</td>
</tr>
<tr>
<td>Diagnostic no. 833 →  31</td>
</tr>
</tbody>
</table>
Diagnostic no. 140 (Sensor sig.asym.)

**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 sig.asym.**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

1 For a detailed description of the options available, see → 28

---

Diagnostic no. 046 (Sensor limit)

**Navigation**

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

**Description**

Option for changing the diagnostic behavior of the diagnostic message **046 Sensor limit.**
Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see → 28

Diagnostic no. 144 (MeasErrorTooHigh)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 144 MeasErrorTooHigh.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Alarm

Additional information

For a detailed description of the options available, see → 28

Diagnostic no. 832 (Electronic temp.)

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 temp..

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see → 28
### Diagnostic no. 833 (Electronic temp.)

**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 temp.**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see →  28

### Diagnostic no. 834 (Process temp.)

**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 temp.**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see →  28

### Diagnostic no. 835 (Process temp.)

**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 temp.**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see →  28
Diagnostic no. 912 (Medium inhomog.)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 912 Medium inhomog..

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see →  28

Diagnostic no. 913 (Medium unsuitab.)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 913 Medium unsuitab..

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see →  28

Diagnostic no. 944 (MonitoringFailed)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 944 MonitoringFailed.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see →  28
Diagnostic no. 948 (Oscill. damping)

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

**Description**
Option for changing the diagnostic behavior of the diagnostic message 948 Oscill. damping.

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see →  28

Diagnostic no. 192 (Special event 9)

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

**Description**
Option for changing the diagnostic behavior of the diagnostic message 192 Special event 9.

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see →  28

Diagnostic no. 374 (Sensor electron.)

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

**Description**
Option for changing the diagnostic behavior of the diagnostic message 374 Sensor electron.

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see →  28
Description of device parameters

Proline Promass 100 PROFINET

Diagnostic no. 392 (Special event 10)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 392 Special event 10.

Selection

• Off
• Alarm
• Warning
• Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see →  28

Diagnostic no. 592 (Special event 11)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 592 Special event 11.

Selection

• Off
• Alarm
• Warning
• Logbook only

Factory setting

Warning

Additional information

For a detailed description of the options available, see →  28

Diagnostic no. 992 (Special event 12)

Navigation

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

Description

Option for changing the diagnostic behavior of the diagnostic message 992 Special event 12.

Selection

• Off
• Alarm
• Warning
• Logbook only

Factory setting

Warning
Additional information

For a detailed description of the options available, see → 28

3.1.3 "Administration" submenu

Navigation

Expert → System → Administration

"Def. access code" wizard

The Def. access code wizard (→ 35) is only available when operating via the local display or Web browser.

If operating via the operating tool, the Def. access code parameter (→ 37) can be found directly in the Administration submenu. There is no Confirm code parameter if the device is operated via the operating tool.

Navigation

Expert → System → Administration → Def. access code

Def. access code

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 **Ent. access code** parameter (→ 12).
- If you lose the access code, please contact your Endress+Hauser sales organization.

**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 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>

### "Reset access code" submenu

**Navigation**

Expert → System → Administration → Reset acc. code

<table>
<thead>
<tr>
<th>► Reset acc. code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating time</td>
</tr>
<tr>
<td>Reset acc. code</td>
</tr>
</tbody>
</table>
### Operating time

**Navigation**
- Expert → Diagnostics → Operating time
- 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.

---

### Reset acc. code

**Navigation**
- Expert → System → Administration → Reset acc. code → Reset acc. code

**Description**
Use this function to enter a reset code to reset the user-specific release code to the factory setting.

**User entry**
Character string comprising numbers, letters and special characters

**Factory setting**
0x00

**Additional information**
- *Description*
  - For a reset code, contact your Endress+Hauser service organization.

  - *User entry*
    - The reset code can only be entered via:
      - Web browser
      - DeviceCare, FieldCare (via interface CDI RJ45)
      - Fieldbus

---

### Additional parameters in the "Administration" submenu

#### Def. access code

**Navigation**
- Expert → System → Administration → 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 operating tool.

**User entry**
0 to 9999
**Factory setting** 0

**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 **Ent. access code** parameter (→ § 12).
- If you lose the access code, please contact your Endress+Hauser sales organization.

*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 set.
- Restart device
- Del.p.fail stor.
- Delete T-DAT
- Del. fact. data

**Factory setting**

Cancel

**Additional information**

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancel</td>
<td>No action is executed and the user exits the parameter.</td>
</tr>
<tr>
<td>To delivery set.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>This option is not visible if no customer-specific settings have been ordered.</td>
</tr>
<tr>
<td>Restart device</td>
<td>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.</td>
</tr>
</tbody>
</table>
Activate SW opt.

**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**

Depends on the software option ordered

**Additional information**

**Description**

If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory.

**User entry**

To activate a software option subsequently, please contact your Endress+Hauser sales organization.

**NOTE!**

The activation code is linked to the serial number of the measuring device and varies according to the device and software option.

If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated.

▸ Before you enter a new activation code, make a note of the current activation code.

▸ Enter the new activation code provided by Endress+Hauser when the new software option was ordered.

▸ Once the activation code has been entered, check if the new software option is displayed in the SW option overv. parameter (→ 40).

▸ The new software option is active if it is displayed.

▸ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid.

▸ If the code entered is incorrect or invalid, enter the old activation code.

▸ Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again.

**Example for a software option**

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

The software options currently enabled are displayed in the SW option overv. parameter (→ 40).

**Web browser**

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

**Navigation**

- Expert → System → Administration → SW option overv.

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

**User interface**
- HBT Verification
- HBT Monitoring
- Concentration
- Viscosity

**Additional information**

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

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

*"Concentration" option*
Order code for "Application package", option **ED** "Concentration" and option **EE** "Special density"

*"Viscosity" option*
- Only available for Promass I.

Order code for "Application package", option **EG** "Viscosity"

---

### 3.2 "Sensor" submenu

**Navigation**

- Expert → Sensor

<table>
<thead>
<tr>
<th>▶ Sensor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ Measured val.</td>
<td></td>
</tr>
<tr>
<td>▶ System units</td>
<td></td>
</tr>
<tr>
<td>▶ Process param.</td>
<td></td>
</tr>
<tr>
<td>▶ Measurement mode</td>
<td></td>
</tr>
<tr>
<td>▶ External comp.</td>
<td></td>
</tr>
<tr>
<td>▶ Calculated value</td>
<td></td>
</tr>
<tr>
<td>▶ Sensor adjustm.</td>
<td></td>
</tr>
</tbody>
</table>
3.2.1 "Measured val." submenu

Navigation  

Expert → Sensor → Measured val.

"Process variab." submenu

Navigation  

Mass flow

**Navigation**


**Description**

Displays the mass flow that is currently measured.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the Mass flow unit parameter (→ 49)

Volume flow

**Navigation**


**Description**

Displays the volume flow currently calculated.

**User interface**

Signed floating-point number

**Additional information**

*Description*

The volume flow is calculated from the mass flow currently measured and the density currently measured.

*Dependency*

The unit is taken from the Volume flow unit parameter (→ 50)

Correct.vol.flow

**Navigation**


**Description**

Displays the corrected volume flow currently measured.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the Cor.volfow unit parameter (→ 52)

Density

**Navigation**


**Description**

Displays the density currently measured.
## Ref. density

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the reference density currently calculated.</td>
</tr>
<tr>
<td>User interface</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Additional information</td>
<td>Dependency &lt;br&gt; The unit is taken from the Ref. dens. unit parameter (→ 54)</td>
</tr>
</tbody>
</table>

## Temperature

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the medium temperature currently measured.</td>
</tr>
<tr>
<td>User interface</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Additional information</td>
<td>Dependency &lt;br&gt; The unit is taken from the Temperature unit parameter (→ 55)</td>
</tr>
</tbody>
</table>

## Pressure value

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the fixed or external pressure value.</td>
</tr>
<tr>
<td>User interface</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Additional information</td>
<td>Dependency &lt;br&gt; The unit is taken from the Pressure unit parameter (→ 55)</td>
</tr>
</tbody>
</table>
**Description of device parameters**

**Proline Promass 100 PROFINET**

### Dynam. viscosity

**Navigation**


**Prerequisite**

For the following order code:

*Application package*, option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

**Description**

Displays the dynamic viscosity currently calculated.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Dyn. visc. unit** parameter.

### Kinematic visc.

**Navigation**


**Prerequisite**

For the following order code:

*Application package*, option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

**Description**

Displays the kinematic viscosity currently calculated.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Kin. visc. unit** parameter.

### TempCompDynVisc

**Navigation**


**Prerequisite**

For the following order code:

*Application package*, option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

**Description**

Displays the temperature compensation currently calculated for the viscosity.

**User interface**

Signed floating-point number
Additional information  

**Dependency**

The unit is taken from the *Dyn. visc. unit* parameter.

---

**TempCompKinVisc**

**Navigation**


**Prerequisite**

For the following order code:

‘Application package’, option **EG** "Viscosity"

The software options currently enabled are displayed in the *SW option overv.* parameter (→ 40).

**Description**

Displays the temperature compensation currently calculated for the kinetic viscosity.

**User interface**

Signed floating-point number

**Additional information  

**Dependency**

The unit is taken from the *Kin. visc. unit* parameter.

---

**Concentration**

**Navigation**


**Prerequisite**

For the following order code:

‘Application package’, option **ED** "Concentration"

The software options currently enabled are displayed in the *SW option overv.* parameter (→ 40).

**Description**

Displays the concentration currently calculated.

**User interface**

Signed floating-point number

**Additional information  

**Dependency**

The unit is taken from the *Concentr. unit* parameter.
Description of device parameters

Proline Promass 100 PROFINET

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 Concentr. unit parameter.

The software options currently enabled are displayed in the SW option overv. parameter (→ 40).

**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 (→ 49)

Carrier mass fl.

**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 Concentr. unit parameter.

The software options currently enabled are displayed in the SW option overv. parameter (→ 49).

**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 (→ 49)

"Totalizer" submenu

**Navigation**

Expert → Sensor → Measured val. → Totalizer

- Totalizer
  - Totalizer val. 1 to n → 47
  - Tot. overflow 1 to n → 47
Totalizer val. 1 to n

Navigation

Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n

Prerequisite

One of the following options is selected in the Assign variable parameter (→ 100)Totalizer 1 to n submenu:
- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description

Displays the current totalizer reading.

User interface

Signed floating-point number

Additional information

Description

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

In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 104).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Operation mode parameter (→ 102).

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 100).

Example

Calculation of the current totalizer reading when the value exceeds the 7-digit display range of the operating tool:
- Value in the Totalizer val. 1 parameter: 1 968 457 m³
- Value in the Tot. overflow 1 parameter: 1 ⋅ 10⁷ (1 overflow) = 10 000 000 [m³]
- Current totalizer reading: 11 968 457 m³

Tot. overflow 1 to n

Navigation

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

Prerequisite

One of the following options is selected in the Assign variable parameter (→ 100)Totalizer 1 to n submenu:
- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description

Displays the current totalizer overflow.

* Visibility depends on order options or device settings
**User interface**

Integer with sign

**Additional information**

*Description*

If the current totalizer reading exceeds 7 digits, which is the maximum value range that can be displayed by the operating tool, the value above this range is output as an overflow. The current totalizer value is therefore the sum of the overflow value and the totalizer value from the Totalizer val. 1 to n parameter.

*User interface*

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 100).

*Example*

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

- Value in the Totalizer val. 1 parameter: 1 968 457 m³
- Value in the Tot. overflow 1 parameter: 2 \cdot 10^7 (2 overflows) = 20 000 000 [m³]
- Current totalizer reading: 21 968 457 m³

### 3.2.2 "System units" submenu

*Navigation*

Expert → Sensor → System units

- Mass flow unit → 49
- Mass unit → 49
- Volume flow unit → 50
- Volume unit → 52
- Cor.volflow unit → 52
- Corr. vol. unit → 53
- Density unit → 53
- Ref. dens. unit → 54
- Temperature unit → 55
- Pressure unit → 55
- Date/time format → 56
- User-spec. units → 57
### Mass flow unit

**Navigation**
- Expert → Sensor → System units → Mass flow unit

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

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>g/s</td>
<td>oz/s</td>
</tr>
<tr>
<td>g/min</td>
<td>oz/min</td>
</tr>
<tr>
<td>g/h</td>
<td>oz/h</td>
</tr>
<tr>
<td>g/d</td>
<td>oz/d</td>
</tr>
<tr>
<td>kg/s</td>
<td>lb/s</td>
</tr>
<tr>
<td>kg/min</td>
<td>lb/min</td>
</tr>
<tr>
<td>kg/h</td>
<td>lb/h</td>
</tr>
<tr>
<td>kg/d</td>
<td>lb/d</td>
</tr>
<tr>
<td>t/s</td>
<td>STon/s</td>
</tr>
<tr>
<td>t/min</td>
<td>STon/min</td>
</tr>
<tr>
<td>t/h</td>
<td>STon/h</td>
</tr>
<tr>
<td>t/d</td>
<td>STon/d</td>
</tr>
</tbody>
</table>

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

**Factory setting**
Country-specific:
- kg/h (DN > 150 (6\(^{\circ}\)): t/h)
- lb/min

**Additional information**

**Result**
The selected unit applies for:
- Target mass flow parameter → 46
- Carrier mass fl. parameter → 46
- Mass flow parameter → 42

**Selection**
For an explanation of the abbreviated units: → 136

---

### Mass unit

**Navigation**
- Expert → Sensor → System units → Mass unit

**Description**
Use this function to select the unit for the mass.

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>oz</td>
</tr>
<tr>
<td>kg</td>
<td>lb</td>
</tr>
<tr>
<td>t</td>
<td>STon</td>
</tr>
</tbody>
</table>

**Custom-specific units**
User mass
Factory setting

Country-specific:
- kg (DN > 150 (6''): t)
- lb

Additional information

Selection

For an explanation of the abbreviated units: →  136

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></td>
</tr>
<tr>
<td>• l/min</td>
<td>• kgal/min (us)</td>
<td></td>
</tr>
<tr>
<td>• l/h</td>
<td>• kgal/h (us)</td>
<td></td>
</tr>
<tr>
<td>• l/d</td>
<td>• kgal/d (us)</td>
<td></td>
</tr>
<tr>
<td>• hl/s</td>
<td>• Mgal/s (us)</td>
<td></td>
</tr>
<tr>
<td>• hl/min</td>
<td>• Mgal/min (us)</td>
<td></td>
</tr>
<tr>
<td>• hl/h</td>
<td>• Mgal/h (us)</td>
<td></td>
</tr>
<tr>
<td>• hl/d</td>
<td>• Mgal/d (us)</td>
<td></td>
</tr>
<tr>
<td>• Ml/s</td>
<td>• bbl/s (us;liq.)</td>
<td></td>
</tr>
<tr>
<td>• Ml/min</td>
<td>• bbl/min (us;liq.)</td>
<td></td>
</tr>
<tr>
<td>• Ml/h</td>
<td>• bbl/h (us;liq.)</td>
<td></td>
</tr>
<tr>
<td>• Ml/d</td>
<td>• bbl/d (us;liq.)</td>
<td></td>
</tr>
<tr>
<td>• Ml/s (us;beer)</td>
<td>• bbl/s (us;beer)</td>
<td></td>
</tr>
<tr>
<td>• Ml/min (us;beer)</td>
<td>• bbl/min (us;beer)</td>
<td></td>
</tr>
<tr>
<td>• Ml/h (us;beer)</td>
<td>• bbl/h (us;beer)</td>
<td></td>
</tr>
<tr>
<td>• Ml/d (us;beer)</td>
<td>• bbl/d (us;beer)</td>
<td></td>
</tr>
<tr>
<td>• Ml/s (us;oil)</td>
<td>• bbl/s (us;oil)</td>
<td></td>
</tr>
<tr>
<td>• Ml/min (us;oil)</td>
<td>• bbl/min (us;oil)</td>
<td></td>
</tr>
<tr>
<td>• Ml/h (us;oil)</td>
<td>• bbl/h (us;oil)</td>
<td></td>
</tr>
<tr>
<td>• Ml/d (us;oil)</td>
<td>• bbl/d (us;oil)</td>
<td></td>
</tr>
<tr>
<td>• Ml/s (us;tank)</td>
<td>• bbl/s (us;tank)</td>
<td></td>
</tr>
<tr>
<td>• Ml/min (us;tank)</td>
<td>• bbl/min (us;tank)</td>
<td></td>
</tr>
<tr>
<td>• Ml/h (us;tank)</td>
<td>• bbl/h (us;tank)</td>
<td></td>
</tr>
<tr>
<td>• Ml/d (us;tank)</td>
<td>• bbl/d (us;tank)</td>
<td></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 (DN > 150 (6")· m³/h)
- gal/min (us)

### Additional information

#### Result

The selected unit applies for:

*Volume flow* parameter (→  42)

### Selection

For an explanation of the abbreviated units: →  136
Volume unit

**Navigation**

Expert → Sensor → System units → Volume unit

**Description**

Use this function to select the unit for the volume.

**Selection**

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

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

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

**Custom-specific units**

User vol.

**Factory setting**

Country-specific:
- l (DN > 150 (6") : m³)
- gal (us)

**Additional information**

**Selection**

For an explanation of the abbreviated units: →  136

Cor.volflow 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 (DN > 150 (6”): Nm³/h)
- Sft³/min

**Additional information**

*Result*

The selected unit applies for:
- **Correct. vol. flow** parameter (→ 42)

*Selection*

For an explanation of the abbreviated units: → 136

---

### Corr. vol. 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 (DN > 150 (6”): Nm³)
- Sft³

**Additional information**

*Selection*

For an explanation of the abbreviated units: → 136

---

### 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 (→  42)

**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).

For an explanation of the abbreviated units: →  136

---

### Ref. dens. 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

**Factory setting**

- kg/Nl
- lb/Sft³
Additional information

Result
The selected unit applies for:
- **Ext. ref. density** parameter (→ 79)
- **Fix ref. density** parameter (→ 79)
- **Ref. density** parameter (→ 43)

Selection

For an explanation of the abbreviated units: → 136

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 (→ 120)
- **Minimum value** parameter (→ 120)
- **Maximum value** parameter (→ 121)
- **Minimum value** parameter (→ 121)
- **Maximum value** parameter (→ 122)
- **Minimum value** parameter (→ 122)
- **External temp.** parameter (→ 76)
- **Ref. temperature** parameter
- **Temperature** parameter (→ 43)
- **Ref. temperature** parameter (→ 79)

Selection

For an explanation of the abbreviated units: → 136

Pressure unit

Navigation

Expert → Sensor → System units → Pressure unit

Description
Use this function to select the unit for the pipe pressure.
Description of device parameters

Proline Promass 100 PROFINET

**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 (→ 74)
    - External press. parameter (→ 74)
    - Pressure value parameter (→ 43)

- Selection
  - For an explanation of the abbreviated units: → 136

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

**Factory setting**

dd.mm.yy hh:mm

**Additional information**

- Selection
  - For an explanation of the abbreviated units: → 136
"User-spec. units" submenu

**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 (→ 49)
- Mass unit parameter (→ 49)

Example

If the text CENT for 'centner' is entered, the following options are displayed in the picklist for the Mass flow unit parameter (→ 49):

- CENT/s
- CENT/min
- CENT/h
- CENT/d

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

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
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 (→ 50)
- Volume unit parameter (→ 52)

Example  
If the text GLAS is entered, the choose list of the Volume flow unit parameter (→ 50) shows the following options:
- GLAS/s
- GLAS/min
- GLAS/h
- GLAS/d

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

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
Corr. vol. 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:
  - **Corr. volflow unit** parameter (→  52)
  - **Corr. vol. unit** parameter (→  53)

**Example**

If the text GLAS is entered, the choose list of the **Corr. volflow unit** parameter (→  52) shows the following options:

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

Corr. vol. 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

Cor. vol. 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.
Description of device parameters

Density text

**User entry**
Signed floating-point number

**Factory setting**
1.0

**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 (→ 53).

Example
Enter text “CE_L” for centners per liter

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

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
Description of device parameters

<table>
<thead>
<tr>
<th>Pressure text</th>
</tr>
</thead>
</table>

**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 (→  55).

<table>
<thead>
<tr>
<th>Pressure offset</th>
</tr>
</thead>
</table>

**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

<table>
<thead>
<tr>
<th>Pressure factor</th>
</tr>
</thead>
</table>

**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 param." submenu

**Navigation**


**Description**

Use this function to enter a time constant for flow damping (PT1 element). 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**

- The damping is performed by a PT1 element 2).

**User entry**

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

Damping is switched off if 0 is entered (factory setting).

**Result**

- The damping affects the following variables of the device:
  - Outputs
  - Low flow cut off → 65
  - Totalizers → 99

---

2) Proportional behavior with first-order lag
Density damping

**Navigation**  
Expert → Sensor → Process param. → Density damping

**Description**  
Use this function to enter a time constant for the damping (PT1 element) of the density measured value.

**User entry**  
0 to 999.9 s

**Factory setting**  
0 s

**Additional information**  
*Description*

The damping is performed by a PT1 element.

*User entry*

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

Damping is switched off if 0 is entered (factory setting).

Temp. damping

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

**Description**  
Use this function to enter a time constant for the damping (PT1 element) of the temperature measured value.

**User entry**  
0 to 999.9 s

**Factory setting**  
0 s

**Additional information**  
*Description*

The damping is performed by a PT1 element.

*User entry*

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

Damping is switched off if 0 is entered (factory setting).
Flow override

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td>Selection</td>
<td>• Off</td>
</tr>
<tr>
<td></td>
<td>• On</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Off</td>
</tr>
<tr>
<td>Additional information</td>
<td>Result</td>
</tr>
<tr>
<td></td>
<td>This setting affects all the functions and outputs of the measuring device.</td>
</tr>
</tbody>
</table>

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

-positive zero return can also be enabled via the Status input: Assign stat.inp. parameter.

"Low flow cut off" submenu

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign variable</td>
<td></td>
</tr>
<tr>
<td>On value</td>
<td>→ 65</td>
</tr>
<tr>
<td>Off value</td>
<td>→ 66</td>
</tr>
<tr>
<td>Pres. shock sup.</td>
<td>→ 67</td>
</tr>
</tbody>
</table>

Assign variable

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to select the process variable for low flow cutoff detection.</td>
</tr>
</tbody>
</table>
Description of device parameters

Proline Promass 100 PROFINET

Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow

Factory setting

Mass flow

On value


table

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>One of the following options is selected in the Assign variable parameter (→ 65):</td>
</tr>
<tr>
<td></td>
<td>Mass flow</td>
</tr>
<tr>
<td></td>
<td>Volume flow</td>
</tr>
<tr>
<td></td>
<td>Correct.vol.flow</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter a switch-on value for low flow cut off. Low flow cut off is activated if the value entered is not equal to 0 → 66.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Depends on country and nominal diameter → 133</td>
</tr>
<tr>
<td>Additional information</td>
<td>Dependency</td>
</tr>
<tr>
<td></td>
<td>The unit depends on the process variable selected in the Assign variable parameter (→ 65).</td>
</tr>
</tbody>
</table>

Off value


table

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>One of the following options is selected in the Assign variable parameter (→ 65):</td>
</tr>
<tr>
<td></td>
<td>Mass flow</td>
</tr>
<tr>
<td></td>
<td>Volume flow</td>
</tr>
<tr>
<td></td>
<td>Correct.vol.flow</td>
</tr>
<tr>
<td>Description</td>
<td>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 → 66.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 100.0 %</td>
</tr>
<tr>
<td>Factory setting</td>
<td>50 %</td>
</tr>
</tbody>
</table>
Additional information

Example

- **Q** Flow
- **t** Time
- **H** Hysteresis
- **A** Low flow cut off active
- **1** Low flow cut off is activated
- **2** Low flow cut off is deactivated
- **3** On value entered
- **4** Off value entered

**Pres. shock sup.**

**Navigation**


**Prerequisite**

One of the following options is selected in the Assign variable parameter (→ 65):

- Mass flow
- Volume flow
- Correct.vol.flow

**Description**

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

**Additional information**

**Pressure shock suppression is enabled**

- Prerequisite:
  - Flow rate < on-value of low flow cut off
  - 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.
Description of device parameters

Proline Promass 100 PROFINET

Q  Flow
T  Time
A  Drip
B  Pressure shock
C  Pressure shock suppression active as specified by the time entered
D  Pressure shock suppression inactive
1  Valve closes
2  Flow falls below the on-value of the low flow cut off: pressure shock suppression is activated
3  The time entered has elapsed: pressure shock suppression is deactivated
4  The actual flow value is now displayed and output
5  On value for low flow cut off
6  Off value for low flow cut off

"Partial pipe det" submenu


<table>
<thead>
<tr>
<th>➤ Partial pipe det</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign variable</td>
<td>➤ 69</td>
</tr>
<tr>
<td>Low value</td>
<td>➤ 69</td>
</tr>
<tr>
<td>High value</td>
<td>➤ 69</td>
</tr>
<tr>
<td>Response time</td>
<td>➤ 70</td>
</tr>
<tr>
<td>Max. damping</td>
<td>➤ 70</td>
</tr>
</tbody>
</table>
Assign 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
- Ref.density

Factory setting
Off

Low value

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

Prerequisite
One of the following options is selected in the Assign variable parameter (→ 69):
- Density
- Ref.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 defined in the High value parameter (→ 69).

The unit depends on the process variable selected in the Assign variable parameter (→ 69).

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

High value

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

Prerequisite
One of the following options is selected in the Assign variable parameter (→ 69):
- Density
- Ref.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
6 000

Additional information

User entry
The upper limit value must be greater than the lower limit value defined in the Low value parameter (→  69).

The unit depends on the process variable selected in the Assign variable parameter (→  69).

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

Response time

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

Prerequisite
One of the following options is selected in the Assign variable parameter (→  69):
• Density
• Ref.density

Description
Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message △S862 Partly filled to be triggered if the measuring pipe is empty or partially full.

User entry
0 to 100 s

Factory setting
1 s

Max. damping

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

Prerequisite
One of the following options is selected in the Assign variable parameter (→  69):
• Density
• Ref.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 oscillation damping 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 **S862 Partly filled**. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases.

*User entry*

- Damping is disabled if 0 is entered (factory setting).
- Damping is enabled if the value entered is greater than 0.
- The value entered depends on application-specific influence variables, such as the medium, nominal diameter, sensor etc.

*Example*

- If the pipe is filled normally the value of the oscillation damping is 500.
- If the pipe is partially filled the value of the oscillation damping is > 5000.
- A practical damping value would then be 2000: enter 2000 as the value.

### 3.2.4 "Measurement mode" submenu

*Navigation*  

[En] Expert → Sensor → Measurement mode

**Measurement mode**

- Select medium → 71
- Select gas type → 72
- Sound velocity → 72
- Temp. coeff. SV → 73

**Select medium**

*Navigation*  

[En] 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 (→ 71).

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

**Selection**
- Air
- Ammonia NH3
- Argon Ar
- Sulf. hex.fl SF6
- Oxygen O2
- Ozone O3
- Nitrog. ox. NOx
- Nitrogen N2
- Nitrous ox. N2O
- Methane CH4
- Hydrogen H2
- Helium He
- Hydrog.chlor. HCl
- Hydrog.sulf. H2S
- Ethylene C2H4
- Carbon diox. CO2
- Carbon monox. CO
- Chlorine Cl2
- Butane C4H10
- Propane C3H8
- Propylene C3H6
- Ethane C2H6
- Others

**Factory setting**
Methane CH4

**Additional information**
*Description*
The gas type needs to be selected so that it is possible to comply with accuracy specifications in gas applications.

### Sound velocity

**Navigation**
> Expert → Sensor → Measurement mode → Sound velocity

**Prerequisite**
In the **Select gas type** parameter (→ 72), the **Others** option is selected.

**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**
415.0 m/s
### Temp. coeff. SV

**Navigation**

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

**Prerequisite**

The **Others** option is selected in the **Select gas type** parameter (→ 72).

**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 comp." submenu

**Navigation**


<table>
<thead>
<tr>
<th>Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure compen.</td>
<td>73</td>
</tr>
<tr>
<td>Pressure value</td>
<td>74</td>
</tr>
<tr>
<td>External press.</td>
<td>74</td>
</tr>
<tr>
<td>Fail safe type</td>
<td>75</td>
</tr>
<tr>
<td>Fs val. pressure</td>
<td>75</td>
</tr>
<tr>
<td>Temperature mode</td>
<td>75</td>
</tr>
<tr>
<td>External temp.</td>
<td>76</td>
</tr>
<tr>
<td>FailSafeTypeTemp</td>
<td>76</td>
</tr>
<tr>
<td>FailSaValExtTemp</td>
<td>77</td>
</tr>
</tbody>
</table>

**Pressure compen.**

**Navigation**


**Prerequisite**

The **Gas** option is selected in the **Select medium** parameter (→ 71).

**Description**

Use this function select the type of pressure compensation.
### Selection
- Off
- Fixed value
- External value

#### Factory setting
Off

#### Additional information
*Selection*
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 compen.** parameter (→ 73).

#### 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 (→ 55)

---

### External press.

#### Navigation

#### Prerequisite
The **External value** option is selected in the **Pressure compen.** parameter (→ 73).

#### 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 (→ 55)
Fail safe type

**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 Fs val. pressure parameter (→ 75).
- Fallback value
  The last valid value is used.
- Off option: The invalid value continues to be used.

Fs val. pressure

**Navigation**

![Expert → Sensor → External comp. → Fs val. pressure]

**Prerequisite**

The *Fail safe value* option is selected in the *Fail safe type* parameter (→ 75).

**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**

*Description*

In the event of a device alarm, the pressure value is displayed as an output value in the Pressure value parameter (→ 43).

Temperature mode

**Navigation**

![Expert → Sensor → External comp. → Temperature mode]

**Description**

Use this function to select the temperature mode.
Description of device parameters

Proline Promass 100 PROFINET

Selection

- Internal value
- External value

Factory setting

Internal value

Additional information

Selection

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 temp.

Navigation


Prerequisite

The Temperature option is selected in the Temperature mode parameter (→ 75).

Description

Use this function to enter the external temperature.

User entry

-273.15 to 99999 °C

Factory setting

0 °C

Additional information

Description

The unit is taken from the Temperature unit parameter (→ 55)

FailSafeTypeTemp

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 FailSaValExtTemp parameter (→ 77).
- **Fallback value**
  The last valid value is used.
- **Off**
  The invalid value continues to be used.

---

### FailSaValExtTemp

**Navigation**

Expert → Sensor → External comp. → FailSaValExtTemp

**Prerequisite**

The **Fail safe value** option is selected in the FailSafeTypeTemp parameter (→ 76).

**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 (→ 43).

---

### 3.2.6 "Calculated value" submenu

**Navigation**

Expert → Sensor → Calculated value

> Calculated value


**"Corr. vol.flow." submenu**

**Navigation**


→ 78
**Corr. vol.flow.**

**Navigation**


**Description**

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

**Selection**

- Fix ref. density
- Calc ref density
- Ref. dens API 53
- Ext. ref. density

**Factory setting**

Calc ref density

**Additional information**

The **Ref. dens API 53** option is suitable only for applications involving LPG, where the flow rate is measured on the basis of the corrected volume flow.

Selecting this option means that the reference density is used, taking into account the values in table 53 E of API MPMS section 11.2. Temperature measurement (measured internally or read into the device from an external source) and density measurement take place during operation while the medium is flowing. The mass flow is divided by the reference density to give the corrected volume flow and is issued as an output signal.

Ext. ref. density

The reference density value of cyclic PROFINET communication is accepted. In addition, the 'External reference density' compensation value must be incorporated into the Analog Output module.

For more information, see the 'Cyclic data transmission' section of the Operating Instructions

---

5) liquefied petroleum gas
## Ext. ref. density

### Navigation


### Prerequisite

In the Corr. vol. flow. parameter (→ 78), the Ext. ref. density option is selected.

### Description

Displays the reference density which is read in externally, e.g. via the current input.

### User interface

Floating point number with sign

### Additional information

**Dependency**

![Info icon](https://via.placeholder.com/15)

The unit is taken from the Ref. dens. unit parameter (→ 54)

## Fix ref. density

### Navigation


### Prerequisite

The Fix ref. density option is selected in the Corr. vol. flow. parameter (→ 78) parameter.

### 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**

![Info icon](https://via.placeholder.com/15)

The unit is taken from the Ref. dens. unit parameter (→ 54)

## Ref. temperature

### Navigation


### Prerequisite

The Calc ref density option is selected in the Corr. vol. flow. parameter (→ 78) parameter.

### 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 (→ 55).

Reference density calculation

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

- \( \rho_n \): 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 = \([1/\text{K}]\); K = Kelvin
- \( \beta \): square expansion coefficient of the fluid, unit = \([1/\text{K}^2]\)

Linear exp coeff

Navigation

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

Prerequisite

The Calc ref density option is selected in the Corr. vol.flow. parameter (→ 78) parameter.

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 exp coeff

Navigation


Prerequisite

The Calc ref density option is selected in the Corr. vol.flow. parameter (→ 78) parameter.

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
### FailSaTypRefDens

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to select the failsafe mode for the external reference density value.</td>
</tr>
</tbody>
</table>
| 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 `FailSaValRefDens` parameter (→ 81).  
• Fallback value  
The last valid value is used.  
• Off  
The invalid value continues to be used. |

### FailSaValRefDens

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Fail safe value</strong> option is selected in the <code>FailSaTypRefDens</code> parameter (→ 81).</td>
</tr>
<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 kg/Nl</td>
</tr>
</tbody>
</table>
| Additional information | Description  
In the event of a device alarm, the reference density value is displayed as an output value in the `Ref.density` parameter (→ 43). |
3.2.7  "Sensor adjustm." submenu

**Navigation**  

- **Install. direct.**  
  → 82
- **Zero point adj.**  
  → 82
- **Density adjustm.**  
  → 84
- **Variable adjust**  
  → 86

**Install. direct.**

**Navigation**  

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

**Selection**  
- In arrow direct.
- Against arrow

**Factory setting**  
In arrow direct.

**Additional information**  
*Description*

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 adj." submenu

- It is generally not necessary to perform zero point adjustment.
- However, this function may be needed in some applications with low flow and strict accuracy requirements.
- A zero point adjustment cannot increase repeatability.
- The following conditions should be met to perform a zero point adjustment successfully without the adjustment finishing in an error:
  - The real flow must be 0.
  - The pressure must be at least 15 psi g.
- The adjustment takes a maximum of 60 s. The more stable the conditions, the faster the adjustment is completed.
- This function can also be used to check the health of the measuring device.
  A healthy measuring device has a maximum zero point deviation of ±100 compared to the factory setting of the measuring device (calibration report).
**Zero point adj.**

**Navigation**


**Description**

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

*Observe conditions → 82.*

**Selection**

- **Cancel**
- **Busy**
- **Zero adjust fail**
- **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 adjust fail**

  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

Note the following before performing the adjustment:

- A density adjustment only makes sense if there is little variation in the operating conditions and the density adjustment is performed under the operating conditions.
- The density adjustment scales the internally computed density value with a user-specific slope and offset.
- A 1-point or 2-point density adjustment can be performed.
- For a 2-point density adjustment, there must be a difference of at least 0.2 kg/l between the two target density values.
- The reference media must be gas-free or pressurized so that any gas they contain is compressed.
- The reference density measurements must be performed at the same medium temperature that prevails in the process, as otherwise the density adjustment will not be accurate.
- The correction resulting from the density adjustment can be cleared with the Restore original option.

**Navigation**


### Adjustment mode

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the method for field density adjustment.</th>
</tr>
</thead>
</table>
| User interface | 1 point adjustm.  
2 point adjustm. |
| Factory setting | 1 point adjustm. |

---

**Navigation**


**Adjustment mode**

- Adjustment mode
- Density setpt 1
- Density setpt 2
- Density adjustm.
- Progress
- Dens. adj factor
- Dens. adj offset
**Density setpt 1**

**Navigation**  
Experts → Sensor → Sensor adjustm. → Density adjustm. → Density setpt 1

**Description**  
Displays the existing density value.

**User interface**  
Input depends on the unit selected in the **Density unit** parameter (→ 53).

**Factory setting**  
1 kg/l

---

**Density setpt 2**

**Navigation**  

**Prerequisite**  
The 2 point adjustm. option is selected in the **Adjustment mode** parameter.

**Description**  
Displays the second density setpoint.

**User interface**  
Input depends on the unit selected in the **Density unit** parameter (→ 53).

**Factory setting**  
1 kg/l

---

**Density adjustm.**

**Navigation**  

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

**User interface**  
- Cancel  
- Busy  
- Ok  
- Dens. adj. fail.  
- Meas. density 1  
- Meas. density 2  
- Calculate  
- Restore original

**Factory setting**  
Ok

---

**Progress**

**Navigation**  
Experts → Sensor → Sensor adjustm. → Density adjustm. → Progress

**Description**  
The progress of the process is indicated.
Description of device parameters

**Proline Promass 100 PROFINET**

**User interface**

0 to 100 %

---

**Dens. adj factor**

**Navigation**


**Description**

Displays the current correction factor for the density.

**User interface**

Signed floating-point number

**Factory setting**

1

**Additional information**

Manual value adjustment: **Density factor** parameter (→ 89)

---

**Dens. adj offset**

**Navigation**


**Description**

Displays the current correction offset for the density.

**User interface**

Signed floating-point number

**Factory setting**

0

**Additional information**

Manual value adjustment: **Density offset** parameter (→ 88)

---

**"Variable adjust" submenu**

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust

- Mass flow offset
  → 87
- Mass flow factor
  → 87
- Vol. flow offset
  → 88
- Vol. flow factor
  → 88
- Density offset
  → 88
### 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
Vol. 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

Vol. 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**

Description

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**

Description

Corrected value = (factor × value) + offset
### Density factor

**Navigation**

[Path](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**

Description

Corrected value = (factor × value) + offset

### Corr. vol 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

### Corr. vol 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
**Ref.dens. 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 reference 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

**Ref.dens. 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

**Temp. 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
### Temp. 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

**Cal. factor**

- **Navigation**
  
  Expert → Sensor → Calibration → Cal. factor

  **Description**

  Displays the current calibration factor for the sensor.

  **User interface**

  Signed floating-point number

  **Factory setting**

  Depends on nominal diameter and calibration.
Description of device parameters

### 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

---

### 3.2.9 "Supervision" submenu

**Navigation**

Expert → Sensor → Supervision

---

Limit tube damp.
Limit tube damp.

**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 **Tube damp. high**.
- For detecting inhomogeneous media, for example

### 3.3 "Communication" submenu

**Navigation**

Expert → Communication

#### 3.3.1 "Web server" submenu

**Navigation**

Expert → Communication → Web server

- Webserv.language
  → 94
- MAC Address
  → 94
- IP address
  → 95
- Subnet mask
  → 95
- Default gateway
  → 95
Webserv.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 *
- Polski *
- русский язык(Ru) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- العربية (Ara) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Vit) *
- čeština (Czech) *

Factory setting
English

MAC Address

Navigation
Expert → Communication → Web server → MAC Address

Description
Displays the MAC 6) 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

* Visibility depends on order options or device settings
6) Media Access Control
**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

---

**Subnet mask**

**Navigation**

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**

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

---

**Webserver funct.**

**Navigation**

Expert → Communication → Web server → Webserver funct.

**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 Webserver funct. can only be re-enabled via the local display or the operating tool FieldCare.

**Selection**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| 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

![Login page icon](image)

### "PROFINET config." 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-promass100-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: Endress+Hauser
- promass: Instrument family
- 100: Transmitter
- xxxxx: Serial number of the device

---

### Man. spec. diag.

#### 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 info" submenu

#### Navigation

Expert → Communication → PROFINET info

---

**Device type**

→ 98
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

Promass 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 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**

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancel</td>
<td>No action is executed and the user exits the parameter.</td>
</tr>
<tr>
<td>Reset + totalize</td>
<td>Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totalized.</td>
</tr>
</tbody>
</table>

---

3.4.1 "Totalizer 1 to n" submenu

**Navigation**

Expert → Application → Totalizer 1 to n

---

**Totalizer 1 to n**

**Assign variable**

→ 100

**Unit totalizer**

→ 100

**Operation mode**

→ 102
Assign variable

**Navigation**

Expert → Application → Totalizer 1 to n → Assign variable

**Description**

Use this function to select a process variable for the Totalizer 1 to n.

**Selection**

- Off
- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

**Factory setting**

Mass flow

**Additional information**

*Description*

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

*Selection*

If the Off option is selected, only Assign variable parameter (→ 100) is still displayed in the Totalizer 1 to n submenu. All other parameters in the submenu are hidden.

Unit totalizer

**Navigation**

Expert → Application → Totalizer 1 to n → Unit totalizer

**Prerequisite**

One of the following options is selected in the Assign variable parameter (→ 100) of the Totalizer 1 to n submenu:

- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

**Description**

Use this function to select the process variable unit for the Totalizer 1 to n (→ 99).

* Visibility depends on order options or device settings
**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>SI units</th>
<th>US units</th>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>oz</td>
<td>cm³</td>
<td>af</td>
<td>Nl</td>
<td>Sft³</td>
</tr>
<tr>
<td>kg</td>
<td>lb</td>
<td>dm³</td>
<td>ft³</td>
<td>Nm³</td>
<td>Sgal</td>
</tr>
<tr>
<td>t</td>
<td>STon</td>
<td>m³</td>
<td>fl oz (us)</td>
<td>Sm³</td>
<td>Sbbl</td>
</tr>
</tbody>
</table>

*Custom-specific units*

User mass

or

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>SI units</th>
<th>US units</th>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm³</td>
<td>af</td>
<td>ft³</td>
<td>fl oz (us)</td>
<td>Nl</td>
<td>Sft³</td>
</tr>
<tr>
<td>dm³</td>
<td>ft³</td>
<td>fl oz (us)</td>
<td>Sgal</td>
<td>Nm³</td>
<td>Sbbl</td>
</tr>
<tr>
<td>m³</td>
<td>fl oz (us)</td>
<td>gal (us)</td>
<td>Sgal</td>
<td>ml</td>
<td>Sbbl</td>
</tr>
<tr>
<td>l</td>
<td>gal (us)</td>
<td>kgal (us)</td>
<td>Sbbl</td>
<td>hl</td>
<td>Sbbl</td>
</tr>
<tr>
<td>hl</td>
<td>Mgal (us)</td>
<td>bbl (us;liq.)</td>
<td>Sgal</td>
<td>Ml Mega</td>
<td>bbl (us;tank)</td>
</tr>
<tr>
<td>Ml Mega</td>
<td>Mgal (us)</td>
<td>bbl (us;oil)</td>
<td>Sgal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Custom-specific units*

User vol.

or

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nl</td>
<td>Sft³</td>
<td>Sgal</td>
<td>Sbbl</td>
</tr>
<tr>
<td>Nm³</td>
<td>Sgal</td>
<td>Sgal</td>
<td>Sbbl</td>
</tr>
<tr>
<td>Sl</td>
<td>Sgal</td>
<td>Sgal</td>
<td>Sbbl</td>
</tr>
<tr>
<td>Sm³</td>
<td>Sgal</td>
<td>Sgal</td>
<td>Sbbl</td>
</tr>
</tbody>
</table>

*Factory setting*

Country-specific:

- kg
- lb

*Additional information*

**Description**

The unit is selected separately for each totalizer. It is independent of the selection made in the **System units** submenu (→ 48).

**Selection**

The selection is dependent on the process variable selected in the **Assign variable** parameter (→ 100).
Operation mode

Navigation

Expert → Application → Totalizer 1 to n → Operation mode

Prerequisite

One of the following options is selected in the Assign variable parameter (→ 100) of the Totalizer 1 to n submenu:

- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl.

Description

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

Selection

- Net flow total
- Forward total
- Reverse total

Factory setting

Net flow total

Additional information

Selection

- Net flow total
  Flow values in the forward and reverse flow direction are totalized and balanced against one another. Net flow is registered in the flow direction.
- Forward total
  Only the flow in the forward flow direction is totalized.
- Reverse total
  Only the flow in the reverse flow direction is totalized (= reverse flow quantity).

Control Tot. 1 to n

Navigation

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

Prerequisite

One of the following options is selected in the Assign variable parameter (→ 100) of the Totalizer 1 to n submenu:

- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl.

Description

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

Selection

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

* Visibility depends on order options or device settings
### Factory setting
- **Totalize**

### Additional information

#### Selection

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalize</td>
<td>The totalizer is started or continues running.</td>
</tr>
<tr>
<td>Reset + hold</td>
<td>The totaling process is stopped and the totalizer is reset to 0.</td>
</tr>
<tr>
<td>Preset + hold</td>
<td>The totaling process is stopped and the totalizer is set to its defined start value from the Preset value parameter.</td>
</tr>
<tr>
<td>Reset + totalize</td>
<td>The totalizer is reset to 0 and the totaling process is restarted.</td>
</tr>
<tr>
<td>Preset + totalize</td>
<td>The totalizer is set to the defined start value from the Preset value parameter and the totaling process is restarted.</td>
</tr>
</tbody>
</table>

#### Preset value 1 to n

**Navigation**

[ 专家 ] Expert → Application → Totalizer 1 to n → Preset value 1 to n

**Prerequisite**

One of the following options is selected in the Assign variable parameter (→ 100) of the Totalizer 1 to n submenu:
- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl.

**Description**

Use this function to enter a start value for the Totalizer 1 to n.

**User entry**

Signed floating-point number

**Factory setting**

Country-specific:
- 0 kg
- 0 lb

**Additional information**

**Entry**

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 100).

**Example**

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

* Visibility depends on order options or device settings
Failure mode

Navigation

Expert → Application → Totalizer 1 to n → Failure mode

Prerequisite

One of the following options is selected in the Assign variable parameter (→ 100) of the Totalizer 1 to n submenu:

- Volume flow
- Mass flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

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
  The totalizer is stopped in the event of a device alarm.
- Actual value
  The totalizer continues to count based on the actual 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.

3.4.2 "Viscosity" submenu

Only available for Promass I.

For detailed information on the parameter descriptions for the Viscosity application package, refer to the Special Documentation for the device

Navigation

Expert → Application → Viscosity

Viscosity

Viscos. damping

Temp. compensat.

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

For detailed information on the parameter descriptions for the Concentration application package, refer to the Special Documentation for the device.

Navigation

Expert → Application → Concentration

3.5 "Diagnostics" submenu

Navigation

Expert → Diagnostics
### Actual diagnos.

**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 (→ 108).

*Example*

For the display format:

F271 Main electronics

### 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 diagnos. parameter (→ 106).

*Example*

For the display format:

24d12h13m00s

### Prev.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 electronics

---

**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 Prev.diagnostics parameter (→ 106).

Example
For the display format:
24d12h13m00s

---

**Time fr. 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

---

### 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 electronics  
- F276 I/O module

---

### 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 (→ 108).

*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 electronics
- F276 I/O module

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 (→  109).

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 electronics
- F276 I/O module
### 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 (→  109).

*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 electronics
- F276 I/O module

---

### 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 (→  110).

*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 electronics
-  F276 I/O module

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 (→  111).

Example
For the display format:
24d12h13m00s

3.5.2 "Event logbook" submenu

Navigation

Expert → Diagnostics → Event logbook

Event logbook

Filter options

→  112

Event list

→  113
Description of device parameters

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)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (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

Navigation

Expert → Diagnostics → Event logbook → Event list

Description

Displays the history of event messages of the category selected in the Filter options parameter (→  112).

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. 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:

- 11091 Configuration modified
  ☒ 24d12h13m00s
- ☒F271 Main electronics
  ☒ 01d04h12min30s

HistoROM

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

**Navigation**

Expert → Diagnostics → Device info

<table>
<thead>
<tr>
<th>Device Info</th>
<th>Description</th>
<th>User Interface</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Device tag</strong></td>
<td>Displays a unique name for the measuring point so it can be identified quickly within the plant.</td>
<td>Max. 32 characters such as lower-case letter or numbers</td>
<td>eh-promass100-xxxxx</td>
</tr>
<tr>
<td><strong>Serial number</strong></td>
<td>Displays the serial number of the measuring device. The number can be found on the nameplate of the sensor and transmitter.</td>
<td>A maximum of 11-digit character string comprising letters and numbers.</td>
<td></td>
</tr>
<tr>
<td><strong>Firmware version</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Device name</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Order code</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ext. order cd. 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ext. order cd. 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ext. order cd. 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Config. counter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENP version</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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-promass100-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.

### Ext. order cd. 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.

### Ext. order cd. 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 Ext. order cd. 1 parameter (→ 116)

### Ext. order cd. 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 Ext. order cd. 1 parameter (→ 116)
Config. 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**  
*Description*

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 rev.**

**Navigation**  
Expert → Diagnostics → I/O module → Software rev.

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

**User interface**  
Positive integer
3.5.5  "Sens. electronic" submenu

**Navigation**  
Expert → Diagnostics → Sens. electronic

<table>
<thead>
<tr>
<th>Sens. electronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software rev.</td>
</tr>
<tr>
<td>→  118</td>
</tr>
</tbody>
</table>

**Software rev.**

**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 rev.</td>
</tr>
<tr>
<td>→  118</td>
</tr>
</tbody>
</table>

**Software rev.**

**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 val." 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
- Oscil. amplitude
- Osc. ampl. 1 *
- Oscil. damping
- Tors.oscil.amp. *
- Oscil. frequency
- Tors.oscil.freq.
- Signal asymmetry

Factory setting

Cancel

* Visibility depends on order options or device settings
Additional information  

Selection

Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→ 17)

"Electronic temp." submenu

Navigation  

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

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 (→ 55)

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 (→ 55)
"Medium temp." 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>→ 121</td>
</tr>
<tr>
<td>Maximum value</td>
<td>→ 121</td>
</tr>
</tbody>
</table>

**Minimum value**

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

**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 (→ 55)

**Maximum value**

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

**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 (→ 55)

"Carr. pipe temp." 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>→ 122</td>
</tr>
<tr>
<td>Maximum value</td>
<td>→ 122</td>
</tr>
</tbody>
</table>
### Minimum value

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

**Prerequisite**  
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- If the carrier tube temperature is provided:
  - Promass F
  - Promass G
  - Promass H
  - Promass I
  - Promass O
  - Promass P
  - Promass S
  - Promass X

**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 (→  55)

### Maximum value

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

**Prerequisite**  
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- If the carrier tube temperature is provided:
  - Promass F
  - Promass G
  - Promass H
  - Promass I
  - Promass O
  - Promass P
  - Promass S
  - Promass X

**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 (→  55)
"Oscil. frequency" submenu

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

<table>
<thead>
<tr>
<th>➤ Oscil. frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value → 123</td>
</tr>
<tr>
<td>Maximum value → 123</td>
</tr>
</tbody>
</table>

Minimum value

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

Description  
Displays the lowest previously measured oscillation frequency.

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

"Tors.oscil.freq." submenu

Navigation  
Expert → Diagnostics → Min/max val. → Tors.oscil.freq.

<table>
<thead>
<tr>
<th>➤ Tors.oscil.freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value → 124</td>
</tr>
<tr>
<td>Maximum value → 124</td>
</tr>
</tbody>
</table>
### Minimum value

**Navigation**
- Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Minimum value

**Prerequisite**
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

**Description**
Displays the lowest previously measured torsion oscillation frequency.

**User interface**
Signed floating-point number

### Maximum value

**Navigation**
- Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Maximum value

**Prerequisite**
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

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

**User interface**
Signed floating-point number

### "Oscil. amplitude" submenu

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

#### "Oscil. amplitude" submenu

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Diagnostics → Min/max val. → Oscil. amplitude</th>
</tr>
</thead>
</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

---

### "Tor. osc. amp." submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Tor. osc. amp.

<table>
<thead>
<tr>
<th>Tor. osc. amp.</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. → Tor. osc. amp. → Minimum value

**Prerequisite**

- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

**Description**

Displays the lowest previously measured torsion oscillation amplitude.

**User interface**

Signed floating-point number

---

### Maximum value

**Navigation**

Expert → Diagnostics → Min/max val. → Tor. osc. amp. → Maximum value

**Prerequisite**

- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

**Description**

Displays the highest previously measured torsion oscillation amplitude.

**User interface**

Signed floating-point number
"Oscil. damping" submenu

**Navigation**
- Expert → Diagnostics → Min/max val. → Oscil. damping

<table>
<thead>
<tr>
<th>Oscil. damping</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. damping → Minimum value

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

**User interface**
Signed floating-point number

**Maximum value**

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

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

**User interface**
Signed floating-point number

"Tors.oscil.damp." submenu

**Navigation**
- Expert → Diagnostics → Min/max val. → Tors.oscil.damp.

<table>
<thead>
<tr>
<th>Tors.oscil.damp.</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. → Tors. osc. damp. → Minimum value

**Prerequisite**
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

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

**User interface**
Signed floating-point number

Maximum value

**Navigation**
Expert → Diagnostics → Min/max val. → Tors. osc. damp. → Maximum value

**Prerequisite**
- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- Available only for Promass I.

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

**User interface**
Signed floating-point number

"Signal asymmetry" submenu

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

- **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
### 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 for the **Heartbeat** application package, refer to the Special Documentation for the device.

**Navigation**
> Expert → Diagnostics → Heartbeat

- [► Heartbeat](#)
  - [► Perform.verific.](#)
  - [► Verific. results](#)
  - [► HBT Monitoring](#)
  - [► Monitor. results](#)

#### 3.5.9 "Simulation" submenu

**Navigation**
> Expert → Diagnostics → Simulation

- [► Simulation](#)
  - Assign proc.var. → 129
  - Proc. var. value → 129
  - Sim. alarm → 130
  - Event category → 130
  - Diag. event sim. → 130
Assign proc.var.

**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
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Dynam. viscosity *
- Kinematic visc.
- TempCompDynVisc *
- TempCompKinVisc *
- Concentration *
- Target mass flow *
- Carrier mass fl.

**Factory setting**
Off

**Additional information**
* Description
The simulation value of the process variable selected is defined in the **Proc. var. value** parameter (→ 129).

---

Proc. var. value

**Navigation**
Expert → Diagnostics → Simulation → Proc. var. value

**Prerequisite**
One of the following options is selected in the **Assign proc.var.** parameter (→ 129):
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Dynam. viscosity *
- Kinematic visc.
- TempCompDynVisc *
- TempCompKinVisc *
- Concentration *
- Target mass flow *
- Carrier mass fl.

* 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 (→ 48).

---

**Sim. 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.

---

**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 **Diag. event sim.** parameter (→ 130).

**Selection**

- Sensor
- Electronics
- Configuration
- Process

**Factory setting**

Process

---

**Diag. event sim.**

**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

For the simulation, you can choose from the diagnostic events of the category selected in the Event category parameter (→ 130).
4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</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>8</td>
<td>400</td>
</tr>
<tr>
<td>15</td>
<td>1300</td>
</tr>
<tr>
<td>15 FB</td>
<td>3600</td>
</tr>
<tr>
<td>25</td>
<td>3600</td>
</tr>
<tr>
<td>25 FB</td>
<td>9000</td>
</tr>
<tr>
<td>40</td>
<td>9000</td>
</tr>
<tr>
<td>40 FB</td>
<td>14000</td>
</tr>
<tr>
<td>50</td>
<td>14000</td>
</tr>
<tr>
<td>50 FB</td>
<td>36000</td>
</tr>
<tr>
<td>80</td>
<td>36000</td>
</tr>
<tr>
<td>100</td>
<td>60000</td>
</tr>
<tr>
<td>150</td>
<td>130 t/h</td>
</tr>
<tr>
<td>250</td>
<td>360 t/h</td>
</tr>
<tr>
<td>350</td>
<td>650 t/h</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.

### Nominal diameter [mm] vs. On-value for liquid [kg/h]

<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>8</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>15 FB</td>
<td>72</td>
</tr>
<tr>
<td>25</td>
<td>72</td>
</tr>
<tr>
<td>25 FB</td>
<td>180</td>
</tr>
<tr>
<td>40</td>
<td>180</td>
</tr>
<tr>
<td>40 FB</td>
<td>300</td>
</tr>
<tr>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>50 FB</td>
<td>720</td>
</tr>
<tr>
<td>80</td>
<td>720</td>
</tr>
<tr>
<td>100</td>
<td>1200</td>
</tr>
<tr>
<td>150</td>
<td>2.6 t/h</td>
</tr>
<tr>
<td>250</td>
<td>7.2 t/h</td>
</tr>
<tr>
<td>350</td>
<td>13 t/h</td>
</tr>
</tbody>
</table>

### Nominal diameter [mm] vs. Switch-on value for gas [kg/h]

<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>
<tr>
<td>4</td>
<td>0.45</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>6.5</td>
</tr>
<tr>
<td>15 FB</td>
<td>18</td>
</tr>
<tr>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>25 FB</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>40 FB</td>
<td>75</td>
</tr>
<tr>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>50 FB</td>
<td>180</td>
</tr>
<tr>
<td>80</td>
<td>180</td>
</tr>
<tr>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>150</td>
<td>650</td>
</tr>
<tr>
<td>250</td>
<td>1.8 t/h</td>
</tr>
<tr>
<td>350</td>
<td>3.25 t/h</td>
</tr>
</tbody>
</table>
4.2  US units

Only valid for USA and Canada.

4.2.1  System units

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</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>°F</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>¼ 24</td>
<td>0.15</td>
</tr>
<tr>
<td>⅛ 12</td>
<td>0.75</td>
</tr>
<tr>
<td>⅛ 8</td>
<td>3.3</td>
</tr>
<tr>
<td>⅛ 8</td>
<td>15</td>
</tr>
<tr>
<td>⅛ 8</td>
<td>50</td>
</tr>
<tr>
<td>½ FB</td>
<td>130</td>
</tr>
<tr>
<td>1</td>
<td>130</td>
</tr>
<tr>
<td>1 FB</td>
<td>330</td>
</tr>
<tr>
<td>1½</td>
<td>330</td>
</tr>
<tr>
<td>1½ FB</td>
<td>550</td>
</tr>
<tr>
<td>2</td>
<td>550</td>
</tr>
<tr>
<td>2 FB</td>
<td>1300</td>
</tr>
<tr>
<td>3</td>
<td>1300</td>
</tr>
<tr>
<td>4</td>
<td>2200</td>
</tr>
<tr>
<td>6</td>
<td>4800</td>
</tr>
<tr>
<td>10</td>
<td>13000</td>
</tr>
<tr>
<td>14</td>
<td>23500</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.
### Nominal diameter [in]

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>On-value for liquid [lb/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{1}{24} )</td>
<td>0.003</td>
</tr>
<tr>
<td>( \frac{1}{12} )</td>
<td>0.015</td>
</tr>
<tr>
<td>( \frac{1}{8} )</td>
<td>0.066</td>
</tr>
<tr>
<td>( \frac{1}{8} )</td>
<td>0.3</td>
</tr>
<tr>
<td>( \frac{1}{4} )</td>
<td>1</td>
</tr>
<tr>
<td>( \frac{1}{4} ) FB</td>
<td>2.6</td>
</tr>
<tr>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>1 FB</td>
<td>6.6</td>
</tr>
<tr>
<td>1( \frac{1}{2} )</td>
<td>6.6</td>
</tr>
<tr>
<td>1( \frac{1}{2} ) FB</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>2 FB</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>44</td>
</tr>
<tr>
<td>6</td>
<td>95</td>
</tr>
<tr>
<td>10</td>
<td>260</td>
</tr>
<tr>
<td>14</td>
<td>470</td>
</tr>
</tbody>
</table>

### Switch-on value for gas [lb/min]

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>Switch-on value for gas [lb/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{1}{24} )</td>
<td>0.001</td>
</tr>
<tr>
<td>( \frac{1}{12} )</td>
<td>0.004</td>
</tr>
<tr>
<td>( \frac{1}{8} )</td>
<td>0.016</td>
</tr>
<tr>
<td>( \frac{1}{8} )</td>
<td>0.075</td>
</tr>
<tr>
<td>( \frac{1}{4} )</td>
<td>0.25</td>
</tr>
<tr>
<td>( \frac{1}{4} ) FB</td>
<td>0.65</td>
</tr>
<tr>
<td>1</td>
<td>0.65</td>
</tr>
<tr>
<td>1 FB</td>
<td>1.65</td>
</tr>
<tr>
<td>1( \frac{1}{2} )</td>
<td>1.65</td>
</tr>
<tr>
<td>1( \frac{1}{2} ) FB</td>
<td>2.75</td>
</tr>
<tr>
<td>2</td>
<td>2.75</td>
</tr>
<tr>
<td>2 FB</td>
<td>6.5</td>
</tr>
<tr>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>23.75</td>
</tr>
<tr>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>14</td>
<td>117.5</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>Ref. density</td>
<td>kg/Nm³, kg/NI, g/Scm³, kg/Sm³</td>
<td>Kilogram, gram/standard volume unit</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>Nl, Nm³, Sm³</td>
<td>Normal liter, normal cubic meter, standard cubic meter</td>
</tr>
<tr>
<td>Correct.vol.flow</td>
<td>Nl/s, Nl/min, Nl/h, Nl/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/ft³, 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>Ref. density</td>
<td>lb/St³⁹</td>
<td>Weight unit/standard volume unit</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>St³⁹, Sgal (us), Sbbl (us;liq.)</td>
<td>Standard cubic foot, standard gallon, standard barrel</td>
</tr>
<tr>
<td>Correct. vol. flow</td>
<td>St³⁹/s, St³⁹/min, St³⁹/h, St³⁹/d</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>Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/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>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>bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)</td>
<td>Barrel/time unit (petrochemicals)</td>
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