Description of Device Parameters

Proline Promag 100
PROFIBUS DP

Electromagnetic flowmeter
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1 Document information

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

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
This document lists the submenus and their parameters according to the structure of the Expert menu (→ 8) menu that are available once the "Operator" user role or the "Maintenance" user role is enabled.

For information on the arrangement of the parameters according to the structure of the Operation menu, Setup menu, Diagnostics menu (→ 140), along with a brief description, see the Operating Instructions for the device.
For information about the operating philosophy, see the "Operating philosophy" chapter in the device's Operating Instructions.
1.3.2 Structure of a parameter description

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

Complete parameter name

Write-protected parameter = ⚠️

Navigation

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

Prerequisite

The parameter is only available under these specific conditions

Description

Description of the parameter function

Selection

List of the individual options for the parameter
- Option 1
- Option 2

User entry

Input range for the parameter

User interface

Display value/data for the parameter

Factory setting

Default setting ex works

Additional information

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

1.4 Symbols used

1.4.1 Symbols for certain types of information

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip</td>
<td>Indicates additional information.</td>
</tr>
<tr>
<td></td>
<td>Reference to documentation</td>
</tr>
<tr>
<td></td>
<td>Reference to page</td>
</tr>
<tr>
<td></td>
<td>Reference to graphic</td>
</tr>
<tr>
<td></td>
<td>Operation via local display</td>
</tr>
<tr>
<td></td>
<td>Operation via operating tool</td>
</tr>
<tr>
<td></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>
# 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.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expert</strong></td>
<td></td>
</tr>
<tr>
<td>Direct access</td>
<td>→ 10</td>
</tr>
<tr>
<td>Locking status</td>
<td>→ 11</td>
</tr>
<tr>
<td>Access status display</td>
<td>→ 11</td>
</tr>
<tr>
<td>Access status tooling</td>
<td>→ 12</td>
</tr>
<tr>
<td>Enter access code</td>
<td>→ 13</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>→ 13</td>
</tr>
<tr>
<td>Display</td>
<td>→ 13</td>
</tr>
<tr>
<td>Diagnostic handling</td>
<td>→ 26</td>
</tr>
<tr>
<td>Administration</td>
<td>→ 30</td>
</tr>
<tr>
<td><strong>Sensor</strong></td>
<td>→ 34</td>
</tr>
<tr>
<td>Measured values</td>
<td>→ 35</td>
</tr>
<tr>
<td>System units</td>
<td>→ 38</td>
</tr>
<tr>
<td>Process parameters</td>
<td>→ 46</td>
</tr>
<tr>
<td>External compensation</td>
<td>→ 58</td>
</tr>
<tr>
<td>Sensor adjustment</td>
<td>→ 60</td>
</tr>
<tr>
<td>Calibration</td>
<td>→ 65</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>→ 67</td>
</tr>
<tr>
<td>PROFIBUS DP configuration</td>
<td>→ 67</td>
</tr>
<tr>
<td>PROFIBUS DP info</td>
<td>→ 69</td>
</tr>
<tr>
<td>Physical block</td>
<td>→ 71</td>
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<tr>
<td>Web server</td>
<td>→ 80</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Analog inputs</td>
<td>83</td>
</tr>
<tr>
<td>Analog input 1 to 4</td>
<td>83</td>
</tr>
<tr>
<td>Discrete inputs</td>
<td>97</td>
</tr>
<tr>
<td>Discrete input 1 to 2</td>
<td>97</td>
</tr>
<tr>
<td>Analog outputs</td>
<td>104</td>
</tr>
<tr>
<td>Analog output 1 to 2</td>
<td>104</td>
</tr>
<tr>
<td>Discrete outputs</td>
<td>116</td>
</tr>
<tr>
<td>Discrete output 1 to 2</td>
<td>116</td>
</tr>
<tr>
<td>Application</td>
<td>126</td>
</tr>
<tr>
<td>Totalizer 1 to 3</td>
<td>126</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>140</td>
</tr>
<tr>
<td>Actual diagnostics</td>
<td>141</td>
</tr>
<tr>
<td>Previous diagnostics</td>
<td>141</td>
</tr>
<tr>
<td>Operating time from restart</td>
<td>142</td>
</tr>
<tr>
<td>Operating time</td>
<td>142</td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>143</td>
</tr>
<tr>
<td>Event logbook</td>
<td>147</td>
</tr>
<tr>
<td>Device information</td>
<td>149</td>
</tr>
<tr>
<td>Min/max values</td>
<td>152</td>
</tr>
<tr>
<td>Heartbeat</td>
<td>154</td>
</tr>
<tr>
<td>Simulation</td>
<td>155</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.

<table>
<thead>
<tr>
<th>Expert</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct access</td>
<td>10</td>
</tr>
<tr>
<td>Locking status</td>
<td>11</td>
</tr>
<tr>
<td>Access status display</td>
<td>11</td>
</tr>
<tr>
<td>Access status tooling</td>
<td>12</td>
</tr>
<tr>
<td>Enter access code</td>
<td>13</td>
</tr>
<tr>
<td>System</td>
<td>13</td>
</tr>
<tr>
<td>Sensor</td>
<td>34</td>
</tr>
<tr>
<td>Communication</td>
<td>67</td>
</tr>
<tr>
<td>Analog inputs</td>
<td>83</td>
</tr>
<tr>
<td>Discrete inputs</td>
<td>97</td>
</tr>
<tr>
<td>Analog outputs</td>
<td>104</td>
</tr>
<tr>
<td>Discrete outputs</td>
<td>116</td>
</tr>
<tr>
<td>Application</td>
<td>126</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>140</td>
</tr>
</tbody>
</table>

**Direct access**

**Navigation**  
Expert → Direct access

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

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

**User entry**  
0 to 65,535
**Additional information**  
*User entry*

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.
- If no channel number is entered, channel 1 is jumped to automatically.

**Example:** Input of "914" instead of "0914"

**Example:** Enter **0914** → **Assign process variable** parameter

- If a different channel is jumped to: Enter the direct access code with the corresponding channel number.

**Example:** Enter **0914-3** → **Assign process variable** parameter

---

**Locking status**

**Navigation**  

- Expert → Locking status

**Description**

Displays the active write protection.

**User interface**

- Hardware locked
- Temporarily locked

**Additional information**

*Display*

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

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

*"Hardware locked" option (priority 1)*

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

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

*"Temporarily locked" option (priority 2)*

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

---

**Access status display**

**Navigation**

- Expert → Access stat.disp

**Prerequisite**

A local display is provided.

**Description**

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

- Operator
- Maintenance

Factory setting

Operator

Additional information

Description

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

Access authorization can be modified via the **Enter access code** parameter (→ 13).

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

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

Display

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

Access status tooling

Navigation

- Expert → Access stat.tool

Description

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

User interface

- Operator
- Maintenance

Factory setting

Maintenance

Additional information

Description

Access authorization can be modified via the **Enter access code** parameter (→ 13).

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

Display

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

**Navigation**

Expert → Ent. access code

**Description**

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

**User entry**

0 to 9999

### 3.1 "System" submenu

**Navigation**

Expert → System

```
[▶ System]
  ▶ Display               ➔ 13
  ▶ Diagnostic handling  ➔ 26
  ▶ Administration       ➔ 30
```

### 3.1.1 "Display" submenu

**Navigation**

Expert → System → Display

```
[▶ Display]
  Display language          ➔ 14
  Format display            ➔ 15
  Value 1 display           ➔ 17
  0% bargraph value 1       ➔ 17
  100% bargraph value 1     ➔ 18
  Decimal places 1          ➔ 18
  Value 2 display           ➔ 19
  Decimal places 2          ➔ 19
  Value 3 display           ➔ 20
```
### Display language

**Navigation**

[<<] Expert → System → Display → Display language

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- English
- Deutsch *
- Français *
- Español *
- Italiano *
- Nederlands *
- Portuguesa *
- Polski *
- русский язык (Russian) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *

* Visibility depends on order options or device settings
Factory setting

Format display

Navigation

Expert → System → Display → Format display

Prerequisite

A local display is provided.

Description

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

Selection

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

Factory setting

1 value, max. size

Additional information

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 (→ 21) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the Display interval parameter (→ 22).

* Visibility depends on order options or device settings
Possible measured values shown on the local display:

"1 value, max. size" option

```
+----------------------------------+
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>900.00</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>U</td>
<td>900.00</td>
<td>l/h</td>
</tr>
<tr>
<td>-------</td>
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</tr>
</tbody>
</table>
```

"1 bargraph + 1 value" option

```
+----------------------------------+
<p>| | | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>900.00</td>
<td>l/h</td>
</tr>
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<tr>
<td>U</td>
<td></td>
<td></td>
<td>60.00</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td>---</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
<td>%</td>
</tr>
</tbody>
</table>
+----------------------------------+
```

"2 values" option

```
+----------------------------------+
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>900.00</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>U</td>
<td>900.00</td>
<td>l/h</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>S</td>
<td>60.00</td>
<td>%</td>
</tr>
</tbody>
</table>
+----------------------------------+
```

"1 value large + 2 values" option

```
+----------------------------------+
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>900.00</td>
<td>l/h</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---</td>
</tr>
</tbody>
</table>
| U     |         |       | 60.00%
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td></td>
<td>5.98 kWh/Nm³</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>---</td>
</tr>
</tbody>
</table>
```

"4 values" option

```
+----------------------------------+
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>900.00</td>
<td>l/h</td>
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<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>---</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td></td>
<td>60.00%</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>S</td>
<td></td>
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<td>5.98 kWh/Nm³</td>
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<td>-------</td>
<td>-------</td>
<td>---</td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td>213.94 l</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>---</td>
</tr>
</tbody>
</table>
```
## Value 1 display

**Navigation**

Expert → System → Display → Value 1 display

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity
- Corrected conductivity
- None
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Temperature
- Electronic temperature

**Factory setting**

Volume flow

**Additional information**

*Description*

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

*Selection*

The unit of the displayed measured value is taken from the System units submenu (→ 38).

## 0% bargraph value 1

**Navigation**

Expert → System → Display → 0% bargraph 1

**Prerequisite**

A local display is provided.

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

Country-specific:

- 0 l/h
- 0 gal/min (us)

* Visibility depends on order options or device settings
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 (→ 38).

---

### 100% bargraph value 1

**Navigation**

[  ] Expert → System → Display → 100% bargraph 1

**Prerequisite**

A local display is provided.

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

Depends on country and nominal diameter → 158

**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 (→ 38).

---

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

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

**Selection**
- The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

---

**Decimal places 2**

**Navigation**
Expert → System → Display → Decimal places 2

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

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

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

**Factory setting**
x.xx

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

**Navigation**
Expert → System → Display → Value 3 display

**Prerequisite**
A local display is provided.

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

**Selection**
Picklist, see **Value 1 display** parameter (→ 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.

*Selection*
The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

**0% bargraph value 3**

**Navigation**
Expert → System → Display → 0% bargraph 3

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

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

**User entry**
Signed floating-point number

**Factory setting**
Country-specific:
- 0 l/h
- 0 gal/min (us)

**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 (→ 38).
### 100% bargraph value 3

**Navigation**

**Prerequisite**

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

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0

**Additional information**

**Description**

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

**User entry**

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

### Decimal places 3

**Navigation**

**Prerequisite**

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

**Description**

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

**Selection**

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

**Factory setting**

x.xx

**Additional information**

**Description**

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

### Value 4 display

**Navigation**

**Prerequisite**

A local display is provided.
Description

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

Selection

Picklist, see Value 1 display parameter (→ 17)

Factory setting

None

Additional information

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 (→ 38).

Decimal places 4

Navigation

Expert → System → Display → Decimal places 4

Prerequisite

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

Description

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

Selection

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

Factory setting

x.xx

Additional information

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

## Display damping

**Navigation**

Expert → System → Display → Display damping

**Prerequisite**

A local display is provided.

**Description**

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

**User entry**

0.0 to 999.9 s

**Factory setting**

0.0 s

**Additional information**

A time constant is entered:

- If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.
- On the other hand, the display reacts more slowly if a high time constant is entered.

## Header

**Navigation**

Expert → System → Display → Header

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- Device tag
- Free text

**Factory setting**

Device tag

**Additional information**

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

Proline Promag 100 PROFIBUS DP

---

**Header text**

1. **Position of the header text on the display**

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

2. **Navigation**

   📖 📖 Expert → System → Display → Header text

3. **Prerequisite**

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

4. **Description**

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

5. **User entry**

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

6. **Factory setting**

   1

7. **Additional information**

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

---

**Separator**

1. **Position of the header text on the display**

   1

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

**Prerequisite**

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

**Description**

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

**Selection**

- Disable
- Enable

**Factory setting**

Enable

---

**Access status display**

**Navigation**

- Expert → System → Display → Access stat.disp

**Prerequisite**

A local display is provided.

**Description**

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

**User interface**

- Operator
- Maintenance

**Factory setting**

Operator
### Additional information

**Description**

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

Access authorization can be modified via the **Enter access code** parameter (→ 13).

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

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

**Display**

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

### 3.1.2 "Diagnostic handling" submenu

**Navigation**

Expert → System → Diagn. handling

#### Alarm delay

**Navigation**

Expert → System → Diagn. handling → Alarm delay

**Description**

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

The diagnostic message is reset without a time delay.

**User entry**

0 to 60 s

**Factory setting**

0 s

**Additional information**

**Effect**

This setting affects the following diagnostic messages:

- 190 Special event 1
- 191 Special event 5
- 832 Electronic temperature too high
- 833 Electronic temperature too low
- 834 Process temperature too high
• 835 Process temperature too low
• 862 Partly filled pipe
• 990 Special event 4
• 991 Special event 8

"Diagnostic behavior" submenu

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

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

<table>
<thead>
<tr>
<th>Diagnostic behavior</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>The device stops measurement. The totalizers assume the defined alarm condition. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Warning</td>
<td>The device continues to measure. The measured value output via PROFIBUS and the totalizers are not affected. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Logbook entry only</td>
<td>The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→ 147) (Event list submenu (→ 148)) 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>Diagnostic behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign behavior of diagnostic no. 531 → 28</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 832 → 28</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 833 → 28</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 834 → 29</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 835 → 29</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 862 → 29</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 937 → 30</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 302 → 30</td>
</tr>
</tbody>
</table>
Assign behavior of diagnostic no. 531 (Empty pipe detection)

**Navigation**
> Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 531

**Description**
Use this function to change the diagnostic behavior of the diagnostic message **531 Empty pipe detection**.

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see ↪ 27

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

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

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

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see ↪ 27

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

**Navigation**
> Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833

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

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see ↪ 27
Assign behavior of diagnostic no. 834 (Process temperature too high)

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see \(\rightarrow\) 27

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see \(\rightarrow\) 27

Assign behavior of diagnostic no. 862 (Empty pipe)

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 862

**Description**

Use this function to change the diagnostic behavior of the diagnostic message 862 Empty pipe.

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see \(\rightarrow\) 27
Assign behavior of diagnostic no. 937 (EMC interference)

**Navigation**
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 937

**Description**
Use this function to change the diagnostic behavior of the diagnostic message **937 EMC interference**.

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

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see → 27

Assign behavior of diagnostic no. 302 (Device verification active)

**Navigation**
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 302

**Description**
Use this function to change the diagnostic behavior of the diagnostic message **302 Device verification active**.

**Selection**
- Alarm
- Warning

**Factory setting**
Warning

**Additional information**
For a detailed description of the options available, see → 27

3.1.3 "Administration" submenu

**Navigation**
Expert → System → Administration

- Define access code
- Device reset
- Activate SW option
- Software option overview

→ 31

→ 33

→ 33

→ 34
"Define access code" wizard

The Define access code wizard (→ 31) is only available when operating via the local display or Web browser.

If operating via the operating tool, the Define access code parameter (→ 32) can be found directly in the Administration submenu. There is no Confirm access code parameter if the device is operated via the operating tool.

Navigation  Expert → System → Administration → Def. access code

<table>
<thead>
<tr>
<th>Define access code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define access code (→ 31)</td>
</tr>
<tr>
<td>Confirm access code (→ 32)</td>
</tr>
</tbody>
</table>

Define access code

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

User entry
0 to 9 999

Factory setting
0

Additional information

Description
The write protection affects all parameters in the document marked with the symbol. On the local display, the symbol in front of a parameter indicates that the parameter is write-protected. The parameters that cannot be write-accessed are grayed out in the Web browser.

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the Enter access code parameter (→ 13).

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

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

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

**Navigation**
Expert → System → Administration → Def. access code → Confirm code

**Description**
Enter the defined release code a second time to confirm the release code.

**User entry**
0 to 9999

**Factory setting**
0

Additional parameters in the "Administration" submenu

Define 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 **Enter access code** parameter (→ 13).
- If you lose the access code, please contact your Endress+Hauser Sales Center.

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

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

**Navigation**

Expert → System → Administration → Device reset

**Description**

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

**Selection**

- Cancel
- To delivery settings
- Restart device

**Factory setting**

Cancel

**Additional information**

*’Cancel’ option*

No action is executed and the user exits the parameter.

*’To delivery settings’ option*

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

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

*’Restart device’ option*

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

---

**Activate SW option**

**Navigation**

Expert → System → Administration → Activate SW opt.

**Description**

Use this function to enter an activation code to enable an additional, ordered software option.

**User entry**

Max. 10-digit string consisting of numbers.

**Factory setting**

0

**Additional information**

*User entry*

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

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

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

Web browser

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

Software option overview

Navigation

Expert → System → Administration → SW option overv.

Description

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

User interface

- Electrode cleaning circuit
- Heartbeat Verification
- Heartbeat Monitoring

Additional information

Description

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

"Electrode cleaning circuit" option
Order code for "Application package", option EC "ECC electrode cleaning"

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

3.2 "Sensor" submenu

Navigation

Expert → Sensor
3.2.1 "Measured values" submenu

**Navigation**

.navigate

Expert → Sensor → Measured val.

**Measured values**

- Process variables
  - Volume flow
  - Mass flow
  - Conductivity
  - Corrected volume flow
  - Temperature
  - Corrected conductivity

**Volume flow**

**Navigation**

.navigate


**Description**

Displays the volume flow currently measured.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Volume flow unit** parameter (→ 39)
## Mass flow

**Navigation**

**Description**
Displays the mass flow currently calculated.

**User interface**
Signed floating-point number

**Additional information**
*Dependency*

> The unit is taken from the **Mass flow unit** parameter (→ 42)

## Conductivity

**Navigation**

**Prerequisite**
In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description**
Displays the conductivity currently measured.

**User interface**
Signed floating-point number

**Additional information**
*Dependency*

> The unit is taken from the **Conductivity unit** parameter (→ 41)

## Corrected volume 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 **Corrected volume flow unit** parameter (→ 44)

## Temperature

**Navigation**

**Prerequisite**
For the following order code:
'Sensor Option', option CI 'Fluid temperature probe"
**Corrected conductivity**

**Navigation**


**Prerequisite**

One of the following conditions is satisfied:
- Order code for "Sensor Option", option CI "Fluid temperature probe"
- The temperature is read into the flowmeter from an external device.

**Description**

Displays the conductivity currently corrected.

**User interface**

Positive floating-point number

**Additional information**

Dependency

The unit is taken from the **Conductivity unit** parameter (→ 41)

---

**"Totalizer" submenu**

**Navigation**

Expert → Sensor → Measured val. → Totalizer

- **Totalizer value 1 to 3** → 37
- **Totalizer status (Hex) 1 to 3** → 38
- **Totalizer status 1 to 3** → 38

---

**Totalizer value 1 to 3**

**Navigation**

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

**Prerequisite**

In the **Target mode** parameter (→ 133), the Auto option is selected.

**Description**

Displays the current reading for totalizer 1-3.
Description of device parameters

Proline Promag 100 PROFIBUS DP

User interface
Signed floating-point number

Additional information

Description
In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 130).

User interface
The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Totalizer operation mode parameter (→ 130).

Dependency
The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).

Totalizer status (Hex) 1 to 3

Navigation
Expert → Sensor → Measured val. → Totalizer → Status (Hex) 1 to 3

Prerequisite
In Target mode parameter (→ 133), the Auto option is selected.

Description
Displays the status value (hex) of the particular totalizer.

User interface
0 to 0xFF

Totalizer status 1 to 3

Navigation
Expert → Sensor → Measured val. → Totalizer → Tot. status 1 to 3

Description
Displays the status of the particular totalizer.

User interface
- Good
- Uncertain
- Bad

3.2.2 “System units” submenu

Navigation
Expert → Sensor → System units

<table>
<thead>
<tr>
<th>System units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow unit</td>
</tr>
<tr>
<td>Volume unit</td>
</tr>
</tbody>
</table>
Volume flow unit

Navigation  
Expert → Sensor → System units → Volume flow unit

Description  
Use this function to select the unit for the volume flow.
Description of device parameters

Selection

**SI units**
- \( \text{cm}^3/\text{s} \)
- \( \text{cm}^3/\text{min} \)
- \( \text{cm}^3/\text{h} \)
- \( \text{cm}^3/\text{d} \)
- \( \text{dm}^3/\text{s} \)
- \( \text{dm}^3/\text{min} \)
- \( \text{dm}^3/\text{h} \)
- \( \text{dm}^3/\text{d} \)
- \( \text{m}^3/\text{s} \)
- \( \text{m}^3/\text{min} \)
- \( \text{m}^3/\text{h} \)
- \( \text{m}^3/\text{d} \)
- \( \text{ml}/\text{s} \)
- \( \text{ml}/\text{min} \)
- \( \text{ml}/\text{h} \)
- \( \text{ml}/\text{d} \)
- \( \text{l}/\text{s} \)
- \( \text{l}/\text{min} \)
- \( \text{l}/\text{h} \)
- \( \text{l}/\text{d} \)
- \( \text{hl}/\text{s} \)
- \( \text{hl}/\text{min} \)
- \( \text{hl}/\text{h} \)
- \( \text{hl}/\text{d} \)
- \( \text{Ml}/\text{s} \)
- \( \text{Ml}/\text{min} \)
- \( \text{Ml}/\text{h} \)
- \( \text{Ml}/\text{d} \)

**US units**
- \( \text{af} /\text{s} \)
- \( \text{af}/\text{min} \)
- \( \text{af}/\text{h} \)
- \( \text{af}/\text{d} \)
- \( \text{ft}^3/\text{s} \)
- \( \text{ft}^3/\text{min} \)
- \( \text{ft}^3/\text{h} \)
- \( \text{ft}^3/\text{d} \)
- \( \text{fl oz}/\text{s} \) (us)
- \( \text{fl oz}/\text{min} \) (us)
- \( \text{fl oz}/\text{h} \) (us)
- \( \text{fl oz}/\text{d} \) (us)
- \( \text{gal}/\text{s} \) (us)
- \( \text{gal}/\text{min} \) (us)
- \( \text{gal}/\text{h} \) (us)
- \( \text{gal}/\text{d} \) (us)
- \( \text{kgal}/\text{s} \) (us)
- \( \text{kgal}/\text{min} \) (us)
- \( \text{kgal}/\text{h} \) (us)
- \( \text{kgal}/\text{d} \) (us)
- \( \text{bbl}/\text{s} \) (us; liq.)
- \( \text{bbl}/\text{min} \) (us; liq.)
- \( \text{bbl}/\text{h} \) (us; liq.)
- \( \text{bbl}/\text{d} \) (us; liq.)
- \( \text{bbl}/\text{s} \) (us; beer)
- \( \text{bbl}/\text{min} \) (us; beer)
- \( \text{bbl}/\text{h} \) (us; beer)
- \( \text{bbl}/\text{d} \) (us; beer)
- \( \text{bbl}/\text{s} \) (us; oil)
- \( \text{bbl}/\text{min} \) (us; oil)
- \( \text{bbl}/\text{h} \) (us; oil)
- \( \text{bbl}/\text{d} \) (us; oil)
- \( \text{bbl}/\text{s} \) (us; tank)
- \( \text{bbl}/\text{min} \) (us; tank)
- \( \text{bbl}/\text{h} \) (us; tank)
- \( \text{bbl}/\text{d} \) (us; tank)

**Imperial units**
- \( \text{gal}/\text{s} \) (imp)
- \( \text{gal}/\text{min} \) (imp)
- \( \text{gal}/\text{h} \) (imp)
- \( \text{gal}/\text{d} \) (imp)
- \( \text{Mgal}/\text{s} \) (imp)
- \( \text{Mgal}/\text{min} \) (imp)
- \( \text{Mgal}/\text{h} \) (imp)
- \( \text{Mgal}/\text{d} \) (imp)
- \( \text{bbl}/\text{s} \) (imp; beer)
- \( \text{bbl}/\text{min} \) (imp; beer)
- \( \text{bbl}/\text{h} \) (imp; beer)
- \( \text{bbl}/\text{d} \) (imp; beer)
- \( \text{bbl}/\text{s} \) (imp; oil)
- \( \text{bbl}/\text{min} \) (imp; oil)
- \( \text{bbl}/\text{h} \) (imp; oil)
- \( \text{bbl}/\text{d} \) (imp; oil)

**Factory setting**

Country-specific:
- \( \text{l}/\text{h} \)
- \( \text{gal}/\text{min} \) (us)

**Additional information**

*Result*

The selected unit applies for:

**Volume flow parameter** (→ 35)

**Selection**

For an explanation of the abbreviated units: → 162
**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)
- bbl (us;oil)
- bbl (us;beer)
- bbl (us;tank)

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

**Factory setting**
Country-specific:
- m³
- gal (us)

**Additional information**

*Selection*
For an explanation of the abbreviated units: → 162

**Conductivity unit**

**Navigation**
Expert → Sensor → System units → Conductiv. unit

**Prerequisite**
In the Conductivity measurement parameter (→ 49), the On option is selected.

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

**Selection**

**SI units**
- nS/cm
- µS/cm
- µS/m
- µS/mm
- mS/m
- mS/cm
- S/cm
- S/m
- kS/m
- MS/m

**Factory setting**
µS/cm
Additional information

Result

The selected unit applies for:
- **Conductivity** parameter (→ 36)
- **Corrected conductivity** parameter (→ 37)

Selection

For an explanation of the abbreviated units: → 162

Temperature unit

Navigation

Expert → Sensor → System units → Temperature unit

Description

Use this function to select the unit for the temperature.

Selection

**SI units**
- °C
- K

**US units**
- °F
- °R

Factory setting

Country-specific:
- °C
- °F

Additional information

Result

The selected unit applies for:
- **Temperature** parameter (→ 36)
- **Maximum value** parameter (→ 153)
- **Minimum value** parameter (→ 153)
- **External temperature** parameter (→ 59)
- **Maximum value** parameter (→ 154)
- **Minimum value** parameter (→ 154)

Selection

For an explanation of the abbreviated units: → 162

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>

Factory setting

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

Additional information

Result

The selected unit applies for:

**Mass flow** parameter (→ 36)

Selection

For an explanation of the abbreviated units: → 162

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>

Factory setting

Country-specific:
- kg
- lb

Additional information

Selection

For an explanation of the abbreviated units: → 162
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)

Factory setting

Country-specific:
- kg/l
- lb/ft³

Additional information

Result

The selected unit applies for:
- External density parameter (→ 59)
- Fixed density parameter (→ 59)

Selection

- SD = 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).
- SG = 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).

For an explanation of the abbreviated units: → 162

Corrected volume flow unit

Navigation

Expert → Sensor → System units → Cor.volflow unit

Description

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

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

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

**Factory setting**

Country-specific:
- Nl/h
- Sft³/h

**Additional information**

Result

The selected unit applies for:
**Corrected volume flow** parameter (→ 36)

Selection

For an explanation of the abbreviated units: → 162

**Corrected volume unit**

**Navigation**

Expert → Sensor → System units → Corr. vol. unit

**Description**

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

**Selection**

SI units
- Nl
- Nm³
- Sm³

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

Imperial units
- Sgal (imp)

**Factory setting**

Country-specific:
- Nm³
- Sft³

**Additional information**

Selection

For an explanation of the abbreviated units: → 162
Description of device parameters

Navigation

Expert → Sensor → System units → Date/time format

Description

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

Selection

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

Factory setting

dd.mm.yy hh:mm

Additional information

Selection

For an explanation of the abbreviated units: → 162

3.2.3 "Process parameters" submenu

Navigation


- Filter options → 47
- Flow damping → 48
- Flow override → 48
- Conductivity damping → 49
- Temperature damping → 49
- Conductivity measurement → 49
- Low flow cut off → 50
- Empty pipe detection → 53
- Electrode cleaning circuit → 56
Filter options

Navigation  
Expert → Sensor → Process param. → Filter options

Description  
Use this function to select a filter option.

Selection  
- Standard CIP off
- Standard CIP on
- Dynamic CIP off
- Dynamic CIP on
- Binomial filter

Factory setting  
Standard CIP off

Additional information  
Description
The user can choose from a range of filter combinations which can optimize the measurement result depending on the application. Each change in the filter setting affects the output signal of the measuring device. The response time of the output signal increases as the filter depth increases.

Selection
- **Standard**  
  - Strong flow damping with a short output signal response time.
  - Some time is needed before a stable output signal can be generated.
  - Not suitable for pulsating flow as the average flow can be different here.

- **Dynamic**  
  - Average flow damping with a delayed output signal response time.
  - The average flow is displayed correctly over a measuring interval determined over a long period.

- **Binomial**  
  - Weak flow damping with a short output signal response time.
  - The average flow is displayed correctly over a measuring interval determined over a long period.

- **CIP**  
  - This filter is also available for the Standard and Dynamic filter options.
  - If the CIP filter has detected a change in the medium (abrupt increase in the noise level, e.g. quickly changing medium conductivity values during CIP cleaning), flow damping is greatly increased and the raw value (before flow damping) is limited by the mean value (delimiter). This eliminates extremely high measured errors (up to several 100 m/s).
  - If the CIP filter is enabled, the response time of the entire measuring system increases and the output signal is delayed accordingly.

Examples

Possible applications for the filters

<table>
<thead>
<tr>
<th>Application</th>
<th>Standard</th>
<th>CIP</th>
<th>Dynamic</th>
<th>CIP</th>
<th>Binomial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulsating flow (flow is negative intermittently)</td>
<td>--</td>
<td>--</td>
<td>++</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td>Flow changes frequently (flow is dynamic)</td>
<td>-</td>
<td>--</td>
<td>++</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td>Clear signal, quick control loop (&lt; 1 s)</td>
<td>--</td>
<td>--</td>
<td>+(^\d)</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td>Poor signal, slow control loop (response time of a few seconds)</td>
<td>++</td>
<td>-</td>
<td>--</td>
<td>---</td>
<td>--</td>
</tr>
<tr>
<td>Permanently bad signal</td>
<td>++</td>
<td>--</td>
<td>--</td>
<td>---</td>
<td>--</td>
</tr>
</tbody>
</table>
### Flow damping

**Navigation**

Expert → Sensor → Process param. → Flow damping

**Description**

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

**User entry**

0 to 15

**Factory setting**

7

**Additional information**

*User entry*

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

- 0 is a weak damping and 15 a strong one.
- A damping of 0 is not recommended, as the measuring signal is then so noisy that it is almost impossible to carry out a measurement.
- The damping depends on the measuring period and the filter type selected.
- An increase or decrease in the damping depends on the application.

**Effect**

The damping affects the following variables of the device:

- Outputs
- Low flow cut off → 50
- Totalizers → 126

### Flow override

**Navigation**


**Description**

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

**Selection**

- Off
- On
**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

**Conductivity damping**

**Navigation**

Expert → Sensor → Process param. → Conduct. damping

**Prerequisite**

In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description**

Use this function to enter the time constant for conductivity damping.

**User entry**

0 to 999.9 s

**Factory setting**

0 s

**Temperature damping**

**Navigation**

Expert → Sensor → Process param. → Temp. damping

**Prerequisite**

For the following order code:
"Sensor Option", option CI 'Fluid temperature probe'

**Description**

Use this function to enter the time constant for temperature damping.

**User entry**

0 to 999.9 s

**Factory setting**

0 s

**Conductivity measurement**

**Navigation**


**Description**

Use this function to enable and disable conductivity measurement.
Description of device parameters

Proline Promag 100 PROFIBUS DP

Selection
- Off
- On

Factory setting
Off

Additional information
Description

For conductivity measurement to work, the medium must have a minimum conductivity of 5 µS/cm.

"Low flow cut off" submenu

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

Assign process variable

On value low flow cutoff

Off value low flow cutoff

Pressure shock suppression

Selection
- Off
- Volume flow
- Mass flow
- Corrected volume flow

Factory setting
Volume flow
On value low flow cutoff

**Navigation**

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

**Prerequisite**

One of the following options is selected in the *Assign process variable* parameter (→ 50):

- Volume flow
- Mass flow
- Corrected volume flow

**Description**

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 → 51.

**User entry**

Signed floating-point number

**Factory setting**

Depends on country and nominal diameter → 159

**Additional information**

*Dependency*

The unit depends on the process variable selected in the *Assign process variable* parameter (→ 50).

Off value low flow cutoff

**Navigation**

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

**Prerequisite**

One of the following options is selected in the *Assign process variable* parameter (→ 50):

- Volume flow
- Mass flow
- Corrected volume flow

**Description**

Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value → 51.

**User entry**

0 to 100.0 %

**Factory setting**

50 %
## Pressure shock suppression

### Navigation


### Prerequisite

One of the following options is selected in the Assign process variable parameter
(→ 50):
- Volume flow
- Mass flow
- Corrected volume 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

**Description**

**Pressure shock suppression is enabled**
- Prerequisite:
  - Flow rate < on-value of low flow cut off
- 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.
**Proline Promag 100 PROFIBUS DP**

**Description of device parameters**

\[ Q \] **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**

"**Empty pipe detection**" submenu

**Navigation**


<table>
<thead>
<tr>
<th>▶ Empty pipe detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty pipe detection</td>
</tr>
<tr>
<td>Switch point empty pipe detection</td>
</tr>
<tr>
<td>Response time empty pipe detection</td>
</tr>
<tr>
<td>Empty pipe adjust value</td>
</tr>
<tr>
<td>Full pipe adjust value</td>
</tr>
<tr>
<td>Measured value EPD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>▶ Empty pipe adjust</th>
</tr>
</thead>
</table>

---

Endress+Hauser
**Empty pipe detection**

**Navigation**

**Description**
Use this function to switch empty pipe detection on and off.

**Selection**
- Off
- On

**Factory setting**
Off

**Switch point empty pipe detection**

**Navigation**
Expert → Sensor → Process param. → Empty pipe det. → Switch point EPD

**Prerequisite**
The **On** option is selected in the **Empty pipe detection** parameter (→ 54).

**Description**
Use this function to enter the percentage threshold value of the resistance in relation to the adjustment values.

**User entry**
0 to 100 %

**Factory setting**
10 %

**Response time empty pipe detection**

**Navigation**

**Prerequisite**
In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.

**Description**
Enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message \(\Delta S862\) **Empty pipe** to be triggered if the measuring pipe is empty or partially full.

**User entry**
0 to 100 s

**Factory setting**
1 s

**New adjustment**

**Navigation**

**Prerequisite**
The **On** option is selected in the **Empty pipe detection** parameter (→ 54).

**Description**
For selecting whether to perform an empty pipe or full pipe adjustment.
Selection
- Cancel
- Empty pipe adjust
- Full pipe adjust

Factory setting
Cancel

Progress

Navigation

Prerequisite
The On option is selected in the Empty pipe detection parameter (→ 54).

Description
Use this function to view the progress.

User interface
- Ok
- Busy
- Not ok

Empty pipe adjust value

Navigation
Expert → Sensor → Process param. → Empty pipe det. → Empty pipe value

Prerequisite
- In the Empty pipe detection parameter (→ 54), the On option is selected.
- Adjustment value > full pipe value.

Description
Displays the adjustment value when the measuring pipe is empty.

User interface
Positive floating-point number

Full pipe adjust value

Navigation
Expert → Sensor → Process param. → Empty pipe det. → Full pipe value

Prerequisite
- In the Empty pipe detection parameter (→ 54), the On option is selected.
- Adjustment value < empty pipe value.

Description
Displays the adjustment value when the measuring pipe is full.

User interface
Positive floating-point number
Measured value EPD

**Navigation**


**Prerequisite**

In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.

**Description**

Displays the current measured value.

**User interface**

Positive floating-point number

"Electrode cleaning circuit" submenu

**Navigation**

Expert → Sensor → Process param. → ECC

- **Electrode cleaning circuit** → 56
- **ECC duration** → 57
- **ECC recovery time** → 57
- **ECC cleaning cycle** → 57
- **ECC Polarity** → 58

Electrode cleaning circuit

**Navigation**

Expert → Sensor → Process param. → ECC

**Prerequisite**

For the following order code: 'Application package', option EC "ECC electrode cleaning"

**Description**

Use this function to enable and disable cyclic electrode cleaning.

**Selection**

- **Off**
- **On**

**Factory setting**

Off
### ECC duration

**Navigation**

Expert → Sensor → Process param. → ECC → ECC duration

**Prerequisite**

For the following order code:
"Application package", option EC "ECC electrode cleaning"

**Description**

Use this function to enter the duration of electrode cleaning in seconds.

**User entry**

0.01 to 30 s

**Factory setting**

2 s

### ECC recovery time

**Navigation**

Expert → Sensor → Process param. → ECC → ECC recov. time

**Prerequisite**

For the following order code:
"Application package", option EC "ECC electrode cleaning"

**Description**

Use this function to enter the recovery time after electrode cleaning to prevent signal output interference. The current output values are frozen in the meanwhile.

**User entry**

Positive floating-point number

**Factory setting**

60 s

### ECC cleaning cycle

**Navigation**

Expert → Sensor → Process param. → ECC → ECC clean. cycle

**Prerequisite**

For the following order code:
"Application package", option EC "ECC electrode cleaning"

**Description**

Use this function to enter the pause duration until the next electrode cleaning.

**User entry**

0.5 to 168 h

**Factory setting**

0.5 h
Description of device parameters

Proline Promag 100 PROFIBUS DP

ECC Polarity

Navigation

Expert → Sensor → Process param. → ECC → ECC Polarity

Prerequisite

For the following order code:
*Application package*, option EC "ECC electrode cleaning"

Description

Displays the polarity of the electrode cleaning circuit.

User interface

- Positive
- Negative

Factory setting

Depends on the electrode material:
- Platinum: **Negative** option
- Tantalum, Alloy C22, stainless steel: **Positive** option

3.2.4 "External compensation" submenu

Navigation


Temperature source

Navigation

Expert → Sensor → External comp. → Temp. source

Description

Use this function to select the temperature source.

Selection

- Internal temperature sensor
- External value

Factory setting

External value
External temperature

**Navigation**


**Prerequisite**

The **External value** option is selected in the **Temperature source** parameter (→ 58).

**Description**

Displays the temperature read in by the external device.

**User interface**

Floating point number with sign

**Additional information**

*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

Density source

**Navigation**

Expert → Sensor → External comp. → Density source

**Description**

Use this function to select the density source.

**Selection**

- Fixed density
- External density

**Factory setting**

Fixed density

External density

**Navigation**

Expert → Sensor → External comp. → External density

**Prerequisite**

In the **Density source** parameter (→ 59), the **External density** option is selected.

**Description**

Displays the density read in from the external device.

**User interface**

Positive floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Density unit** parameter (→ 44)

Fixed density

**Navigation**

Expert → Sensor → External comp. → Fixed density

**Description**

Use this function to enter a fixed value for the density.
User entry: Positive floating-point number

Factory setting: Country-specific:
- 1 000 kg/l
- 1 000 lb/ft³

Additional information

**Dependency**

The unit is taken from the **Density unit** parameter (→ 44)

### Reference density

**Navigation**

Expert → Sensor → External comp. → Ref.density

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

Country-specific:
- 1 kg/l
- 1 lb/ft³

**Additional information**

**Dependency**

The unit is taken from the **Density unit** parameter (→ 44)

### 3.2.5 "Sensor adjustment“ submenu

**Navigation**

Expert → Sensor → Sensor adjutsm.

<table>
<thead>
<tr>
<th>Sensor adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation direction</td>
</tr>
<tr>
<td>Integration time</td>
</tr>
<tr>
<td>Measuring period</td>
</tr>
</tbody>
</table>

| Process variable adjustment | → 61 |
Installation direction

**Navigation**  

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

**Selection**  
- Flow in arrow direction
- Flow against arrow direction

**Factory setting**  
Flow in arrow direction

**Additional information**  
*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.

Integration time

**Navigation**  
Expert → Sensor → Sensor adjustm. → Integration time

**Description**  
Display the duration of an integration cycle.

**User interface**  
1 to 65 ms

Measuring period

**Navigation**  
Expert → Sensor → Sensor adjustm. → Measuring period

**Description**  
Display the time of a full measuring period.

**User interface**  
50 to 1000 ms

"Process variable adjustment" submenu

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

<table>
<thead>
<tr>
<th>Process variable adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow offset</td>
</tr>
<tr>
<td>Volume flow factor</td>
</tr>
<tr>
<td>Mass flow offset</td>
</tr>
</tbody>
</table>
### Volume flow offset

**Navigation**


**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0 m³/s

**Additional information**

*Description*

Corrected value = (factor × value) + offset

### Volume flow factor

**Navigation**


**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

*Description*

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

### Conductivity offset

**Navigation**
- Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. offset

**Prerequisite**
In the Conductivity measurement parameter (→ 49), the On option is selected.

**Description**
Use this function to enter the zero point shift for the conductivity trim. The conductivity unit on which the shift is based is S/m

**User entry**
Signed floating-point number

**Factory setting**
0 S/m

**Additional information**
**Description**
Corrected value = (factor × value) + offset
Description of device parameters

**Conductivity factor**

**Navigation**

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

**Prerequisite**

In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

*Description*

Corrected value = (factor × value) + offset

**Corrected volume flow offset**

**Navigation**


**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0 Nm³/s

**Additional information**

*Description*

Corrected value = (factor × value) + offset

**Corrected volume flow factor**

**Navigation**


**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

*Description*

Corrected value = (factor × value) + offset
Temperature offset

**Navigation**

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

**Prerequisite**

For the following order code:
'Sensor Option', option CI 'Fluid temperature probe'

**Description**

Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is 1 K.

**User entry**

Signed floating-point number

**Factory setting**

0 K

**Additional information**

**Description**

Corrected value = (factor × value) + offset

Temperature factor

**Navigation**

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

**Prerequisite**

For the following order code:
'Sensor Option', option CI 'Fluid temperature probe'

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

**Description**

Corrected value = (factor × value) + offset

3.2.6 "Calibration" submenu

**Navigation**

Expert → Sensor → Calibration

<table>
<thead>
<tr>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal diameter</td>
</tr>
<tr>
<td>Calibration factor</td>
</tr>
</tbody>
</table>
Description of device parameters

### 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.

### Calibration factor

**Navigation**

Expert → Sensor → Calibration → Cal. factor

**Description**
Displays the current calibration factor for the sensor.

**User interface**
Positive floating-point number

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

### Zero point

**Navigation**

Expert → Sensor → Calibration → Zero point

**Description**
This function shows the zero point correction value for the sensor.

**User interface**
Signed floating-point number

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

**Navigation**

Expert → Sensor → Calibration → Cond. cal. fact.

**Prerequisite**

In the Conductivity measurement parameter (→ 49), the On option is selected.

**Description**

Displays the calibration factor for the conductivity measurement.

**User interface**

0 to 10000

---

### 3.3 "Communication" submenu

**Navigation**

Expert → Communication

---

#### 3.3.1 "PROFIBUS DP configuration" submenu

**Navigation**

Expert → Communication → PROFIBUS DP conf

---

**Address mode**

**Navigation**

Expert → Communication → PROFIBUS DP conf → Address mode

**Description**

Displays the configured address mode.
User interface
- Hardware
- Software

Factory setting
Software

Additional information

For detailed information, see the "Setting the device address" section of the Operating Instructions.

Device address

Navigation
Expert → Communication → PROFIBUS DP conf → Device address

Description
Use this function to enter the device address.

User entry
0 to 126

Factory setting
126

Additional information

The address must always be configured for a PROFIBUS device. The valid address range is between 1 and 126. In a PROFIBUS network, each address can only be assigned once. If an address is not configured correctly, the device is not recognized by the master. All measuring devices are delivered from the factory with the device address 126 and with the software addressing method.

Displays the configured address mode: Address mode parameter (→ 67)

Ident number selector

Navigation
Expert → Communication → PROFIBUS DP conf → Ident num select

Description
Use this function to select the device master file (GSD).

Selection
- Automatic mode
- Manufacturer
- Profile
- 2 AI, 1 Totalizer (0x9741)
- 3 AI, 1 Totalizer (0x9742)

Factory setting
Automatic mode

Additional information

In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file.
(GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.

### 3.3.2 "PROFIBUS DP info" submenu

**Navigation**

- Expert → Communication → PROFIBUS DP info

#### Status PROFIBUS Master Config

**Description**
For displaying the status of the PROFIBUS Master configuration.

**User interface**
- Active
- Not active

**Factory setting**
Not active

#### PROFIBUS ident number

**Navigation**

- Expert → Communication → PROFIBUS DP info → Ident number

**Description**
For displaying the PROFIBUS identification number.

**User interface**
0 to FFFF

**Factory setting**
0x1560
Profile version

Navigation

Expert → Communication → PROFIBUS DP info → Profile version

Description
Displays the profile version.

User interface
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Factory setting
3.02

Base current

Navigation

Expert → Communication → PROFIBUS DP info → Base current

Description
Displays the basic current: Every PA measuring device taps a constant basic current from the MBP cable. This base current must be at least 10 mA. The base current enables power to be supplied to the measuring device.

User interface
16 mA

Baudrate

Navigation

Expert → Communication → PROFIBUS DP info → Baudrate

Description
Displays the transmission rate.

User interface
- Not available
- 9.6 kBaud
- 19.2 kBaud
- 31.25 kBaud
- 45.45 kBaud
- 93.75 kBaud
- 187.5 kBaud
- 500 kBaud
- 1.5 MBaud
- 3 MBaud
- 6 MBaud
- 12 MBaud

Factory setting
9.6 kBaud

Master availability

Navigation

Expert → Communication → PROFIBUS DP info → Master avail.

Description
Displays whether or not a PROFIBUS master is present in the network.
User interface
- No
- Yes

Factory setting
No

3.3.3 "Physical block" submenu

Navigation
Expert → Communication → Physical block

![Physical block table]

- Device tag → 72
- Static revision → 72
- Strategy → 73
- Alert key → 73
- Target mode → 73
- Mode block actual → 73
- Mode block permitted → 74
- Mode block normal → 74
- Alarm summary → 74
- Software revision → 75
- Hardware revision → 75
- Manufacturer ID → 75
- Device ID → 76
- Serial number → 76
- Diagnostics → 76
- Diagnostics mask → 77
- Device certification → 77
- Factory reset → 78
### Device tag

**Navigation**  
Expert → Communication → Physical block → Device tag

**Description**  
Use this function to enter the name for the measuring point.

**User entry**  
Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).

**Factory setting**  
Promag 100 DP

---

### Static revision

**Navigation**  
Expert → Communication → Physical block → Static revision

**Description**  
Displays the event counter: every write access to a static block parameter is counted.

**User interface**  
0 to FFFF

**Additional information**  
*Description*

Static parameters are parameters that are not changed by the process.
### Strategy

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Communication → Physical block → Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to FFFF</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Alert key

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Communication → Physical block → Alert key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 0xFF</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Target mode

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Communication → Physical block → Target mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.</td>
</tr>
</tbody>
</table>
| User interface | • Auto  
• Out of service |

### Mode block actual

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Communication → Physical block → Mode block act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 73).</td>
</tr>
</tbody>
</table>
| User interface | • Auto  
• Out of service |
### Additional information

Description

A comparison of the current mode with the target mode (Target mode parameter (→ 73)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation**

Expert → Communication → Physical block → Mode block perm

**Description**

Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 73) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface**

0 to 255

### Mode block normal

**Navigation**

Expert → Communication → Physical block → Mode blk norm

**Description**

Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

**User interface**

- Auto
- Out of service

### Alarm summary

**Navigation**

Expert → Communication → Physical block → Alarm summary

**Description**

Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

**User interface**

- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event
Additional information

Description

Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Physical Block function block.

User interface

- Discrete alarm
  Alarm or warning message with a discrete value.
- Alarm state HiHi limit
  Upper alarm limit
- Alarm state Hi limit
  Upper warning limit
- Alarm state LoLo limit
  Lower alarm limit
- Alarm state Lo limit
  Lower warning limit
- Update Event
  This option constitutes a special alarm that is triggered if a static parameter is changed. If such a parameter is modified, the associated bit is set in the Alarm summary parameter (→ 74), the output of the block switches to 'GOOD (NC) Active Update Event' (if the current status has a lower priority than this), and the block remains in this state for a duration of 10 s. The block then reverts to the normal state (the output has the last status and the Update Event option bit in the Alarm summary parameter (→ 74) is deleted again).

Software revision

Navigation

Expert → Communication → Physical block → Software rev.

Description

Displays the firmware version of the measuring device.

User interface

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

Hardware revision

Navigation

Expert → Communication → Physical block → Hardware rev.

Description

Displays the hardware revision of the measuring device.

User interface

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

Manufacturer ID

Navigation

Expert → Communication → Physical block → Manufacturer ID

Description

Displays the manufacturer ID with which the measuring device has been registered with the PNO (PROFIBUS User Organization).
### Device ID

**Navigation**  
Expert → Communication → Physical block → Device ID

**Description**  
Displays the device ID for identifying the measuring device in a PROFIBUS network.

**User interface**  
Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /).

**Factory setting**  
Promag 100 DP

### Serial number

**Navigation**  
Expert → Communication → Physical block → Serial number

**Description**  
Displays the serial number of the measuring device. It can also be found on the nameplate of the sensor and transmitter.

**User interface**  
Max. 11-digit character string comprising letters and numbers.

**Additional information**  

*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

### Diagnostics

**Navigation**  
Expert → Communication → Physical block → Diagnostics

**Description**  
Displays the diagnostic messages.

**User interface**  
- Hardware failure electronics
- Hardware failure mechanics
- Temperature motor
- Electronic temperature
- Memory checksum error
- Measurement error
- Device not initialized
- Initialization error
- Zero point error
- Power supply
- Configuration invalid
- On warmstart
Diagnostics mask

Navigation  
Expert → Communication → Physical block → Diagnostics mask

Description  
Displays the diagnostic messages supported by the measuring device.

User interface  
- Hardware failure electronics
- Hardware failure mechanics
- Temperature motor
- Electronic temperature
- Memory checksum error
- Measurement error
- Device not initialized
- Initialization error
- Zero point error
- Power supply
- Configuration invalid
- On warmstart
- On coldstart
- Maintenance required
- Characterization invalid
- Ident number violation
- More information available
- Maintenance alarm
- Maintenance demanded
- Function check or simulation
- Invalid process condition

Device certification

Navigation  
Expert → Communication → Physical block → Dev certificate

Description  
Displays certificates of the measuring device, e.g. Ex certificate.

User interface  
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).
Factory reset

**Navigation**
Expert → Communication → Physical block → Factory reset

**Description**
Use this function to reset a certain set of parameters in a block.

**Selection**
- to defaults
- warmstart device
- reset bus address
- Cancel

**Factory setting**
Cancel

Descriptor

**Navigation**
Expert → Communication → Physical block → Descriptor

**Description**
Use this function to enter a user-specific string to describe the device within the application.

**User entry**
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Device message

**Navigation**
Expert → Communication → Physical block → Device message

**Description**
Use this function to enter a user-definable message (a string) to describe the device within the application or in the plant.

**User entry**
Max. 32 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).

Device install date

**Navigation**
Expert → Communication → Physical block → Device inst.date

**Description**
Use this function to enter the date of installation of the device.

**User entry**
Max. 16 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).
### Ident number selector

**Navigation**

[Diagram: Expert → Communication → Physical block → Ident num select]

**Description**

Use this function to select the device master file (GSD).

**Selection**

- Automatic mode
- Manufacturer
- Profile
- 2 AI, 1 Totalizer (0x9741)
- 3 AI, 1 Totalizer (0x9742)

**Factory setting**

Automatic mode

**Additional information**

*Description*

In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file (GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.

### Hardware lock

**Navigation**

[Diagram: Expert → Communication → Physical block → Hardware lock]

**Description**

Displays the hardware write protection.

**User interface**

- Unprotected
- Protected

**Additional information**

*Description*

Indicates whether it is possible to write-access the measuring device via PROFIBUS (acyclic data transmission, e.g. via the “FieldCare” operating program).

For detailed information on hardware write protection, see the "Write protection via write protection switch" section of the Operating Instructions.

**User interface**

- Unprotected
  - Write access via PROFIBUS is possible (acyclic data transmission).
- Protected
  - Write access via PROFIBUS is locked (acyclic data transmission).

### Feature supported

**Navigation**

[Diagram: Expert → Communication → Physical block → Feature support]

**Description**

Displays the PROFIBUS features that are supported by the measuring device.
User interface

• Condensed status
• Classic status diagnosis
• Data exchange broadcast
• MS1 application relationship
• PROFIsafe communication

Feature enabled

Navigation

atoon Expert → Communication → Physical block → Feature enabled

Description
Displays the PROFIBUS features that are enabled in the measuring device.

User interface

• Condensed status
• Classic status diagnosis
• Data exchange broadcast
• MS1 application relationship
• PROFIsafe communication

Condensed status diagnostic

Navigation
aton Expert → Communication → Physical block → Condensed status

Description
Use this function to switch the condensed status diagnostic on and off.

Selection

• Off
• On

Factory setting
On

3.3.4 "Web server" submenu

Navigation
aton Expert → Communication → Web server

Web server

| Web server language | → 81 |
| MAC address         | → 81 |
| IP address          | → 82 |
| Subnet mask         | → 82 |
Web server language

Navigation  
Expert → Communication → Web server → Webserv.language

Description  
Use this function to select the web server language setting.

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

Factory setting  
English

MAC address

Navigation  
Expert → Communication → Web server → MAC Address

Description  
Displays the MAC address of the measuring device.

User interface  
Unique 12-digit character string comprising letters and numbers

Factory setting  
Each measuring device is given an individual address.

Additional information  
Example
For the display format
00:07:05:10:01:5F

* Visibility depends on order options or device settings
1) Media Access Control
Description of device parameters

**Proline Promag 100 PROFIBUS DP**

### 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**
192.168.1.212

### 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**
255.255.255.0

### 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

### Web server functionality

**Navigation**
- Expert → Communication → Web server → Webserver funct.

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

**Selection**
- Off
- On

**Factory setting**
On
Additional information

**Description**

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

**Selection**

- **Off**
  - The web server is completely disabled.
  - Port 80 is locked.
- **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.

### 3.4 "Analog inputs" submenu

**Navigation**

![Expert → Analog inputs](#)

```
Expert → Analog inputs → Analog input 1 to 4
```

### 3.4.1 "Analog input 1 to 4" submenu

**Navigation**

![Expert → Analog inputs → Analog input 1 to 4](#)

```
Expert → Analog inputs → Analog input 1 to 4
```

- **Channel**
  →  84
- **PV filter time**
  →  84
- **Fail safe type**
  →  84
- **Fail safe value**
  →  85
- **Out value**
  →  85
- **Out status**
  →  85
- **Out status**
  →  86
Description of device parameters

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<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| **Selection** | - Volume flow  
- Mass flow  
- Corrected volume flow  
- Flow velocity  
- Conductivity  
- Corrected conductivity*  
- Temperature  
- Electronic temperature |
| **Factory setting** | Volume flow |

<table>
<thead>
<tr>
<th>PV filter time</th>
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<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
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<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>User entry</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fail safe type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| **Selection** | - Fail safe value  
- Fallback value  
- Off |
| **Factory setting** | Off |

* Visibility depends on order options or device settings
Additional information

Selection
If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the **Fail safe value** parameter (→ 85).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

Fail safe value

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Fail safe value

Prerequisite

In **Fail safe type** parameter (→ 84), the **Fail safe value** option is selected.

Description

Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 85)) in the event of an error.

User entry

Signed floating-point number

Factory setting

0

Out value

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Out value

Prerequisite

In **Target mode** parameter (→ 87), the **Auto** option is selected.

Description

Displays the analog value which is calculated when the function is executed.

User interface

Signed floating-point number

Out status

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Out status

Description

Displays the current output status (Good, Bad, Uncertain).

User interface

- Good
- Uncertain
- Bad
Out status

Navigation
- Expert → Analog inputs → Analog input 1 to 4 → Out status

Prerequisite
- In **Target mode** parameter (→ 87), the **Auto** option is selected.

Description
- Displays the current output status (hex value).

User interface
- 0 to 0xFF

Tag description

Navigation
- Expert → Analog inputs → Analog input 1 to 4 → Tag description

Description
- Use this function to enter a string to identify the block.

User entry
- Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation
- Expert → Analog inputs → Analog input 1 to 4 → Static revision

Description
- Displays the event counter: every write access to a static block parameter is counted.

User interface
- 0 to FFFF

Additional information
- **Description**
  - Static parameters are parameters that are not changed by the process.

Strategy

Navigation
- Expert → Analog inputs → Analog input 1 to 4 → Strategy

Description
- Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

User entry
- 0 to FFFF

Factory setting
- 0
Alert key

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → Alert key

**Description**

Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

**User entry**

0 to 0xFF

**Factory setting**

0

Target mode

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → Target mode

**Description**

Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

**User interface**

- Auto
- Man
- Out of service

Mode block actual

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → Mode block act

**Description**

Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 87).

**User interface**

- Auto
- Man
- Out of service

**Additional information**

A comparison of the current mode with the target mode (Target mode parameter (→ 87)) indicates whether it was possible to reach the target mode.
Mode block permitted

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Mode block perm

Description
Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 87) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface
0 to 255

Mode block normal

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Mode blk norm

Description
Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation

Expert → Analog inputs → Analog input 1 to 4 → Alarm summary

Description
Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

Additional information

Description
Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Analog Inputs function block.
### Batch ID

**Navigation**  
Expert → Analog inputs → Analog input 1 to 4 → Batch ID

**Description**  
Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry**  
Positive integer

### Batch operation

**Navigation**  
Expert → Analog inputs → Analog input 1 to 4 → Batch operation

**Description**  
Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry**  
0 to 65535

**Factory setting**  
0

### Batch phase

**Navigation**  
Expert → Analog inputs → Analog input 1 to 4 → Batch phase

**Description**  
Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry**  
0 to 65535

**Factory setting**  
0

### Batch Recipe Unit Procedure

**Navigation**  
Expert → Analog inputs → Analog input 1 to 4 → Batch Recipe

**Description**  
Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry**  
0 to 65535

**Factory setting**  
0
### Additional information

**Description**

The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

---

### PV scale lower range

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → PV scale lo range

**Description**

Use this function to enter the lower value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

**User entry**

Signed floating-point number

**Factory setting**

0

---

### PV scale upper range

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → PV scale up range

**Description**

Use this function to enter the upper value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

**User entry**

Signed floating-point number

**Factory setting**

100.0

---

### Out scale lower range

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → Out scale low

**Description**

Use this function to enter the lower value range for the output value in system units.

**User entry**

Signed floating-point number

**Factory setting**

0

---

### Out scale upper range

**Navigation**

Expert → Analog inputs → Analog input 1 to 4 → Out scale up

**Description**

Use this function to enter the upper value range for the output value in system units.
## User entry

- **Signed floating-point number**

## Factory setting

- **100.0**

## Lin type

### Navigation

- Expert → Analog inputs → Analog input 1 to 4 → Lin type

### Description

Use this function to switch off the linearization type for the input value.

### Selection

- Off

### Factory setting

- Off

## Out unit

### Navigation

- Expert → Analog inputs → Analog input 1 to 4 → Out unit

### Description

Use this function to enter a numerical code (hex) for the system unit.

### User entry

- 0 to 65535

### Factory setting

- 1997

## Out decimal point

### Navigation

- Expert → Analog inputs → Analog input 1 to 4 → Out dec_ point

### Description

Use this function to enter the maximum number of decimal places that are displayed for the output value.

### User entry

- 0 to 7

### Factory setting

- 0

## Alarm hysteresis

### Navigation

- Expert → Analog inputs → Analog input 1 to 4 → Alarm hysteresis

### Description

Use this function to enter the hysteresis value for the upper and lower warning or alarm limit values.

### User entry

- Signed floating-point number
**Hi Hi Lim**

**Navigation**
Expert → Analog inputs → Analog input 1 to 4 → Hi Hi Lim

**Description**
Use this function to enter the value for the upper alarm limit (Hi Hi alarm value parameter (→ 93)).

**User entry**
Signed floating-point number

**Factory setting**
Positive floating-point number

**Additional information**
- If the output value Out value (→ 85) exceeds this limit value, the Hi Hi alarm state parameter (→ 94) is output.

**Hi Lim**

**Navigation**
Expert → Analog inputs → Analog input 1 to 4 → Hi Lim

**Description**
Use this function to enter the value for the upper warning limit (Hi alarm value parameter (→ 94)).

**User entry**
Signed floating-point number

**Factory setting**
Positive floating-point number

**Additional information**
- If the output value Out value (→ 85) exceeds this limit value, the Hi alarm state parameter (→ 94) is output.

- The value is entered in the defined units (Out unit parameter (→ 91)) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).
**Lo Lim**

**Navigation**
Expert → Analog inputs → Analog input 1 to 4 → Lo Lim

**Description**
Use this function to enter the value for the lower warning limit (Lo alarm value parameter (→ 94)).

**User entry**
Signed floating-point number

**Factory setting**
Negative floating-point number

**Additional information**

**Description**
If the output value Out value (→ 85) exceeds this limit value, the Lo alarm state parameter (→ 95) is output.

**User entry**
The value is entered in the defined units (Out unit parameter (→ 91)) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).

**Lo Lo Lim**

**Navigation**
Expert → Analog inputs → Analog input 1 to 4 → Lo Lo Lim

**Description**
Use this function to enter the value for the lower alarm limit (Lo Lo alarm value parameter (→ 95)).

**User entry**
Signed floating-point number

**Factory setting**
Negative floating-point number

**Additional information**

**Description**
If the output value Out value (→ 85) exceeds this limit value, the Lo Lo alarm state parameter (→ 95) is output.

**User entry**
The value is entered in the defined units (Out unit parameter (→ 91)) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).

**Hi Hi alarm value**

**Navigation**
Expert → Analog inputs → Analog input 1 to 4 → HiHi alarm value

**Description**
Displays the alarm value for the upper alarm limit value (Hi Hi Lim parameter (→ 92)).

**User interface**
Signed floating-point number
Hi Hi alarm state

**Navigation**

- Expert → Analog inputs → Analog input 1 to 4 → HiHi alarm state

**Description**

Displays the status for the upper alarm limit value (Hi Hi Lim parameter (→ 92)).

**User interface**

- No alarm
- Alarm state HiHi limit

**Additional information**

*User interface*

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

Hi alarm value

**Navigation**

- Expert → Analog inputs → Analog input 1 to 4 → Hi alarm value

**Description**

Displays the alarm value for the upper warning limit value (Hi Lim parameter (→ 92)).

**User interface**

Signed floating-point number

Hi alarm state

**Navigation**

- Expert → Analog inputs → Analog input 1 to 4 → Hi alarm state

**Description**

Displays the status for the upper warning limit value (Hi Lim parameter (→ 92)).

**User interface**

- No warning
- Alarm state Hi limit

**Additional information**

*User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

Lo alarm value

**Navigation**

- Expert → Analog inputs → Analog input 1 to 4 → Lo alarm value

**Description**

Displays the alarm value for the lower warning limit value (Lo Lim parameter (→ 93)).

**User interface**

Signed floating-point number
Lo alarm state

Navigation  
Expert → Analog inputs → Analog input 1 to 4 → Lo alarm state

Description  
Displays the status for the lower warning limit value (Lo Lim parameter (→ 93)).

User interface  
- No warning
- Alarm state Lo limit

Additional information  
User interface

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

Lo Lo alarm value

Navigation  
Expert → Analog inputs → Analog input 1 to 4 → Lo Lo alarm value

Description  
Displays the alarm value for the lower alarm limit value (Lo Lo Lim parameter (→ 93)).

User interface  
Signed floating-point number

Lo Lo alarm state

Navigation  
Expert → Analog inputs → Analog input 1 to 4 → Lo Lo alarm state

Description  
Displays the status for the lower alarm limit value (Lo Lo Lim parameter (→ 93)).

User interface  
- No alarm
- Alarm state LoLo limit

Additional information  
User interface

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

Simulate enabled

Navigation  
Expert → Analog inputs → Analog input 1 to 4 → Simulate enabled

Description  
Use this function to enable or disable block simulation.

Selection  
- Disable
- Enable

Factory setting  
Disable
**Description of device parameters**

**Additional information**

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

**Simulate value**

**Navigation**

[Expert → Analog inputs → Analog input 1 to 4 → Simulate value](#)

**Description**

Use this function to enter a simulation value for the block.

**User entry**

Signed floating-point number

**Factory setting**

0

**Additional information**

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

**Simulate status**

**Navigation**

[Expert → Analog inputs → Analog input 1 to 4 → Simulate status](#)

**Description**

Use this function to enter a simulation status for the block.

**User entry**

0 to 255

**Factory setting**

0

**Additional information**

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

**Out unit text**

**Navigation**

[Expert → Analog inputs → Analog input 1 to 4 → Out unit text](#)

**Description**

Use this function to enter the out unit text: if a specific out unit does not appear in the code list, the user can enter the specific text. The unit code is then equivalent to the definition provided here.

**User entry**

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

**Factory setting**

NoUnit
### 3.5 "Discrete inputs" submenu

**Navigation**

Expert → Discrete inputs

<table>
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<tbody>
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<td><strong>Navigation</strong></td>
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<tr>
<td>Expert → Discrete inputs → Discrete input 1 to 2</td>
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</table>

#### Channel

**Navigation**

Expert → Discrete inputs → Discrete input 1 to 2 → Channel

**Description**

Use this function to assign a measured variable to the particular function block.

**Selection**

- Empty pipe detection
- Low flow cut off
- Verification status *

**Factory setting**

Empty pipe detection

* Visibility depends on order options or device settings
Invert

Navigation  
Expert → Discrete inputs → Discrete input 1 to 2 → Invert

Description  
Use this function to invert the input signal.

Selection  
- Off
- On

Factory setting  
Off

Fail safe type

Navigation  
Expert → Discrete inputs → Discrete input 1 to 2 → Fail safe type

Description  
Use this function to select the failure mode.

Selection  
- Fail safe value
- Fallback value
- Off

Factory setting  
Off

Additional information  
Selection
If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the Fail safe value parameter (→ 98).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

Fail safe value

Navigation  
Expert → Discrete inputs → Discrete input 1 to 2 → Fail safe value

Prerequisite  
In Fail safe type parameter (→ 98), the Fail safe value option is selected.

Description  
Use this function to enter a failure value. The value entered is displayed as the output value (Out value parameter (→ 99)) in the event of an error.

User entry  
0 to 255

Factory setting  
0
### Out value

**Navigation**

Expert → Discrete inputs → Discrete input 1 to 2 → Out value

**Prerequisite**

In **Target mode** parameter (→ 100), the **Auto** option is selected.

**Description**

Displays the analog value which is calculated when the function is executed.

**User interface**

0 to 255

---

### Out status

**Navigation**

Expert → Discrete inputs → Discrete input 1 to 2 → Out status

**Description**

Displays the current output status (Good, Bad, Uncertain).

**User interface**

- Good
- Uncertain
- Bad

---

### Tag description

**Navigation**

Expert → Discrete inputs → Discrete input 1 to 2 → Tag description

**Description**

Use this function to enter a string to identify the block.

**User entry**

Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).
### Static revision

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Static revision

**Description**
Displays the event counter: every write access to a static block parameter is counted.

**User interface**
0 to FFFF

**Additional information**
*Description*
- Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Strategy

**Description**
Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry**
0 to FFFF

**Factory setting**
0

### Alert key

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Alert key

**Description**
Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

**User entry**
0 to 0xFF

**Factory setting**
0

### Target mode

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Target mode

**Description**
Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

**User interface**
- Auto
- Man
- Out of service
### Mode block actual

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Mode block act

**Description**
Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ Target mode parameter).

**User interface**
- Auto
- Man
- Out of service

**Additional information**
- Description
  A comparison of the current mode with the target mode (Target mode parameter) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Mode block perm

**Description**
Displays the Mode block permitted: This defines which modes of operation in the Target mode are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface**
- 0 to 255

### Mode block normal

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Mode blk norm

**Description**
Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

**User interface**
- Auto
- Man
- Out of service

### Alarm summary

**Navigation**
- Expert → Discrete inputs → Discrete input 1 to 2 → Alarm summary

**Description**
Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.
User interface
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

Additional information

Description
Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Discrete Inputs function block.

Batch ID

Navigation
- Expert → Discrete inputs → Discrete input 1 to 2 → Batch ID

Description
Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

User entry
Positive integer

Batch operation

Navigation
- Expert → Discrete inputs → Discrete input 1 to 2 → Batch operation

Description
Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

User entry
0 to 65535

Factory setting
0

Batch phase

Navigation
- Expert → Discrete inputs → Discrete input 1 to 2 → Batch phase

Description
Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

User entry
0 to 65535

Factory setting
0
### Batch Recipe Unit Procedure

<table>
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<tr>
<td>Description</td>
<td>Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
<tr>
<td>Additional information</td>
<td>Description</td>
</tr>
</tbody>
</table>

### Simulate enabled

<table>
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<th>Navigation</th>
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</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enable or disable block simulation.</td>
</tr>
</tbody>
</table>
| Selection | - Disable  
- Enable |
| Factory setting | Disable |
| Additional information | Description | The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation. |

### Simulate status

<table>
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<td>Use this function to enter a simulation status for the block.</td>
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<td>0</td>
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<td>Additional information</td>
<td>Description</td>
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</table>
Description of device parameters

Simulate value

**Navigation**

- Expert → Discrete inputs → Discrete input 1 to 2 → Simulate value

**Description**

Use this function to enter a simulation value for the block.

**User entry**

0 to 255

**Factory setting**

0

**Additional information**

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

### 3.6 "Analog outputs" submenu

**Navigation**

- Expert → Analog outputs

#### 3.6.1 "Analog output 1 to 2" submenu

**Navigation**

- Expert → Analog outputs → Analog output 1 to 2

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<td>Out status</td>
<td></td>
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<tr>
<td>Out status</td>
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---

**Endress+Hauser**
## Set point value

<table>
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<th>Navigation</th>
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<td>Use this function to enter an analog set point.</td>
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<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
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</table>

## Set point status

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a status for the analog set point.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 255</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
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</table>

## Fail safe time

<table>
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<th>Navigation</th>
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<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 999.0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Additional information

**User entry**

**NOTE!**

If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.).

- Check in advance to ensure that the safety-specific requirements of the process would permit this.
- If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.
Description of device parameters

**Fail safe type**

**Navigation**
Expert → Analog outputs → Analog output 1 to 2 → Fail safe type

**Description**
Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting**
Fallback value

**Additional information**
*Selection*
If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the Fail safe value parameter (⇒ 106).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

**Fail safe value**

**Navigation**
Expert → Analog outputs → Analog output 1 to 2 → Fail safe value

**Prerequisite**
In Fail safe type parameter (⇒ 106), the Fallback value option is selected.

**Description**
Use this function to enter a failure value. The value entered is displayed as the output value (Out value parameter (⇒ 106)) in the event of an error.

**User entry**
Signed floating-point number

**Factory setting**
0

**Out value**

**Navigation**
Expert → Analog outputs → Analog output 1 to 2 → Out value

**Prerequisite**
In Target mode parameter (⇒ 108), the Auto option is selected.

**Description**
Displays the analog value which is calculated when the function is executed.

**User interface**
Signed floating-point number
Out status

Navigation
Expert → Analog outputs → Analog output 1 to 2 → Out status

Description
Displays the current output status (Good, Bad, Uncertain).

User interface
- Good
- Uncertain
- Bad

Navigation
Expert → Analog outputs → Analog output 1 to 2 → Out status

Prerequisite
In Target mode parameter (→ 108), the Auto option is selected.

Description
Displays the current output status (hex value).

User interface
0 to 0xFF

Tag description

Navigation
Expert → Analog outputs → Analog output 1 to 2 → Tag description

Description
Use this function to enter a string to identify the block.

User entry
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation
Expert → Analog outputs → Analog output 1 to 2 → Static revision

Description
Displays the event counter: every write access to a static block parameter is counted.

User interface
0 to FFFF

Additional information
Description
Static parameters are parameters that are not changed by the process.
Description of device parameters

Proline Promag 100 PROFIBUS DP

### Strategy

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → Strategy

**Description**
Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry**
0 to FFFF

**Factory setting**
0

### Alert key

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → Alert key

**Description**
Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

**User entry**
0 to 0xFFFF

**Factory setting**
0

### Target mode

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → Target mode

**Description**
Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

**User interface**
- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

### Mode block actual

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → Mode block act

**Description**
Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 108).
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Description of device parameters

User interface

- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

Additional information

Description

A comparison of the current mode with the target mode (Target mode parameter (→ 108)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation

Expert → Analog outputs → Analog output 1 to 2 → Mode block perm

Description

Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 108) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface

0 to 255

Mode block normal

Navigation

Expert → Analog outputs → Analog output 1 to 2 → Mode blk norm

Description

Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface

- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

Alarm summary

Navigation

Expert → Analog outputs → Analog output 1 to 2 → Alarm summary

Description

Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface

- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event
Additional information

Description
Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Analog Outputs function block.

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<thead>
<tr>
<th>Batch ID</th>
</tr>
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<tbody>
<tr>
<td><strong>Navigation</strong></td>
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<tr>
<td><strong>Description</strong></td>
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<tr>
<td><strong>User entry</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Batch operation</th>
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</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
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<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>User entry</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Batch phase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>User entry</strong></td>
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<td><strong>Factory setting</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Batch Recipe Unit Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
### PV scale lower range

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → PV scale lo range

**Description**
Use this function to enter the lower value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

**User entry**
Signed floating-point number

**Factory setting**
0

### PV scale upper range

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → PV scale up range

**Description**
Use this function to enter the upper value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

**User entry**
Signed floating-point number

**Factory setting**
100.0

### Readback value

**Navigation**
- Expert → Analog outputs → Analog output 1 to 2 → Readback value

**Description**
Displays the readback value. The readback value indicates the current position of the control element within the travel range (between the open and close position) in PV scale units.

**User interface**
Signed floating-point number

---

**Additional information**

*Description*
The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.
## Description of device parameters

### Readback status

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Analog outputs → Analog output 1 to 2 → Readback status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the readback status. The readback status contains the status information of the slave.</td>
</tr>
<tr>
<td>User interface</td>
<td>0 to 255</td>
</tr>
</tbody>
</table>

### RCAS in value

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Analog outputs → Analog output 1 to 2 → RCAS in value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade RCAS in value parameter (→ 112). The normal algorithm calculates the output value of the block on the basis of this set point.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### RCAS in status

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Analog outputs → Analog output 1 to 2 → RCAS in status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 112).</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 255</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Input channel

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Analog outputs → Analog output 1 to 2 → Input channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.</td>
</tr>
<tr>
<td>Selection</td>
<td>None</td>
</tr>
<tr>
<td>Factory setting</td>
<td>None</td>
</tr>
</tbody>
</table>
### Output channel

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → Output channel

**Description**

Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

**Selection**

- External temperature
- External density

**Factory setting**

External temperature

---

### RCAS out value

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → RCAS out value

**Description**

Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.

**User interface**

Signed floating-point number

---

### RCAS out status

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → RCAS out status

**Description**

Displays the RCAS out status. Displays the status of the set point.

**User interface**

0 to 0xFF

---

### Position value

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → Pos value

**Description**

Displays the current value of the positioner.

**User interface**

0 to 255
### Position status

**Navigation**  
Expert → Analog outputs → Analog output 1 to 2 → Position status

**Description**  
Displays the current status of the positioner.

**User interface**  
0 to 255

### Setpoint deviation

**Navigation**  
Expert → Analog outputs → Analog output 1 to 2 → Setp. deviation

**Description**  
Displays the deviation between the set point (Set point value parameter (→ 105)) and the actual value (Readback value parameter (→ 111)).

**User interface**  
Signed floating-point number

### Simulate enabled

**Navigation**  
Expert → Analog outputs → Analog output 1 to 2 → Simulate enabled

**Description**  
Use this function to enable or disable block simulation.

**Selection**  
- Disable
- Enable

**Factory setting**  
Disable

**Additional information**  
Description  
The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

### Simulate value

**Navigation**  
Expert → Analog outputs → Analog output 1 to 2 → Simulate value

**Description**  
Use this function to enter a simulation value.

**User entry**  
Signed floating-point number

**Factory setting**  
0
### Additional information

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

#### Simulate status

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → Simulate status

**Description**

Use this function to enter a simulation status for the block.

**User entry**

0 to 255

**Factory setting**

0

*Additional information

*Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

#### Increase close

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → Increase close

**Description**

Use this function to enter the effective direction of the positioner in automatic mode.

**User entry**

0 to 255

**Factory setting**

0

#### Out scale upper range

**Navigation**

Expert → Analog outputs → Analog output 1 to 2 → Out scale up

**Description**

Use this function to enter the upper value range for the output value in system units.

**User entry**

Signed floating-point number

**Factory setting**

100.0
### Out scale lower range

**Navigation**

- Expert → Analog outputs → Analog output 1 to 2 → Out scale low

**Description**

Use this function to enter the lower value range for the output value in system units.

**User entry**

Signed floating-point number

**Factory setting**

0

---

### 3.7 "Discrete outputs" submenu

**Navigation**

- Expert → Discrete outputs

#### 3.7.1 "Discrete output 1 to 2" submenu

**Navigation**

- Expert → Discrete outputs → Discr. out. 1 to 2

---

### Navigation icons

- Expert
- Analog outputs
- Analog output 1 to 2
- Out scale low
- Discrete outputs
- Discrete output 1 to 2
- Set point value
- Set point status
- Invert
- Fail safe time
- Fail safe type
- Fail safe value
- Out value
- Out status
### Set point value

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Discrete outputs → Discr. out. 1 to 2 → Set point val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter an analog set point.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 255</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Set point status

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Discrete outputs → Discr. out. 1 to 2 → Set point status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a status for the analog set point.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 255</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Invert

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Discrete outputs → Discr. out. 1 to 2 → Invert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to switch inversion on and off. Specifies whether the set point should be inverted before the value is set as the output value or the RCAS value (in the automatic mode).</td>
</tr>
</tbody>
</table>
| Selection | • Off  
• On |
| Factory setting | Off |

### Fail safe time

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>
Additional information  

User entry

NOTE!
If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.).

- Check in advance to ensure that the safety-specific requirements of the process would permit this.
- If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.

### Fail safe type

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe type

**Description**  
Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting**
Fallback value

**Additional information**

Selection
If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the Fail safe value parameter (→ 118).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

### Fail safe value

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe value

**Prerequisite**
In Fail safe type parameter (→ 118), the Fail safe value option is selected.

**Description**
Use this function to enter a failure value. The value entered is displayed as the output value (Out value parameter (→ 119)) in the event of an error.

**User entry**  
0 to 255

**Factory setting**
0
### Out value

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Out value

**Prerequisite**
- In **Target mode** parameter (→ 120), the **Auto** option is selected.

**Description**
- Displays the analog value which is calculated when the function is executed.

**User interface**
- 0 to 255

### Out status

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Out status

**Description**
- Displays the current output status (Good, Bad, Uncertain).

**User interface**
- Good
- Uncertain
- Bad

### Tag description

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Tag description

**Description**
- Use this function to enter a string to identify the block.

**User entry**
- Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).
Description of device parameters

Proline Promag 100 PROFIBUS DP

Static revision

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Static revision

Description
Displays the event counter: every write access to a static block parameter is counted.

User interface
0 to FFFF

Additional information
Description
Static parameters are parameters that are not changed by the process.

Strategy

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Strategy

Description
Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

User entry
0 to FFFF

Factory setting
0

Alert key

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Alert key

Description
Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

User entry
0 to 0xFF

Factory setting
0

Target mode

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Target mode

Description
Displays the Target mode: The target mode specifies which mode of operation is used for this function block. This mode is generally set by a control application.
User interface

- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

Mode block actual

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Mode block act

Description
Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 120).

User interface

- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

Additional information

Description

A comparison of the current mode with the target mode (Target mode parameter (→ 120)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Mode block perm

Description
Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 120) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface

0 to 255

Mode block normal

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Mode blk norm

Description
Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
**Description of device parameters**

**Proline Promag 100 PROFIBUS DP**

### User interface
- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

### Alarm summary

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Alarm summary

**Description**
Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information**
"Description"
Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Discrete Outputs function block.

### Batch ID

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Batch ID

**Description**
Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry**
Positive integer

### Batch operation

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Batch operation

**Description**
Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry**
0 to 65535

**Factory setting**
0
## Batch phase

### Navigation
- Expert → Discrete outputs → Discr. out. 1 to 2 → Batch phase

### Description
Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

### User entry
0 to 65,535

### Factory setting
0

## Batch Recipe Unit Procedure

### Navigation
- Expert → Discrete outputs → Discr. out. 1 to 2 → Batch Recipe

### Description
Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

### User entry
0 to 65,535

### Factory setting
0

### Additional information
*Description*
The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

## Readback value

### Navigation
- Expert → Discrete outputs → Discr. out. 1 to 2 → Readback value

### Description
Displays the readback value. The readback value indicates the current position of the control element and the element's sensors.

### User interface
0 to 255

## Readback status

### Navigation
- Expert → Discrete outputs → Discr. out. 1 to 2 → Readback status

### Description
Displays the readback status. Displays the status of the readback value.

### User interface
0 to 255
### RCAS in value

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS in value

**Description**
Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade **RCAS in value** parameter (→ 124). The normal algorithm calculates the output value of the block on the basis of this set point.

**User entry**
0 to 255

**Factory setting**
0

### RCAS in status

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS in status

**Description**
Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 124).

**User entry**
0 to 255

**Factory setting**
0

### Input channel

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Input channel

**Description**
Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.

**Selection**
None

**Factory setting**
None

### Output channel

**Navigation**
- Expert → Discrete outputs → Discr. out. 1 to 2 → Output channel

**Description**
Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

**Selection**
- Flow override
- Start verification [*]

[*] Visibility depends on order options or device settings
**Factory setting**  
Flow override

**RCAS out value**

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS out value

**Description**  
Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.

**User interface**  
0 to 255

**RCAS out status**

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS out status

**Description**  
Displays the RCAS out status. Displays the status of the set point.

**User interface**  
0 to 255

**Simulate enabled**

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate enabled

**Description**  
Use this function to enable or disable block simulation.

**Selection**  
- Disable
- Enable

**Factory setting**  
Disable

**Additional information**  
*Description*  
The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

**Simulate value**

**Navigation**  
Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate value

**Description**  
Use this function to enter a simulation value.

**User entry**  
0 to 255
Description of device parameters

Proline Promag 100 PROFIBUS DP

Factory setting 0

Additional information

Description

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

Simulate status

Navigation

Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate status

Description

Use this function to enter a simulation status for the block.

User entry 0 to 255

Factory setting 0

Additional information

Description

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

3.8 "Application" submenu

Navigation

Expert → Application

3.8.1 "Totalizer 1 to 3" submenu

Navigation

Expert → Application → Totalizer 1 to 3

Assign process variable

Unit totalizer

Control Totalizer 1 to 3

Preset value 1 to 3

Totalizer operation mode
Assign process variable

Navigation

Expert → Application → Totalizer 1 to 3 → Assign variable

Description

Use this function to select a process variable for the Totalizer 1 to 3.

Selection

- Volume flow
- Mass flow
- Corrected volume flow

Factory setting

Volume flow

Additional information

Description

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

Unit totalizer

Navigation

Expert → Application → Totalizer 1 to 3 → Unit totalizer

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 127):
- Volume flow
- Mass flow
- Corrected volume flow

Description

Use this function to select the process variable of a totalizer.

The unit is selected separately for each totalizer. It is independent of the selection made in the System units submenu (→ 38).

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>

or
**Description of device parameters**

**Proline Promag 100 PROFIBUS DP**

### 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;liq.)
- bbl (us;beer)
- bbl (us;oil)
- bbl (us;tank)

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

or

### SI units
- Nl
- Nm³
- Sl
- Sm³

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

### Imperial units
- Sgal (imp)

---

**Factory setting**

Country-specific:
- m³
- ft³

---

**Additional information**

*Selection*

The selection is independent of the process variable selected in the Assign process variable parameter (→ 127).

*Dependency*

The following parameters depend on the option selected:
- **Alarm hysteresis** parameter (→ 136)
- **Hi Hi Lim** parameter (→ 136)
- **Hi Lim** parameter (→ 137)
- **Lo Lim** parameter (→ 137)
- **Lo Lo Lim** parameter (→ 138)
- **Totalizer value** parameter (→ 37)
- **Preset value** parameter (→ 129)

---

**Control Totalizer 1 to 3**

**Navigation**

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

**Prerequisite**

In the Assign process variable parameter (→ 127), one of the following options is selected:
- Volume flow
- Mass flow
- Corrected volume flow

**Description**

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

- Totalize
- Reset + hold
- Preset + hold

Factory setting

Totalize

Additional information

**Selection**

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

**Preset value 1 to 3**

Navigation

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

Prerequisite

One of the following options is selected in the **Assign process variable** parameter (→ 127):

- Volume flow
- Mass flow
- Corrected volume flow

Description

Use this function to enter an initial value for the specific totalizer.

User entry

Signed floating-point number

Factory setting

Country-specific:

- m³
- ft³

Additional information

**User entry**

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

**Example**

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

Navigation

Expert → Application → Totalizer 1 to 3 → Operation mode

Prerequisite

In the Assign process variable parameter (→ 127), one of the following options is selected:
- Volume flow
- Mass flow
- Corrected volume flow

Description

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

Selection

- Net flow total
- Forward flow total
- Reverse flow total
- Last valid value

Factory setting

Net flow total

Additional information

Selection

- Net flow total
  Positive and negative flow values are totalized and balanced against one another. Net flow is registered in the flow direction.
- Forward flow total
  Only the flow in the forward flow direction is totalized.
- Reverse flow total
  Only the flow against the forward flow direction is totalized (= reverse flow total).
- Last valid value
  The value is frozen. Totaling is stopped.

Failure mode

Navigation

Expert → Application → Totalizer 1 to 3 → Failure mode

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 127):
- Volume flow
- Mass flow
- Corrected volume flow

Description

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

Selection

- Stop
- Actual value
- Last valid value

Factory setting

Actual value
Additional information

Description

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

Selection

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

Totalizer value 1 to 3

Navigation

Expert → Application → Totalizer 1 to 3 → Totalizer val. 1 to 3

Prerequisite

In the Target mode parameter (→ 133), the Auto option is selected.

Description

Displays the current reading for totalizer 1-3.

User interface

Signed floating-point number

Additional information

Description

In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 130).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Totalizer operation mode parameter (→ 130).

Dependency

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).

Totalizer status 1 to 3

Navigation

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

Description

Displays the status of the particular totalizer.

User interface

- Good
- Uncertain
- Bad
Description of device parameters

**Totalizer status (Hex) 1 to 3**

**Navigation**

Expert → Application → Totalizer 1 to 3 → Status (Hex) 1 to 3

**Prerequisite**

In **Target mode** parameter (→ 133), the **Auto** option is selected.

**Description**

Displays the status value (hex) of the particular totalizer.

**User interface**

0 to 0xFF

---

**Tag description**

**Navigation**

Expert → Application → Totalizer 1 to 3 → Tag description

**Description**

Use this function to enter a string to identify the block.

**User entry**

Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

---

**Static revision**

**Navigation**

Expert → Application → Totalizer 1 to 3 → Static revision

**Description**

Displays the event counter: every write access to a static block parameter is counted.

**User interface**

0 to FFFF

**Additional information**

*Description*

Static parameters are parameters that are not changed by the process.

---

**Strategy**

**Navigation**

Expert → Application → Totalizer 1 to 3 → Strategy

**Description**

Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry**

0 to FFFF

**Factory setting**

0
**Alert key**

**Navigation**  
Expert → Application → Totalizer 1 to 3 → Alert key

**Description**  
Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

**User entry**  
0 to 0xFF

**Factory setting**  
0

**Target mode**

**Navigation**  
Expert → Application → Totalizer 1 to 3 → Target mode

**Description**  
Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

**User interface**
- Auto
- Man
- Out of service

**Mode block actual**

**Navigation**  
Expert → Application → Totalizer 1 to 3 → Mode block act

**Description**  
Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 133).

**User interface**
- Auto
- Man
- Out of service

**Additional information**  
*Description*  
A comparison of the current mode with the target mode (Target mode parameter (→ 133)) indicates whether it was possible to reach the target mode.
Description of device parameters

Proline Promag 100 PROFIBUS DP

Mode block permitted

Navigation
Expert → Application → Totalizer 1 to 3 → Mode block perm

Description
Displays the Mode block permitted: This defines which modes of operation in the Target mode ( → 133) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface
0 to 255

Mode block normal

Navigation
Expert → Application → Totalizer 1 to 3 → Mode blk norm

Description
Displays the Mode block normal: This is available to allow the operator to select the Mode block normal from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface
• Auto
• Man
• Out of service

Alarm summary

Navigation
Expert → Application → Totalizer 1 to 3 → Alarm summary

Description
Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface
• Discrete alarm
• Alarm state HiHi limit
• Alarm state Hi limit
• Alarm state LoLo limit
• Alarm state Lo limit
• Update Event

Additional information
Description
Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Totalizer function block.
### Batch ID

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Application → Totalizer 1 to 3 → Batch ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Batch operation

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Application → Totalizer 1 to 3 → Batch operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
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</tbody>
</table>

### Batch phase

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</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### Batch Recipe Unit Procedure

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<th>Navigation</th>
<th>Expert → Application → Totalizer 1 to 3 → Batch Recipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 65535</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>
Additional information  

Description

The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

---

Alarm hysteresis

**Navigation**

Expert → Application → Totalizer 1 to 3 → Alarm hysteresis

**Description**

Use this function to enter the hysteresis value for the upper and lower warning or alarm limit values.

**User entry**

Signed floating-point number

**Factory setting**

0 m³

**Additional information**

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).

---

Hi Hi Lim

**Navigation**

Expert → Application → Totalizer 1 to 3 → Hi Hi Lim

**Description**

Use this function to enter the value for the upper alarm limit of the totalizer (Hi Hi alarm value parameter (→ 138)).

**User entry**

Signed floating-point number

**Factory setting**

Positive floating-point number

**Additional information**

If the output value Out value (→ 85) exceeds this limit value, the Hi Hi alarm state parameter (→ 138) is output.

**User entry**

The value is entered in the defined units (Out unit parameter (→ 91)) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).
Hi Lim

**Navigation**

Expert → Application → Totalizer 1 to 3 → Hi Lim

**Description**

Use this function to enter the value for the upper warning limit of the totalizer (Hi alarm value parameter → 139).

**User entry**

Signed floating-point number

**Factory setting**

Positive floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the Hi alarm state parameter (→ 139) is output.

*User entry*

The value is entered in the defined units (Out unit parameter → 91) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).

Lo Lim

**Navigation**

Expert → Application → Totalizer 1 to 3 → Lo Lim

**Description**

Use this function to enter the value for the lower warning limit of the totalizer (Lo alarm value parameter → 139).

**User entry**

Signed floating-point number

**Factory setting**

Negative floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the Lo alarm state parameter (→ 139) is output.

*User entry*

The value is entered in the defined units (Out unit parameter → 91) and must be in the range defined in the Out scale lower range parameter (→ 90) and Out scale upper range parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 127).
**Lo Lo Lim**

**Navigation**
- Expert → Application → Totalizer 1 to 3 → Lo Lo Lim

**Description**
Use this function to enter the value for the lower alarm limit of the totalizer (Lo Lo alarm value parameter \(\rightarrow\) 140).

**User entry**
Signed floating-point number

**Factory setting**
Negative floating-point number

**Additional information**

**Description**
If the output value Out value (\(\rightarrow\) 85) exceeds this limit value, the Lo Lo alarm state parameter (\(\rightarrow\) 140) is output.

**User entry**
- The value is entered in the defined units (Out unit parameter (\(\rightarrow\) 91)) and must be in the range defined in the Out scale lower range parameter (\(\rightarrow\) 90) and Out scale upper range parameter (\(\rightarrow\) 90).
- The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (\(\rightarrow\) 127).

---

**Hi Hi alarm value**

**Navigation**
- Expert → Application → Totalizer 1 to 3 → HiHi alarm value

**Description**
Displays the alarm value for the upper alarm limit value (Hi Hi Lim parameter (\(\rightarrow\) 136)).

**User interface**
Signed floating-point number

---

**Hi Hi alarm state**

**Navigation**
- Expert → Application → Totalizer 1 to 3 → HiHi alarm state

**Description**
Displays the status for the upper alarm limit value (Hi Hi Lim parameter (\(\rightarrow\) 136)).

**User interface**
- No alarm
- Alarm state HiHi limit

**Additional information**

**User interface**
The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.
Hi alarm value

**Navigation**

Expert → Application → Totalizer 1 to 3 → Hi alarm value

**Description**

Displays the warning value for the upper warning limit value (Hi Lim parameter (→ 137)).

**User interface**

Signed floating-point number

Hi alarm state

**Navigation**

Expert → Application → Totalizer 1 to 3 → Hi alarm state

**Description**

Displays the status for the upper warning limit value (Hi Lim parameter (→ 137)).

**User interface**

- No warning
- Alarm state Hi limit

**Additional information**

*User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

Lo alarm value

**Navigation**

Expert → Application → Totalizer 1 to 3 → Lo alarm value

**Description**

Displays the warning value for the lower warning limit value (Lo Lim parameter (→ 137)).

**User interface**

Signed floating-point number

Lo alarm state

**Navigation**

Expert → Application → Totalizer 1 to 3 → Lo alarm state

**Description**

Displays the status for the lower warning limit value (Lo Lim parameter (→ 137)).

**User interface**

- No warning
- Alarm state Lo limit

**Additional information**

*User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.
Lo Lo alarm value

Navigation
▶ Expert → Application → Totalizer 1 to 3 → LoLo alarm value

Description
Displays the alarm value for the lower alarm limit value (Lo Lo Lim parameter (→ 138)).

User interface
Signed floating-point number

Lo Lo alarm state

Navigation
▶ Expert → Application → Totalizer 1 to 3 → LoLo alarm state

Description
Displays the status for the lower alarm limit value (Lo Lo Lim parameter (→ 138)).

User interface
- No alarm
- Alarm state LoLo limit

Additional information
User interface

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

3.9 “Diagnostics" submenu

Navigation
▶ Expert → Diagnostics

- Actual diagnostics → 141
- Previous diagnostics → 141
- Operating time from restart → 142
- Operating time → 142
- Diagnostic list → 143
- Event logbook → 147
- Device information → 149
- Min/max values → 152
Actual diagnostics

**Navigation**

Expert → Diagnostics → Actual diagnos.

**Prerequisite**

A diagnostic event has occurred.

**Description**

Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

*Display*

Additional pending diagnostic messages can be viewed in the Diagnostic list submenu (→ 143).

*Example*

For the display format:

F271 Main electronic failure

Timestamp

**Navigation**

Expert → Diagnostics → Timestamp

**Description**

Displays the operating time when the current diagnostic message occurred.

**User interface**

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

**Additional information**

*Display*

The diagnostic message can be viewed via the Actual diagnostics parameter (→ 141).

*Example*

For the display format:

24d12h13m00s

Previous diagnostics

**Navigation**

Expert → Diagnostics → Prev.diagnostics

**Prerequisite**

Two diagnostic events have already occurred.
<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the diagnostic message that occurred before the current message.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User interface</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>For the display format:</td>
</tr>
<tr>
<td></td>
<td>☰F271 Main electronic failure</td>
</tr>
</tbody>
</table>

**Timestamp**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>▶ ▶ Expert  Diagnostics  Timestamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the operating time when the last diagnostic message before the current message occurred.</td>
</tr>
<tr>
<td>User interface</td>
<td>Days (d), hours (h), minutes (m) and seconds (s)</td>
</tr>
<tr>
<td>Additional information</td>
<td>Display</td>
</tr>
<tr>
<td></td>
<td>The diagnostic message can be viewed via the Previous diagnostics parameter (→ ☰ 141).</td>
</tr>
<tr>
<td></td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>For the display format:</td>
</tr>
<tr>
<td></td>
<td>24d12h13m00s</td>
</tr>
</tbody>
</table>

**Operating time from restart**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>⏰ ▶ Expert  Diagnostics  Time fr. restart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to display the time the device has been in operation since the last device restart.</td>
</tr>
<tr>
<td>User interface</td>
<td>Days (d), hours (h), minutes (m) and seconds (s)</td>
</tr>
</tbody>
</table>

**Operating time**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>☰ ☰ Expert  Diagnostics  Operating time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to display the length of time the device has been in operation.</td>
</tr>
<tr>
<td>User interface</td>
<td>Days (d), hours (h), minutes (m) and seconds (s)</td>
</tr>
</tbody>
</table>
Additional information

*User interface*

The maximum number of days is 9999, which is equivalent to 27 years.

---

### 3.9.1 "Diagnostic list" submenu

#### Navigation

Expert → Diagnostics → Diagnostic list

#### Description

Displays the current diagnostics message with the highest priority.

#### User interface

Symbol for diagnostic behavior, diagnostic code and short message.

#### Additional information

*Examples*

For the display format:

- ☢F271 Main electronic failure
- ☢F276 I/O module failure

---

#### Timestamp

#### Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

#### Description

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

#### User interface

Days (d), hours (h), minutes (m) and seconds (s)
**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Diagnostics 1** parameter (→ 143).

*Example*  
For the display format:  
24d12h13m00s

---

**Diagnostics 2**

**Navigation**  
Expert → Diagnostics → Diagnostic list → Diagnostics 2

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

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

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

---

**Timestamp**

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

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

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

**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Diagnostics 2** parameter (→ 144).

*Example*  
For the display format:  
24d12h13m00s

---

**Diagnostics 3**

**Navigation**  
Expert → Diagnostics → Diagnostic list → Diagnostics 3

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

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

*Examples*

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

---

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

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

**Additional information**

*Display*

The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 144).

*Example*

For the display format:
24d12h13m00s

---

**Diagnostics 4**

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 4

**Description**

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

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

*Examples*

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

---

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

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

**Display**

The diagnostic message can be viewed via the `Diagnostics 4` parameter (→ 145).

**Example**

For the display format:

24d12h13m00s

### Diagnostics 5

**Navigation**

[:sa] Expert → Diagnostics → Diagnostic list → Diagnostics 5

**Description**

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

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

**Examples**

For the display format:

- ☳F271 Main electronic failure
- ☳F276 I/O module failure

### Timestamp

**Navigation**

[:sa] 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 (→ 146).

**Example**

For the display format:

24d12h13m00s
3.9.2 "Event logbook" submenu

Navigation  
Expert → Diagnostics → Event logbook

Filter options

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 local display.

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

Factory setting
All

Additional information

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

Filter options

Navigation  
Expert → Diagnostics → Event logbook → Filter options

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

Selection
• All
• Failure (F)
• Function check (C)
• Out of specification (S)
• Maintenance required (M)
• Information (I)
Description of device parameters

Proline Promag 100 PROFIBUS DP

Factory setting

All

Additional information

Description

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

"Event list" submenu

The Event list submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the Event logbook submenu.

Navigation

Expert → Diagnostics → Event logbook → Event list

Event list

Description

Displays the history of event messages of the category selected in the Filter options parameter (→ 147).

User interface

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

Additional information

Description

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

If the advanced HistoROM function is enabled in the device, the event list can contain up to 100 entries.
The following symbols indicate whether an event has occurred or has ended:
- ⚫: Occurrence of the event
- ⌂: End of the event

Examples
For the display format:
- ⚫ I1091 Configuration modified
  ⌂ 24d12h13m00s
- ⌂ F271 Main electronic failure
  ⚫ 01d04h12min30s

HistoROM
A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

3.9.3 "Device information" submenu

Navigation

Expert → Diagnostics → Device info

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<td>Device name</td>
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<td>Order code</td>
</tr>
<tr>
<td>Extended order code 1</td>
</tr>
<tr>
<td>Extended order code 2</td>
</tr>
<tr>
<td>Extended order code 3</td>
</tr>
<tr>
<td>ENP version</td>
</tr>
</tbody>
</table>

Device tag

Navigation

Expert → Diagnostics → Device info → Device tag

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

User interface
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /)
<table>
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</table>

<table>
<thead>
<tr>
<th><strong>Firmware version</strong></th>
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<tbody>
<tr>
<td><strong>Navigation</strong></td>
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<td><strong>Description</strong></td>
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<td><strong>User interface</strong></td>
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<td><strong>Additional information</strong></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Device name</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>User interface</strong></td>
</tr>
</tbody>
</table>
**Order code**

- **Navigation**
  - Expert → Diagnostics → Device info → Order code
- **Description**
  - Displays the device order code.
- **User interface**
  - Character string composed of letters, numbers and certain punctuation marks (e.g. `/`).
- **Additional information**
  - **Description**
    - The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.
  - The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.
  - **Uses of the order code**
    - To order an identical spare device.
    - To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

**Extended order code 1**

- **Navigation**
  - Expert → Diagnostics → Device info → Ext. order cd. 1
- **Description**
  - Displays the first part of the extended order code.
  - On account of length restrictions, the extended order code is split into a maximum of 3 parameters.
- **User interface**
  - Character string
- **Additional information**
  - **Description**
    - The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.
  - The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

**Extended order code 2**

- **Navigation**
  - Expert → Diagnostics → Device info → Ext. order cd. 2
- **Description**
  - For displaying the second part of the extended order code.
- **User interface**
  - Character string
- **Additional information**
  - For additional information, see Extended order code 1 parameter (→ 151)
Extended order code 3

Navigation

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

Description

For displaying the third part of the extended order code.

User interface

Character string

Additional information

For additional information, see Extended order code 1 parameter (→ 151)

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.

3.9.4 "Min/max values" submenu

Navigation

Expert → Diagnostics → Min/max val.

Reset min/max values

Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.
"Main electronic temperature" submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Main elect.temp.

**Minimum value**

- **Navigation**
  
  Expert → Diagnostics → Min/max val. → Main elect.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 (→ 42)

**Maximum value**

- **Navigation**
  
  Expert → Diagnostics → Min/max val. → Main elect.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 (→ 42)
Description of device parameters

Proline Promag 100 PROFIBUS DP

"Temperature" submenu

Navigation  
Expert → Diagnostics → Min/max val. → Temperature

Minimum value

Prerequisite  
For the following order code: 'Sensor Option', option CI "Fluid temperature probe"

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 (→ 42)

Maximum value

Prerequisite  
For the following order code: 'Sensor Option', option CI "Fluid temperature probe"

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 (→ 42)

3.9.5  "Heartbeat" submenu

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

Expert → Diagnostics → Heartbeat

- Heartbeat
  - Heartbeat base settings
  - Performing verification
  - Verification results
  - Monitoring results

3.9.6 "Simulation" submenu

Navigation  

Expert → Diagnostics → Simulation

- Simulation
  - Assign simulation process variable
  - Value process variable
  - Simulation device alarm
  - Diagnostic event category
  - Simulation diagnostic event

Assign simulation process variable

Navigation  

Expert → Diagnostics → Simulation → Assign proc.var.

Description

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

Selection

- Off
- Volume flow
- Mass flow
- Corrected volume flow
- Conductivity *
- Corrected conductivity *
- Temperature *

Factory setting

Off

* Visibility depends on order options or device settings
Additional information

Description

The simulation value of the process variable selected is defined in the Value process variable parameter (→ 156).

Value process variable

Navigation

Expert → Diagnostics → Simulation → Value proc. var.

Prerequisite

One of the following options is selected in the Assign simulation process variable parameter (→ 155):

• Volume flow
• Mass flow
• Corrected volume flow
• Conductivity
• Corrected conductivity
• Temperature

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 (→ 38).

Simulation device alarm

Navigation

Expert → Diagnostics → Simulation → Sim. alarm

Description

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

Selection

• Off
• On

Factory setting

Off

Additional information

Description

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

* Visibility depends on order options or device settings
### Diagnostic event category

**Navigation**

[Expert → Diagnostics → Simulation → Event category]

**Description**

Use this function to select the category of the diagnostic events that are displayed for the simulation in the **Simulation diagnostic event** parameter (→ Seite 157).

**Selection**

- Sensor
- Electronics
- Configuration
- Process

**Factory setting**

Process

### Simulation diagnostic event

**Navigation**

[Expert → Diagnostics → Simulation → Sim. diag. event]

**Description**

Use this function to select a diagnostic event for the simulation process that is activated.

**Selection**

- Off
- Diagnostic event picklist (depends on the category selected)

**Factory setting**

Off

**Additional information**

*Description*

For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter (→ Seite 157).
4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

| Volume flow     | l/h |
| Volume          | m³  |
| Conductivity    | µS/cm |
| Temperature     | °C  |
| Mass flow       | kg/h |
| Mass            | kg  |
| Density         | kg/l |
| Corrected volume flow | Nl/h |
| Corrected volume | Nm³ |

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>(v ~ 2.5 m/s) [dm³/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>32</td>
<td>125</td>
</tr>
<tr>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>65</td>
<td>500</td>
</tr>
<tr>
<td>80</td>
<td>750</td>
</tr>
<tr>
<td>100</td>
<td>1200</td>
</tr>
<tr>
<td>125</td>
<td>1850</td>
</tr>
<tr>
<td>150</td>
<td>150 m³/h</td>
</tr>
<tr>
<td>200</td>
<td>300 m³/h</td>
</tr>
<tr>
<td>250</td>
<td>500 m³/h</td>
</tr>
<tr>
<td>300</td>
<td>750 m³/h</td>
</tr>
<tr>
<td>350</td>
<td>1000 m³/h</td>
</tr>
<tr>
<td>400</td>
<td>1200 m³/h</td>
</tr>
<tr>
<td>450</td>
<td>1500 m³/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.

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>(v ~ 2.5 m/s) [dm³/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>2 000 m³/h</td>
</tr>
<tr>
<td>600</td>
<td>2 500 m³/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>(v ~ 0.04 m/s) [m³/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.01</td>
</tr>
<tr>
<td>4</td>
<td>0.05</td>
</tr>
<tr>
<td>8</td>
<td>0.1</td>
</tr>
<tr>
<td>15</td>
<td>0.5</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>65</td>
<td>8</td>
</tr>
<tr>
<td>80</td>
<td>12</td>
</tr>
<tr>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>125</td>
<td>30</td>
</tr>
<tr>
<td>150</td>
<td>2.5</td>
</tr>
<tr>
<td>200</td>
<td>5</td>
</tr>
<tr>
<td>250</td>
<td>7.5</td>
</tr>
<tr>
<td>300</td>
<td>10</td>
</tr>
<tr>
<td>350</td>
<td>15</td>
</tr>
<tr>
<td>400</td>
<td>20</td>
</tr>
<tr>
<td>450</td>
<td>25</td>
</tr>
<tr>
<td>500</td>
<td>30</td>
</tr>
<tr>
<td>600</td>
<td>40</td>
</tr>
</tbody>
</table>

4.2 US units

Only valid for USA and Canada.

4.2.1 System units

<table>
<thead>
<tr>
<th>Volume flow</th>
<th>gal/min (us)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>gal (us)</td>
</tr>
<tr>
<td>Temperature</td>
<td>°F</td>
</tr>
<tr>
<td>Mass flow</td>
<td>lb/min</td>
</tr>
<tr>
<td>Mass</td>
<td>lb</td>
</tr>
<tr>
<td>Density</td>
<td>lb/ft³</td>
</tr>
</tbody>
</table>
Corrected volume flow Sft³/h
Corrected volume Sft³

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>(v ~ 2.5 m/s) [gal/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12</td>
<td>0.1</td>
</tr>
<tr>
<td>1/8</td>
<td>0.5</td>
</tr>
<tr>
<td>3/8</td>
<td>2</td>
</tr>
<tr>
<td>1/2</td>
<td>6</td>
</tr>
<tr>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>11/2</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>4</td>
<td>300</td>
</tr>
<tr>
<td>5</td>
<td>450</td>
</tr>
<tr>
<td>6</td>
<td>600</td>
</tr>
<tr>
<td>8</td>
<td>1200</td>
</tr>
<tr>
<td>10</td>
<td>1500</td>
</tr>
<tr>
<td>12</td>
<td>2400</td>
</tr>
<tr>
<td>14</td>
<td>3600</td>
</tr>
<tr>
<td>16</td>
<td>4800</td>
</tr>
<tr>
<td>18</td>
<td>6000</td>
</tr>
<tr>
<td>20</td>
<td>7500</td>
</tr>
<tr>
<td>24</td>
<td>10500</td>
</tr>
</tbody>
</table>

4.2.3 On value low flow cut off

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

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>(v ~ 0.04 m/s) [gal/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12</td>
<td>0.002</td>
</tr>
<tr>
<td>1/8</td>
<td>0.008</td>
</tr>
<tr>
<td>3/8</td>
<td>0.025</td>
</tr>
<tr>
<td>1/2</td>
<td>0.15</td>
</tr>
<tr>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td>11/2</td>
<td>0.75</td>
</tr>
<tr>
<td>2</td>
<td>1.25</td>
</tr>
<tr>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Nominal diameter [in]</td>
<td>(v \sim 0.04 \text{ m/s)}) [gal/min]</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>12</td>
<td>45</td>
</tr>
<tr>
<td>14</td>
<td>60</td>
</tr>
<tr>
<td>16</td>
<td>60</td>
</tr>
<tr>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td>24</td>
<td>180</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, SG15°C, SG20°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>Conductivity</td>
<td>µS/mm</td>
<td>Microsiemens/length unit</td>
</tr>
<tr>
<td></td>
<td>nS/cm, µS/cm, mS/cm, S/cm</td>
<td>Nano- Micro- , Milli- , Siemens/length unit</td>
</tr>
<tr>
<td></td>
<td>µS/m, mS/m, S/m, kS/m, MS/m</td>
<td>Micro- , Milli- , Siemens, Kilo- , Megasiemens/length unit</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>Corrected volume</td>
<td>Nl, Nm³, Sm³</td>
<td>Normal liter, normal cubic meter, standard cubic meter</td>
</tr>
<tr>
<td>Corrected volume 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, MI 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>MI/s, MI/min, MI/h, MI/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>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>Process variable</td>
<td>Units</td>
<td>Explanation</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------</td>
<td>--------------------------------------------------</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>Corrected volume</td>
<td>Sft³, Sgal (us), Sbbl (us;liq.)</td>
<td>Standard cubic foot, standard gallon, standard barrel</td>
</tr>
<tr>
<td>Corrected</td>
<td>Sft³/s, Sft³/min, Sft³/h, Sft³/d</td>
<td>Standard cubic foot/time unit</td>
</tr>
<tr>
<td>volume flow</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>
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<td>ft³/s, ft³/min, ft³/h, ft³/d</td>
<td>Cubic foot/time unit</td>
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<td>fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)</td>
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<td>bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)</td>
<td>Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl</td>
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<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) Beer: 31.0 gal/bbl</td>
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<td>bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)</td>
<td>Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl</td>
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<td>bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)</td>
<td>Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl</td>
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<tr>
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<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
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<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem ( before midday), post meridiem (after midday)</td>
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<td>Barrel (beer), barrel (petrochemicals)</td>
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<td>Process variable</td>
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<td>Volume flow</td>
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<td>Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)</td>
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|                  | bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil) | Barrel/time unit (petrochemicals)  
|                  |                                                                  | Petrochemicals: 34.97 gal/bbl |
| Time             | s, m, h, d, y | Second, minute, hour, day, year |
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