Description of Device Parameters

Proline Prosonic Flow 100

HART

Ultrasonic time-of-flight flowmeter
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1  About this document

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

It is used to perform tasks that require detailed knowledge of the function of the device:

- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

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

1.3  Using this document

1.3.1  Information on the document structure
The document lists the submenus and their parameters according to the structure from the Expert menu (→ 8), which is displayed when the "Maintenance" user role is enabled.
Additional information regarding:
- The arrangement of the parameters according to the menu structure of the Operation menu, Setup menu, Diagnostics menu with a brief description: Operating Instructions → 7
- Operating concept of the operating menus: Operating Instructions

1 Sample graphic for the schematic layout of the operating menu.
1.3.2 Structure of a parameter description

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

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

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

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

**Description**
Description of the parameter function

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

**User entry**
Input range for the parameter

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

**Factory setting**
Default setting ex works

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

1.4 Symbols used

1.4.1 Symbols for certain types of information

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip</td>
<td>Indicates additional information.</td>
</tr>
<tr>
<td></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>

1.5 Documentation

1.5.1 Standard documentation

Operating Instructions

<table>
<thead>
<tr>
<th>Measuring device</th>
<th>Documentation code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosonic Flow E 100</td>
<td>BA01769D</td>
</tr>
</tbody>
</table>

1.5.2 Supplementary device-dependent documentation

Special documentation

<table>
<thead>
<tr>
<th>Contents</th>
<th>Documentation code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on the Pressure Equipment Directive</td>
<td>SD01614D</td>
</tr>
<tr>
<td>RFID TAG</td>
<td>SD01565D</td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>SD02079D</td>
</tr>
</tbody>
</table>


# Overview of the Expert operating menu

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

<table>
<thead>
<tr>
<th>Expert</th>
<th>→</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct access (0106)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locking status (0004)</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Access status (0005)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Ent. access code (0003)</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>System</td>
<td>→</td>
<td>13</td>
</tr>
<tr>
<td>Display</td>
<td>→</td>
<td>13</td>
</tr>
<tr>
<td>Diagn. handling</td>
<td>→</td>
<td>31</td>
</tr>
<tr>
<td>Administration</td>
<td>→</td>
<td>26</td>
</tr>
<tr>
<td>Sensor</td>
<td>→</td>
<td>38</td>
</tr>
<tr>
<td>Measured val.</td>
<td>→</td>
<td>38</td>
</tr>
<tr>
<td>System units</td>
<td>→</td>
<td>47</td>
</tr>
<tr>
<td>Process param.</td>
<td>→</td>
<td>53</td>
</tr>
<tr>
<td>External comp.</td>
<td>→</td>
<td>57</td>
</tr>
<tr>
<td>Sensor adjustm.</td>
<td>→</td>
<td>58</td>
</tr>
<tr>
<td>Calibration</td>
<td>→</td>
<td>60</td>
</tr>
<tr>
<td>Output</td>
<td>→</td>
<td>64</td>
</tr>
<tr>
<td>Curr. output 1</td>
<td>→</td>
<td>64</td>
</tr>
<tr>
<td>PFS output 1</td>
<td>→</td>
<td>78</td>
</tr>
<tr>
<td>Communication</td>
<td>→</td>
<td>98</td>
</tr>
<tr>
<td>HART output</td>
<td>→</td>
<td>98</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Web server</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Diag. config.</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Reset all tot. (2806)</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Totalizer 1 to n</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>Diagnostics</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Actual diagnos. (0691)</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Prev.diagnostics (0690)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Time fr. restart (0653)</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>Operating time (0652)</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Event logbook</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Device info</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>Mainboard module</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Sens. electronic</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Display module</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Heartbeat</td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>Simulation</td>
<td>149</td>
<td></td>
</tr>
</tbody>
</table>
3 Description of device parameters

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

| Expert |  
| Direct access (0106) | → § 10  
| Locking status (0004) | → § 11  
| Access status (0005) | → § 12  
| Ent. access code (0003) | → § 13  
| System | → § 13  
| Sensor | → § 38  
| Output | → § 64  
| Communication | → § 98  
| Application | → § 123  
| Diagnostics | → § 129  

Direct access

Navigation

Expert → Direct access (0106)

Prerequisite

There is a local display with operating elements.

Description

Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

User entry

0 to 65535

Additional information

User entry

The direct access code consists of a 5-digit number (at maximum) and the channel number, which identifies the channel of a process variable: e.g. 00914-2. In the navigation view, this appears on the right-hand side in the header of the selected parameter.
1  Direct access code

Note the following when entering the direct access code:
- The leading zeros in the direct access code do not have to be entered.
  Example: Enter “914” instead of “00914”
- If no channel number is entered, channel 1 is accessed automatically.
  Example: Enter 00914 → Assign variable parameter
- If a different channel is accessed: Enter the direct access code with the corresponding channel number.
  Example: Enter 00914-2 → Assign variable parameter

Locking status

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Locking status (0004)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the active write protection.</td>
</tr>
<tr>
<td>User interface</td>
<td>Hardware locked</td>
</tr>
<tr>
<td></td>
<td>Temp. locked</td>
</tr>
<tr>
<td>Additional information</td>
<td>Display</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Detailed information on access authorization is provided in the 'User roles and associated access authorization' and 'Operating concept' sections of the Operations Instructions for the device →  7</td>
</tr>
</tbody>
</table>

Selection

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware locked (priority 1)</td>
<td>The write protection switch (DIP switch) for locking the hardware is activated on the main electronic module. This locks write access to the parameters.</td>
</tr>
<tr>
<td>Temp. locked (priority 2)</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Access stat.disp

**Navigation**  
Expert → Access stat.disp (0091)

**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.

ℹ️ Access authorization can be modified via the Ent. access code parameter (→ 📜 13).

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

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

**Display**  
Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 📜 7

### Access status

**Navigation**  
Expert → Access status (0005)

**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 Ent. access code parameter (→ 📜 13).

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

**Display**  
Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 📜 7
**Ent. access code**

**Navigation**  
Expert → Ent. access code (0003)

**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

---

### 3.1.1 "Display" submenu

**Navigation**  
Expert → System → Display

---

<table>
<thead>
<tr>
<th>Display language (0104)</th>
<th>→ 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format display (0098)</td>
<td>→ 15</td>
</tr>
<tr>
<td>Value 1 display (0107)</td>
<td>→ 17</td>
</tr>
<tr>
<td>0% bargraph 1 (0123)</td>
<td>→ 17</td>
</tr>
<tr>
<td>100% bargraph 1 (0125)</td>
<td>→ 18</td>
</tr>
<tr>
<td>Decimal places 1 (0095)</td>
<td>→ 18</td>
</tr>
<tr>
<td>Value 2 display (0108)</td>
<td>→ 19</td>
</tr>
<tr>
<td>Decimal places 2 (0117)</td>
<td>→ 19</td>
</tr>
<tr>
<td>Value 3 display (0110)</td>
<td>→ 20</td>
</tr>
</tbody>
</table>
### Display language

**Navigation**

Expert → System → Display → Display language (0104)

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- English
- Deutsch *
- Français *
- Español *
- Italiano *
- Nederlands *
- Portuguesa *
- Polski *
- русский язык (Ru) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- العربية (Ara) *

* Visibility depends on order options or device settings
Factory setting

Format display

Navigation

Expert → System → Display → Format display (0098)

Prerequisite

A local display is provided.

Description

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

Selection

- 1 value, max.
- Bargr. + 1 value
- 2 values
- Val. large+2val.
- 4 values

Factory setting

1 value, max.

Additional information

Description

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

- The Value 1 display parameter (→ 17) to Value 4 display parameter (→ 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." option

![Image of the local display showing a single value]

"Bargr. + 1 value" option

![Image of the local display showing a bar graph and a single value]

"2 values' option

![Image of the local display showing two values]

"Val. large+2val." option

![Image of the local display showing a large value and two additional values]

"4 values' option

![Image of the local display showing four values]
Value 1 display

**Navigation**

Expert → System → Display → Value 1 display (0107)

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Volume flow
- Curr.output 1
- Acceptance rate
- Signal asymmetry
- Turbulence
- Signal strength
- Curr.output 1
- SNR
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Volume flow

**Additional information**

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

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

**Dependency**

The unit of the displayed measured value is taken from the **System units** submenu (→ 47).

0% bargraph 1

**Navigation**

Expert → System → Display → 0% bargraph 1 (0123)

**Prerequisite**

A local display is provided.

**Description**

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

**User entry**

Signed floating-point number

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

**100% bargraph 1**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → System → Display → 100% bargraph 1 (0125)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>A local display is provided.</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Depends on country and nominal diameter → 156</td>
</tr>
<tr>
<td>Additional information</td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>The <strong>Format display</strong> parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.</td>
</tr>
<tr>
<td></td>
<td>User entry</td>
</tr>
<tr>
<td></td>
<td>The unit of the displayed measured value is taken from the <strong>System units</strong> submenu (→ 47).</td>
</tr>
</tbody>
</table>

**Decimal places 1**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → System → Display → Decimal places 1 (0095)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>A measured value is specified in the <strong>Value 1 display</strong> parameter (→ 17).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to select the number of decimal places for measured value 1.</td>
</tr>
</tbody>
</table>
| Selection | • x  
• x.x  
• x.xx  
• x.xxx  
• x.xxxx |
| Factory setting | x.xx |
Additional information

Description

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

Value 2 display

Navigation

Expert → System → Display → Value 2 display (0108)

Prerequisite

A local display is provided.

Description

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

Selection

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

Factory setting

None

Additional information

Description

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

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

Dependency

The unit of the displayed measured value is taken from the System units submenu (→ 47).

Decimal places 2

Navigation

Expert → System → Display → Decimal places 2 (0117)

Prerequisite

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

Description

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

Selection

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

Factory setting

x.xx

Additional information

Description

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

**Navigation**
Expert → System → Display → Value 3 display (0110)

**Prerequisite**
A local display is provided.

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

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

**Factory setting**
None

**Additional information**

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

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

*Selection*

The unit of the displayed measured value is taken from the **System units** submenu (→ 47).

---

**0% bargraph 3**

**Navigation**
Expert → System → Display → 0% bargraph 3 (0124)

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

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

**User entry**
Signed floating-point number

**Factory setting**
Country-specific:
- 0 m³/h
- 0 ft³/h

**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 (→ 47).
### 100% bargraph 3

**Navigation**

- Expert → System → Display → 100% bargraph 3 (0126)

**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 (→  47).

### Decimal places 3

**Navigation**

- Expert → System → Display → Decimal places 3 (0118)

**Prerequisite**

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

**Description**

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

**Selection**

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

**Factory setting**

x.xx

**Additional information**

**Description**

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

### Value 4 display

**Navigation**

- Expert → System → Display → Value 4 display (0109)

**Prerequisite**

A local display is provided.
Description

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

Selection

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

Factory setting

None

Additional information

Description

If several measured values are displayed at once, the measured value selected here will be the 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 (→ 47).

Decimal places 4

Navigation

Expert → System → Display → Decimal places 4 (0119)

Prerequisite

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

Description

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

Selection

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

Factory setting

x.xx

Additional information

Description

This setting does not affect the measuring or computational accuracy of the device.

The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Display interval

Navigation

Expert → System → Display → Display interval (0096)

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
### Display damping

**Navigation**

Expert → System → Display → Display damping (0094)

**Prerequisite**

A local display is provided.

**Description**

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

**User entry**

0.0 to 999.9 s

**Factory setting**

0.0 s

**Additional information**

Use this function to enter a time constant (PT1 element ¹) for display damping:
- If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.
- On the other hand, the display reacts more slowly if a high time constant is entered.

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

### Header

**Navigation**

Expert → System → Display → Header (0097)

**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

---

¹ proportional transmission behavior with first order delay
Additional information

Description
The header text only appears during normal operation.

| 1 | Position of the header text on the display |

Selection

- Device tag
  Is defined in the Device tag parameter (→ 138).
- Free text
  Is defined in the Header text parameter (→ 24).

Header text

Navigation

Expert → System → Display → Header text (0112)

Prerequisite
In the Header parameter (→ 23), the Free text option is selected.

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

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

Factory setting
-----------

Additional information

Description
The header text only appears during normal operation.

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

Navigation  

Prerequisite  A local display is provided.

Description  Use this function to select the decimal separator.

Selection  

Factory setting  . (point)

Contrast display

Navigation  

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  

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

Selection  

Factory setting Enable

Access stat.disp

Navigation  

Prerequisite  A local display is provided.

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

**User interface**
- Operator
- Maintenance

**Factory setting**
Operator

**Additional information**

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

Access authorization can be modified via the Ent. access code parameter (→ ☐ 13).

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

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

*Display*
Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operating Instructions for the device (→ ☐ 7)

### 3.1.2 "Administration" submenu

*Navigation*

Expert → System → Administration

<table>
<thead>
<tr>
<th>➤ Administration</th>
<th>➤ Def. access code</th>
<th>➤ Reset acc. code</th>
</tr>
</thead>
</table>

- Device reset (0000) ➤ ☐ 29
- Activate SW opt. (0029) ➤ ☐ 30
- SW option overv. (0015) ➤ ☐ 31

"Def. access code" wizard

The Def. access code wizard (→ ☐ 26) is only available when operating via the local display or Web browser.

If operating via the operating tool, the Def. access code parameter (→ ☐ 29) can be found directly in the Administration submenu. There is no Confirm code parameter if the device is operated via the operating tool.
Description of device parameters

Navigation  

Expert → System → Administration → Def. access code

Def. access code

Description

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

User entry

0 to 9999

Factory setting

0

Additional information

Description

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

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

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

If you lose the access code, please contact your Endress+Hauser sales organization.

User entry

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

Factory setting

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

Confirm code

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
Description of device parameters

Proline Prosonic Flow 100 HART

Factory setting

0

"Reset access code" submenu

Navigation

Expert → System → Administration → Reset acc. code

Reset acc. code

Operating time (0652)

Reset acc. code (0024)

Description

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

User interface

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

Additional information

User interface

The maximum number of days is 9999, which is equivalent to 27 years.

Reset acc. code

Navigation

Expert → System → Administration → Reset acc. code → Reset acc. code (0024)

Description

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

User entry

Character string comprising numbers, letters and special characters

Factory setting

0x00
Additional information

*Description*

For a reset code, contact your Endress+Hauser service organization.

*User entry*

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

Additional parameters in the "Administration" submenu

<table>
<thead>
<tr>
<th>Def. access code</th>
</tr>
</thead>
</table>

*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.

*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 (0000)

*Description*

Use this function to choose whether to reset the device configuration - either entirely or in part - to a defined state.
### Selection
- Cancel
- To delivery set.
- Restart device
- Rest.S-DATBackup

### Factory setting
Cancel

### Additional information
*Selection*

| Options            | Description                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---|
| Cancel             | No action is executed and the user exits the parameter.                                                                                     |
| To delivery set.   | 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     | 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 opt.

#### Navigation

Expert → System → Administration → Activate SW opt. (0029)

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

#### User entry
Max. 10-digit string consisting of numbers.

#### Factory setting
Depends on the software option ordered

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

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

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

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

- Before you enter a new activation code, make a note of the current activation code.
- Enter the new activation code provided by Endress+Hauser when the new software option was ordered.
- Once the activation code has been entered, check if the new software option is displayed in the **SW option overv.** parameter (→ 31).

*⇒* The new software option is active if it is displayed.
If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid.

- If the code entered is incorrect or invalid, enter the old activation code.
- Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again.

**Example for a software option**

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

The software options currently enabled are displayed in the SW option overv. parameter (→ 31).

**Web browser**

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

---

**SW option overv.**

**Navigation**

[Expert → System → Administration → SW option overv. (0015)]

**Description**

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

**User interface**

- HBT Monitoring
- HBT Verification

**Additional information**

**Description**

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

'HBT Verification' option and 'HBT Monitoring' option

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

---

**3.1.3 "Diagn. handling" submenu**

**Navigation**

[Expert → System → Diagn. handling]

- [Diagn. handling](#)

  - Alarm delay (0651) → 32

- [Diagn. behavior](#) → 32
Alarm delay

Navigation

Expert → System → Diagn. handling → Alarm delay (0651)

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

This setting affects the following diagnostic messages:

- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.

"Diagn. behavior" submenu

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the Diagn. behavior submenu (→ 32).

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

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>The device stops measurement. The signal outputs and totalizers assume the defined alarm condition. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Warning</td>
<td>The device continues to measure. The signal outputs and totalizers are not affected. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Logbook only</td>
<td>The device continues to measure. The diagnostic message is entered only in the Event logbook submenu (→ 135) (Event list submenu (→ 136)) and is not displayed in alternation with the measured value 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 → 7 → 7

Navigation

Expert → System → Diagn. handling → Diagn. behavior

Diagnostic no. 441 (0657) → 33
Diagnostic no. 442 (0658) → 33
Diagnostic no. 441 (Curr.output 1)

Navigation  
[Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 441 (0657)]

Description  
Option for changing the diagnostic behavior of the diagnostic message 441 Curr.output 1.

Selection  
- Off
- Alarm
- Warning
- Logbook only

Factory setting  
Warning

Additional information  
Detailed description of the options available for selection: [→ 32]

Diagnostic no. 442 (Freq. output)

Navigation  
[Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 442 (0658)]

Prerequisite  
The measuring device has a pulse/frequency/switch output.

Description  
Option for changing the diagnostic behavior of the diagnostic message 442 Freq. output.
Description of device parameters

Proline Prosonic Flow 100 HART

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting
Warning

Additional information
Selection
Detailed description of the options available for selection: →  32

Diagnostic no. 443 (Pulse output)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 443 (0659)

Prerequisite
The measuring device has a pulse/frequency/switch output.

Description
Option for changing the diagnostic behavior of the diagnostic message 443 Pulse output.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting
Warning

Additional information
Selection
Detailed description of the options available for selection: →  32

Diagnostic no. 841 (Sensor range)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 840 (0680)

Description
Option for changing the diagnostic behavior of the diagnostic message 841 Sensor range.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting
Warning

Additional information
Detailed description of the options available for selection: →  32
### Diagnostic no. 881 (Sen.sig. path 1 to n)

**Navigation**
- Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 881 (0724)

**Description**
Option for changing the diagnostic behavior of the diagnostic message **881 Sen.sig. path 1 to n**.

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

**Factory setting**
Warning

**Additional information**
Detailed description of the options available for selection: →  32

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

**Navigation**
- Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0678)

**Description**
Option for changing the diagnostic behavior of the diagnostic message **835 Process temp.**.

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

**Factory setting**
Warning

**Additional information**
Selection
Detailed description of the options available for selection: →  32

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

**Navigation**
- Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0677)

**Description**
Option for changing the diagnostic behavior of the diagnostic message **834 Process temp.**.

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

**Factory setting**
Warning
Diagnostic no. 833 (Electronic temp.)

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0676)

**Description**

Option for changing the diagnostic behavior of the diagnostic message **833 Electronic temp.**.

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

Detailed description of the options available for selection: → 32

Diagnostic no. 832 (Electronic temp.)

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832 (0675)

**Description**

Option for changing the diagnostic behavior of the diagnostic message **832 Electronic temp.**.

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

Detailed description of the options available for selection: → 32

Diagnostic no. 302 (Verific. active)

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 302 (0742)

**Description**

Option for changing the diagnostic behavior of the diagnostic message **302 Verific. active.**
Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection: → 32

---

Diagnostic no. 125 (Rel. sound vel.)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 125 (0775)

Description

Option for changing the diagnostic behavior of the diagnostic message 125 Rel. sound vel.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection: → 32

---

Diagnostic no. 124 (Rel. sig. strength)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 124 (0774)

Description

Option for changing the diagnostic behavior of the diagnostic message 124 Rel. sig. strength.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection: → 32
Diagnostic no. 160 (Signal path off)

Navigation  
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 160 (0776)

Description  
Option for changing the diagnostic behavior of the diagnostic message **160 Signal path off**.

Selection  
- Off
- Alarm
- Warning
- Logbook only

Factory setting  
Warning

Additional information  
Detailed description of the options available for selection: → 32

---

### 3.2 "Sensor" submenu

Navigation  
Expert → Sensor

- Sensor
  - Measured val.  → 38
  - System units  → 47
  - Process param.  → 53
  - External comp.  → 57
  - Sensor adjustm.  → 58
  - Calibration  → 60

---

### 3.2.1 "Measured val." submenu

Navigation  
Expert → Sensor → Measured val.

- Measured val.
  - Process variab.  → 39
  - System values  → 40
"Process variab." submenu

**Navigation**


**Volume flow**

**Navigation**


**Description**

Displays the volume flow that is currently measured.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Volume flow unit** parameter (→ 47)

**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 (→ 49)
### Sound velocity

**Navigation**


**Description**

Displays the sound velocity currently measured.

**User interface**

Signed floating-point number

### Flow velocity

**Navigation**


**Description**

Displays the flow velocity currently measured.

**User interface**

Signed floating-point number

### Temperature

**Navigation**


**Description**

Displays the medium temperature currently measured.

**User interface**

Signed floating-point number

**Additional information**

Dependency

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

---

**“System values” submenu**

**Navigation**

Expert → Sensor → Measured val. → System values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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<td>→ 41</td>
</tr>
<tr>
<td>Asymmetry (2913)</td>
<td>→ 41</td>
</tr>
<tr>
<td>SNR (2917)</td>
<td>→ 42</td>
</tr>
<tr>
<td>Turbulence (2907)</td>
<td>→ 42</td>
</tr>
</tbody>
</table>
Signal strength

**Navigation**

Expert → Sensor → Measured val. → System values → Signal strength (2914)

**Description**

Use this function to display the current signal strength.

**User interface**

Signed floating-point number

**Additional information**

*Description*

A drop in the signal strength over time can be an indicator of deposit buildup on the converter or high ultrasonic damping in the gas. A very fast drop is an indication of a high concentration of CO$_2$.

Acceptance rate

**Navigation**

Expert → Sensor → Measured val. → System values → Acceptance rate (2912)

**Description**

Displays the ratio of the number of ultrasonic signals accepted for flow calculation and the total number of ultrasonic signals emitted.

Multipath measuring devices only: Displays the minimum of all acceptance rates measured.

**User interface**

0 to 100 %

Asymmetry

**Navigation**

Expert → Sensor → Measured val. → System values → Asymmetry (2913)

**Prerequisite**

The Dual path sensor option is selected in the Path conf. parameter parameter.

**Description**

Use this function to display the asymmetry of the measured values between signal path 1 and signal path 2.

**User interface**

Signed floating-point number

**Factory setting**

0 %

**Additional information**

*Limit values*

If the value 0 is displayed, both measured values are the same. The higher the displayed value, the greater the difference between the two measured values of the signal paths.
## SNR

**Navigation**

[Expert → Sensor → Measured val. → System values → SNR (2917)]

**Description**

Use this function to display the current signal-to-noise ratio.

**User interface**

Signed floating-point number

**Additional information**

*Description*

A low value or a drop in the signal to noise ratio over time is an indicator of poor signal quality. A very fast drop is an indication of a high concentration of CO₂.

## Turbulence

**Navigation**

[Expert → Sensor → Measured val. → System values → Turbulence (2907)]

**Description**

Use this function to display the current turbulence.

**User interface**

Signed floating-point number

## Reynolds number

**Navigation**

[Expert → Sensor → Measured val. → System values → Reynolds number (2908)]

**Description**

Displays the Reynolds number.

**User interface**

Signed floating-point number

## Profile factor

**Navigation**

[Expert → Sensor → Measured val. → System values → Profile factor (2909)]

**Description**

Displays the profile factor.

The profile factor describes the correction factor applied based on the flow profile present. The more the profile deviates from even distribution, the smaller the factor. The profile factor is used to calculate the flow rate.

**User interface**

Signed floating-point number
"Output values" submenu

**Navigation**

![Expert → Sensor → Measured val. → Output values](#)

<table>
<thead>
<tr>
<th>Output values</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Output freq. 1 (0471–1) → 44</td>
</tr>
<tr>
<td>Switch status 1 (0461–1) → 44</td>
</tr>
</tbody>
</table>

---

**Output curr. 1**

**Navigation**

![Expert → Sensor → Measured val. → Output values → Output curr. 1 (0361–1)](#)

**Description**

Displays the current value currently calculated for the current output.

**User interface**

0 to 22.5 mA

---

**Measur. curr. 1**

**Navigation**

![Expert → Sensor → Measured val. → Output values → Measur. curr. 1 (0366–1)](#)

**Description**

Use this function to display the actual measured value of the output current.

**User interface**

0 to 30 mA

---

**Pulse output 1**

**Navigation**

![Expert → Sensor → Measured val. → Output values → Pulse output 1 (0456–1)](#)

**Prerequisite**

The Pulse option is selected in the Operating mode parameter (→ 80) parameter.

**Description**

Displays the pulse frequency currently output.

**User interface**

Positive floating-point number
Description of device parameters

Proline Prosonic Flow 100 HART

Additional information

Description

- The pulse output is an open collector output.
- This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.
- The Value per pulse parameter (→ 82) and Pulse width parameter (→ 82) can be used to define the value (i.e. the measured value amount that corresponds to a pulse) and the duration of the pulse.

![Diagram of NC and NO contacts](image)

0 Non-conductive
1 Conductive
NC NC contact (normally closed)
NO NO contact (normally open)

The output behavior can be reversed via the Invert outp.sig. parameter (→ 97) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (Failure mode parameter (→ 84)) can be configured.

Output freq. 1

Navigation  
Expert → Sensor → Measured val. → Output values → Output freq. 1 (0471–1)

Prerequisite  
In the Operating mode parameter (→ 80), the Frequency option is selected.

Description  
Displays the actual value of the output frequency which is currently measured.

User interface  
0.0 to 12 500.0 Hz

Switch status 1

Navigation  
Expert → Sensor → Measured val. → Output values → Switch status 1 (0461–1)

Prerequisite  
The Switch option is selected in the Operating mode parameter (→ 80).

Description  
Displays the current switch status of the status output.

User interface  
- Open
- Closed
Additional information

User interface

- Open
  The switch output is not conductive.
- Closed
  The switch output is conductive.

"Totalizer" submenu

Navigation  Expert → Sensor → Measured val. → Totalizer

| Totalizer val. 1 to n (0911–1 to n) | ➔ 45 |
| Tot. overflow 1 to n (0910–1 to n) | ➔ 46 |

Totalizer val. 1 to n

Navigation  Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n (0911–1 to n)

Prerequisite

One of the following options is selected in the Assign variable parameter (➔ 124) of the Totalizer 1 to n submenu:

- Volume flow
- Mass flow

Description

Displays the current totalizer reading.

User interface

Signed floating-point number
Description of device parameters

Proline Prosonic Flow 100 HART

**Additional information**

*Description*

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

In the event of an error, the totalizer adopts the mode defined in the **Failure mode** parameter (→ 127).

*User interface*

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Operation mode** parameter (→ 125).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 125).

*Example*

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

- Value in the **Totalizer val. 1** parameter: 1968457 m³
- Value in the **Tot. overflow 1** parameter: 1 \cdot 10^7 (1 overflow) = 10000000 [m³]
- Current totalizer reading: 11968457 m³

### Tots. overflow 1 to n

#### Navigation

Expert → Sensor → Measured val. → Totalizer → Tot. overflow 1 to n (0910–1 to n)

#### Prerequisite

One of the following options is selected in the **Assign variable** parameter (→ 124) of the **Totalizer 1 to n** submenu:

- Volume flow
- Mass flow

#### Description

Displays the current totalizer overflow.

#### User interface

Integer with sign

#### Additional information

*Description*

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

*User interface*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 125).

*Example*

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

- Value in the **Totalizer val. 1** parameter: 1968457 m³
- Value in the **Tot. overflow 1** parameter: 2 \cdot 10^7 (2 overflows) = 20000000 [m³]
- Current totalizer reading: 21968457 m³
### 3.2.2 "System units" submenu

**Navigation**

Expert → Sensor → System units

<table>
<thead>
<tr>
<th>System units</th>
<th></th>
</tr>
</thead>
<tbody>
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<td>Volume flow unit (0553)</td>
<td>→ 47</td>
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<tr>
<td>Volume unit (0563)</td>
<td>→ 49</td>
</tr>
<tr>
<td>Mass flow unit (0554)</td>
<td>→ 49</td>
</tr>
<tr>
<td>Mass unit (0574)</td>
<td>→ 50</td>
</tr>
<tr>
<td>Temperature unit (0557)</td>
<td>→ 50</td>
</tr>
<tr>
<td>Length unit (0551)</td>
<td>→ 51</td>
</tr>
<tr>
<td>Velocity unit (0566)</td>
<td>→ 51</td>
</tr>
<tr>
<td>Density unit (0555)</td>
<td>→ 52</td>
</tr>
<tr>
<td>Kin. visc. unit (0578)</td>
<td>→ 53</td>
</tr>
<tr>
<td>Date/time format (2812)</td>
<td>→ 53</td>
</tr>
</tbody>
</table>

### Volume flow unit

**Navigation**

Expert → Sensor → System units → Volume flow unit (0553)

**Description**

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

SI units
- cm³/s
- cm³/min
- cm³/h
- cm³/d
- dm³/s
- dm³/min
- dm³/h
- dm³/d
- m³/s
- m³/min
- m³/h
- m³/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/s
- Ml/min
- Ml/h
- Ml/d

US units
- af/s
- af/min
- af/h
- af/d
- ft³/s
- ft³/min
- ft³/h
- ft³/d
- fl oz/s (us)
- fl oz/min (us)
- fl oz/h (us)
- fl oz/d (us)
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- kgal/s (us)
- kgal/min (us)
- kgal/h (us)
- kgal/d (us)
- bbl/s (us; liq.)
- bbl/min (us; liq.)
- bbl/h (us; liq.)
- bbl/d (us; liq.)
- bbl/s (us; beer)
- bbl/min (us; beer)
- bbl/h (us; beer)
- bbl/d (us; beer)
- bbl/s (us; oil)
- bbl/min (us; oil)
- bbl/h (us; oil)
- bbl/d (us; oil)
- bbl/s (us; tank)
- bbl/min (us; tank)
- bbl/h (us; tank)
- bbl/d (us; tank)

Imperial units
- gal/s (imp)
- gal/min (imp)
- gal/h (imp)
- gal/d (imp)
- Mgal/s (imp)
- Mgal/min (imp)
- Mgal/h (imp)
- Mgal/d (imp)
- bbl/s (imp; beer)
- bbl/min (imp; beer)
- bbl/h (imp; beer)
- bbl/d (imp; beer)
- bbl/s (imp; oil)
- bbl/min (imp; oil)
- bbl/h (imp; oil)
- bbl/d (imp; oil)

Factory setting

Country-specific:
- m³/h
- ft³/min

Additional information

Result

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

Selection

For an explanation of the abbreviated units: → 159

Customer-specific units

The unit for the customer-specific volume is specified in the Volume text parameter.
Volume unit

Navigation

Expert → Sensor → System units → Volume unit (0563)

Description

Use this function to select the unit for the volume.

Selection

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

Factory setting

Country-specific:

- dm³
- ft³

Additional information

Selection

For an explanation of the abbreviated units: → 159

Customer-specific units

The unit for the customer-specific volume is specified in the Volume text parameter.

Mass flow unit

Navigation

Expert → Sensor → System units → Mass flow unit (0554)

Description

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

Selection

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

Factory setting

Country-specific:

- kg/h
- lb/min
**Additional information**

*Result*

The selected unit applies for:

**Mass flow parameter**

*Selection*

For an explanation of the abbreviated units: → 159

**Customer-specific units**

The unit for the customer-specific mass is specified in the **Mass text** parameter.

---

**Mass unit**

**Navigation**

Expert → Sensor → System units → Mass unit (0574)

**Description**

Use this function to select the unit for the mass.

**Selection**

**SI units**

- g
- kg
- t

**US units**

- oz
- lb
- STon

**Factory setting**

Country-specific:

- kg
- lb

**Additional information**

*Selection*

For an explanation of the abbreviated units: → 159

**Customer-specific units**

The unit for the customer-specific mass is specified in the **Mass text** parameter.

---

**Temperature unit**

**Navigation**

Expert → Sensor → System units → Temperature unit (0557)

**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 (→ 40)  
- Maximum value (→ 148)  
- Minimum value (→ 148)  
- Maximum value (→ 146)  
- Minimum value (→ 146)  

Selection  
For an explanation of the abbreviated units: → 159  

Length unit  

Navigation  
Expert → Sensor → System units → Length unit (0551)  

Description  
Use this function to select the unit of length for the nominal diameter.  

Selection  
SI units  
- m  
- mm  
- µm  

US units  
- ft  
- in  

Factory setting  
Country-specific:  
- mm  
- in  

Additional information  
Selection  
For an explanation of the abbreviated units: → 159  

Velocity unit  

Navigation  
Expert → Sensor → System units → Velocity unit (0566)  

Description  
Use this function to select the unit for the flow velocity.  

Selection  
SI units  
- m/s  

US units  
- ft/s  

Factory setting  
Country-specific:  
- m/s  
- ft/s  

For an explanation of the abbreviated units: → 159
Additional information

Result

The selected unit applies for:

- Flow velocity (→  40)
- Sound velocity (→  40)
- Maximum value (→  147)
- Minimum value (→  147)
- Maximum value (→  145)
- Minimum value (→  145)

Selection

For an explanation of the abbreviated units: →  159

Density unit

Navigation

Expert → Sensor → System units → Density unit (0555)

Description

Use this function to select the unit for the density.

Selection

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>g/cm³</td>
<td>lb/ft³</td>
<td>lb/gal (imp)</td>
</tr>
<tr>
<td>g/m³</td>
<td>lb/gal (us)</td>
<td>lb/bbl (imp;beer)</td>
</tr>
<tr>
<td>kg/l</td>
<td>lb/bbl (us,liq.)</td>
<td>lb/bbl (imp;oil)</td>
</tr>
<tr>
<td>kg/dm³</td>
<td>lb/bbl (us,beer)</td>
<td></td>
</tr>
<tr>
<td>kg/m³</td>
<td>lb/bbl (us,oil)</td>
<td></td>
</tr>
<tr>
<td>SD4°C</td>
<td>lb/bbl (us,tank)</td>
<td></td>
</tr>
<tr>
<td>SD15°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD20°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG4°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG15°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SG20°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Factory setting

Country-specific:

- kg/l
- lb/ft³

Additional information

Selection

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

For an explanation of the abbreviated units: →  159

Customer-specific units

The unit for the customer-specific density is specified in the Density text parameter.
Kin. visc. unit

**Navigation**

Expert → Sensor → System units → Kin. visc. unit (0578)

**Description**

Use this function to select the unit for the kinematic viscosity.

**Selection**

*SI units*

- cSt
- m²/s
- St

**Factory setting**

Country-specific:

- m²/s
- cSt

Date/time format

**Navigation**

Expert → Sensor → System units → Date/time format (2812)

**Description**

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

**Selection**

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

**Factory setting**

dd.mm.yy hh:mm

**Additional information**

Selection

For an explanation of the abbreviated units: →  159

3.2.3  "Process param." submenu

**Navigation**


<table>
<thead>
<tr>
<th>Process param.</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Flow damping (1802) →  54</td>
</tr>
<tr>
<td>Temp. damping (1886) →  55</td>
</tr>
<tr>
<td>Low flow cut off →  55</td>
</tr>
</tbody>
</table>
Flow override

**Navigation**


**Description**

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

**Selection**

- Off
- On

**Factory setting**

Off

**Additional information**

Result

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

Description

Flow override is active

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

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

Flow damping

**Navigation**

Expert → Sensor → Process param. → Flow damping (1802)

**Description**

Use this function to enter a time constant for flow damping (PT1 element). Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.

**User entry**

0 to 999.9 s

**Factory setting**

0 s
Additional information

Description

The damping is performed by a PT1 element 2).

User entry

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

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

Result

The damping affects the following variables of the device:

- Outputs → 64
- Low flow cut off → 55
- Totalizers → 124

Temp. damping

Navigation


Description

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

User entry

0 to 999.9 s

Factory setting

10 s

"Low flow cut off" submenu

Navigation

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

Assign variable (1837) → 56
On value (1805) → 56
Off value (1804) → 56

2) Proportional behavior with first-order lag
**Assign variable**

**Navigation**
Expert → Sensor → Process param. → Low flow cut off → Assign variable (1837)

**Description**
Use this function to select the process variable for low flow cutoff detection.

**Selection**
- Off
- Volume flow
- Mass flow

**Factory setting**
Off

---

**On value**

**Navigation**
Expert → Sensor → Process param. → Low flow cut off → On value (1805)

**Prerequisite**
In the Assign variable parameter (→ 56), one of the following options is selected:
- Volume flow
- Mass 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 (→ 56).

**User entry**
Positive floating-point number

**Factory setting**
Depends on country and nominal diameter (→ 156)

**Additional information**
*Dependency*
- The unit depends on the process variable selected in the Assign variable parameter (→ 56).

---

**Off value**

**Navigation**
Expert → Sensor → Process param. → Low flow cut off → Off value (1804)

**Prerequisite**
In the Assign variable parameter (→ 56), one of the following options is selected:
- Volume flow
- Mass 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 (→ 56).

**User entry**
0 to 100.0 %

**Factory setting**
50 %
Additional information

Example

\[
\begin{align*}
Q & \quad \text{Flow} \\
t & \quad \text{Time} \\
H & \quad \text{Hysteresis} \\
A & \quad \text{Low flow cut off active} \\
1 & \quad \text{Low flow cut off is activated} \\
2 & \quad \text{Low flow cut off is deactivated} \\
3 & \quad \text{On value entered} \\
4 & \quad \text{Off value entered}
\end{align*}
\]

3.2.4 "External comp." submenu

Navigation  

Fixed density

Navigation  
Expert → Sensor → External comp. → Fixed density (1862)

Prerequisite
The Mass flow option is selected in the Assign curr. parameter (→ 65).

Description
Use this function to enter a fixed value for the density. The density is used to calculate the mass flow.

User entry
Positive floating-point number

Factory setting
1000 kg/l

Additional information  
User entry
The unit is taken from the Density unit parameter (→ 52).
3.2.5  "Sensor adjustm." submenu


- Sensor adjustm.
  - Variable adjust
    → 58

"Process variable adjustment" submenu


- Variable adjust
  - Vol. flow offset (1831) → 58
  - Vol. flow factor (1832) → 59
  - Mass flow offset (1841) → 59
  - Mass flow factor (1846) → 59
  - S. veloc. offset (1848) → 60
  - S. veloc. factor (1849) → 60

Vol. flow offset


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 l/h

Additional information  ☐  Description
Corrected value = (factor × value) + offset
Vol. flow factor

Navigation

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

User entry
Positive floating-point number

Factory setting
1

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

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/h.

User entry
Signed floating-point number

Factory setting
0 kg/h

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

Mass flow factor

Navigation
Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1846)

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
Description of device parameters

**S. veloc. offset**

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → S. veloc. offset (1848)

**Description**

Use this function to enter the zero point shift for the sound velocity trim. The sound velocity unit on which the shift is based is m/s.

**User entry**

Signed floating-point number

**Factory setting**

0 m/s

**Additional information**

*Description*

Corrected value = (factor × value) + offset

**S. veloc. factor**

**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → S. veloc. factor (1849)

**Description**

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

- **Cal. factor (2920)** → 61
- **Zero point (2921)** → 61
- **Nominal diameter (2807)** → 61
**Cal. factor**

**Navigation**

Expert → Sensor → Calibration → Cal. factor (2920)

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

**User interface**
Signed floating-point number

**Factory setting**
1

**Zero point**

**Navigation**

Expert → Sensor → Calibration → Zero point (2921)

**Description**
Displays the current zero point correction value for the sensor.

**User interface**
Signed floating-point number

**Factory setting**
0

**Nominal diameter**

**Navigation**

Expert → Sensor → Calibration → Nominal diameter (2807)

**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.

"Recalibration" submenu

**Navigation**

Expert → Sensor → Calibration → Recalibration

<table>
<thead>
<tr>
<th>Recalibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year (2846)</td>
</tr>
<tr>
<td>Month (2845)</td>
</tr>
</tbody>
</table>
Description of device parameters

**Year**

**Navigation**

Expert → Sensor → Calibration → Recalibration → Year (2846)

**Prerequisite**

Can be edited if Heartbeat Verification is not active.

**Description**

Use this function to enter the year of recalibration.

**User entry**

9 to 99

**Factory setting**

10

**Month**

**Navigation**

Expert → Sensor → Calibration → Recalibration → Month (2845)

**Prerequisite**

Can be edited if Heartbeat Verification is not active.

**Description**

Use this function to select the month of recalibration.

**Selection**

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

**Factory setting**

January
<table>
<thead>
<tr>
<th><strong>Day</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Prerequisite</strong></td>
</tr>
<tr>
<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><strong>Hour</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Prerequisite</strong></td>
</tr>
<tr>
<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><strong>AM/PM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Prerequisite</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
| **Selection** | - AM  
- PM |
| **Factory setting** | AM |
Description of device parameters

Proline Prosonic Flow 100 HART

Minute

Navigation

Expert → Sensor → Calibration → Recalibration → Minute (2844)

Prerequisite

Can be edited if Heartbeat Verification is not active.

Description

Use this function to enter the minutes of recalibration.

User entry

0 to 59 min

Factory setting

0 min

3.3 "Output" submenu

Navigation

Expert → Output

3.3.1 "Current output 1" submenu

Navigation

Expert → Output → Curr.output 1
Assign curr. 1

**Navigation**

Expert → Output → Curr.output 1 → Assign curr. 1 (0359–1)

**Description**

Use this function to select a process variable for the current output.

**Selection**

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature *
- Acceptance rate *
- Signal strength *
- SNR *
- Turbulence *
- Signal asymmetry *

**Factory setting**

Volume flow

Current span

**Navigation**

Expert → Output → Curr.output 1 → Current span (0353–1)

**Description**

Use this function to select the current range for the process value output and the upper and lower level for signal on alarm.

**Selection**

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA
- Fixed current

**Factory setting**

Country-specific:

- 4...20 mA NAMUR
- 4...20 mA US

* Visibility depends on order options or device settings
Additional information

Description

- In the event of a device alarm, the current output adopts the value specified in the Failure mode parameter (→ 75).
- The measuring range is specified via the 0/4 mA value parameter (→ 67) and 20 mA value parameter (→ 68).

"Fixed current" option

- This option is used for a HART Multidrop network.
- It can only be used for the 4…20 mA HART current output (current output 1).
- The current value is set via the Fixed current parameter (→ 66).

Example

Shows the relationship between the current span for the output of the process variable and the lower and upper alarm levels:

![Diagram showing current span and alarm levels](image.png)

1. Current span for process value
2. Lower level for signal on alarm
3. Upper level for signal on alarm

Selection

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<td>0 to 20.5 mA</td>
<td>&lt; 0 mA</td>
<td>&gt; 21.95 mA</td>
</tr>
</tbody>
</table>

Fixed current

Navigation

Expert → Output → Curr.output 1 → Fixed current (0365–1)

Prerequisite

The Fixed current option is selected in the Current span parameter (→ 65).

Description

Use this function to enter a constant current value for the current output.

User entry

0 to 22.5 mA

Factory setting

22.5 mA
0/4 mA value

Navigation

Expert → Output → Curr.output 1 → 0/4 mA value (0367–1)

Prerequisite

One of the following options is selected in the Current span parameter (→ 65):

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description

Use this function to enter a value for the 0/4 mA current.

User entry

Signed floating-point number

Factory setting

0 l/h

Additional information

Description

Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→ 65). In addition, the value can be greater than or smaller than the value assigned for the 20 mA current in the 20 mA value parameter (→ 68).

Dependency

The unit depends on the process variable selected in the Assign curr. parameter (→ 65).

Current output behavior

The current output behaves differently depending on the settings configured in the following parameters:

- Current span (→ 65)
- Measuring mode (→ 69)
- Failure mode (→ 75)

Configuration examples

Some examples of parameter settings and their effect on the current output are given in the following section.

Configuration example A

Measuring mode with Forward flow option

- 0/4 mA value parameter (→ 67) = not equal to zero flow (e.g. −250 m³/h)
- 20 mA value parameter (→ 68) = not equal to zero flow (e.g. +750 m³/h)
- Calculated current value = 8 mA at zero flow

Q  Flow
I  Current
I  Measuring range is exceeded or undershot
Configuration example B
Measuring mode with Forward/Reverse option

![Diagram showing flow measurement with Forward/Reverse option](image)

1 Current
Q Flow
1 Value assigned to the 0/4 mA current
2 Forward flow
3 Reverse flow

Configuration example C
Measuring mode with Rev. flow comp. option
If flow is characterized by severe fluctuations (e.g. when using reciprocating pumps), flow components outside the measuring range are buffered, balanced and output after a maximum delay of 60 s → 69.

20 mA value

| Navigation       |  
|------------------|------------------|
| Prerequisite      | One of the following options is selected in the Current span parameter (→ 65):  
|                  | • 4...20 mA NAMUR  
|                  | • 4...20 mA US  
| Description      | Use this function to enter a value for the 20 mA current.  
| User entry       | Signed floating-point number  
| Factory setting  | Depends on country and nominal diameter  
| Additional info. | Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→ 65). In addition, the value can be greater than or
smaller than the value assigned for the 0/4 mA current in the 0/4 mA value parameter (→ 67).

Dependency

The unit depends on the process variable selected in the Assign curr. parameter (→ 65).

Example

• Value assigned to 0/4 mA = –250 m³/h
• Value assigned to 20 mA = +750 m³/h
• Calculated current value = 8 mA (at zero flow)

If the Forward/Reverse option is selected in the Measuring mode parameter (→ 69), different signs cannot be entered for the values of the 0/4 mA value parameter (→ 67) and 20 mA value parameter (→ 68). The diagnostic message S441 Curr.output 1 is displayed.

Configuration examples

Observe the configuration examples for the 0/4 mA value parameter (→ 67).

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<td><strong>Factory setting</strong></td>
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</tbody>
</table>

* Visibility depends on order options or device settings
Additional information

Description

The process variable that is assigned to the current output via the Assign curr. parameter (→ 65) is displayed below the parameter.

"Forward flow" option

The current output signal is proportional to the process variable assigned. The measuring range is defined by the values that are assigned to the 0/4 mA and 20 mA current value.

The flow components outside the scaled measuring range are taken into account for signal output as follows:

Both values are defined such that they are not equal to zero flow e.g.:
- 0/4 mA current value = −5 m³/h
- 20 mA current value = 10 m³/h

"Forward/Reverse" option

- The current output signal is independent of the direction of flow (absolute amount of the measured variable). The values for the 0/4 mA value parameter (→ 67) and 20 mA value parameter (→ 68) must have the same sign.
- The value for the 20 mA value parameter (→ 68) (e.g. reverse flow) corresponds to the mirrored value for the 20 mA value parameter (→ 68) (e.g. forward flow).

"Rev. flow comp." option

The Rev. flow comp. option is primarily used to compensate for abrupt reverse flow which can occur in connection with positive displacement pumps as a result of wear or high viscosity. The reverse flows are recorded in a buffer and balanced against forward flow the next time flow is in the forward direction.

Flow values can aggregate in the buffer in the event of prolonged and unwanted fluid reverse flow. However, these flows are not taken into consideration by the current output configuration, i.e. the reverse flow is not compensated.

If this option is set, the measuring device does not attenuate the flow signal. The flow signal is not attenuated.

Examples of how the current output behaves

Example 1

Defined measuring range: lower range value and upper range value with the same sign.
3 Measuring range

1 Current
Q Flow
1 Lower range value (value assigned to 0/4 mA current)
2 Upper range value (value assigned to 20 mA current)

With the following flow response:

![Flow response diagram]

4 Flow response

Q Flow
t Time

With **Forward flow** option

The current output signal is proportional to the process variable assigned. The flow components outside the scaled measuring range are not taken into account for signal output:

![Flow response diagram with Forward flow option]

1 Current
t Time

With **Forward/Reverse** option

The current output signal is independent of the direction of flow.

![Flow response diagram with Forward/Reverse option]

1 Current
t Time

With **Rev. flow comp.** option

![Flow response diagram with Rev. flow comp. option]
Flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.

I = A = S = t

Example 2

Defined measuring range: lower range value and upper range value with different signs

With flow a (—) outside, b (- -) inside the measuring range

With **Forward flow** option
- a (—): The flow components outside the scaled measuring range cannot be taken into account for signal output.
- b (- -): The current output signal is proportional to the process variable assigned.
With **Forward/Reverse** option

This option is not possible in this case as the values for the **0/4 mA value** parameter (→ 67) and **20 mA value** parameter (→ 68) have different signs.

With **Rev. flow comp.** option

Flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.

**Damping out. 1**

**Navigation**

Expert → Output → Curr.output 1 → Damping out. 1 (0363–1)

**Prerequisite**

One of the following options is selected in the **Assign curr.** parameter (→ 65):

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity *
- Temperature *
- Acceptance rate *
- Signal strength *
- SNR *
- Turbulence *
- Signal asymmetry *

One of the following options is selected in the **Current span** parameter (→ 65):

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

* Visibility depends on order options or device settings
Description

Use this function to enter a time constant for the reaction time of the current output signal to fluctuations in the measured value caused by process conditions.

User entry

0.0 to 999.9 s

Factory setting

1.0 s

Additional information

Entry

Use this function to enter a time constant (PT1 element \(^3\)) for current output damping:
- If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables.
- On the other hand, the current output reacts more slowly if a high time constant is entered.

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

Response time

Navigation

Expert → Output → Curr.output 1 → Response time (0378–1)

Prerequisite

One of the following options is selected in the Assign curr. parameter (→ 65):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature *
- Acceptance rate *
- Signal strength *
- SNR *
- Turbulence *
- Signal asymmetry *

One of the following options is selected in the Current span parameter (→ 65):
- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description

Displays the response time. This specifies how quickly the current output reaches the measured value change of 63 % of 100 % of the measured value change.

User interface

Positive floating-point number

Additional information

Description

The response time is made up of the time specified for the following dampings:
- Current output damping → 73
- Depending on the measured variable assigned to the output.

Flow damping

3) proportional transmission behavior with first order delay
*
Visibility depends on order options or device settings
Navigation

Expert → Output → Curr.output 1 → Failure mode (0364–1)

Prerequisite

One of the following options is selected in the Assign curr. parameter (→ 65):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

One of the following options is selected in the Current span parameter (→ 65):
- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description

Use this function to select the value of the current output in the event of a device alarm.

Selection

- Min.
- Max.
- Last valid value
- Actual value
- Defined value

Factory setting

Max.

* Visibility depends on order options or device settings
Additional information

**Description**

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

**“Min.” option**
The current output adopts the value of the lower level for signal on alarm.

![Tip icon](image)
The signal on alarm level is defined via the **Current span** parameter (→ 65).

**“Max.” option**
The current output adopts the value of the upper level for signal on alarm.

![Tip icon](image)
The signal on alarm level is defined via the **Current span** parameter (→ 65).

**“Last valid value” option**
The current output adopts the last measured value that was valid before the device alarm occurred.

**“Actual value” option**
The current output adopts the measured value on the basis of the current flow measurement; the device alarm is ignored.

**“Defined value” option**
The current output adopts a defined measured value.

![Tip icon](image)
The measured value is defined via the **Failure current** parameter (→ 76).

### Failure current

**Navigation**

![Expert icon](image)  Expert → Output → Curr.output 1 → Failure current (0352–1)

**Prerequisite**
The **Defined value** option is selected in the **Failure mode** parameter (→ 75).

**Description**
Use this function to enter a fixed value that the current output adopts in the event of a device alarm.

**User entry**

0 to 22.5 mA

**Factory setting**

22.5 mA

### Output curr. 1

**Navigation**

![Expert icon](image)  Expert → Output → Curr.output 1 → Output curr. 1 (0361–1)

**Description**
Displays the current value currently calculated for the current output.

**User interface**

0 to 22.5 mA
Measur. curr. 1

**Navigation**

Expert → Output → Curr.output 1 → Measur. curr. 1 (0366–1)

**Description**

Use this function to display the actual measured value of the output current.

**User interface**

0 to 30 mA

Trim

**Navigation**

Expert → Output → Curr.output 1 → Trim (0362–1)

**Description**

Use this function to select the calibration mode for process-specific recalibration.

**Selection**

- Off
- 4 mA
- 20 mA
- Calculate
- Reset

**Factory setting**

Off

**Additional information**

For a detailed description of current output trimming, see

Trim value high

**Navigation**

Expert → Output → Curr.output 1 → Trim value high (0356–1)

**Prerequisite**

If the sensor output adjustment is 20 mA.

**Description**

Use this function to enter the upper value for the trim (approx. 20 mA).

**User entry**

18 to 22 mA

**Factory setting**

20 mA

**Additional information**

For a detailed description of current output trimming, see
Trim value low

**Navigation**

Expert → Output → Curr.output 1 → Trim value low (0357–1)

**Prerequisite**

If the sensor output adjustment is 4 mA.

**Description**

Use this function to enter the lower value for the trim (approx. 4 mA).

**User entry**

3 to 5 mA

**Factory setting**

4 mA

**Additional information**

*Description*

For a detailed description of current output trimming, see

Status

**Navigation**

Expert → Output → Curr.output 1 → Status (0360–1)

**Description**

Displays the status of the last output current (OutValue).

**User interface**

0 to 255

**Factory setting**

0

**Additional information**

*Description*

A combination of bits in one byte: 76543210

- The first two bits 7 and 6 describe the overall status.
- The middle bits 5 to 2 describe a substatus which, in turn, depends on the overall status.
- The last two bits 1 and 0 describe whether a limit has been reached.

*User interface*

For detailed information on interpreting display values, see the 'Status of output current' section

3.3.2 "PFS output" submenu

**Navigation**

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</tbody>
</table>
**Operating mode**

**Navigation**
Expert → Output → PFS output 1 → Operating mode (0469–1)

**Description**
Use this function to select the operating mode of the output as a pulse, frequency or switch output.

**Selection**
- Pulse
- Frequency
- Switch

**Factory setting**
Pulse

**Additional information**

**“Pulse” option**
Quantity-dependent pulse with configurable pulse width
- Whenever a specific volume or mass is reached (pulse value), a pulse is output, the duration of which was set previously (pulse width).
- The pulses are never shorter than the set duration.

Example
- Flow rate approx. 100 g/s
- Pulse value 0.1 g
- Pulse width 0.05 ms
- Pulse rate 1000 Impuls/s

**“Frequency” option**
Flow-proportional frequency output with 1:1 on/off ratio
An output frequency is output that is proportional to the value of a process variable, such as volume flow, mass flow, temperature, sound velocity, flow velocity, acceptance rate, signal asymmetry, turbulence, signal strength or signal-to-noise ratio.
Example
- Flow rate approx. 100 g/s
- Max. frequency 10 kHz
- Flow rate at max. frequency 1000 g/s
- Output frequency approx. 1000 Hz

**Flow-proportional frequency output**

"Switch" option
Contact for displaying a condition (e.g. alarm or warning if a limit value is reached)

Example
Alarm response without alarm

**No alarm, high level**

Example
Alarm response in case of alarm

**Alarm, low level**

### Assign pulse 1

**Navigation**

Expert → Output → PFS output 1 → Assign pulse 1 (0460–1)

**Prerequisite**

The Pulse option is selected in the Operating mode parameter (→ 80) parameter.

**Description**

Use this function to select the process variable for the pulse output.

**Selection**

- Off
- Volume flow
- Mass flow
**Factory setting**

Off

**Value per pulse**

**Navigation**

Expert → Output → PFS output 1 → Value per pulse (0455–1)

**Prerequisite**

In the Operating mode parameter (→ 80), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 81):

- Volume flow
- Mass flow

**Description**

Use this function to enter the value for the measured value that a pulse is equivalent to.

**User entry**

Signed floating-point number

**Factory setting**

Depends on country and nominal diameter→ 156

**Additional information**

User entry

Weighting of the pulse output with a quantity.

The lower the pulse value, the
- better the resolution.
- the higher the frequency of the pulse response.

**Pulse width**

**Navigation**

Expert → Output → PFS output 1 → Pulse width (0452–1)

**Prerequisite**

In the Operating mode parameter (→ 80), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 81):

- Volume flow
- Mass flow

**Description**

Use this function to enter the duration of the output pulse.

**User entry**

0.05 to 2 000 ms

**Factory setting**

100 ms

**Additional information**

Define how long a pulse is (duration).

- The maximum pulse rate is defined by \( f_{\text{max}} = 1 / (2 \times \text{pulse width}) \).
- The interval between two pulses lasts at least as long as the set pulse width.
- The maximum flow is defined by \( Q_{\text{max}} = f_{\text{max}} \times \text{pulse value} \).
- If the flow exceeds these limit values, the measuring device displays the diagnostic message ΔS443 Pulse output 1.
**Measuring mode**

**Navigation**
Expert → Output → PFS output 1 → Measuring mode (0457–1)

**Prerequisite**
In the Operating mode parameter (→ 80), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 81):
- Volume flow
- Mass flow

**Description**
Use this function to select the measuring mode for the pulse output.

**Selection**
- Forward flow
- Forward/Reverse
- Reverse flow
- Rev. flow comp.

**Factory setting**
Forward flow

**Additional information**

*Selection*
- Forward flow
  Positive flow is output, negative flow is not output.
- Forward/Reverse
  Positive and negative flow are output (absolute value), but a distinction is not made between positive and negative flow.
- Reverse flow
  Negative flow is output, positive flow is not output.
- Rev. flow comp.
  The flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.

For a detailed description of the options available, see the Measuring mode parameter (→ 69)

**Examples**
For a detailed description of the configuration examples, see the Measuring mode parameter (→ 69)
Failure mode

Navigation  
Expert → Output → PFS output 1 → Failure mode (0480–1)

Prerequisite  
In the Operating mode parameter (→ 80), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 81):

• Volume flow  
• Mass flow

Description  
Use this function to select the failure mode of the pulse output in the event of a device alarm.

Selection

• Actual value  
• No pulses

Factory setting  
No pulses

Additional information

Description  
The dictates of safety render it advisable to ensure that the pulse output shows a predefined behavior in the event of a device alarm.

Selection

• Actual value  
In the event of a device alarm, the pulse output continues on the basis of the current flow measurement. The fault is ignored.

• No pulses  
In the event of a device alarm, the pulse output is "switched off".

NOTICE! A device alarm is a measuring device error that must be taken seriously. It can affect the measurement quality such that the quality can no longer be guaranteed. The Actual value option is only recommended if it can be guaranteed that all possible alarm conditions will not affect the measurement quality.

Pulse output 1

Navigation  
Expert → Output → PFS output 1 → Pulse output 1 (0456–1)

Prerequisite  
The Pulse option is selected in the Operating mode parameter (→ 80) parameter.

Description  
Displays the pulse frequency currently output.

User interface  
Positive floating-point number

Additional information

Description

• The pulse output is an open collector output.
• This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.
• The Value per pulse parameter (→ 82) and Pulse width parameter (→ 82) can be used to define the value (i.e. the measured value amount that corresponds to a pulse) and the duration of the pulse.
The output behavior can be reversed via the `Invert outp.sig` parameter (→ 97) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (Failure mode parameter (→ 84)) can be configured.

### Assign freq.

**Navigation**

Expert → Output → PFS output 1 → Assign freq. (0478–1)

**Prerequisite**

The Frequency option is selected in the Operating mode parameter (→ 80) parameter.

**Description**

Use this function to select the process variable for the frequency output.

**Selection**

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

**Factory setting**

Off

### Min. freq. value

**Navigation**

Expert → Output → PFS output 1 → Min. freq. value (0453–1)

**Prerequisite**

In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
Description of device parameters

Proline Prosonic Flow 100 HART

- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

Description
Use this function to enter the start value frequency.

User entry
0.0 to 10000.0 Hz

Factory setting
0.0 Hz

Max. freq. value

Navigation
Expert → Output → PFS output 1 → Max. freq. value (0454–1)

Prerequisite
In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

Description
Use this function to enter the end value frequency.

User entry
0.0 to 10000.0 Hz

Factory setting
10000.0 Hz

Val. at min.freq

Navigation
Expert → Output → PFS output 1 → Val. at min.freq (0476–1)

Prerequisite
In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry
**Description**
Use this function to enter the measured value for the start value frequency.

**User entry**
Signed floating-point number

**Factory setting**
Depends on country and nominal diameter

**Additional information**
*Dependency*

The entry depends on the process variable selected in the *Assign freq.* parameter (→ 85).

---

**Val. at max.freq**

**Navigation**
Expert → Output → PFS output 1 → Val. at max.freq (0475–1)

**Prerequisite**
In the *Operating mode* parameter (→ 80), the *Frequency* option is selected, and one of the following options is selected in the *Assign freq.* parameter (→ 85):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

**Description**
Use this function to enter the measured value for the end value frequency.

**User entry**
Signed floating-point number

**Factory setting**
Depends on country and nominal diameter

**Additional information**
*Description*
Use this function to enter the maximum measured value at the maximum frequency. The selected process variable is output as a proportional frequency.

*Dependency*

The entry depends on the process variable selected in the *Assign freq.* parameter (→ 85).
**Measuring mode**

**Navigation**  
Expert → Output → PFS output 1 → Measuring mode (0479–1)

**Prerequisite**  
In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

**Description**  
Use this function to select the measuring mode for the frequency output.

**Selection**  
- Forward flow
- Forward/Reverse
- Rev. flow comp.

**Factory setting**  
Forward flow

**Additional information**  
* Selection  
For a detailed description of the options available, see the Measuring mode parameter (→ 69)

* Examples  
For a detailed description of the configuration examples, see the Measuring mode parameter (→ 69)

**Damping out. 1**

**Navigation**  
Expert → Output → PFS output 1 → Damping out. 1 (0477–1)

**Prerequisite**  
In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

* Visibility depends on order options or device settings
### Description
Use this function to enter a time constant for the reaction time of the output signal to fluctuations in the measured value.

### User entry
0 to 999.9 s

### Factory setting
0.0 s

### Additional information
**User entry**
Use this function to enter a time constant (PT1 element 4) for frequency output damping:
- If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables.
- On the other hand, the current output reacts more slowly if a high time constant is entered.

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

The frequency output is subject to separate damping that is independent of all preceding time constants.

### Response time

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<th><strong>Navigation</strong></th>
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<tr>
<td>☯ ☯ Expert → Output → PFS output 1 → Response time (0491–1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Prerequisite</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Operating mode parameter (→ ☯ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ ☯ 85):</td>
</tr>
<tr>
<td>• Volume flow</td>
</tr>
<tr>
<td>• Mass flow</td>
</tr>
<tr>
<td>• Sound velocity</td>
</tr>
<tr>
<td>• Flow velocity</td>
</tr>
<tr>
<td>• Temperature *</td>
</tr>
<tr>
<td>• Acceptance rate *</td>
</tr>
<tr>
<td>• Signal strength *</td>
</tr>
<tr>
<td>• SNR *</td>
</tr>
<tr>
<td>• Turbulence *</td>
</tr>
<tr>
<td>• Signal asymmetry *</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the response time. This specifies how quickly the pulse/frequency/switch output reaches the measured value change of 63 % of 100 % of the measured value change.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>User interface</strong></th>
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</thead>
<tbody>
<tr>
<td>Positive floating-point number</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Additional information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>The response time is made up of the time specified for the following dampings:</td>
</tr>
<tr>
<td>- Damping of pulse/frequency/switch output (73)</td>
</tr>
<tr>
<td>- Depending on the measured variable assigned to the output.</td>
</tr>
<tr>
<td>- Flow damping</td>
</tr>
<tr>
<td>or</td>
</tr>
<tr>
<td>- Temperature damping</td>
</tr>
</tbody>
</table>

---

4) proportional transmission behavior with first order delay

* Visibility depends on order options or device settings
Failure mode

Navigation

Expert → Output → PFS output 1 → Failure mode (0451–1)

Prerequisite

In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal strength
- SNR
- Turbulence
- Signal asymmetry

Description

Use this function to select the failure mode of the frequency output in the event of a device alarm.

Selection

- Actual value
- Defined value
- 0 Hz

Factory setting

0 Hz

Additional information

Selection

- Actual value
  In the event of a device alarm, the frequency output continues on the basis of the current flow measurement. The device alarm is ignored.
- Defined value
  In the event of a device alarm, the frequency output continues on the basis of a predefined value. The Failure freq. (→ 90) replaces the current measured value, making it possible to bypass the device alarm. The actual measurement is switched off for the duration of the device alarm.
- 0 Hz
  In the event of a device alarm, the frequency output is "switched off".

NOTICE! A device alarm is a measuring device error that must be taken seriously. It can affect the measurement quality such that the quality can no longer be guaranteed. The Actual value option is only recommended if it can be guaranteed that all possible alarm conditions will not affect the measurement quality.

Failure freq.

Navigation

Expert → Output → PFS output 1 → Failure freq. (0474–1)

Prerequisite

In the Operating mode parameter (→ 80), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 85):

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
• Temperature
• Acceptance rate
• Signal strength
• SNR
• Turbulence
• Signal asymmetry

**Description**

Use this function to enter the value for the frequency output in the event of a device alarm in order to bypass the alarm.

**User entry**

0.0 to 12 500.0 Hz

**Factory setting**

0.0 Hz

---

**Output freq. 1**

**Navigation**

Expert → Output → PFS output 1 → Output freq. 1 (0471–1)

**Prerequisite**

In the **Operating mode** parameter (→ 80), the **Frequency** option is selected.

**Description**

Displays the actual value of the output frequency which is currently measured.

**User interface**

0.0 to 12 500.0 Hz

---

**Switch out funct**

**Navigation**

Expert → Output → PFS output 1 → Switch out funct (0481–1)

**Prerequisite**

The **Switch** option is selected in the **Operating mode** parameter (→ 80).

**Description**

Use this function to select a function for the switch output.

**Selection**

- Off
- On
- Diag. behavior
- Limit
- Fl. direct.check
- Status

**Factory setting**

Off
Additional information

Selection
• Off
  The switch output is permanently switched off (open, non-conductive).
• On
  The switch output is permanently switched on (closed, conductive).
• Diag. behavior
  Indicates if the diagnostic event is present or not. Is used to output diagnostic information and to react to it appropriately at the system level.
• Limit
  Indicates if a specified limit value has been reached for the process variable. Is used to output diagnostic information relating to the process and to react to it appropriately at the system level.
• Status
  Indicates the device status depending on whether empty pipe detection or low flow cut off is selected.

Assign diag. beh

Navigation
Expert → Output → PFS output 1 → Assign diag. beh (0482–1)

Prerequisite
- In the Operating mode parameter (→ 80), the Switch option is selected.
- In the Switch out funct parameter (→ 91), the Diag. behavior option is selected.

Description
Use this function to select the diagnostic event category that is displayed for the switch output.

Selection
- Alarm
- Alarm or warning
- Warning

Factory setting
Alarm

Additional information

If no diagnostic event is pending, the switch output is closed and conductive.

Selection
- Alarm
  The switch output signals only diagnostic events in the alarm category.
- Alarm or warning
  The switch output signals diagnostic events in the alarm and warning category.
- Warning
  The switch output signals only diagnostic events in the warning category.

Assign limit

Navigation
Expert → Output → PFS output 1 → Assign limit (0483–1)

Prerequisite
- The Switch option is selected in the Operating mode parameter (→ 80) parameter.
- The Limit option is selected in the Switch out funct parameter (→ 91) parameter.
**Description**

Use this function to select a process variable for the limit function.

**Selection**

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Signal strength
- SNR
- Turbulence
- Signal asymmetry
- Acceptance rate
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Volume flow

**Additional information**

*Description*

Behavior of status output when Switch-on value > Switch-off value:

- Process variable > Switch-on value: transistor is conductive
- Process variable < Switch-off value: transistor is non-conductive

Behavior of status output when Switch-on value < Switch-off value:

- Process variable < Switch-on value: transistor is conductive
- Process variable > Switch-off value: transistor is non-conductive
Behavior of status output when Switch-on value = Switch-off value:
- Process variable > Switch-on value: transistor is conductive
- Process variable < Switch-off value: transistor is non-conductive
Description

Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive).

When using a hysteresis: Switch-on value > Switch-off value.

Dependency

The unit depends on the process variable selected in the Assign limit parameter (→ 92).

Switch-off value

Navigation

Expert → Output → PFS output 1 → Switch-off value (0464–1)

Prerequisite

- In the Operating mode parameter (→ 80), the Switch option is selected.
- In the Switch out funct parameter (→ 91), the Limit option is selected.

Description

Use this function to enter the measured value for the switch-off point.

User entry

Signed floating-point number

Factory setting

Country-specific:
- 0 m³/h
- 0 ft³/h

Additional information

Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive).

When using a hysteresis: Switch-on value > Switch-off value.

Dependency

The unit depends on the process variable selected in the Assign limit parameter (→ 92).

Assign dir.check

Navigation

Expert → Output → PFS output 1 → Assign dir.check (0484–1)

Prerequisite

- The Switch option is selected in the Operating mode parameter (→ 80).
- The Fl. direct.check option is selected in the Switch out funct parameter (→ 91).

Description

Use this function to select a process variable for monitoring the flow direction.

Selection

- Off
- Volume flow
- Mass flow
- Flow velocity
**Assign status**

**Navigation**

Expert → Output → PFS output 1 → Assign status (0485–1)

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 80).
- The **Status** option is selected in the **Switch out funct** parameter (→ 91).

**Description**

Use this function to select a device status for the switch output.

**Selection**

- Off
- Low flow cut off

**Factory setting**

Low flow cut off

**Additional information**

*Options*

If empty pipe detection or low flow cut off are enabled, the output is conductive. Otherwise, the switch output is non-conductive.

---

**Switch-on delay**

**Navigation**

Expert → Output → PFS output 1 → Switch-on delay (0467–1)

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 80).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 91).

**Description**

Use this function to enter a delay time for switching on the switch output.

**User entry**

0.0 to 100.0 s

**Factory setting**

0.0 s

---

**Switch-off delay**

**Navigation**

Expert → Output → PFS output 1 → Switch-off delay (0465–1)

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 80).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 91).

**Description**

Use this function to enter a delay time for switching off the switch output.

**User entry**

0.0 to 100.0 s

**Factory setting**

0.0 s
Failure mode

**Navigation**

Expert → Output → PFS output 1 → Failure mode (0486–1)

**Description**

Use this function to select a failsafe mode for the switch output in the event of a device alarm.

**Selection**

- Actual status
- Open
- Closed

**Factory setting**

Open

**Additional information**

*Options*

- **Actual status**
  - In the event of a device alarm, faults are ignored and the current behavior of the input value is output by the switch output. The **Actual status** option behaves in the same way as the current input value.
- **Open**
  - In the event of a device alarm, the switch output's transistor is set to **non-conductive**.
- **Closed**
  - In the event of a device alarm, the switch output's transistor is set to **conductive**.

Switch status 1

**Navigation**

Expert → Output → PFS output 1 → Switch status 1 (0461–1)

**Prerequisite**

The **Switch** option is selected in the **Operating mode** parameter (→ 80).

**Description**

Displays the current switch status of the status output.

**User interface**

- Open
- Closed

**Additional information**

*User interface*

- **Open**
  - The switch output is not conductive.
- **Closed**
  - The switch output is conductive.

Invert outp.sig.

**Navigation**

Expert → Output → PFS output 1 → Invert outp.sig. (0470–1)

**Description**

Use this function to select whether to invert the output signal.

**Selection**

- No
- Yes
### Description of device parameters

**Proline Prosonic Flow 100 HART**

**Factory setting**

No

**Additional information**

*Selection*

**No** option (passive - negative)

![Diagram](image1)

**Yes** option (passive - positive)

![Diagram](image2)

### 3.4 "Communication" submenu

**Navigation**

Expert → Communication

- Communication
  - HART output → 98
  - Web server → 115
  - Diag. config. → 118

### 3.4.1 "HART output" submenu

**Navigation**

Expert → Communication → HART output

- HART output
  - Configuration → 99
  - Burst config. → 101
  - Information → 107
  - Output → 111
"Configuration" submenu

Navigation

Expert → Communication → HART output → Configuration

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<td>Fieldwrit.acc. (0273)</td>
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HART short tag

Navigation

Expert → Communication → HART output → Configuration → HART short tag (0220)

Description

Use this function to enter a brief description for the measuring point. This can be edited and displayed via HART protocol or using the local display.

User entry

Max. 8 characters: A to Z, 0 to 9 and certain special characters (e.g. punctuation marks, @, %).

Factory setting

PROSOnIC

Device tag

Navigation

Expert → Communication → HART output → Configuration → Device tag (0215)

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

Prosonic Flow E 100
### HART address

**Navigation**

[Expert → Communication → HART output → Configuration → HART address (0219)]

**Description**

Use this function to enter the address via which the data exchange takes place via HART protocol.

**User entry**

0 to 63

**Factory setting**

0

**Additional information**

*Description*

For addressing in a HART Multidrop network, the **Fixed current** option must be set in the **Current span** parameter (→ 65) (current output 1).

### No. of preambles

**Navigation**

[Expert → Communication → HART output → Configuration → No. of preambles (0217)]

**Description**

Use this function to enter the number of preambles in the HART protocol.

**User entry**

2 to 20

**Factory setting**

5

**Additional information**

*User entry*

As every modem component can 'swallow' a byte, 2-byte preambles at least must be defined.

### Fieldb.writ.acc.

**Navigation**

[Expert → Communication → HART output → Configuration → Fieldb.writ.acc. (0273)]

**Description**

Use this function to restrict access to the measuring device via fieldbus (HART interface).

**Selection**

- Read + write
- Read only

**Factory setting**

Read + write
Additional information

Description
If read and/or write protection is enabled, the parameter can only be controlled and reset via local operation. Access is no longer possible via operating tools.

Selection
- Read + write
  The parameters are readable and writable.
- Read only
  The parameters are only readable.

"Burst configuration 1 to n" submenu

Navigation

Expert → Communication → HART output → Burst config. → Burst config. 1 to n

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<tr>
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<td>Burst variable 3 (2036)</td>
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<td>Burst variable 4 (2037)</td>
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<td>Burst variable 5 (2038)</td>
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<td>Burst variable 6 (2039)</td>
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</table>
**Burst mode 1 to n**

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n
→ Burst mode 1 to n (2032–1 to n)

**Description**

Use this function to select whether to activate the HART burst mode for burst message X.

**Selection**

- Off
- On

**Factory setting**

Off

**Additional information**

*Options*

- Off
  The measuring device transmits data only when requested by the HART master.
- On
  The measuring device transmits data regularly without being requested.

**Burst command 1 to n**

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n
→ Burst command 1 to n (2031–1 to n)

**Description**

Use this function to select the HART command that is sent to the HART master.

**Selection**

- Command 1
- Command 2
- Command 3
- Command 9
- Command 33
- Command 48

**Factory setting**

Command 2

**Additional information**

*Selection*

- Command 1
  Read out the primary variable.
- Command 2
  Read out the current and the main measured value as a percentage.
- Command 3
  Read out the dynamic HART variables and the current.
- Command 9
  Read out the dynamic HART variables including the related status.
- Command 33
  Read out the dynamic HART variables including the related unit.
- Command 48
  Read out the complete device diagnostics.

*Command 33* option

The HART device variables are defined via Command 107.
The following measured variables (HART device variables) can be read out:

- Volume flow
- Mass flow
- Temperature
- Totalizer 1...3
- Sound velocity
- Flow velocity
- Signal asymmetry *
- Acceptance rate *
- Turbulence *
- Signal strength *
- SNR *
- Percent of range
- Measur. curr.
- Primary var (PV)
- Second.var(SV)
- Tertiary var(TV)
- Quaterna.var(QV)

Commands

- Information about the defined details of the command: HART specifications
- The measured variables (HART device variables) are assigned to the dynamic variables in the Output submenu (→ 64).

**Burst variable 0**

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 0 (2033)

**Description**

For HART command 9 and 33: select the HART device variable or the process variable.

**Selection**

- Volume flow
- Mass flow
- Flow velocity
- Temperature
- Sound velocity
- Signal asymmetry *
- Acceptance rate *
- Turbulence *
- Signal strength *
- SNR *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Percent of range
- Measur. curr.
- Primary var (PV)
- Second.var(SV)
- Tertiary var(TV)
- Quaterna.var(QV)
- Not used

* Visibility depends on order options or device settings
Factory setting: Volume flow

Additional information:

Selection

The **Not used** option is set if a burst message is not configured.

---

**Burst variable 1**

**Navigation**

[Diagram]

**Description**

For HART command 9 and 33: select the HART device variable or the process variable.

**Selection**

See the **Burst variable 0** parameter (→ 103).

**Factory setting**

**Not used**

---

**Burst variable 2**

**Navigation**

[Diagram]

**Description**

For HART command 9 and 33: select the HART device variable or the process variable.

**Selection**

See the **Burst variable 0** parameter (→ 103).

**Factory setting**

**Not used**

---

**Burst variable 3**

**Navigation**

[Diagram]

**Description**

For HART command 9 and 33: select the HART device variable or the process variable.

**Selection**

See the **Burst variable 0** parameter (→ 103).

**Factory setting**

**Not used**
Burst variable 4

Navigation
Expert ➔ Communication ➔ HART output ➔ Burst config. ➔ Burst config. 1 to n ➔ Burst variable 4 (2037)

Description
For HART command 9: select the HART device variable or the process variable.

Selection
See the Burst variable 0 parameter (➔ 103).

Factory setting
Not used

Burst variable 5

Navigation
Expert ➔ Communication ➔ HART output ➔ Burst config. ➔ Burst config. 1 to n ➔ Burst variable 5 (2038)

Description
For HART command 9: select the HART device variable or the process variable.

Selection
See the Burst variable 0 parameter (➔ 103).

Factory setting
Not used

Burst variable 6

Navigation
Expert ➔ Communication ➔ HART output ➔ Burst config. ➔ Burst config. 1 to n ➔ Burst variable 6 (2039)

Description
For HART command 9: select the HART device variable or the process variable.

Selection
See the Burst variable 0 parameter (➔ 103).

Factory setting
Not used

Burst variable 7

Navigation
Expert ➔ Communication ➔ HART output ➔ Burst config. ➔ Burst config. 1 to n ➔ Burst variable 7 (2040)

Description
For HART command 9: select the HART device variable or the process variable.

Selection
See the Burst variable 0 parameter (➔ 103).

Factory setting
Not used
### Trigger mode

**Navigation**

- Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Trigger mode (2044–1 to n)

**Description**

Use this function to select the event that triggers burst message X.

**Selection**

- Continuous
- Window
- Rising
- Falling
- On change

**Factory setting**

Continuous

**Additional information**

**Options**

- Continuous
  
  The message is sent continuously, at least at intervals corresponding to the time frame specified in the Burst min per parameter (→ 107).

- Window
  
  The message is sent if the specified measured value has changed by the value in the Trigger level parameter (→ 106).

- Rising
  
  The message is sent if the specified measured value exceeds the value in the Trigger level parameter (→ 106).

- Falling
  
  The message is sent if the specified measured value drops below the value in the Trigger level parameter (→ 106).

- On change
  
  The message is sent if a measured value changes in the burst message.

### Trigger level

**Navigation**

- Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Trigger level (2043–1 to n)

**Description**

For entering the burst trigger value.

**User entry**

Signed floating-point number

**Additional information**

**Description**

Together with the option selected in the Trigger mode parameter (→ 106) the burst trigger value determines the time of burst message X.
### Min. upd. per.

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Min. upd. per. (2042–1 to n)

**Description**

Use this function to enter the minimum time span between two burst commands of burst message X.

**User entry**

Positive integer

**Factory setting**

1 000 ms

---

### Max. upd. per.

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Max. upd. per. (2041–1 to n)

**Description**

Use this function to enter the maximum time span between two burst commands of burst message X.

**User entry**

Positive integer

**Factory setting**

2 000 ms

---

### "Information" submenu

**Navigation**

Expert → Communication → HART output → Information

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<thead>
<tr>
<th>Information</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device revision (0204)</td>
<td>108</td>
</tr>
<tr>
<td>Device ID (0221)</td>
<td>108</td>
</tr>
<tr>
<td>Device type (0209)</td>
<td>108</td>
</tr>
<tr>
<td>Manufacturer ID (0259)</td>
<td>109</td>
</tr>
<tr>
<td>HART revision (0205)</td>
<td>109</td>
</tr>
<tr>
<td>HART descriptor (0212)</td>
<td>109</td>
</tr>
<tr>
<td>HART message (0216)</td>
<td>109</td>
</tr>
<tr>
<td>Hardware rev. (0206)</td>
<td>110</td>
</tr>
</tbody>
</table>
**Device revision**

**Navigation**

Expert → Communication → HART output → Information → Device revision (0204)

**Description**

Displays the device revision with which the device is registered with the HART Communication Foundation.

**User interface**

2-digit hexadecimal number

**Factory setting**

0x01

**Additional information**

*Description*

The device revision is needed to assign the appropriate device description file (DD) to the device.

---

**Device ID**

**Navigation**

Expert → Communication → HART output → Information → Device ID (0221)

**Description**

Use this function to view the device ID for identifying the measuring device in a HART network.

**User interface**

6-digit hexadecimal number

**Additional information**

*Description*

In addition to the device type and manufacturer ID, the device ID is part of the unique ID. Each HART device is uniquely identified by the unique device ID.

---

**Device type**

**Navigation**

Expert → Communication → HART output → Information → Device type (0209)

**Description**

Displays the device type with which the measuring device is registered with the HART Communication Foundation.

**User interface**

2-digit hexadecimal number

**Factory setting**

0x5c (for Prosonic Flow E 100)
### Additional information

*Description*

The device type is specified by the manufacturer. It is needed to assign the appropriate device description file (DD) to the device.

<table>
<thead>
<tr>
<th><strong>Manufacturer ID</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>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>HART revision</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>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>HART descriptor</strong></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>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>HART message</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
</tbody>
</table>
### User entry
Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /)

### Factory setting
Pros.Flow E 100

---

#### Hardware rev.

<table>
<thead>
<tr>
<th>Navigation</th>
<th>⚙ Expert → Communication → HART output → Information → Hardware rev. (0206)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the hardware revision of the measuring device.</td>
</tr>
<tr>
<td>User interface</td>
<td>0 to 30</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1</td>
</tr>
</tbody>
</table>

---

#### Software rev.

<table>
<thead>
<tr>
<th>Navigation</th>
<th>⚙ Expert → Communication → HART output → Information → Software rev. (0224)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the software revision of the measuring device.</td>
</tr>
<tr>
<td>User interface</td>
<td>0 to 255</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1</td>
</tr>
</tbody>
</table>

---

#### HART date code

<table>
<thead>
<tr>
<th>Navigation</th>
<th>⚙ Expert → Communication → HART output → Information → HART date code (0202)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the date information for individual use.</td>
</tr>
<tr>
<td>User entry</td>
<td>Date entry format: yyyy-mm-dd</td>
</tr>
<tr>
<td>Factory setting</td>
<td>2009-07-20</td>
</tr>
<tr>
<td>Additional information</td>
<td>Example</td>
</tr>
<tr>
<td></td>
<td>Device installation date</td>
</tr>
</tbody>
</table>
### "Output" submenu

**Navigation**

![Expert → Communication → HART output → Output](#)

**Description**

Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

**Selection**

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Temperature
- Acceptance rate
- Signal asymmetry
- Turbulence
- Signal strength
- SNR

**Factory setting**

Volume flow

* Visibility depends on order options or device settings
**Primary var (PV)**

**Navigation**

Expert → Communication → HART output → Output → Primary var (PV) (0201)

**Description**

Displays the current measured value of the primary dynamic variable (PV).

**User interface**

Signed floating-point number

**Additional information**

*User interface*

The measured value displayed depends on the process variable selected in the Assign PV parameter (→ 111).

*Dependency*

The unit of the displayed measured value is taken from the System units submenu (→ 47).

---

**Assign SV**

**Navigation**

Expert → Communication → HART output → Output → Assign SV (0235)

**Description**

Use this function to select a measured variable (HART device variable) for the secondary dynamic variable (SV).

**Selection**

- Volume flow
- Mass flow
- Flow velocity
- Sound velocity
- Temperature
- Acceptance rate *
- Signal asymmetry *
- Turbulence *
- Signal strength *
- SNR *
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Totalizer 1

---

**Second.var(SV)**

**Navigation**

Expert → Communication → HART output → Output → Second.var(SV) (0226)

**Description**

Displays the current measured value of the secondary dynamic variable (SV).

**User interface**

Signed floating-point number

* Visibility depends on order options or device settings
**Assign TV**

**Navigation**
Expert → Communication → HART output → Output → Assign TV (0236)

**Description**
Use this function to select a measured variable (HART device variable) for the tertiary (third) dynamic variable (TV).

**Selection**
- Volume flow
- Mass flow
- Flow velocity
- Sound velocity*
- Temperature*
- Acceptance rate*
- Signal asymmetry*
- Turbulence*
- Signal strength*
- SNR*
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**
Totalizer 2

---

**Tertiary var(TV)**

**Navigation**
Expert → Communication → HART output → Output → Tertiary var(TV) (0228)

**Description**
Displays the current measured value of the tertiary dynamic variable (TV).

**User interface**
Signed floating-point number

**Additional information**

* Visibility depends on order options or device settings

**User interface**
The measured value displayed depends on the process variable selected in the **Assign SV** parameter (→ 112).

**Dependency**
The unit of the displayed measured value is taken from the **System units** submenu (→ 47).
**Assign QV**

**Navigation**

Expert → Communication → HART output → Output → Assign QV (0237)

**Description**

Use this function to select a measured variable (HART device variable) for the quaternary (fourth) dynamic variable (QV).

**Selection**

- Volume flow
- Mass flow
- Flow velocity
- Sound velocity
- Temperature
- Acceptance rate *
- Signal asymmetry *
- Turbulence *
- Signal strength *
- SNR *
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Totalizer 3

---

**Quaterna.var(QV)**

**Navigation**

Expert → Communication → HART output → Output → Quaterna.var(QV) (0203)

**Description**

Displays the current measured value of the quaternary dynamic variable (QV).

**User interface**

Signed floating-point number

**Additional information**

*User interface*

The measured value displayed depends on the process variable selected in the Assign QV parameter (→ 114).

*Dependency*

The unit of the displayed measured value is taken from the System units submenu (→ 47).

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

Navigation

Expert → Communication → Web server

Webserv.language

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

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

* Visibility depends on order options or device settings
### MAC Address

**Navigation**

Expert → Communication → Web server → MAC Address (7214)

**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

### DHCP client

**Navigation**

Expert → Communication → Web server → DHCP client (7212)

**Description**

Use this function to activate and deactivate the DHCP client functionality.

**Selection**

- Off
- On

**Factory setting**

Off

**Additional information**

Result

If the DHCP client functionality of the Web server is activated, the IP address (→ 116), Subnet mask (→ 117) and Default gateway (→ 117) are set automatically.

Identification is via the MAC address of the measuring device.

### IP address

**Navigation**

Expert → Communication → Web server → IP address (7209)

**Description**

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

**User entry**

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

**Factory setting**

192.168.1.212

---

5) Media Access Control
Subnet mask

**Navigation**
Expert → Communication → Web server → Subnet mask (7211)

**Description**
Displays the subnet mask.

**User entry**
4 octet: 0 to 255 (in the particular octet)

**Factory setting**
255.255.255.0

Default gateway

**Navigation**
Expert → Communication → Web server → Default gateway (7210)

**Description**
Displays the default gateway.

**User entry**
4 octet: 0 to 255 (in the particular octet)

**Factory setting**
0.0.0.0

Webserver funct.

**Navigation**
Expert → Communication → Web server → Webserver funct. (7222)

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

**Selection**
- **Off**
- **HTML Off**
- **On**

**Factory setting**
On

**Additional information**

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

**Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>- The web server is completely disabled.</td>
</tr>
<tr>
<td></td>
<td>- Port 80 is locked.</td>
</tr>
<tr>
<td>HTML Off</td>
<td>The HTML version of the web server is not available.</td>
</tr>
<tr>
<td>On</td>
<td>- The complete functionality of the web server is available.</td>
</tr>
<tr>
<td></td>
<td>- JavaScript is used.</td>
</tr>
<tr>
<td></td>
<td>- The password is transferred in an encrypted state.</td>
</tr>
<tr>
<td></td>
<td>- Any change to the password is also transferred in an encrypted state.</td>
</tr>
</tbody>
</table>
Login page

Navigation

Expert → Communication → Web server → Login page (7273)

Description

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

Selection

- Without header
- With header

Factory setting

With header

3.4.3 "Diag. config." submenu

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

Assign a category to the particular diagnostic event:

- **Failure (F) option**
  A device error has occurred. The measured value is no longer valid.

- **Funct. check (C) option**
  The device is in service mode (e.g. during a simulation).

- **Out of spec. (S) option**
  The device is being operated:
  - Outside its technical specification limits (e.g. outside the process temperature range)
  - Outside of the configuration carried out by the user (e.g. maximum flow in parameter 20 mA value)

- **Mainten. req. (M) option**
  Maintenance is required. The measured value is still valid.

- **No effect (N) option**
  Has no effect on the condensed status.

Navigation

Expert → Communication → Diag. config.

| Event category 124 (0270) | ➔ 119 |
| Event category 125 (0271) | ➔ 119 |
| Event category 160 (0272) | ➔ 120 |
| Event category 441 (0210) | ➔ 120 |
| Event category 442 (0230) | ➔ 120 |
| Event category 443 (0231) | ➔ 121 |
| Event category 832 (0218) | ➔ 121 |
Event category 124 (Rel.sig.strength)

Navigation

Expert → Communication → Diag. config. → Event category 124 (0270)

Description

Use this function to select a category for the diagnostic message 124 Rel.sig.strength.

Selection

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

Factory setting

Out of spec. (S)

Additional information

For a detailed description of the event categories available for selection:

Event category 125 (Rel. sound vel.)

Navigation

Expert → Communication → Diag. config. → Event category 125 (0271)

Description

Use this function to select a category for the diagnostic message 125 Rel. sound vel..

Selection

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

Factory setting

Out of spec. (S)

Additional information

For a detailed description of the event categories available for selection:
**Event category 160 (Signal path off)**

**Navigation**

Expert → Communication → Diag. config. → Event category 160 (0272)

**Description**

Use this function to select a category for the diagnostic message **160 Signal path off**.

**Selection**

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

**Factory setting**

Mainten. req. (M)

**Additional information**

For a detailed description of the event categories available for selection:

---

**Event category 441 (Curr.output 1 to n)**

**Navigation**

Expert → Communication → Diag. config. → Event category 441 (0210)

**Description**

Use this function to select a category for the diagnostic message **441 Curr.output 1 to n**.

**Selection**

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

**Factory setting**

Out of spec. (S)

**Additional information**

For a detailed description of the event categories available for selection:

---

**Event category 442 (Freq. output)**

**Navigation**

Expert → Communication → Diag. config. → Event category 442 (0230)

**Prerequisite**

The pulse/frequency/switch output is available.

**Description**

Use this function to select the category assigned to diagnostic message **442 Freq. output**.

**Selection**

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)
Event category 443 (Pulse output)

Navigation  
Expert → Communication → Diag. config. → Event category 443 (0231)

Prerequisite  
The pulse/frequency/switch output is available.

Description  
Use this function to select the category assigned to diagnostic message **443 Pulse output**.

Selection  
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- No effect (N)

Factory setting  
Out of spec. (S)

Additional information  
Selection  
For a detailed description of the event categories available for selection:

Event category 832 (Electronic temp.)

Navigation  
Expert → Communication → Diag. config. → Event category 832 (0218)

Description  
Use this function to select a category for the diagnostic message **832 Electronic temp.**

Selection  
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- No effect (N)

Factory setting  
Out of spec. (S)

Additional information  
Selection  
For a detailed description of the event categories available for selection:
Description of device parameters

Proline Prosonic Flow 100 HART

Event category 833 (Electronic temp.)

Navigation

Expert → Communication → Diag. config. → Event category 833 (0225)

Description

Use this option to select a category for the diagnostic message 833 Electronic temp..

Selection

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

Factory setting

Out of spec. (S)

Additional information

Selection

For a detailed description of the event categories available for selection:

Event category 834 (Process temp.)

Navigation

Expert → Communication → Diag. config. → Event category 834 (0227)

Description

Use this option to select a category for the diagnostic message 834 Process temp..

Selection

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

Factory setting

Out of spec. (S)

Additional information

Selection

For a detailed description of the event categories available for selection:

Event category 835 (Process temp.)

Navigation

Expert → Communication → Diag. config. → Event category 835 (0229)

Description

Use this option to select a category for the diagnostic message 835 Process temp..

Selection

- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- No effect (N)

Factory setting

Out of spec. (S)
Additional information  
For a detailed description of the event categories available for selection:

Event category 841 (Sensor range)

Navigation  
Expert → Communication → Diag. config. → Event category 840 (0267)

Description  
Use this function to select a category for the diagnostic message 841 Sensor range.

Selection  
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- No effect (N)

Factory setting  
Out of spec. (S)

Additional information  
For a detailed description of the event categories available for selection:

3.5  "Application" submenu

Navigation  
Expert → Application

Reset all tot.

Navigation  
Expert → Application → Reset all tot. (2806)

Description  
Use this function to reset all totalizers to the value 0 and restart the totaling process. This deletes all the flow values previously totalized.

Selection  
- Cancel
- Reset + totalize

Factory setting  
Cancel
### Additional information

#### Selection

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

#### 3.5.1 "Totalizer 1 to n" submenu

**Navigation**

Expert → Application → Totalizer 1 to n

**Assign variable**

**Description**

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

**Selection**

- **Off**
- **Volume flow**
- **Mass flow**

**Factory setting**

Volume flow

**Additional information**

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

**Selection**

If the **Off** option is selected, only **Assign variable** parameter (→ 124) is still displayed in the **Totalizer 1 to n** submenu. All other parameters in the submenu are hidden.
Unit totalizer 1 to n

Navigation
Expert → Application → Totalizer 1 to n → Unit totalizer 1 to n (0915–1 to n)

Prerequisite
One of the following options is selected in the Assign variable parameter (→ 124) of the Totalizer 1 to n submenu:
• Volume flow
• Mass flow

Description
Use this function to select the process variable unit for the Totalizer 1 to n (→ 124).

Selection

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>oz</td>
<td>gal (imp)</td>
</tr>
<tr>
<td>kg</td>
<td>lb</td>
<td>Mgal (imp)</td>
</tr>
<tr>
<td>t</td>
<td>STon</td>
<td>bbl (imp;beer)</td>
</tr>
</tbody>
</table>

or

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

Factory setting
Country-specific:
• m³
• ft³

Additional information
Description
The unit is selected separately for each totalizer. It is independent of the selection made in the System units submenu (→ 47).

Selection
The selection is dependent on the process variable selected in the Assign variable parameter (→ 124).

Operation mode

Navigation
Expert → Application → Totalizer 1 to n → Operation mode (0908–1 to n)

Prerequisite
One of the following options is selected in the Assign variable parameter (→ 124) of the Totalizer 1 to n submenu:
• Volume flow
• Mass flow
Description of device parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Use this function to select how the totalizer summates the flow.</th>
</tr>
</thead>
</table>
| Selection           | • Net flow total  
                     | • Forward total  
                     | • Reverse total  |
| Factory setting     | Net flow total                                                   |
| Additional information | Selection  
                     | • Net flow total  
                         | Flow values in the forward and reverse flow direction are totalized and balanced against one another. Net flow is registered in the flow direction.  
                     | • Forward total  
                         | Only the flow in the forward flow direction is totalized.  
                     | • Reverse total  
                         | Only the flow in the reverse flow direction is totalized (= reverse flow quantity). |

Control Tot. 1 to n

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (0912–1 to n)</th>
</tr>
</thead>
</table>
| Prerequisite      | One of the following options is selected in the Assign variable parameter (→ 124) of the Totalizer 1 to n submenu:  
                     | • Volume flow  
                     | • Mass flow  |
| Description       | Use this function to select the control of totalizer value 1-3. |
| Selection         | • Totalize  
                     | • Reset + hold  
                     | • Preset + hold  
                     | • Reset + totalize  
                     | • Preset+totalize  
                     | • Hold  |
| Factory setting   | Totalize  |
| Additional information | Selection  |

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalize</td>
<td>The totalizer is started or continues running.</td>
</tr>
<tr>
<td>Reset + hold</td>
<td>The totaling process is stopped and the totalizer is reset to 0.</td>
</tr>
<tr>
<td>Preset + hold</td>
<td>The totaling process is stopped and the totalizer is set to its defined start value from the Preset value parameter.</td>
</tr>
<tr>
<td>Reset + totalize</td>
<td>The totalizer is reset to 0 and the totaling process is restarted.</td>
</tr>
<tr>
<td>Preset+totalize</td>
<td>The totalizer is set to the defined start value from the Preset value parameter and the totaling process is restarted.</td>
</tr>
</tbody>
</table>
Preset value 1 to n

**Navigation**

Expert → Application → Totalizer 1 to n → Preset value 1 to n (0913-1 to n)

**Prerequisite**

One of the following options is selected in the Assign variable parameter (→ 124) of the Totalizer 1 to n submenu:
- Volume flow
- Mass flow

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

Country-specific:
- 0 m³
- 0 ft³

**Additional information**

User entry

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 125).

**Example**

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

---

Failure mode

**Navigation**

Expert → Application → Totalizer 1 to n → Failure mode (0901-1 to n)

**Prerequisite**

One of the following options is selected in the Assign variable parameter (→ 124) of the Totalizer 1 to n submenu:
- Volume flow
- Mass flow

**Description**

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

**Selection**

- Stop
- Actual value
- Last valid value

**Factory setting**

Stop
Additional information

Description

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

Selection

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

3.5.2 "Inventory count." submenu

Navigation

Expert → Application → Inventory count.

- Inventory count.
- Unit (0974)

Description

Displays the unit of the inventory counter.

User interface

SI units
- g
- kg
- t

US units
- oz
- lb
- STon

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

or

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

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

Description

![The parameter cannot be configured or reset.]

---

### 3.6 "Diagnostics" submenu

**Navigation**  
Expert → Diagnostics

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<th>► Diagnostics</th>
<th>➡  129</th>
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<tr>
<td>Prev.diagnostics (0690)</td>
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<td>Timestamp (0672)</td>
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<td>Time fr. restart (0653)</td>
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<td>► Simulation</td>
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</tbody>
</table>

---

**Actual diagnos.**

**Navigation**  
Expert → Diagnostics → Actual diagnos. (0691)

**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 (→ 132).

Example
For the display format:
F271 Main electronics

---

Timestamp

Navigation
Expert → Diagnostics → Timestamp

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

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

Additional information
Display
The diagnostic message can be viewed via the Actual diagnos. parameter (→ 129).

Example
For the display format:
24d12h13m00s

---

Prev.diagnostics

Navigation
Expert → Diagnostics → Prev.diagnostics (0690)

Prerequisite
Two diagnostic events have already occurred.

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

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

Additional information
Example
For the display format:
F271 Main electronics
Timestamp

**Navigation**  
Expert → Diagnostics → Timestamp

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

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

**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Prev.diagnostics** parameter (→ 130).

*Example*  
For the display format:  
24d12h13m00s

Time fr. restart

**Navigation**  
Expert → Diagnostics → Time fr. restart (0653)

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

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

Operating time

**Navigation**  
Expert → Diagnostics → Operating time (0652)

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

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

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

**Navigation**

Expert → Diagnostics → Diagnostic list

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<td></td>
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<tr>
<td>Diagnostics 2 (0693)</td>
<td>→</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Diagnostics 3 (0694)</td>
<td>→</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Diagnostics 4 (0695)</td>
<td>→</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Diagnostics 5 (0696)</td>
<td>→</td>
<td>135</td>
<td></td>
</tr>
</tbody>
</table>

**Diagnostics 1**

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 1 (0692)

**Description**

Displays the current diagnostics message with the highest priority.

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

*Examples*

For the display format:
- F271 Main electronics
- F276 I/O module

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

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

**Additional information**

*Display*

The diagnostic message can be viewed via the Diagnostics 1 parameter (→ 132).

*Example*

For the display format:
24d12h13m00s
Diagnostics 2

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 2 (0693)

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

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

Additional information

Examples
For the display format:
- F271 Main electronics
- F276 I/O module

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

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

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

Additional information

Display
The diagnostic message can be viewed via the Diagnostics 2 parameter (→ 133).

Example
For the display format:
24d12h13m00s

Diagnostics 3

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 3 (0694)

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

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

Additional information

Examples
For the display format:
- F271 Main electronics
- F276 I/O module
### Description of device parameters

#### Proline Prosonic Flow 100 HART

**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 (→ 133).

*Example*  
For the display format:  
24d12h13m00s

---

**Diagnostics 4**

**Navigation**  
Expert → Diagnostics → Diagnostic list → Diagnostics 4 (0695)

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

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

**Additional information**  
*Examples*  
For the display format:  
- ☝F271 Main electronics  
- ☝F276 I/O module

---

**Timestamp**

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

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

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

**Additional information**  
*Display*  
The diagnostic message can be viewed via the **Diagnostics 4** parameter (→ 134).

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

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 5 (0696)

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

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

**Additional information**

*Examples*
For the display format:
- F271 Main electronics
- F276 I/O module

Timestamp

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

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

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

**Additional information**

*Display*
The diagnostic message can be viewed via the Diagnostics 5 parameter (→ 135).

*Example*
For the display format:
24d12h13m00s

3.6.2 "Event logbook" submenu

**Navigation**

Expert → Diagnostics → Event logbook

*Event logbook*

Filter options (0705)

*Event list*
Filter options

Navigation

Expert → Diagnostics → Event logbook → Filter options

Description

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

Selection

- All
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req. (M)
- Information (I)

Factory setting

All

Additional information

Description

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

"Event list" submenu

The Event list submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the Event logbook submenu.

Navigation

Expert → Diagnostics → Event logbook → Event list

Event list

Navigation

Expert → Diagnostics → Event logbook → Event list

Description

Displays the history of event messages of the category selected in the Filter options parameter.
User interface

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

Additional information

Description
A maximum of 20 event messages are displayed in chronological order.
The following symbols indicate whether an event has occurred or has ended:
- ☖: Occurrence of the event
- ☐: End of the event

Examples
For the display format:
- I1091 Configuration modified
  ☖ 24d12h13m00s
- ☒F271 Main electronics
  ☖ 01d04h12min30s

HistoROM
A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

3.6.3 "Device info" submenu

Navigation

Expert → Diagnostics → Device info

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<th>Device info</th>
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<td>Serial number (0009)</td>
</tr>
<tr>
<td>Firmware version (0010)</td>
</tr>
<tr>
<td>Device name (0013)</td>
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<tr>
<td>Order code (0008)</td>
</tr>
<tr>
<td>Ext. order cd. 1 (0023)</td>
</tr>
<tr>
<td>Ext. order cd. 2 (0021)</td>
</tr>
<tr>
<td>Ext. order cd. 3 (0022)</td>
</tr>
<tr>
<td>Config. counter (0233)</td>
</tr>
<tr>
<td>ENP version (0012)</td>
</tr>
</tbody>
</table>
**Device tag**

**Navigation**  
Expert → Diagnostics → Device info → Device tag (0011)

**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. @, %, /).

**Factory setting**  
Prosonic Flow E 100

---

**Serial number**

**Navigation**  
Expert → Diagnostics → Device info → Serial number (0009)

**Description**  
Displays the serial number of the measuring device.

*The number can 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

---

**Firmware version**

**Navigation**  
Expert → Diagnostics → Device info → Firmware version (0010)

**Description**  
Displays the device firmware version installed.

**User interface**  
Character string in the format xx.yy.zz

**Additional information**  
*Display*

The Firmware version is also located:

- On the title page of the Operating instructions
- On the transmitter nameplate
### Device name

**Navigation**

[Icon: Expert → Diagnostics → Device info → Device name (0013)]

**Description**

Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.

**User interface**

Max. 32 characters such as letters or numbers.

**Factory setting**

Pros.Flow E 100

### Order code

**Navigation**

[Icon: Expert → Diagnostics → Device info → Order code (0008)]

**Description**

Displays the device order code.

**User interface**

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

**Additional information**

**Description**

The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.

The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

**Uses of the order code**

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

### Ext. order cd. 1

**Navigation**

[Icon: Expert → Diagnostics → Device info → Ext. order cd. 1 (0023)]

**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.
**Description of device parameters**

**Proline Prosonic Flow 100 HART**

---

**Ext. order cd. 2**

<table>
<thead>
<tr>
<th>Navigation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the second part of the extended order code.</td>
</tr>
<tr>
<td>User interface</td>
<td>Character string</td>
</tr>
<tr>
<td>Additional information</td>
<td>For additional information, see Ext. order cd. 1 parameter (→  139)</td>
</tr>
</tbody>
</table>

**Ext. order cd. 3**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Diagnostics → Device info → Ext. order cd. 3 (0022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the third part of the extended order code.</td>
</tr>
<tr>
<td>User interface</td>
<td>Character string</td>
</tr>
<tr>
<td>Additional information</td>
<td>For additional information, see Ext. order cd. 1 parameter (→  139)</td>
</tr>
</tbody>
</table>

**Config. counter**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Diagnostics → Device info → Config. counter (0233)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the number of parameter modifications for the device. When the user changes a parameter setting, this counter is incremented.</td>
</tr>
<tr>
<td>User interface</td>
<td>0 to 65 535</td>
</tr>
</tbody>
</table>

**ENP version**

<table>
<thead>
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<th>Navigation</th>
<th>Expert → Diagnostics → Device info → ENP version (0012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the version of the electronic nameplate.</td>
</tr>
<tr>
<td>User interface</td>
<td>Character string</td>
</tr>
<tr>
<td>Factory setting</td>
<td>2.02.00</td>
</tr>
<tr>
<td>Additional information</td>
<td>Description</td>
</tr>
</tbody>
</table>

This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.
### 3.6.4 "Mainboard module" submenu

**Navigation**

Expert → Diagnostics → Mainboard module

#### Software rev.

**Description**

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

**User interface**

Positive integer

#### Build no. softw.

**Description**

Displays the software build number of the module.

**User interface**

Positive integer

#### Bootloader rev.

**Description**

Displays the bootloader revision of the software.

**User interface**

Positive integer
### "Sens. electronic" submenu

#### Software rev.

**Navigation**

Expert → Diagnostics → Sens. electronic → Software rev. (0072)

**Description**

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

**User interface**

Positive integer

#### Build no. softw.

**Navigation**

Expert → Diagnostics → Sens. electronic → Build no. softw. (0079)

**Description**

Displays the software build number of the module.

**User interface**

Positive integer

#### Bootloader rev.

**Navigation**

Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)

**Description**

Displays the bootloader revision of the software.

**User interface**

Positive integer
### 3.6.6 "Display module" submenu

**Navigation**  
Expert → Diagnostics → Display module

**Software rev.**

**Navigation**  
Expert → Diagnostics → Display module → Software rev. (0072)

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

**User interface**  
Positive integer

**Build no. softw.**

**Navigation**  
Expert → Diagnostics → Display module → Build no. softw. (0079)

**Description**  
Displays the software build number of the module.

**User interface**  
Positive integer

**Bootloader rev.**

**Navigation**  
Expert → Diagnostics → Display module → Bootloader rev. (0073)

**Description**  
Displays the bootloader revision of the software.

**User interface**  
Positive integer
3.6.7 "Min/max val." submenu

Navigation

Expert → Diagnostics → Min/max val.

Reset min/max

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

Selection
Cancel

Factory setting
Cancel

"Meas. point 1" submenu

Navigation

Expert → Diagnostics → Min/max val. → Meas. point 1

Reset min/max

Description
Use this function to select the peakhold indicators that are to be reset.

Selection

- Cancel
- Flow velocity
- Sound velocity
- Signal strength
- SNR
- Turbulence
- Acceptance rate
- Asymmetry

Factory setting
Cancel
“Sound velocity” submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Meas. point 1 → Sound velocity

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<td>→ 145</td>
</tr>
<tr>
<td>Minimum value (2969)</td>
<td>→ 145</td>
</tr>
</tbody>
</table>

**Maximum value**

**Navigation**

Expert → Diagnostics → Min/max val. → Meas. point 1 → Sound velocity → Maximum value (2968)

**Description**

Maximum value of sound velocity since the last reset.

**User interface**

Signed floating-point number

**Factory setting**

0 m/s

**Minimum value**

**Navigation**

Expert → Diagnostics → Min/max val. → Meas. point 1 → Sound velocity → Minimum value (2969)

**Description**

Minimum value of sound velocity since the last reset.

**User interface**

Signed floating-point number

**Factory setting**

0 m/s

“Sensor elec.temp” submenu

**Navigation**

Expert → Diagnostics → Min/max val. → Meas. point 1 → Sensor elec.temp

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
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<td>→ 146</td>
</tr>
<tr>
<td>Minimum value (3021)</td>
<td>→ 146</td>
</tr>
</tbody>
</table>
### Maximum value

**Navigation**

- Expert → Diagnostics → Min/max val. → Meas. point 1 → Sensor elec.temp → Maximum value (3020)

**Description**

Maximum value of sensor electronic temperature since the last reset.

**User interface**

Signed floating-point number

**Factory setting**

Positive floating-point number

### Minimum value

**Navigation**

- Expert → Diagnostics → Min/max val. → Meas. point 1 → Sensor elec.temp → Minimum value (3021)

**Description**

Minimum value of sensor electronic temperature since the last reset.

**User interface**

Signed floating-point number

**Factory setting**

Negative floating-point number

### "Signal strength" submenu

**Navigation**

- Expert → Diagnostics → Min/max val. → Meas. point 1 → Signal strength

<table>
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<th>Signal strength</th>
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<th>Minimum value (2973)</th>
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<tbody>
<tr>
<td></td>
<td>→ 146</td>
<td>→ 147</td>
</tr>
</tbody>
</table>

### Maximum value

**Navigation**

- Expert → Diagnostics → Min/max val. → Meas. point 1 → Signal strength → Maximum value (2972)

**Description**

Maximum value of signal strength since the last reset.

**User interface**

Signed floating-point number

**Factory setting**

0 dB
Minimum value

**Navigation**
Expert → Diagnostics → Min/max val. → Meas. point 1 → Signal strength → Minimum value (2973)

**Description**
Minimum value of signal strength since the last reset.

**User interface**
Signed floating-point number

**Factory setting**
0 dB

"Flow velocity" submenu

**Navigation**
Expert → Diagnostics → Min/max val. → Meas. point 1 → Flow velocity

<table>
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<th>Flow velocity</th>
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</thead>
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<td>Maximum value (2911) → 147</td>
</tr>
<tr>
<td>Minimum value (2918) → 147</td>
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</tbody>
</table>

Maximum value

**Navigation**
Expert → Diagnostics → Min/max val. → Meas. point 1 → Flow velocity → Maximum value (2911)

**Description**
Maximum value of flow velocity since the last reset.

**User interface**
Signed floating-point number

**Factory setting**
0 m/s

Minimum value

**Navigation**
Expert → Diagnostics → Min/max val. → Meas. point 1 → Flow velocity → Minimum value (2918)

**Description**
Minimum value of flow velocity since the last reset.

**User interface**
Signed floating-point number
Description of device parameters

Proline Prosonic Flow 100 HART

**Factory setting** 0 m/s

"Medium temp." submenu

**Navigation**
Expert → Diagnostics → Min/max val. → Meas. point 1 → Medium temp.

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<th>Submenu</th>
<th>Description</th>
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</thead>
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<td>Maximum value</td>
<td>Maximum value of medium temperature since the last reset.</td>
<td>Signed floating-point number</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Minimum value</td>
<td>Minimum value of medium temperature since the last reset.</td>
<td>Signed floating-point number</td>
<td>Negative floating-point number</td>
</tr>
</tbody>
</table>

3.6.8 "Heartbeat" submenu

For detailed information on the parameter descriptions for the Heartbeat Verification+Monitoring application package, refer to the Special Documentation for the device.
Navigation  
Expert → Diagnostics → Heartbeat

- Heartbeat
  - Base settings
  - Perform.verific.
  - Verific. results

3.6.9  "Simulation" submenu

Navigation  
Expert → Diagnostics → Simulation

- Simulation
  - Assign proc.var. (1810)  → 150
  - Proc. var. value (1811)  → 150
  - Curr.out. 1 sim. (0354–1)  → 151
  - Value curr.out 1 (0355–1)  → 151
  - FreqOutputSim 1 (0472–1)  → 151
  - Freq value 1 (0473–1)  → 152
  - Puls.outp.sim. 1 (0458–1)  → 152
  - Pulse value 1 (0459–1)  → 153
  - Switch sim. 1 (0462–1)  → 153
  - Switch status 1 (0463–1)  → 154
  - Dev. alarm sim. (0654)  → 154
  - Event category (0738)  → 155
  - Diag. event sim. (0737)  → 155
### Assign proc.var.

**Navigation**

> Expert → Diagnostics → Simulation → Assign proc.var. (1810)

**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
- Sound velocity
- Flow velocity
- Temperature

**Factory setting**

Off

**Additional information**

*Description*

The simulation value of the process variable selected is defined in the **Proc. var. value** parameter (→ 150).

### Proc. var. value

**Navigation**

> Expert → Diagnostics → Simulation → Proc. var. value (1811)

**Prerequisite**

In the **Assign proc.var.** parameter (→ 150), one of the following options is selected:

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- 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 (→ 47).

* Visibility depends on order options or device settings
### Curr.out. 1 sim.

**Navigation**  
Expert → Diagnostics → Simulation → Curr.out. 1 sim. (0354–1)

**Description**  
Use this function to switch simulation of the current output on and off. The display alternates between the measured value and a diagnostic message of the ‘Function check’ category (C) while simulation is in progress.

**Selection**  
- Off
- On

**Factory setting**  
Off

**Additional information**  
*Description*

The desired simulation value is specified in the **Value curr.out 1** parameter (→ 151).

*Selection*

- Off  
  Current simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On  
  Current simulation is active.

### Value curr.out 1

**Navigation**  
Expert → Diagnostics → Simulation → Value curr.out 1 (0355–1)

**Prerequisite**  
In the Curr.out. 1 sim. parameter, the **On** option is selected.

**Description**  
Use this function to enter a current value for the simulation. In this way, users can verify the correct adjustment of the current output and the correct function of downstream switching units.

**User entry**  
0 to 22.5 mA

### FreqOutputSim 1

**Navigation**  
Expert → Diagnostics → Simulation → FreqOutputSim 1 (0472–1)

**Prerequisite**  
In the Operating mode parameter (→ 80), the **Frequency** option is selected.

**Description**  
Use this function to switch simulation of the frequency output on and off. The display alternates between the measured value and a diagnostic message of the ‘Function check’ category (C) while simulation is in progress.

**Selection**  
- Off
- On
Description of device parameters

**Proline Prosonic Flow 100 HART**

**Factory setting**
- Off

**Additional information**

*Description*

- The desired simulation value is defined in the **Freq value** parameter (→ 152).

*Selection*

- **Off**
  - Frequency simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- **On**
  - Frequency simulation is active.

---

### Freq value 1

**Navigation**

- Expert → Diagnostics → Simulation → Freq value 1 (0473–1)

**Prerequisite**

- In the **FreqOutputSim** parameter (→ 151), the **On** option is selected.

**Description**

- Use this function to enter a frequency value for the simulation. In this way, users can verify the correct adjustment of the frequency output and the correct function of downstream switching units.

**User entry**

- 0.0 to 12 500.0 Hz

---

### Puls.outp.sim. 1

**Navigation**

- Expert → Diagnostics → Simulation → Puls.outp.sim. 1 (0458–1)

**Prerequisite**

- In the **Operating mode** parameter (→ 80), the **Pulse** option is selected.

**Description**

- Use this function to switch simulation of the pulse output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

**Selection**

- **Off**
- **Fixed value**
- **Down-count. val.**

**Factory setting**

- Off
Additional information

**Description**

The desired simulation value is defined in the **Pulse value** parameter (→ 153).

**Selection**
- **Off**
  - Pulse simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- **Fixed value**
  - Pulses are continuously output with the pulse width specified in the **Pulse width** parameter (→ 82).
- **Down-count. val.**
  - The pulses specified in the **Pulse value** parameter (→ 153) are output.

### Pulse value 1

**Navigation**

Expert → Diagnostics → Simulation → Pulse value 1 (0459–1)

**Prerequisite**

In the **Puls.outp.sim.** parameter (→ 152), the **Down-count. val.** option is selected.

**Description**

Use this function to enter a pulse value for the simulation. In this way, users can verify the correct adjustment of the pulse output and the correct function of downstream switching units.

**User entry**

0 to 65535

### Switch sim. 1

**Navigation**

Expert → Diagnostics → Simulation → Switch sim. 1 (0462–1)

**Prerequisite**

In the **Operating mode** parameter (→ 80), the **Switch** option is selected.

**Description**

Use this function to switch simulation of the switch output on and off. The display alternates between the measured value and a diagnostic message of the 'Function check' category (C) while simulation is in progress.

**Selection**

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

**Factory setting**

Off
Additional information

Description

The desired simulation value is defined in the Switch status parameter (→ 154).

Selection

- Off
  Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On
  Switch simulation is active.

Switch status 1

Navigation

Expert → Diagnostics → Simulation → Switch status 1 (0463–1)

Prerequisite

In the Switch sim. parameter (→ 153) Switch sim. 1 to n parameter Switch sim. 1 to n parameter, the On option is selected.

Description

Use this function to select a switch value for the simulation. In this way, users can verify the correct adjustment of the switch output and the correct function of downstream switching units.

Selection

- Open
- Closed

Additional information

Selection

- Open
  Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- Closed
  Switch simulation is active.

Dev. alarm sim.

Navigation

Expert → Diagnostics → Simulation → Dev. alarm sim. (0654)

Description

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

Selection

- Off
- On

Factory setting

Off

Additional information

Description

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

**Navigation**  
Expert → Diagnostics → Simulation → Event category (0738)

**Description**  
Use this function to select the category of the diagnostic events that are displayed for the simulation in the **Diag. event sim.** parameter (→ 155).

**Selection**  
- Sensor
- Electronics
- Configuration
- Process

**Factory setting**  
Process

### Diag. event sim.

**Navigation**  
Expert → Diagnostics → Simulation → Diag. event sim. (0737)

**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 **Event category** parameter (→ 155).
4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td>Mass flow</td>
<td>kg/h</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Volume flow</td>
<td>m³/h</td>
<td></td>
</tr>
<tr>
<td>Velocity</td>
<td>m/s</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>mm</td>
<td></td>
</tr>
</tbody>
</table>

4.1.2 Full scale values

The factory settings apply to the following parameters:
- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>[dm³/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>720</td>
</tr>
<tr>
<td>65</td>
<td>1200</td>
</tr>
<tr>
<td>80</td>
<td>1680</td>
</tr>
<tr>
<td>100</td>
<td>2880</td>
</tr>
<tr>
<td>150</td>
<td>6360</td>
</tr>
</tbody>
</table>

4.1.3 Output current span

Current output 1 4 to 20 mA NAMUR

4.1.4 Pulse value

<table>
<thead>
<tr>
<th>Nominal diameter [mm]</th>
<th>[dm³/pulse]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>65</td>
<td>4</td>
</tr>
<tr>
<td>80</td>
<td>6</td>
</tr>
<tr>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>150</td>
<td>25</td>
</tr>
</tbody>
</table>

4.1.5 On value low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.
### Nominal diameter [mm] | Switch-on point \( (v \sim 0.1 \text{ m/s}) \) [dm³/min]
--- | ---
50 | 14.4
65 | 24.0
80 | 33.6
100 | 57.6
150 | 127.2

### 4.2 US units

Only valid for USA and Canada.

#### 4.2.1 System units

<table>
<thead>
<tr>
<th>Mass</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow</td>
<td>lb/min</td>
</tr>
<tr>
<td>Volume</td>
<td>ft³</td>
</tr>
<tr>
<td>Volume flow</td>
<td>ft³/min</td>
</tr>
<tr>
<td>Velocity</td>
<td>ft/s</td>
</tr>
<tr>
<td>Temperature</td>
<td>°F</td>
</tr>
<tr>
<td>Length</td>
<td>in</td>
</tr>
</tbody>
</table>

#### 4.2.2 Full scale values

The factory settings apply to the following parameters:
- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>[gal/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>190</td>
</tr>
<tr>
<td>2 ½</td>
<td>317</td>
</tr>
<tr>
<td>3</td>
<td>444</td>
</tr>
<tr>
<td>4</td>
<td>761</td>
</tr>
<tr>
<td>6</td>
<td>1680</td>
</tr>
</tbody>
</table>

#### 4.2.3 Output current span

Current output 1 4 to 20 mA US

#### 4.2.4 Pulse value

<table>
<thead>
<tr>
<th>Nominal diameter [in]</th>
<th>[gal/pulse]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>2 ½</td>
<td>1.1</td>
</tr>
<tr>
<td>3</td>
<td>1.6</td>
</tr>
</tbody>
</table>
4.2.5 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>Switch-on point (v ~ 0.1 m/s) [dm³/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3.8</td>
</tr>
<tr>
<td>2 ½</td>
<td>6.3</td>
</tr>
<tr>
<td>3</td>
<td>8.9</td>
</tr>
<tr>
<td>4</td>
<td>15.2</td>
</tr>
<tr>
<td>6</td>
<td>33.6</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>Velocity</td>
<td>m/s</td>
<td>Meter/time 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</td>
<td>Kilogram/time unit</td>
</tr>
<tr>
<td></td>
<td>kg/s, kg/min, kg/h, kg/d</td>
<td>Metric ton/time unit</td>
</tr>
<tr>
<td></td>
<td>t/h, t/d</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>°C, K</td>
<td>Celsius, Kelvin</td>
</tr>
<tr>
<td>Volume</td>
<td>m³/₃, dm³, m³</td>
<td>Cubic centimeter, cubic decimeter, cubic meter</td>
</tr>
<tr>
<td></td>
<td>ml, l</td>
<td>Milliliter, liter</td>
</tr>
<tr>
<td>Volume flow</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>l/s, l/min, l/h, l/d</td>
<td>Liter/time unit</td>
</tr>
<tr>
<td>Time</td>
<td>m, h, d, y</td>
<td>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>Velocity</td>
<td>ft/s</td>
<td>Foot/time 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</td>
<td>Ounce/time unit</td>
</tr>
<tr>
<td></td>
<td>lb/s, lb/min, lb/h, lb/d</td>
<td>Pound/time unit</td>
</tr>
<tr>
<td></td>
<td>STon/h, STon/d</td>
<td>Standard ton/time unit</td>
</tr>
<tr>
<td>Temperature</td>
<td>°F, °R</td>
<td>Fahrenheit, Rankine</td>
</tr>
<tr>
<td>Volume</td>
<td>ft³</td>
<td>Cubic foot</td>
</tr>
<tr>
<td>Volume flow</td>
<td>ft³/s, ft³/min, ft³/h, ft³/d</td>
<td>Cubic foot/time unit</td>
</tr>
<tr>
<td>Time</td>
<td>m, h, d, y</td>
<td>Minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem (before midday), post meridiem (after midday)</td>
</tr>
</tbody>
</table>

### 5.3 Imperial units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>bbl (imp.beer)</td>
<td>Barrel (beer)</td>
</tr>
<tr>
<td>Volume flow</td>
<td>bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)</td>
<td>Barrel /time unit (beer)</td>
</tr>
<tr>
<td></td>
<td>Beer: 36.0 gal/bbl</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>m, h, d, y</td>
<td>Minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem (before midday), post meridiem (after midday)</td>
</tr>
</tbody>
</table>
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  Assign behavior of diagnostic no. 124 (0774) .... 37
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  Assign behavior of diagnostic no. 302 (0742) .... 36
  Assign behavior of diagnostic no. 441 (0657) .... 33
  Assign behavior of diagnostic no. 442 (0658) .... 33
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