Description of Device Parameters
Proline Prosonic Flow W 400

Ultrasonic time-of-flight flowmeter
HART
# Table of contents

1 About this document .......................... 4
   1.1 Document function .......................... 4
   1.2 Target group ............................... 4
   1.3 Using this document ....................... 4
       1.3.1 Information on the document structure ........................................ 4
       1.3.2 Structure of a parameter description ........................................ 6
   1.4 Symbols used ................................ 6
       1.4.1 Symbols for certain types of information ..................................... 6
       1.4.2 Symbols in graphics ................................................................. 7
   1.5 Documentation ............................... 7
       1.5.1 Standard documentation ............................................................ 7
       1.5.2 Supplementary device-dependent documentation ............................ 7

2 Overview of the Expert operating menu ........................................ 8

3 Description of device parameters ............................................. 11
   3.1 'System' submenu .................................. 13
       3.1.1 'Display' submenu .......................... 14
       3.1.2 'Diagnostic handling' submenu ............... 33
       3.1.3 'Administration' submenu ...................... 40
   3.2 'Sensor' submenu .................................. 45
       3.2.1 'Measured values' submenu .................... 45
       3.2.2 'System units' submenu ......................... 54
       3.2.3 'Measuring point' submenu ...................... 60
       3.2.4 'Installation status' submenu .................... 69
       3.2.5 'Process parameters' submenu .................... 71
       3.2.6 'External compensation' submenu .............. 75
       3.2.7 'Sensor adjustment' submenu .................... 79
       3.2.8 'Calibration' submenu .......................... 83
   3.3 'Input' submenu .................................. 84
       3.3.1 'Status input 1 to n' submenu ................ 85
   3.4 'Output' submenu .................................. 87
       3.4.1 'Current output 1' submenu .................... 87
       3.4.2 'Pulse/frequency/switch output 1 to n' submenu ................................ 99
   3.5 'Communication' submenu .................................. 117
       3.5.1 'HART input' submenu ........................ 117
       3.5.2 'HART output' submenu ........................ 123
       3.5.3 'Web server' submenu ........................ 139
       3.5.4 'Diagnostic configuration' submenu ............ 143
       3.5.5 'WLAN settings' wizard ........................ 149
   3.6 'Application' submenu .................................. 155
       3.6.1 'Totalizer 1 to n' submenu .................... 156
   3.7 'Diagnostics' submenu .................................. 160
       3.7.1 'Diagnostic list' submenu ........................ 163
       3.7.2 'Event logbook' submenu ........................ 167
       3.7.3 'Device information' submenu .................... 169
       3.7.4 'Main electronic module + I/O module 1' submenu .......................... 173
   3.7.5 'Sensor electronic module (ISEM)' submenu ....................... 174
   3.7.6 'Display module' submenu ........................ 175
   3.7.7 'Data logging' submenu .......................... 176
   3.7.8 'Heartbeat' submenu ............................ 183
   3.7.9 'Simulation' submenu ............................ 184

4 Country-specific factory settings ........................................ 191
   4.1 SI units ........................................ 191
       4.1.1 System units .................................. 191
       4.1.2 Output current span .......................... 191
   4.2 US units ........................................ 191
       4.2.1 System units .................................. 191
       4.2.2 Output current span .......................... 191

5 Explanation of abbreviated units ........................................ 192
   5.1 SI units ........................................ 192
   5.2 US units ........................................ 192
   5.3 Imperial units .................................... 193

Index ........................................ 194
1  About this document

1.1  Document function
The document is part of the Operating Instructions and serves as a reference for parameters, providing a detailed explanation of each individual parameter of the Expert operating menu.
It is used to perform tasks that require detailed knowledge of the function of the device:
- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

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

1.3  Using this document

1.3.1  Information on the document structure
The document lists the submenus and their parameters according to the structure from the Expert menu (→ 8), which is displayed when the "Maintenance" user role is enabled.
Additional information regarding:

- The arrangement of the parameters according to the menu structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu with a brief description: Operating Instructions
- Operating concept of the operating menus: Operating Instructions
1.3.2 Structure of a parameter description

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

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

**Navigation**

- Navigation path to the parameter via the local display (direct access code) or web browser
- Navigation path to the parameter via the operating tool

The names of the menus, submenus and parameters are abbreviated to the form in which they appear on the display and in the operating tool.

**Prerequisite**

The parameter is only available under these specific conditions

**Description**

Description of the parameter function

**Selection**

List of the individual options for the parameter

- Option 1
- Option 2

**User entry**

Input range for the parameter

**Display**

Display value/data for the parameter

**Factory setting**

Default setting ex works

**Additional information**

Additional explanations (e.g. in examples):

- On individual options
- On display values/data
- On the input range
- On the factory setting
- On the parameter function

1.4 Symbols used

1.4.1 Symbols for certain types of information

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3 ...</td>
<td>Item numbers</td>
</tr>
<tr>
<td>A, B, C, ...</td>
<td>Views</td>
</tr>
<tr>
<td>A-A, B-B, C-C, ...</td>
<td>Sections</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 W 400</td>
<td>BA02086D</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>Radio approvals for WLAN interface for A309/A310 display module</td>
<td>SD01793D</td>
</tr>
<tr>
<td>FlowDC</td>
<td>SD02691D</td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>SD02712D</td>
</tr>
<tr>
<td>Web server</td>
<td>SD02713D</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>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct access (0106)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locking status (0004)</td>
<td>→</td>
<td>12</td>
</tr>
<tr>
<td>User role (0005)</td>
<td>→</td>
<td>13</td>
</tr>
<tr>
<td>Enter 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>14</td>
</tr>
<tr>
<td>Diagnostic handling</td>
<td>→</td>
<td>33</td>
</tr>
<tr>
<td>Administration</td>
<td>→</td>
<td>40</td>
</tr>
<tr>
<td>Sensor</td>
<td>→</td>
<td>45</td>
</tr>
<tr>
<td>Measured values</td>
<td>→</td>
<td>45</td>
</tr>
<tr>
<td>System units</td>
<td>→</td>
<td>54</td>
</tr>
<tr>
<td>Measuring point 1</td>
<td>→</td>
<td>60</td>
</tr>
<tr>
<td>Installation status</td>
<td>→</td>
<td>69</td>
</tr>
<tr>
<td>Process parameters</td>
<td>→</td>
<td>71</td>
</tr>
<tr>
<td>External compensation</td>
<td>→</td>
<td>75</td>
</tr>
<tr>
<td>Sensor adjustment</td>
<td>→</td>
<td>79</td>
</tr>
<tr>
<td>Calibration</td>
<td>→</td>
<td>83</td>
</tr>
<tr>
<td>Input</td>
<td>→</td>
<td>84</td>
</tr>
<tr>
<td>Status input</td>
<td>→</td>
<td>85</td>
</tr>
<tr>
<td>Menu Item</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>→ Current output 1</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>→ Pulse/frequency/switch output 1 to n</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>→ HART input</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>→ HART output</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>→ Web server</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>→ Diagnostic configuration</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>→ WLAN settings</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>→ Reset all totalizers (2806)</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>→ Totalizer 1 to n</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td><strong>Diagnostics</strong></td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>→ Actual diagnostics (0691)</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>→ Previous diagnostics (0690)</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>→ Operating time from restart (0653)</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>→ Operating time (0652)</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>→ Diagnostic list</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>→ Event logbook</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>→ Device information</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>→ Main electronic module</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>→ Sensor electronic module (ISEM)</td>
<td>174</td>
<td></td>
</tr>
<tr>
<td>→ Display module</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>183</td>
<td></td>
</tr>
<tr>
<td>Simulation</td>
<td>184</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.

<table>
<thead>
<tr>
<th><strong>Expert</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct access (0106)</td>
</tr>
<tr>
<td>Locking status (0004)</td>
</tr>
<tr>
<td>User role (0005)</td>
</tr>
<tr>
<td>Enter access code (0003)</td>
</tr>
<tr>
<td>System</td>
</tr>
<tr>
<td>Sensor</td>
</tr>
<tr>
<td>Input</td>
</tr>
<tr>
<td>Output</td>
</tr>
<tr>
<td>Communication</td>
</tr>
<tr>
<td>Application</td>
</tr>
<tr>
<td>Diagnostics</td>
</tr>
</tbody>
</table>

**Direct access**

**Navigation**

Expert → Direct access (0106)

**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 6535

**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.
Description of device parameters

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 opened automatically.
  Example: Enter 00914 → Assign process variable parameter
- If a different channel is opened: Enter the direct access code with the corresponding channel number.
  Example: Enter 00914-2 → Assign process variable parameter

Locking status

Navigation

Expert → Locking status (0004)

Description

Displays the active write protection.

User interface

- Hardware locked
- Temporarily locked

Additional information

User interface

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.

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

Selection

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>The access status displayed in the Access status display parameter (→ 32) applies. Only appears on local display.</td>
</tr>
<tr>
<td>Hardware locked</td>
<td>The DIP switch for hardware locking is activated on the main electronics module. This locks write access to the parameters (e.g. via local display or operating tool).</td>
</tr>
<tr>
<td>Temporarily locked</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>
Proline Prosonic Flow W 400

User role

Navigation  
Expert → User role (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 Enter access code parameter (→ 13).

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

User interface  
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

Enter 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  
Max. 16-digit character string comprising numbers, letters and special characters

3.1 "System" submenu

Navigation  
Expert → System

<table>
<thead>
<tr>
<th>System</th>
<th>Display</th>
<th>Diagnostic handling</th>
<th>Administration</th>
</tr>
</thead>
</table>

→ 14
→ 33
→ 40
### 3.1.1 "Display" submenu

**Navigation**  
[Expert] → [System] → [Display]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display language (0104)</td>
<td>15</td>
</tr>
<tr>
<td>Format display (0098)</td>
<td>15</td>
</tr>
<tr>
<td>Value 1 display (0107)</td>
<td>18</td>
</tr>
<tr>
<td>0% bargraph value 1 (0123)</td>
<td>18</td>
</tr>
<tr>
<td>100% bargraph value 1 (0125)</td>
<td>19</td>
</tr>
<tr>
<td>Decimal places 1 (0095)</td>
<td>19</td>
</tr>
<tr>
<td>Value 2 display (0108)</td>
<td>20</td>
</tr>
<tr>
<td>Decimal places 2 (0117)</td>
<td>20</td>
</tr>
<tr>
<td>Value 3 display (0110)</td>
<td>21</td>
</tr>
<tr>
<td>0% bargraph value 3 (0124)</td>
<td>21</td>
</tr>
<tr>
<td>100% bargraph value 3 (0126)</td>
<td>22</td>
</tr>
<tr>
<td>Decimal places 3 (0118)</td>
<td>22</td>
</tr>
<tr>
<td>Value 4 display (0109)</td>
<td>22</td>
</tr>
<tr>
<td>Decimal places 4 (0119)</td>
<td>23</td>
</tr>
<tr>
<td>Display interval (0096)</td>
<td>29</td>
</tr>
<tr>
<td>Display damping (0094)</td>
<td>30</td>
</tr>
<tr>
<td>Header (0097)</td>
<td>30</td>
</tr>
<tr>
<td>Header text (0112)</td>
<td>31</td>
</tr>
<tr>
<td>Separator (0101)</td>
<td>31</td>
</tr>
<tr>
<td>Contrast display (0105)</td>
<td>32</td>
</tr>
<tr>
<td>Backlight (0111)</td>
<td>32</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 (Russian)
- Svenska
- Türkçe
- 中文 (Chinese)
- 日本語 (Japanese)
- 한국어 (Korean)
- Bahasa Indonesia
- tiếng Việt (Vietnamese)
- čeština (Czech)

Factory setting

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

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

Factory setting

1 value, max. size
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 (→ 18) to **Value 4 display** parameter (→ 22) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the **Display interval** parameter (→ 29).
Possible measured values shown on the local display:

### "1 value, max. size" option

<table>
<thead>
<tr>
<th>l/h</th>
<th>900.00</th>
</tr>
</thead>
</table>

### "1 bargraph + 1 value" option

<table>
<thead>
<tr>
<th>l/h</th>
<th>900.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>60.00</td>
</tr>
</tbody>
</table>

### "2 values" option

<table>
<thead>
<tr>
<th>l/h</th>
<th>900.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>60.00</td>
</tr>
</tbody>
</table>

### "1 value large + 2 values" option

<table>
<thead>
<tr>
<th>l/h</th>
<th>900.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>60.00</td>
</tr>
<tr>
<td>kWh/Nm</td>
<td>5.98</td>
</tr>
</tbody>
</table>

### "4 values" option

<table>
<thead>
<tr>
<th>l/h</th>
<th>900.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>60.00</td>
</tr>
<tr>
<td>kWh/Nm</td>
<td>5.98</td>
</tr>
<tr>
<td>l</td>
<td>213.94</td>
</tr>
</tbody>
</table>
Value 1 display

**Navigation**

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

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Current output 1

**Factory setting**

Volume flow

**Additional information**

*Description*

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

*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 (→ 54).*

0% bargraph value 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

**Factory setting**

Country-specific

*Visibility depends on order options or device settings*
**Additional information**  
*Description*

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

*User entry*

> The unit of the displayed measured value is taken from the **System units** submenu (→ 54).

---

### 100% bargraph value 1

**Navigation**  
Expert → System → Display → 100% bargraph 1 (0125)

**Prerequisite**  
A local display is provided.

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

**User entry**  
Signed floating-point number

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

---

**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 (→ 54).

---

### Decimal places 1

**Navigation**  
Expert → System → Display → Decimal places 1 (0095)

**Prerequisite**  
A measured value is defined in the **Value 1 display** parameter (→ 18).

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

**Selection**

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

**Factory setting**  
x.xx
Additional information

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 a measured value that is shown on the local display.

Selection

For the picklist, see the Value 1 display parameter (→ 18)

Factory setting

None

Additional information

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

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

Dependency

The unit of the displayed measured value is taken from the System units submenu (→ 54).

Decimal places 2

Navigation

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

Prerequisite

A measured value is specified in the Value 2 display parameter (→ 20).

Description

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

Selection

• x
• x.x
• x.xx
• x.xxx
• x.xxxx

Factory setting

x.xx

Additional information

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

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

**Prerequisite**
A local display is provided.

**Description**
Use this function to select a measured value that is shown on the local display.

**Selection**
For the picklist, see the Value 1 display parameter (→ 18)

**Factory setting**
None

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

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

The unit of the displayed measured value is taken from the System units submenu (→ 54).

### 0% bargraph value 3

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

**Prerequisite**
A selection was made in the Value 3 display parameter (→ 21).

**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

**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 (→ 54).
100% bargraph value 3

**Navigation**

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

**Prerequisite**

A selection was made in the Value 3 display parameter (→ 21).

**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 (→ 54).

---

Decimal places 3

**Navigation**

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

**Prerequisite**

A measured value is specified in the Value 3 display parameter (→ 21).

**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 a measured value that is shown on the local display.

Selection
For the picklist, see the Value 1 display parameter (→ 18)

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.

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

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.

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

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

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

Selection
• x
• x.x
• x.xx
• x.xxx
• x.xxxx

Factory setting
x.xx

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

Value 5 display

Navigation
Expert → System → Display → Value 5 display (0145)

Prerequisite
A local display is provided.

Description
Use this function to select a measured value that is shown on the local display.

Selection
For the picklist, see the Value 1 display parameter (→ 18)

Factory setting
None
**Description of device parameters**

**Proline Prosonic Flow W 400**

---

**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 (→  54).

---

**0% bargraph value 5**

**Navigation**

Expert → System → Display → 0% bargraph 5 (0153)

**Prerequisite**

An option was selected in the **Value 5 display** parameter (→  23).

**Description**

Use this function to enter the 0% bar graph value to be shown on the display for the measured value 5.

**User entry**

Signed floating-point number

**Factory setting**

Depends on country

**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 (→  54).

---

**100% bargraph value 5**

**Navigation**

Expert → System → Display → 100% bargraph 5 (0155)

**Prerequisite**

An option was selected in the **Value 5 display** parameter (→  23).

**Description**

Use this function to enter the 100% bar graph value to be shown on the display for the measured value 5.

**User entry**

Signed floating-point number

**Factory setting**

0
### Decimal places 5

**Navigation**

Expert → System → Display → Decimal places 5 (0149)

**Prerequisite**

A measured value is specified in the **Value 5 display** parameter (→ 15).

**Description**

Use this function to select the number of decimal places for measured value 5.

**Selection**

- x
- x.x
- x.xx
- x.xxx
- x.xxxx
- x.xxxxx
- x.xxxxxx
- x.xxxxxxx

**Factory setting**

x.xx

**Additional information**

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

### Value 6 display

**Navigation**

Expert → System → Display → Value 6 display (0146)

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

For the picklist, see the **Value 1 display** parameter (→ 15).

**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 (→ [54]).

---

**Decimal places 6**

**Navigation**

Expert → System → Display → Decimal places 6 (0150)

**Prerequisite**

A measured value is specified in the **Value 6 display** parameter (→ [25]).

**Description**

Use this function to select the number of decimal places for measured value 6.

**Selection**

- **x**
- **x.x**
- **x.xx**
- **x.xxx**
- **x.xxxx**
- **x.xxxxx**
- **x.xxxxxx**

**Factory setting**

x.xx

**Additional information**

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

---

**Value 7 display**

**Navigation**

Expert → System → Display → Value 7 display (0147)

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

For the picklist, see the **Value 1 display** parameter (→ [18])

**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 (→ 54).

Decimal places 7

Navigation Expert → System → Display → Decimal places 7 (0151)
Prerequisite A measured value is specified in the Value 7 display parameter (→ 26).
Description Use this function to select the number of decimal places for measured value 7.
Selection • x
• x.x
• x.xx
• x.xxx
• x.xxxx
• x.xxxxx
• x.xxxxxx
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.

0% bargraph value 7

Navigation Expert → System → Display → 0% bargraph 7 (0154)
Prerequisite An option was selected in the Value 7 display parameter (→ 26).
Description Use this function to enter the 0% bar graph value to be shown on the display for the measured value 7.
User entry Signed floating-point number
Factory setting Depends on country
Description of device parameters

Proline Prosonic Flow W 400

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 (→ 54).

100% bargraph value 7

**Navigation**

Expert → System → Display → 100% bargraph 7 (0156)

**Prerequisite**

An option was selected in the **Value 7 display** parameter (→ 26).

**Description**

Use this function to enter the 100% bar graph value to be shown on the display for the measured value 7.

**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 (→ 54).

Value 8 display

**Navigation**

Expert → System → Display → Value 8 display (0148)

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

For the picklist, see the **Value 1 display** parameter (→ 18)

**Factory setting**

None
Proline Prosonic Flow W 400

Description of device parameters

Additional information

Description

If several measured values are displayed at once, the measured value selected here will be the eighth 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 (→ 54).

Decimal places 8

Navigation

Expert → System → Display → Decimal places 8 (0152)

Prerequisite

A measured value is specified in the Value 8 display parameter (→ 28).

Description

Use this function to select the number of decimal places for measured value 8.

Selection

• x
• x.x
• x.xx
• x.xxx
• x.xxxx
• x.xxxxx
• x.xxxxxx

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

Factory setting

5 s
Additional information

Description

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

- The **Value 1 display** parameter (→  18) to **Value 4 display** parameter (→  22) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→  15).

Display damping

**Navigation**

Expert → System → Display → Display damping (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**

*User entry*

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

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

Header

**Navigation**

Expert → System → Display → Header (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

**Additional information**

*Description*

The header text only appears during normal operation.

---

1) proportional transmission behavior with first order delay
### Header text

#### Navigation
- Expert → System → Display → Header text (0112)

#### Prerequisite
- The **Free text** option is selected in the **Header** parameter (→ 30).

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

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

#### Factory setting
- ------------

#### Additional information
- **Description**
  - The header text only appears during normal operation.

### Separator

#### Navigation
- Expert → System → Display → Separator (0101)

#### Prerequisite
- A local display is provided.
## Description

Use this function to select the decimal separator.

### Selection

- . (point)
- , (comma)

### Factory setting

. (point)

## Contrast display

### Navigation

Expert → System → Display → Contrast display (0105)

### 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

50 %

## Backlight

### Navigation

Expert → System → Display → Backlight (0111)

### Prerequisite

A local display is provided.

### Description

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

### Selection

- Disable
- Enable

### Factory setting

Enable

## Access status display

### Navigation

Expert → System → Display → Access stat.disp (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
### Description of device parameters

#### Additional information

*Description*

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

Access authorization can be modified via the **Enter access code** parameter (→ 33).

For information about the **Enter 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.

*User interface*

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

#### 3.1.2 "Diagnostic handling" submenu

*Navigation* ~ Expert → System → Diagn. handling

<table>
<thead>
<tr>
<th>Diagnostic handling</th>
<th>→ 33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm delay (0651)</td>
<td>→ 33</td>
</tr>
</tbody>
</table>

#### 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

*"Diagnostic behavior" submenu*

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagnostic behavior** submenu (→ 33).
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. The background lighting changes to red.</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 entry only</td>
<td>The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→ 167) and is not displayed in alternation with the operational display.</td>
</tr>
<tr>
<td>Off</td>
<td>The diagnostic event is ignored, and no diagnostic message is generated or entered.</td>
</tr>
</tbody>
</table>

For a list of all the diagnostic events, see the Operating Instructions for the device → 7

**Navigation**  ➤ Expert → System → Diagn. handling → Diagn. behavior 

<table>
<thead>
<tr>
<th>Diagnostic behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign behavior of diagnostic no. 019 (0635)   → 35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 160 (0776)    → 35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 302 (0742)    → 35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 441 (0657)    → 36</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 442 (0658)    → 36</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 443 (0659)    → 37</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 833 (0676)    → 37</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 832 (0675)    → 37</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 840 (0680)    → 38</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 842 (0638)    → 38</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 870 (0726)    → 38</td>
</tr>
</tbody>
</table>
Assign behavior of diagnostic no. 019 (Device initialization active)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 019 (0635)

Description
Use this function to change the diagnostic behavior of the Device initialization active diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available: → 34

Assign behavior of diagnostic no. 160 (Signal path switched off)

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

Description
Use this function to change the diagnostic behavior of the Signal path switched off diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available: → 34

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

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

Description
Use this function to change the diagnostic behavior of the Device verification active diagnostic message.
Selection
- Off
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available: → 34

Assign behavior of diagnostic no. 441 (Current output 1 to n)

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

Description
Use this function to change the diagnostic behavior of the 441 Current output 1 to n diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
Selection
For a detailed description of the options available: → 34

Assign behavior of diagnostic no. 442 (Frequency output 1 to n)

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

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

Description
Use this function to change the diagnostic behavior of the 442 Frequency output 1 to n diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available: → 34
### Assign behavior of 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**

Use this function to change the diagnostic behavior of the **443 Pulse output** diagnostic message.

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available: [→ 34](#)

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available: [→ 34](#)

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only
Description of device parameters

**Assign behavior of diagnostic no. 840 (Sensor range)**

**Navigation**

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

**Description**

Use this function to change the diagnostic behavior of the **840 Sensor range** diagnostic message.

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available: → 34

**Assign behavior of diagnostic no. 842 (Process limit)**

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 842 (0638)

**Description**

Use this function to change the diagnostic behavior of the **842 Process limit** diagnostic message.

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Off

**Additional information**

For a detailed description of the options available: → 34

**Assign behavior of diagnostic no. 870 (Measuring inaccuracy increased)**

**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 870 (0726)

**Description**

Use this function to change the diagnostic behavior of the **870 Measuring inaccuracy increased** diagnostic message.
Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
Selection

For a detailed description of the options available: →  34

Assign behavior of diagnostic no. 930 (Process fluid)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 930 (0639)

Description
Use this function to change the diagnostic behavior of the S930 Process fluid diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Alarm

Additional information
For a detailed description of the options available: →  34

Assign behavior of diagnostic no. 931 (Process fluid)

Navigation
Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 931 (0640)

Description
Use this function to change the diagnostic behavior of the S931 Process fluid diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Alarm

Additional information
For a detailed description of the options available: →  34
3.1.3  "Administration" submenu

**Navigation**

Expert → System → Administration

<table>
<thead>
<tr>
<th>Dialog Box</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
</tr>
</tbody>
</table>
  ▶ Define access code → 40  
  ▶ Reset access code → 41  
  Device reset (0000) → 43  
  Activate SW option (0029) → 43  
  Software option overview (0015) → 44  

"Define access code" wizard

The **Define access code** wizard (→ 40) is only available when operating via the local display or Web browser.

If operating via the operating tool, the **Define access code** parameter (→ 42) can be found directly in the **Administration** submenu. There is no **Confirm access code** parameter if the device is operated via the operating tool.

**Navigation**

Expert → System → Administration → Def. access code

<table>
<thead>
<tr>
<th>Dialog Box</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define access code</td>
<td></td>
</tr>
</tbody>
</table>
  Define access code → 40  
  Confirm access code → 41  

**Define access code**

**Navigation**

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

**Description**

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

**User entry**

0 to 9999

**Factory setting**

0

**Additional information**

*Description*

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

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the Enter access code parameter (→ 41).

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 access code**

| Navigation | Expert → System → Administration → Def. access code → Confirm code |
| User entry | 0 to 9 999 |
| Factory setting | 0 |

"Reset access code" submenu

**Navigation**

 Expert → System → Administration → Reset acc. code

**Operating time**

**Navigation**

 Expert → System → Administration → Reset acc. code → 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.

---

**Reset access 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 access codes 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 CDI RJ45 interface)
- Fieldbus

---

**Additional parameters in the "Administration" submenu**

---

**Define access code**

**Navigation**

Expert → System → Administration → Def. access code

**Description**

Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the configuration of the device against any inadvertent changes via the operating tool.

**User entry**

0 to 9999

**Factory setting**

0
Additional information

**Description**

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

- Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the *Enter access code* parameter (→ 13).
- If you lose the access code, please contact your Endress+Hauser sales organization.

**User entry**

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

**Factory setting**

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

### Device reset

**Navigation**

Expert → System → Administration → Device reset (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 settings
- Restart device
- Restore S-DAT backup *

**Factory setting**

Cancel

### Activate SW option

**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

* Visibility depends on order options or device settings
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 Software option overview parameter (→ 44).

 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 EA 'Extended HistoROM'

The software options currently enabled are displayed in the Software option overview parameter (→ 44).

Web browser

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

Software option overview

Navigation

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

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

User interface

● Extended HistoROM
● PFS output 2 + status input
● Heartbeat Verification
● Heartbeat Monitoring
● Flow disturbance compensation
Additional information

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

'Extended HistoROM' option
Order code for "Application package", option EA "Extended HistoROM"

'PFS output 2 + status input' option
Order code for "Output; input", option I '4-20mA HART, 2x pul./freq./switch output; status input"

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

'Flow disturbance compensation' option
Order code for "Application package", option EN 'FlowDC'

3.2 "Sensor" submenu

Navigation  
Expert → Sensor

3.2.1 "Measured values" submenu

Navigation  
Expert → Sensor → Measured val.
“Process variables” submenu

**Navigation**


**Process variables**

- Volume flow (1838) → 46
- Mass flow (1847) → 46
- Flow velocity (1852) → 47
- Sound velocity (1850) → 47
- Density (1851) → 47
- Temperature (1853) → 48

**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 (→ 55)

**Mass flow**

**Navigation**


**Description**
Displays the mass flow that is currently calculated.
User interface  Signed floating-point number

Additional information  Dependency
  The unit is taken from the Mass flow unit parameter (→ 56)

Flow velocity


Description  Displays the average flow velocity that is currently calculated.

User interface  Signed floating-point number

Additional information  Dependency
  The unit is taken from the Velocity unit parameter (→ 57)

Sound velocity


Description  Displays the sound velocity that is currently measured.

User interface  Signed floating-point number

Additional information  Dependency
  The unit is taken from the Velocity unit parameter (→ 57)

Density


Prerequisite  A fixed density is not entered.

Description  Displays the density that is currently calculated.

User interface  Signed floating-point number

Additional information  Dependency
  The unit is taken from the Density unit parameter (→ 58)
Description of device parameters

Proline Prosonic Flow W 400

Temperature

Navigation

Prerequisite
A fixed temperature is not entered.

Description
Displays the medium temperature that is currently measured.

User interface
Signed floating-point number

Additional information

Dependency
The unit is taken from the Temperature unit parameter (→  58)

“System values” submenu

Navigation
Expert → Sensor → Measured val. → System values

Signal strength

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

Description
Displays 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 process changes, such as the development of deposits in the measuring pipe at the measuring point. This can only be quantified by performing a direct process comparison with different deposit layer thicknesses and associated signal strengths.
## Signal to noise ratio

**Navigation**

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

**Description**
Displays 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.

## 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 %

## Turbulence

**Navigation**

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

**Description**
Displays the current turbulence.

**User interface**
Signed floating-point number

**Additional information**
*Description*
A high turbulence value indicates a disturbance in the flow profile.
"Totalizer" submenu

**Navigation**

Expert → Sensor → Measured val. → Totalizer

<table>
<thead>
<tr>
<th>Totalizer value 1 to n (0911–1 to n)</th>
<th>→  50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalizer overflow 1 to n (0910–1 to n)</td>
<td>→  51</td>
</tr>
</tbody>
</table>

**Totalizer value 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 process variable** parameter (→ 156) of the **Totalizer 1 to n** submenu:

- Volume flow
- Mass flow

**Description**

Displays the current totalizer counter reading.

**User interface**

Signed floating-point number

**Additional information**

**Description**

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

In the event of an error, the totalizer adopts the mode defined in the **Failure mode** parameter (→ 159).

**User interface**

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Totalizer operation mode** parameter (→ 158).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 157).

**Example**

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

- Value in the **Totalizer value** parameter: 1968457 m³
- Value in the **Totalizer overflow** parameter: 1 ⋅ 10⁷ (1 overflow) = 1000000 m³
- Current totalizer reading: 11968457 m³
**Totalizer 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 process variable parameter (→ 156) 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 value 1 to n parameter.

*User interface*

The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 157).

*Example*
Calculation of the current totalizer reading when the value exceeds the 7-digit display range of the operating tool:
- Value in the Totalizer value 1 parameter: 1968457 m$^3$
- Value in the Totalizer overflow 1 parameter: 2 · 10$^7$ (2 overflows) = 20 000 000 [m$^3$]
- Current totalizer reading: 21968457 m$^3$

"Input values" submenu

**Navigation**
Expert → Sensor → Measured val. → Input values

**Value status input**

**Navigation**
Expert → Sensor → Measured val. → Input values → Val.stat.inp. (1353)

**Prerequisite**
For the following order code:
"Output; input", option I"4-20mA HART, 2x pul./freq./switch output; status input"

**Description**
Displays the current input signal level.
User interface

- High
- Low

"Output values" submenu

Navigation

Expert → Sensor → Measured val. → Output values

Output current 1 (0361–1)
→ 52

Measured current 1 (0366–1)
→ 52

Pulse output 1 (0456–1)
→ 53

Output frequency 1 (0471–1)
→ 53

Switch state 1 (0461–1)
→ 54

Output frequency 2 (0471–2)
→ 53

Pulse output 2 (0456–2)
→ 53

Switch state 2 (0461–2)
→ 54

Output current 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

Measured current 1

Navigation

Expert → Sensor → Measured val. → Output values → Measur. curr. 1 (0366–1)

Description
Displays the actual measured value of the output current.

User interface
0 to 30 mA
### Pulse output 1 to n

**Navigation**
- Expert → Sensor → Measured val → Output values → Pulse output 1 (0456–1)
- Expert → Sensor → Measured val → Output values → Pulse output 2 (0456–2)

**Prerequisite**
The **Pulse** option is selected in the **Operating mode** parameter (→ 100) parameter.

**Description**
Displays the pulse frequency currently output.

**User interface**
Positive floating-point number

**Additional information**

- 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 (→ 102) and **Pulse width** parameter (→ 103) 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 showing NC and NO contacts with pulse duration](image)

<table>
<thead>
<tr>
<th>0</th>
<th>Non-conductive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conductive</td>
</tr>
<tr>
<td>NC</td>
<td>Normally closed</td>
</tr>
<tr>
<td>NO</td>
<td>Normally opened</td>
</tr>
</tbody>
</table>

The output behavior can be reversed via the **Invert output signal** parameter (→ 116) 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 (→ 104)) can be configured.

### Output frequency 1 to n

**Navigation**
- Expert → Sensor → Measured val → Output values → Output freq. 1 (0471–1)
- Expert → Sensor → Measured val → Output values → Output freq. 2 (0471–2)

**Prerequisite**
In the **Operating mode** parameter (→ 100), 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 state 1 to n

Navigation

Expert → Sensor → Measured val. → Output values → Switch state 1 (0461–1)
Expert → Sensor → Measured val. → Output values → Switch state 2 (0461–2)

Prerequisite
In the Operating mode parameter (→ 100), the Switch option is selected.

Description
Displays the current switch status of the status output.

User interface
- Open
- Closed

Additional information
Selection
- Open
The switch output is not conductive.
- Closed
The switch output is conductive.

3.2.2 "System units" submenu

Navigation
Expert → Sensor → System units

<table>
<thead>
<tr>
<th>System units</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume flow unit (0553)</td>
<td></td>
</tr>
<tr>
<td>Volume unit (0563)</td>
<td></td>
</tr>
<tr>
<td>Mass flow unit (0554)</td>
<td></td>
</tr>
<tr>
<td>Mass unit (0574)</td>
<td></td>
</tr>
<tr>
<td>Velocity unit (0566)</td>
<td></td>
</tr>
<tr>
<td>Temperature unit (0557)</td>
<td></td>
</tr>
<tr>
<td>Density unit (0555)</td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity unit (0578)</td>
<td></td>
</tr>
<tr>
<td>Length unit (0551)</td>
<td></td>
</tr>
<tr>
<td>Date/time format (2812)</td>
<td></td>
</tr>
</tbody>
</table>

→ 55
→ 56
→ 56
→ 57
→ 57
→ 58
→ 58
→ 59
→ 59
→ 60
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

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>• cm³/s</td>
<td>• af/s</td>
<td>• gal/s (imp)</td>
</tr>
<tr>
<td>• cm³/min</td>
<td>• af/min</td>
<td>• gal/min (imp)</td>
</tr>
<tr>
<td>• cm³/h</td>
<td>• af/h</td>
<td>• gal/h (imp)</td>
</tr>
<tr>
<td>• dm³/d</td>
<td>• af/d</td>
<td>• gal/d (imp)</td>
</tr>
<tr>
<td>• dm³/s</td>
<td>• ft³/s</td>
<td>• Mgal/s (imp)</td>
</tr>
<tr>
<td>• dm³/min</td>
<td>• ft³/min</td>
<td>• Mgal/min (imp)</td>
</tr>
<tr>
<td>• dm³/h</td>
<td>• ft³/h</td>
<td>• Mgal/h (imp)</td>
</tr>
<tr>
<td>• dm³/d</td>
<td>• ft³/d</td>
<td>• Mgal/d (imp)</td>
</tr>
<tr>
<td>• m³/s</td>
<td>• kft³/s</td>
<td>• bbl/s (imp;beer)</td>
</tr>
<tr>
<td>• m³/min</td>
<td>• kft³/min</td>
<td>• bbl/min (imp;beer)</td>
</tr>
<tr>
<td>• m³/h</td>
<td>• kft³/h</td>
<td>• bbl/h (imp;beer)</td>
</tr>
<tr>
<td>• m³/d</td>
<td>• kft³/d</td>
<td>• bbl/d (imp;beer)</td>
</tr>
<tr>
<td>• ml/s</td>
<td>• fl oz/s (us)</td>
<td>• bbl/s (imp;oil)</td>
</tr>
<tr>
<td>• ml/min</td>
<td>• fl oz/min (us)</td>
<td>• bbl/min (imp;oil)</td>
</tr>
<tr>
<td>• ml/h</td>
<td>• fl oz/h (us)</td>
<td>• bbl/h (imp;oil)</td>
</tr>
<tr>
<td>• ml/d</td>
<td>• fl oz/d (us)</td>
<td>• bbl/d (imp;oil)</td>
</tr>
<tr>
<td>• l/s</td>
<td>• gal/s (us)</td>
<td>• bbl/s (us;liq.)</td>
</tr>
<tr>
<td>• l/min</td>
<td>• gal/min (us)</td>
<td>• bbl/min (us;liq.)</td>
</tr>
<tr>
<td>• l/h</td>
<td>• gal/h (us)</td>
<td>• bbl/h (us;liq.)</td>
</tr>
<tr>
<td>• l/d</td>
<td>• gal/d (us)</td>
<td>• bbl/s (us;beer)</td>
</tr>
<tr>
<td>• hl/s</td>
<td>• Mgal/s (us)</td>
<td>• bbl/min (us;beer)</td>
</tr>
<tr>
<td>• hl/min</td>
<td>• Mgal/min (us)</td>
<td>• bbl/h (us;beer)</td>
</tr>
<tr>
<td>• hl/h</td>
<td>• Mgal/h (us)</td>
<td>• bbl/d (us;beer)</td>
</tr>
<tr>
<td>• hl/d</td>
<td>• Mgal/d (us)</td>
<td>• bbl/s (us;oil)</td>
</tr>
<tr>
<td>• Mi/s</td>
<td>• bbl/h (us;liq.)</td>
<td>• bbl/min (us;oil)</td>
</tr>
<tr>
<td>• Mi/min</td>
<td>• bbl/min (us;liq.)</td>
<td>• bbl/h (us;oil)</td>
</tr>
<tr>
<td>• Mi/h</td>
<td>• bbl/h (us;liq.)</td>
<td>• bbl/d (us;oil)</td>
</tr>
<tr>
<td>• Mi/d</td>
<td>• bbl/d (us;liq.)</td>
<td>• bbl/s (us;tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• bbl/min (us;tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• bbl/h (us;tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• bbl/d (us;tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• kgal/s (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• kgal/min (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• kgal/h (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• kgal/d (us)</td>
</tr>
</tbody>
</table>

Factory setting

Depends on country:
• m³/h
• ft³/min
Additional information  

**Effect**  
The selected unit applies for:  
**Volume flow** parameter (→ 46)

**Selection**  
For an explanation of the abbreviated units: → 192

---

### 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>Mft³</td>
<td>bbl (imp;beer)</td>
</tr>
<tr>
<td>ml</td>
<td>fl oz (us)</td>
<td>bbl (imp;oil)</td>
</tr>
<tr>
<td>l</td>
<td>gal (us)</td>
<td></td>
</tr>
<tr>
<td>hl</td>
<td>kgal (us)</td>
<td></td>
</tr>
<tr>
<td>Ml Mega</td>
<td>Mgal (us)</td>
<td></td>
</tr>
<tr>
<td></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:  
- m³
- ft³

**Additional information**  
Selection  
For an explanation of the abbreviated units: → 192

---

### 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**

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

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

**Factory setting**

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

**Additional information**

*Effect*

The selected unit applies for:

**Mass flow** parameter

**Selection**

For an explanation of the abbreviated units: → 192

---

**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**

For an explanation of the abbreviated units: → 192

---

**Velocity unit**

**Navigation**

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

**Description**

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

#### Proline Prosonic Flow W 400

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>m/s</td>
<td>ft/s</td>
</tr>
</tbody>
</table>

**Factory setting**

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

**Additional information**

*Effect*

The selected unit applies for:
- Flow velocity (→ 47)
- Sound velocity (→ 47)

**Selection**

For an explanation of the abbreviated units: → 192

---

### Temperature unit

**Navigation**

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

**Description**

Use this function to select the unit for the temperature.

**Selection**

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

**Factory setting**

Country-specific:
- °C
- °F

**Additional information**

*Effect*

The selected unit applies for:
- Temperature (→ 48)
- Electronic temperature
- External temperature
- Reference temperature

**Selection**

For an explanation of the abbreviated units: → 192

---

### Density unit

**Navigation**

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

**Description**

Use this function to select the unit for the density.
**Selection**

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

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

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

**Factory setting**

- Country-specific:
  - kg/dm³
  - lb/ft³

**Additional information**

For an explanation of the abbreviated units: → 192

---

### Kinematic viscosity 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

---

### Length unit

**Navigation**

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

**Description**

Use this function to select the unit of length for the.

**Selection**

- **SI units**
  - m
  - mm

- **US units**
  - ft
  - in

- **Country-specific:**
  - mm
  - in
Additional information

Selection

For an explanation of the abbreviated units: →  192

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

Factory setting

dd.mm.yy hh:mm

Additional information

Selection

For an explanation of the abbreviated units: →  192

3.2.3 "Measuring point " submenu

Navigation

Expert → Sensor → Meas. point

Measuring point 1

Measuring point configuration (5675–1) →  61

Process fluid (2926–1) →  62

Medium temperature (3053–1) →  62

Sound velocity (2929–1) →  62

Viscosity (2932–1) →  63

Pipe material (2927–1) →  63

Pipe sound velocity (2933–1) →  63

Pipe dimensions (2943–1) →  64

Pipe circumference (2934–1) →  64
### Measuring point configuration

**Navigation**  
Expert → Sensor → Meas. point 1 → Meas. pt config. (5675–1)

**Description**  
Use this function to enter the measuring point configuration.

**Selection**  
- 1 measuring point - signal path 1
- 1 measuring point - signal path 2 *
- 1 measuring point - 2 signal paths *

**Factory setting**  
Depending on the sensor version

* Visibility depends on order options or device settings
Process fluid

**Navigation**

Expert → Sensor → Meas. point 1 → Process fluid (2926–1)

**Description**

Select process fluid.

**Selection**

- Water
- Sea water
- Distilled water
- Ammonia NH3
- Benzene
- Ethanol
- Glycol
- Milk
- Methanol
- User-specific liquid

**Factory setting**

Water

---

Medium temperature

**Navigation**

Expert → Sensor → Meas. point 1 → Medium temp. (3053–1)

**Description**

Enter a fixed value for process temperature.

**User entry**

−200 to 550 °C

**Factory setting**

20 °C

---

Sound velocity

**Navigation**

Expert → Sensor → Meas. point 1 → Sound velocity (2929–1)

**Prerequisite**

The **User-specific liquid** option is selected in the **Process fluid** parameter (→ 62).

**Description**

Enter sound velocity of fluid.

**User entry**

200 to 3 000 m/s

**Factory setting**

1 482.4 m/s
### Viscosity

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → Meas. point 1 → Viscosity (2932–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prerequisite</strong></td>
<td>The <strong>User-specific liquid</strong> option is selected in the <strong>Process fluid</strong> parameter (→ 62).</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Enter medium viscosity at installation temperature.</td>
</tr>
<tr>
<td><strong>User entry</strong></td>
<td>1E-10 to 0.01 m²/s</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>1E-6 m²/s</td>
</tr>
</tbody>
</table>

### Pipe material

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → Meas. point 1 → Pipe material (2927–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Select pipe material.</td>
</tr>
</tbody>
</table>
| **Selection**       | • Carbon steel  
                      | • Ductile cast iron  
                      | • Stainless steel  
                      | • 1.4301 (UNS S30400)  
                      | • 1.4401 (UNS S31600)  
                      | • 1.4550 (UNS S34700)  
                      | • Hastelloy C  
                      | • PVC  
                      | • PE  
                      | • LDPE  
                      | • HDPE  
                      | • GRP  
                      | • PVDF  
                      | • PA  
                      | • PP  
                      | • PTFE  
                      | • Pyrex glass  
                      | • Asbestos cement  
                      | • Copper  
                      | • Unknown pipe material |
| **Factory setting** | Stainless steel |

### Pipe sound velocity

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → Meas. point 1 → Pipe sound vel. (2933–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prerequisite</strong></td>
<td>The <strong>Unknown pipe material</strong> option is selected in the <strong>Pipe material</strong> parameter (→ 63).</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Enter sound velocity of pipe material.</td>
</tr>
</tbody>
</table>
User entry 800.0 to 3 800.0 m/s
Factory setting 3 120.0 m/s

Pipe dimensions

Navigation 专家 → 传感器 → 测点 1 → 管道尺寸（2943–1）
Description 选择管道尺寸是否由直径或周长定义。
Selection • 直径
• 周长
Factory setting 直径

Pipe circumference

Navigation 专家 → 传感器 → 测点 1 → 管道周长（2934–1）
Prerequisite 管道周长选项在管道尺寸参数（→ 64）中被选中。
Description 定义管道的周长。
User entry 30 to 62 800 mm
Factory setting 314.159 mm

Pipe outer diameter

Navigation 专家 → 传感器 → 测点 1 → 管道外径（2910–1）
Prerequisite 直径选项在管道尺寸参数（→ 64）中被选中。
Description 定义管道的外径。
User entry 10 to 5 000 mm
Factory setting 100 mm
### Pipe wall thickness

**Navigation**  
Expert → Sensor → Meas. point 1 → Wall thickness (2916–1)

**Description**  
Enter the pipe wall thickness.

**User entry**  
Positive floating point number

**Factory setting**  
3 mm

### Liner material

**Navigation**  
Expert → Sensor → Meas. point 1 → Liner material (2928–1)

**Description**  
Select liner material.

**Selection**  
- None
- Cement
- Rubber
- Epoxy resin
- Unknown liner material

**Factory setting**  
None

### Liner sound velocity

**Navigation**  
Expert → Sensor → Meas. point 1 → Liner sound vel. (2936–1)

**Prerequisite**  
The **Unknown liner material** option is selected in the **Liner material** parameter (→ 65).

**Description**  
Define the sound velocity of liner material.

**User entry**  
800.0 to 3800.0 m/s

**Factory setting**  
2400.0 m/s
**Liner thickness**

**Navigation**
Expert → Sensor → Meas. point 1 → Liner thickness (2935–1)

**Prerequisite**
One of the following options is selected in the Liner material parameter (→ 65):
- Cement
- Rubber
- Epoxy resin
- Unknown liner material

**Description**
Define the thickness of liner.

**User entry**
0 to 100 mm

**Factory setting**
0 mm

**Sensor type**

**Navigation**
Expert → Sensor → Meas. point 1 → Sensor type (2924–1)

**Description**
Select sensor type.

**Selection**
- C-030-A
- C-050-A
- C-100-A
- C-100-B
- C-100-C
- C-200-A
- C-200-B
- C-200-C
- C-500-A

**Factory setting**
As per order

**Sensor coupling**

**Navigation**
Expert → Sensor → Meas. point 1 → Sensor coupling (2957–1)

**Description**
Select coupling medium.

**Selection**
- Coupling pad
- Coupling paste

**Factory setting**
Coupling pad
## Mounting type

### Navigation

Show: Expert → Sensor → Meas. point 1 → Mounting type (2938–1)

### Description

- **(1) direct** option: sensor arrangement with 1 traverse
- **(2) V-mounting** option: sensor arrangement with 2 traverses
- **(3) Z-Mounting** option: sensor arrangement with 3 traverses
- **(4) W-mounting** option: sensor arrangement with 4 traverses

### Selection

- (1) direct
- (2) V-mounting
- (3) Z-Mounting
- (4) W-mounting
- Automatic

### Factory setting

Automatic

## Cable length

### Navigation

Show: Expert → Sensor → Meas. point 1 → Cable length (2939–1)

### Description

Enter length of sensor cables.

### User entry

0 to 200,000 mm

### Factory setting

As per order

## FlowDC inlet configuration

### Navigation

Show: Expert → Sensor → Meas. point 1 → FlowDC inl. conf (3049–1)

### Prerequisite

- The 1 measuring point - 2 signal paths option is selected in the Measuring point configuration parameter (→ 61).
- Order code for "Application package", option EN "FlowDC" has been purchased.

### Description

Select FlowDC inlet configuration.

### Selection

- Off
- Single elbow
- Double elbow
- Double elbow 3D
- Concentric diameter change

### Factory setting

Off
Inlet diameter

**Navigation**

Expert → Sensor → Meas. point 1 → Inlet diameter (3054–1)

**Prerequisite**

- The **1 measuring point - 2 signal paths** option is selected in the **Measuring point configuration** parameter (→ 61).
- The **Concentric diameter change** option is selected in the **Inlet configuration** parameter (→ 67).

**Description**
Enter the outer diameter of the pipe before the cross-section change. For convenience, the same measuring pipe wall thickness as for the clamp-on system is applied.

**User entry**

1 to 10000 mm

**Factory setting**

88.9 mm

Transition length

**Navigation**

Expert → Sensor → Meas. point 1 → Transit. length (3065–1)

**Prerequisite**

- The **1 measuring point - 2 signal paths** option is selected in the **Measuring point configuration** parameter (→ 61).
- The **Concentric diameter change** option is selected in the **Inlet configuration** parameter (→ 67).

**Description**
Enter length of the concentric diameter change.

**User entry**

0 to 20000 mm

**Factory setting**

0 mm

Inlet run

**Navigation**

Expert → Sensor → Meas. point 1 → Inlet run (3050–1)

**Prerequisite**

The **1 measuring point - 2 signal paths** option is selected in the **Measuring point configuration** parameter (→ 61).

**Description**
Enter length of the available straight inlet run.

**User entry**

0 to 50000 mm

**Factory setting**

0 mm
Relative sensor position

**Navigation**

Expert → Sensor → Meas. point 1 → Rel. sensor pos. (2985–1)

**Prerequisite**

The *1 measuring point - 2 signal paths* option is selected in the *Measuring point configuration* parameter (→ 61).

**Description**

Shows the correct position for the sensor.

**User interface**

- 90°
- 180°

Result sensor type / mounting type

**Navigation**

Expert → Sensor → Meas. point 1 → Sensor/mounting (2946–1)

**Description**

Shows the selected sensor type and (if applicable automatically) selected mounting type.

**User interface**

e.g. C-100-A option / (2) V-mounting option

Result sensor distance / measuring aid

**Navigation**

Expert → Sensor → Meas. point 1 → Dist./meas. aid (2947–1)

**Description**

Shows the calculated sensor distance and vernier or wire length (if applicable) required for installation.

**User interface**

e.g. 201.3 mm / B 21

3.2.4 "Installation status" submenu

**Navigation**

Expert → Sensor → Install. status

<table>
<thead>
<tr>
<th>Installation status</th>
</tr>
</thead>
</table>
| Installation status (2958) | → 70  
| Signal strength (2914) | → 70  
| Signal to noise ratio (2917) | → 70  
| Sound velocity (2915) | → 71  

Endress+Hauser
Description of device parameters

Proline Prosonic Flow W 400

Installation status

Navigation

Expert → Sensor → Install. status → Install. status (2958)

Description
Displays the device status after installation according to the displayed measured values.

- **Good** option: No further optimization required
- **Acceptable** option: Measuring performance ok, optimize if possible. You should always aim for the status **Good** option.
- **Bad** option: Optimization is required. Poor and unstable measuring performance.

Check the following points to optimize the sensor installation:

- Number of traverses, change if necessary (e.g. from 2 traverses to 1 traverse)
- Sensor distance
- Alignment of sensors
- Sufficient coupling medium available (coupling pad or coupling gel)
- Check the measuring point parameters in the configuration

User interface

- Good
- Acceptable
- Bad

Factory setting

Good

Signal strength

Navigation

Expert → Sensor → Install. status → Signal strength (2914)

Description
Displays 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 process changes, such as the development of deposits in the measuring pipe at the measuring point. This can only be quantified by performing a direct process comparison with different deposit layer thicknesses and associated signal strengths.

Signal to noise ratio

Navigation

Expert → Sensor → Install. status → SNR (2917)

Description
Displays 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.
Sound velocity

**Navigation**

Expert → Sensor → Install. status → Sound velocity (2915)

**Description**

The difference between the configured sound velocity and measured sound velocity should not be > 2%.

**User interface**

Signed floating-point number

---

### 3.2.5 "Process parameters" submenu

**Navigation**


```plaintext
<table>
<thead>
<tr>
<th>Process parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow override (1839)</td>
</tr>
<tr>
<td>Flow damping (1802)</td>
</tr>
<tr>
<td>Sound velocity damping (1888)</td>
</tr>
<tr>
<td>Density damping (1889)</td>
</tr>
<tr>
<td>Temperature damping (1886)</td>
</tr>
</tbody>
</table>

▶ Low flow cut off | → 73 |
```

---

**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

**Effect**

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

**Description**

**Flow override is active**

- The 453 Flow override diagnostic message is output.
- Output values
  - Output: value at zero flow
  - Temperature: continues to be output
  - Sound velocity: continues to be output
  - Totalizer 1...3: stop being totalized

The Flow override option can also be activated in the Status input submenu: Assign status input parameter (→ 85).

### 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**

1 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).

**Effect**

The damping affects the following variables of the device:

- Outputs → 87
- Low flow cut off → 73
- Totalizers → 156

---

2) Proportional behavior with first-order lag
Sound velocity damping

**Navigation**


**Description**

Use this function to enter the time constant for sound velocity damping. Reduction of the variability of the measured sound velocity or sound velocity measured value (in relation to interference). For this purpose, the depth of the sound velocity 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**

1 s

Density damping

**Navigation**


**Description**

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

**User entry**

0 to 999.9 s

**Factory setting**

0 s

Temperature 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 process variable (1837) → 74
Assign process 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
- Flow velocity

**Factory setting**

Flow velocity

On value low flow cutoff

**Navigation**

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

**Prerequisite**

A process variable is selected in the Assign process variable parameter (→ 74).

**Description**

Use this function to enter a switch-on value for low flow cutoff. Low flow cutoff is activated if the value entered is not equal to 0 → 74.

**User entry**

Positive floating-point number

**Factory setting**

0.3 m/s

**Additional information**

*Dependency*

The unit depends on the process variable selected in the Assign process variable parameter (→ 74).

Off value low flow cutoff

**Navigation**

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

**Prerequisite**

A process variable is selected in the Assign process variable parameter (→ 74).

**Description**

Use this function to enter a switch-off value for low flow cutoff. The switch-off value is entered as a positive hysteresis from the switch-on value → 74.

**User entry**

0 to 100.0 %
Factory setting 50 %

Additional information Example

3.2.6 "External compensation" submenu


<table>
<thead>
<tr>
<th>External compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature compensation (3025) → 76</td>
</tr>
<tr>
<td>External temperature (3058) → 76</td>
</tr>
<tr>
<td>Medium temperature (2925) → 76</td>
</tr>
<tr>
<td>Density source (3048) → 76</td>
</tr>
<tr>
<td>External density (3060) → 77</td>
</tr>
<tr>
<td>Fixed density (3171) → 77</td>
</tr>
<tr>
<td>Linear expansion coefficient (3153) → 77</td>
</tr>
<tr>
<td>Square expansion coefficient (3172) → 78</td>
</tr>
<tr>
<td>Fixed reference density (3178) → 78</td>
</tr>
<tr>
<td>Reference temperature (3147) → 78</td>
</tr>
</tbody>
</table>
### Temperature compensation

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Calculated value</strong> option is selected in the <strong>Density source</strong> parameter (→ 76).</td>
</tr>
<tr>
<td>Description</td>
<td>Select temperature mode for temperature compensation.</td>
</tr>
<tr>
<td>Selection</td>
<td></td>
</tr>
</tbody>
</table>
|  | • Fixed value  
|  | • External value |
| Factory setting | Fixed value |

### External temperature

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Calculated value</strong> option is selected in the <strong>Density source</strong> parameter (→ 76) and the <strong>External value</strong> option is selected in the <strong>Temperature compensation</strong> parameter (→ 76).</td>
</tr>
<tr>
<td>Description</td>
<td>Shows the external process temperature read in from the external device.</td>
</tr>
<tr>
<td>User interface</td>
<td>–273.15 to 99999 °C</td>
</tr>
<tr>
<td>Factory setting</td>
<td>–</td>
</tr>
</tbody>
</table>

### Medium temperature

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Enter a fixed value for process temperature.</td>
</tr>
<tr>
<td>User entry</td>
<td>–50 to 550 °C</td>
</tr>
<tr>
<td>Factory setting</td>
<td>20 °C</td>
</tr>
</tbody>
</table>

### Density source

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Select the density source for the calculation of the mass.</td>
</tr>
</tbody>
</table>
## Selection
- Fixed density
- External density
- Calculated value

## Factory setting
Fixed density

### External density

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → External comp. → External density (3060)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>External density</strong> option is selected in the <strong>Density source</strong> parameter (→ 76).</td>
</tr>
<tr>
<td>Description</td>
<td>Shows the density read in from the external device.</td>
</tr>
<tr>
<td>User interface</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 kg/l</td>
</tr>
</tbody>
</table>

### Fixed density

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → External comp. → Fixed density (3171)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Fixed density</strong> option is selected in the <strong>Density source</strong> parameter (→ 76).</td>
</tr>
<tr>
<td>Description</td>
<td>Enter fixed value for medium density.</td>
</tr>
<tr>
<td>User entry</td>
<td>1E-05 to 15 kg/l</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1 kg/l</td>
</tr>
</tbody>
</table>

### Linear expansion coefficient

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → External comp. → Linear exp coeff (3153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Calculated value</strong> option is selected in the <strong>Density source</strong> parameter (→ 76).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter a linear, medium-specific expansion coefficient for calculating the density.</td>
</tr>
<tr>
<td>User entry</td>
<td>$1.0 \cdot 10^{-6}$ to $2.0 \cdot 10^{-3}$</td>
</tr>
<tr>
<td>Factory setting</td>
<td>$2.06 \cdot 10^{-4}$</td>
</tr>
</tbody>
</table>
Square expansion coefficient

**Navigation**
Expert → Sensor → External comp. → Square exp coeff (3172)

**Prerequisite**
The Calculated value option is selected in the Density source parameter (→ 76).

**Description**
For media with a non-linear expansion pattern: use this function to enter a quadratic, medium-specific expansion coefficient for calculating the density.

**User entry**
1.0 · 10^{-6} to 2.0 · 10^{-3}

**Factory setting**
2.06 · 10^{-4}

Fixed reference density

**Navigation**
Expert → Sensor → External comp. → Fix ref.density (3178)

**Prerequisite**
The Calculated value option is selected in the Density source parameter (→ 76).

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

**User entry**
1E-05 to 15 kg/l

**Factory setting**
1 kg/l

**Additional information**
Reference density calculation

\[
\rho = \rho_N \cdot (1 + a \cdot \Delta t + \beta \cdot \Delta t^2)
\]

- \(\rho\): currently used density for mass flow calculation
- \(\rho_N\): reference density
- \(t\): currently read-in or fixed temperature according to the setting in the Temperature compensation parameter (→ 76)
- \(t_N\): reference temperature at which the reference density applies (e.g. 20 °C)
- \(\Delta t\): \(t - t_N\)
- \(a\): linear expansion coefficient of the medium, unit = \(1/K\); \(K\) = Kelvin
- \(\beta\): square expansion coefficient of the medium, unit = \(1/K^2\)

Reference temperature

**Navigation**
Expert → Sensor → External comp. → Ref. temperature (3147)

**Prerequisite**
The Calculated value option is selected in the Density source parameter (→ 76).

**Description**
Enter the reference temperature at which the reference density applies.

**User entry**
–200 to 450 °C
Factory setting 20 °C

3.2.7 "Sensor adjustment" submenu

Navigation


Sensor adjustment

Installation direction (1809) → 79

Process variable adjustment → 79

Installation direction

Navigation

Expert → Sensor → Sensor adjustm. → Install. direct. (1809)

Description

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

Selection

- Forward flow
- Reverse flow

Factory setting

Forward flow

"Process variable adjustment" submenu

Navigation

Expert → Sensor → Sensor adjustm. → Variable adjust

Process variable adjustment

Volume flow offset (1831) → 80

Volume flow factor (1832) → 80

Mass flow offset (1841) → 80

Mass flow factor (1846) → 81

Sound velocity offset (1848) → 81

Sound velocity factor (1849) → 81
**Volume flow offset**

**Navigation**

**Description**
Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is m³/s. The value is entered in the selected volume flow unit.

**User entry**
Signed floating-point number

**Factory setting**
0 m³/h

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

**Volume flow factor**

**Navigation**

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

**User entry**
Positive floating-point number

**Factory setting**
1

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

**Mass flow offset**

**Navigation**

**Description**
Use this function to enter the zero point shift for the mass flow trim. The mass flow unit on which the shift is based is kg/h. The value is entered in the selected mass flow unit.

**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

Sound velocity 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. The value is entered in the selected velocity unit.

User entry

Signed floating-point number

Factory setting

0 m/s

Additional information  

Description

Corrected value = (factor × value) + offset

Sound velocity 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
**Temperature offset**

**Navigation**


**Prerequisite**

The **Calculated value** option is selected in the **Density source** parameter (→ 76) and the **External value** option is selected in the **Temperature compensation** parameter (→ 76).

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0

**Additional information**

Description

Corrected value = (factor × value) + offset

**Temperature factor**

**Navigation**


**Prerequisite**

The **Calculated value** option is selected in the **Density source** parameter (→ 76) and the **External value** option is selected in the **Temperature compensation** parameter (→ 76).

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Description

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

| **Navigation** |  | Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset (1877) |
|----------------|------------------|
| **Prerequisite** | The **External density** option or **Calculated value** option is selected in the **Density source** parameter (→ 76). |
| **Description** | Use this function to enter the zero point shift for the density trim. The value is entered in the selected density unit. |
| **User entry** | Signed floating-point number |
| **Factory setting** | 0 kg/m³ |

### Density factor

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prerequisite</strong></td>
<td>The <strong>External density</strong> option or <strong>Calculated value</strong> option is selected in the <strong>Density source</strong> parameter (→ 76).</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Use this function to enter a quantity factor for the density.</td>
</tr>
<tr>
<td><strong>User entry</strong></td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

### 3.2.8 "Calibration" submenu

**Navigation**  |  | Expert → Sensor → Calibration |

| **Calibration** |  |  |
|----------------|------------------|
| Calibration factor (2920) | → 84 |
| Zero point (2921) | → 84 |
| Nominal diameter (2807) | → 84 |
### Calibration 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**

--------------

**Factory setting**

--------------

3.3 "Input" submenu

**Navigation**

Expert → Input

```
<table>
<thead>
<tr>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status input</td>
</tr>
</tbody>
</table>
```

→ 85
3.3.1 "Status input 1 to n" submenu

Navigation
Expert → Input → Status input 1 to n

Assign status input

- Assign status input (1352)
- Value status input (1353)
- Active level (1351)
- Response time status input (1354)

Description
Use this function to select the function for the status input.

Selection
- Off
- Reset totalizer 1
- Reset totalizer 2
- Reset totalizer 3
- Reset all totalizers
- Flow override

Factory setting
Off

Additional information
Selection
- Off
  The status input is switched off.
- Reset totalizer 1...3
  The individual totalizers are reset.
- Reset all totalizers
  All totalizers are reset.
- Flow override
  The Flow override (→ 71) is activated.

Note on the Flow override (→ 71):
- The Flow override (→ 71) is enabled as long as the level is at the status input (continuous signal).
- All other assignments react to a change in level (pulse) at the status input.
### Value status input

**Navigation**

![Diagram] 

**Prerequisite**

For the following order code: 
"Output; input", option I "4-20mA HART, 2x pul./freq./switch output; status input"

**Description**

Displays the current input signal level.

**User interface**

- High
- Low

### Active level

**Navigation**

![Diagram] 

**Description**

Use this function to determine the input signal level at which the assigned function is activated.

**Selection**

- High
- Low

**Factory setting**

High

### Response time status input

**Navigation**

![Diagram] 

**Description**

Use this function to enter the minimum time period for which the input signal level must be present before the selected function is activated.

**User entry**

5 to 200 ms

**Factory setting**

50 ms
3.4 "Output" submenu

**Navigation**

ضيف عالي → Output

```
[.Output]
[.Current output 1] → 87
[.Pulse/frequency/switch output 1 to n] → 99
```

3.4.1 "Current output 1" submenu

**Navigation**

ضيف عالي → Output → Curr.output 1

```
[.Current output 1]

Process variable current output (0359–1) → 87
Current range output (0353–1) → 88
Fixed current (0365–1) → 89
Lower range value output (0367–1) → 89
Upper range value output (0372–1) → 91
Measuring mode current output (0351–1) → 92
Damping current output (0363–1) → 96
Failure behavior current output (0364–1) → 97
Failure current (0352–1) → 98
Output current 1 (0361–1) → 98
Measured current 1 (0366–1) → 99
```

**Process variable current output**

**Navigation**

ضيف عالي → Output → Curr.output 1 → Proc.var. outp (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
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature

Factory setting

Volume flow

Current range output

Navigation

Expert → Output → Curr.output 1 → Curr.range out (0353–1)

Description

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

Selection

- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)
- 4...20 mA (4... 20.5 mA)
- 0...20 mA (0... 20.5 mA)
- Fixed value

Factory setting

Depends on country:

- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)

Additional information

Description

- In the event of a device alarm, the current output adopts the value specified in the Failure mode parameter (→ 97).
- If the measured value is outside the measuring range, the S441 Current output 1 diagnostic message is displayed.
- The measuring range is specified via the 0/4 mA value parameter (→ 89) and 20 mA value parameter (→ 91).

*Fixed current* option

- This option is used for a HART Multidrop network.
- It can only be used for the 4 to 20 mA HART current output (current output 1).
- The current value is set via the Fixed current parameter (→ 89).

Example

Shows the relationship between the current range for outputting the process value and the two sign on alarm levels:

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

Proline Prosonic Flow W 400

Selection

<table>
<thead>
<tr>
<th>Selection</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4...20 mA NE (3.8...20.5 mA)</td>
<td>3.8 to 20.5 mA</td>
<td>&lt; 3.6 mA</td>
<td>&gt; 21.95 mA</td>
</tr>
<tr>
<td>4...20 mA US (3.9...20.8 mA)</td>
<td>3.9 to 20.8 mA US</td>
<td>&lt; 3.6 mA</td>
<td>&gt; 21.95 mA</td>
</tr>
<tr>
<td>4...20 mA (4... 20.5 mA)</td>
<td>4 to 20.5 mA</td>
<td>&lt; 3.6 mA</td>
<td>&gt; 21.95 mA</td>
</tr>
<tr>
<td>0...20 mA (0... 20.5 mA)</td>
<td>0 to 20.5 mA</td>
<td>&lt; 0 mA</td>
<td>&gt; 21.95 mA</td>
</tr>
</tbody>
</table>

If the flow exceeds or falls below the upper or lower signal on alarm level, the diagnostic message is displayed.

Fixed current

**Navigation**

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

**Prerequisite**

The **Fixed current** option is selected in the **Current span** parameter (→ 88).

**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

Lower range value output

**Navigation**

Expert → Output → Curr.output 1 → Low.range outp (0367–1)

**Prerequisite**

One of the following options is selected in the **Current span** parameter (→ 88):
- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)
- 4...20 mA (4... 20.5 mA)
- 0...20 mA (0... 20.5 mA)

**Description**

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

**User entry**

Signed floating-point number
Factory setting

Country-specific:
- m³/h
- ft³/h

Additional information

Description
Positive and negative values are permitted depending on the process variable assigned in the Assign current output parameter (→ 87). 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 (→ 91).

Dependency

The unit depends on the process variable selected in the Assign current output parameter (→ 87).

Current output behavior

The current output behaves differently depending on the settings configured in the following parameters:
- Current span (→ 88)
- Measuring mode (→ 92)
- Failure mode (→ 97)

Configuration examples

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

Configuration example A

Measurement mode with Forward flow option
- 0/4 mA value parameter (→ 89) = not equal to zero flow (e.g. –250 m³/h)
- 20 mA value parameter (→ 91) = not equal to zero flow (e.g. +750 m³/h)
- Calculated current value = 8 mA at zero flow

The operational range of the measuring device is defined by the values entered for the 0/4 mA value parameter (→ 89) and 20 mA value parameter (→ 91). If the effective flow exceeds or falls below this operational range, the ΔS441 Current output 1 diagnostic message is displayed.

Configuration example B

Measurement mode with Forward/Reverse flow 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 (→ 89) and 20 mA value parameter (→ 91) must have the same algebraic sign. The value for the 20 mA value parameter (→ 91) (e.g. reverse flow) corresponds to the mirrored value for the 20 mA value parameter (→ 91) (e.g. flow).

**Configuration example C**
Measurement mode with Reverse flow compensation 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 → 92.

**Upper range value output**

- **Navigation**
  - Expert → Output → Curr.output 1 → Upp.range outp (0372-1)

- **Prerequisite**
  - In the Current span parameter (→ 88), one of the following options is selected:
    - 4...20 mA NE (3.8...20.5 mA)
    - 4...20 mA US (3.9...20.8 mA)
    - 4...20 mA (4...20.5 mA)
    - 0...20 mA (0...20.5 mA)

- **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 information**
  - Description
  - Positive and negative values are permitted depending on the process variable assigned in the Assign current output parameter (→ 87). 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 (→ 89).

**Dependency**

>i The unit depends on the process variable selected in the Assign current output parameter (→ 87).

**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 flow option is selected in the Measuring mode parameter (→ 92), different signs cannot be entered for the values of the 0/4 mA value parameter (→ 89) and 20 mA value parameter (→ 91). The ΔS441 Current output 1 diagnostic message is displayed.

**Configuration examples**

>i Observe the configuration examples for the 0/4 mA value parameter (→ 89).

---

**Measuring mode current output**

**Navigation**

Expert → Output → Curr.output 1 → Meas.mode outp (0351-1)

**Prerequisite**

One of the following options is selected in the Current span parameter (→ 88):

- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)
- 4...20 mA (4... 20.5 mA)
- 0...20 mA (0... 20.5 mA)

**Description**

Use this function to select the measuring mode for the current output.

**Selection**

- Forward flow
- Forward/Reverse flow *
- Reverse flow compensation

**Factory setting**

Forward flow

**Additional information**

**Description**

>i The process variable that is assigned to the current output via the Assign current output parameter (→ 87) 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.

* Visibility depends on order options or device settings
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 flow’ 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 (→ 89) and 20 mA value parameter (→ 91) must have the same sign.
- The value for the 20 mA value parameter (→ 91) (e.g. reverse flow) corresponds to the mirrored value for the 20 mA value parameter (→ 91) (e.g. forward flow).

‘Reverse flow compensation’ option

The Reverse flow compensation option is primarily used to compensate for abrupt reverse flow that can occur with positive displacement pumps as a result of wear or high viscosity. The reverse flow is recorded in a buffer memory and offset against the next forward flow.

In the event of prolonged and undesired reverse flow, flow values can accumulate in the buffer memory. Due to the configuration of the current output, these values are not factored in, however, i.e. there is no compensation for the reverse flow.

If this option is set, the measuring device does not smoothen 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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current</td>
</tr>
<tr>
<td>2</td>
<td>Flow</td>
</tr>
<tr>
<td>1</td>
<td>Lower range value (value assigned to 0/4 mA current)</td>
</tr>
<tr>
<td>2</td>
<td>Upper range value (value assigned to 20 mA current)</td>
</tr>
</tbody>
</table>

With the following flow response:

4 Flow response

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>Flow</td>
</tr>
<tr>
<td>t</td>
<td>Time</td>
</tr>
</tbody>
</table>

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.

With **Forward/Reverse flow** option

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

With **Reverse flow compensation** option
Flow components outside of the measuring range are buffered, balanced and output after a maximum delay of 60 s.

\[ I = A_t \]

\[ S = A_t \]

**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.
Description of device parameters

Proline Prosonic Flow W 400

With Forward/Reverse flow option

This option cannot be selected here since the values for the 0/4 mA value parameter (→ 89) and 20 mA value parameter (→ 91) have different algebraic signs.

With Reverse flow compensation option

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

Damping current output

Navigation

Expert → Output → Curr.output 1 → Damp.curr.outp (0363–1)

Prerequisite

A process variable is selected in the Assign current output parameter (→ 87) and one of the following options is selected in the Current span parameter (→ 88):

- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)
- 4...20 mA (4... 20.5 mA)
- 0...20 mA (0... 20.5 mA)

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  

*User 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).

Failure behavior current output

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Output → Curr.output 1 → Fail.behav.out (0364–1)</th>
</tr>
</thead>
</table>
| Prerequisite | A process variable is selected in the Assign current output parameter (→ 87) and one of the following options is selected in the Current span parameter (→ 88):
  - 4...20 mA NE (3.8...20.5 mA)
  - 4...20 mA US (3.9...20.8 mA)
  - 4...20 mA (4... 20.5 mA)
  - 0...20 mA (0... 20.5 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  
Fixed value |
| Factory setting | Max. |

---

\(^3\) proportional transmission behavior with first order delay
**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.

The signal on alarm level is defined via the Current span parameter (→ 88).

"Max." option

The current output adopts the value of the upper level for signal on alarm.

The signal on alarm level is defined via the Current span parameter (→ 88).

"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.

The measured value is defined via the Failure current parameter (→ 98).

**Failure current**

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Output → Curr.output 1 → Fail. current (0352–1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The Defined value option is selected in the Failure mode parameter (→ 97).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter a fixed value that the current output adopts in the event of a device alarm.</td>
</tr>
<tr>
<td>User entry</td>
<td>0 to 22.5 mA</td>
</tr>
<tr>
<td>Factory setting</td>
<td>22.5 mA</td>
</tr>
</tbody>
</table>

**Output current 1**

| Navigation | 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 |
Measured current 1

**Navigation**

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

**Description**

Displays the actual measured value of the output current.

**User interface**

0 to 30 mA

3.4.2 "Pulse/frequency/switch output 1 to n" submenu

**Navigation**

Expert → Output → PFS output 1 to n

<table>
<thead>
<tr>
<th>Operating mode (0469–1 to n)</th>
<th>→ 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign pulse output 1 to n (0460–1 to n)</td>
<td>→ 102</td>
</tr>
<tr>
<td>Pulse scaling (0455–1 to n)</td>
<td>→ 102</td>
</tr>
<tr>
<td>Pulse width (0452–1 to n)</td>
<td>→ 103</td>
</tr>
<tr>
<td>Measuring mode (0457–1 to n)</td>
<td>→ 103</td>
</tr>
<tr>
<td>Failure mode (0480–1 to n)</td>
<td>→ 104</td>
</tr>
<tr>
<td>Pulse output 1 to n (0456–1 to n)</td>
<td>→ 105</td>
</tr>
<tr>
<td>Assign frequency output (0478–1 to n)</td>
<td>→ 105</td>
</tr>
<tr>
<td>Minimum frequency value (0453–1 to n)</td>
<td>→ 106</td>
</tr>
<tr>
<td>Maximum frequency value (0454–1 to n)</td>
<td>→ 106</td>
</tr>
<tr>
<td>Measuring value at minimum frequency (0476–1 to n)</td>
<td>→ 106</td>
</tr>
<tr>
<td>Measuring value at maximum frequency (0475–1 to n)</td>
<td>→ 107</td>
</tr>
<tr>
<td>Measuring mode (0479–1 to n)</td>
<td>→ 107</td>
</tr>
<tr>
<td>Damping output 1 to n (0477–1 to n)</td>
<td>→ 108</td>
</tr>
</tbody>
</table>
### Description of device parameters

#### Proline Prosonic Flow W 400

<table>
<thead>
<tr>
<th>Parameter Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response time (0491–1 to n)</td>
<td>108</td>
</tr>
<tr>
<td>Failure mode (0451–1 to n)</td>
<td>109</td>
</tr>
<tr>
<td>Failure frequency (0474–1 to n)</td>
<td>109</td>
</tr>
<tr>
<td>Output frequency 1 to n (0471–1 to n)</td>
<td>110</td>
</tr>
<tr>
<td>Switch output function (0481–1 to n)</td>
<td>110</td>
</tr>
<tr>
<td>Assign diagnostic behavior (0482–1 to n)</td>
<td>110</td>
</tr>
<tr>
<td>Assign limit (0483–1 to n)</td>
<td>111</td>
</tr>
<tr>
<td>Switch-on value (0466–1 to n)</td>
<td>113</td>
</tr>
<tr>
<td>Switch-off value (0464–1 to n)</td>
<td>113</td>
</tr>
<tr>
<td>Assign flow direction check (0484–1 to n)</td>
<td>114</td>
</tr>
<tr>
<td>Assign status (0485–1 to n)</td>
<td>114</td>
</tr>
<tr>
<td>Switch-on delay (0467–1 to n)</td>
<td>115</td>
</tr>
<tr>
<td>Switch-off delay (0465–1 to n)</td>
<td>115</td>
</tr>
<tr>
<td>Failure mode (0486–1 to n)</td>
<td>115</td>
</tr>
<tr>
<td>Switch state 1 to n (0461–1 to n)</td>
<td>116</td>
</tr>
<tr>
<td>Invert output signal (0470–1 to n)</td>
<td>116</td>
</tr>
</tbody>
</table>

### Operating mode

#### Navigation

- Expert → Output → PFS output 1 to n → Operating mode (0469–1 to n)

#### 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

* Visibility depends on order options or device settings
**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 on/off ratio of 1:1

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, 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

**“Switch” option**

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

Example

Alarm response without alarm
Assign pulse output 1 to n

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

Prerequisite
The Pulse option is selected in the Operating mode parameter (→ 100).

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

Selection
- Off
- Volume flow
- Mass flow

Factory setting
Off

Pulse scaling

Navigation
Expert → Output → PFS output 1 to n → Pulse scaling (0455–1 to n)

Prerequisite
The Pulse option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign pulse output parameter (→ 102).

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

User entry
Positive floating point number

Factory setting
Depends on country and nominal diameter

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 to n → Pulse width (0452–1 to n)

**Prerequisite**
The Pulse option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign pulse output parameter (→ 102).

**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**
Description
- 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 443 Pulse output 1 to n diagnostic message.

**Example**
- Pulse value: 0.1 g
- Pulse width: 0.1 ms
- $f_{\text{max}} = 1 / (2 \times 0.1 \text{ ms}) = 5 \text{ kHz}$
- $Q_{\text{max}} = 5 \text{ kHz} \times 0.1 \text{ g} = 0.5 \text{ kg/s}$

**Measuring mode**

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

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

- Forward flow
- Forward/Reverse flow
- Reverse flow
- Reverse flow compensation

Factory setting

Forward flow

Additional information

Selection

- Forward flow
  Positive flow is output, negative flow is not output.
- Forward/Reverse flow
  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.
- Reverse flow compensation
  The flow components outside the measuring range 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 (→ 92)

Examples

For a detailed description of the configuration examples, see the Measuring mode parameter (→ 92)

Failure mode

Navigation

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

Prerequisite

The Pulse option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign pulse output parameter (→ 102).

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 to n**

- **Navigation**
  
    Expert → Output → PFS output 1 to n → Pulse output 1 to n (0456–1 to n)

- **Prerequisite**
  
  The Pulse option is selected in the Operating mode parameter (→ 100) 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 (→ 102) and Pulse width parameter (→ 103) 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](A0158824.png)

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

  The output behavior can be reversed via the Invert output signal parameter (→ 116) 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 (→ 104)) can be configured.

---

**Assign frequency output**

- **Navigation**
  
    Expert → Output → PFS output 1 to n → Assign freq. (0478–1 to n)

- **Prerequisite**
  
  The Frequency option is selected in the Operating mode parameter (→ 100).

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

- **Selection**
  
  - Off
  - Volume flow
  - Mass flow
Description of device parameters

Proline Prosonic Flow W 400

- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature

Factory setting

Off

Minimum frequency value

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

Prerequisite
The Frequency option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign frequency output parameter (→ 105).

Description
Use this function to enter the minimum frequency.

User entry
0.0 to 10 000 Hz

Factory setting
0.0 Hz

Maximum frequency value

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

Prerequisite
The Frequency option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign frequency output parameter (→ 105).

Description
Use this function to enter the end value frequency.

User entry
0.0 to 10 000 Hz

Factory setting
10 000 Hz

Measuring value at minimum frequency

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

Prerequisite
The Frequency option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign frequency output parameter (→ 105).

Visibility depends on order options or device settings
### Measuring value at maximum frequency

**Navigation**

Expert → Output → PFS output 1 to n → Val. at max.freq (0475–1 to n)

**Prerequisite**

The Frequency option is selected in the Operating mode parameter (→ 100) and a process variable is selected in the Assign frequency output parameter (→ 105).

**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**

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 frequency output parameter (→ 105).

### Measuring mode

**Navigation**

Expert → Output → PFS output 1 to n → Measuring mode (0479–1 to n)

**Description**

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

**Selection**

- Forward flow
- Forward/Reverse flow
- Reverse flow compensation

**Factory setting**

Forward flow
Description of device parameters

Additional information

Selection

For a detailed description of the options available, see the Measuring mode parameter (→ 92)

Examples

For a detailed description of the configuration examples, see the Measuring mode parameter (→ 92)

Damping output 1 to n

Navigation

Expert → Output → PFS output 1 to n → Damping out. 1 to n (0477–1 to n)

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

Navigation

Expert → Output → PFS output 1 to n → Response time (0491–1 to n)

Description

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.

User interface

Positive floating-point number

Additional information

Description

The response time is made up of the time specified for the following dampings:

- Damping of pulse/frequency/switch output → 96
- Depending on the measured variable assigned to the output. Flow damping

4) proportional transmission behavior with first order delay

Endress+Hauser
### Failure mode

**Navigation**

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

**Prerequisite**

The **Frequency** option is selected in the **Operating mode** parameter (→ 100) and a process variable is selected in the **Assign frequency output** parameter (→ 105).

**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 frequency (→ 109) 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 frequency

**Navigation**

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

**Prerequisite**

The **Frequency** option is selected in the **Operating mode** parameter (→ 100) and a process variable is selected in the **Assign frequency output** parameter (→ 105).

**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 frequency 1 to n**

**Navigation**

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

**Prerequisite**

In the Operating mode parameter (→  100), 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 output function**

**Navigation**

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

**Prerequisite**

The Switch option is selected in the Operating mode parameter (→  100).

**Description**

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

**Selection**

- Off
- On
- Diagnostic behavior
- Limit
- Flow direction 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).
- Diagnostic 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
  Displays the device status low flow cut off is selected.

---

**Assign diagnostic behavior**

**Navigation**

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

**Prerequisite**

- In the Operating mode parameter (→  100), the Switch option is selected.
- In the Switch output function parameter (→  110), the Diagnostic 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**

Description

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 to n → Assign limit (0483–1 to n)

**Prerequisite**

- The Switch option is selected in the Operating mode parameter (→ 100).
- The Limit option is selected in the Switch output function parameter (→ 110).

**Description**

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

**Selection**

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting**

Volume flow

* Visibility depends on order options or device settings
**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

![Diagram 1](image1.png)

1. **Switch-on value**
2. **Switch-off value**
3. **Conductive**
4. **Non-conductive**
A. **Process variable**
B. **Status output**

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

![Diagram 2](image2.png)

1. **Switch-off value**
2. **Switch-on value**
3. **Conductive**
4. **Non-conductive**
A. **Process variable**
B. **Status output**

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

![Diagram 3](image3.png)
Switch-on value

**Navigation**

Expert → Output → PFS output 1 to n → Switch-on value (0466–1 to n)

**Prerequisite**

- The **Switch** option is selected in the Operating mode parameter (→ 100).
- The **Limit** option is selected in the **Switch output function** parameter (→ 110).

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

Country-specific

**Additional information**

**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 (→ 111).

Switch-off value

**Navigation**

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

**Prerequisite**

- The **Switch** option is selected in the Operating mode parameter (→ 100).
- The **Limit** option is selected in the **Switch output function** parameter (→ 110).

**Description**

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

**User entry**

Signed floating-point number
**Factory setting**  
Country-specific

**Additional information**

*Description*
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 (→ 111).

---

**Assign flow direction check**

**Navigation**

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

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 100).
- The **Flow direction check** option is selected in the **Switch output function** parameter (→ 110).

**Description**

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

**Selection**

- Off
- Volume flow
- Mass flow
- Flow velocity

**Factory setting**

Volume flow

---

**Assign status**

**Navigation**

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

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 100).
- The **Status** option is selected in the **Switch output function** parameter (→ 110).

**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**

*Selection*

If low flow cut off are active, the output is conductive. Otherwise, the switch output is non-conductive.
### Switch-on delay

**Navigation**

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

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 100).
- The **Limit** option is selected in the **Switch output function** parameter (→ 110).

**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 to n → Switch-off delay (0465-1 to n)

**Prerequisite**

- The **Switch** option is selected in the **Operating mode** parameter (→ 100).
- The **Limit** option is selected in the **Switch output function** parameter (→ 110).

**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 to n → Failure mode (0486-1 to n)

**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 state 1 to n

**Navigation**

> Expert → Output → PFS output 1 to n → Switch state 1 to n (0461–1 to n)

**Prerequisite**

The **Switch** option is selected in the **Operating mode** parameter (→ 100).

**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 output signal

**Navigation**

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

**Description**

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

**Selection**

- **No**
- **Yes**

**Factory setting**

No

**Additional information**

*Selection*

**No** option (passive - negative)

![Diagram](image1)

**Yes** option (passive - positive)

![Diagram](image2)
3.5 "Communication" submenu

**Navigation**

Expert → Communication

- Communication
  - HART input → 117
  - HART output → 123
  - Web server → 139
  - Diagnostic configuration → 143
  - WLAN settings → 149

3.5.1 "HART input" submenu

**Navigation**

Expert → Communication → HART input

- HART input
  - Configuration → 117
  - Input → 122

"Configuration" submenu

**Navigation**

Expert → Communication → HART input → Configuration

- Configuration
  - Capture mode (7001) → 118
  - Device ID (7007) → 118
  - Device type (7008) → 119
  - Manufacturer ID (7009) → 119
  - Burst command (7006) → 119
  - Slot number (7010) → 120
  - Timeout (7005) → 120
Capture mode

Navigation  
Expert → Communication → HART input → Configuration → Capture mode (7001)

Description  
Use this function to select the capture mode via burst or master communication.

Selection  
- Off
- Burst network
- Master network

Factory setting  
Off

Additional information  
*Burst network* option
The device records data transmitted via burst in the network.

An external pressure sensor must be in the burst mode.

*Master network* option
In this case, the device must be located in a HART network in which a HART master (control) queries the measured values of the up to 64 network participants. The device reacts only to the responses of a specific device in the network. Device ID, device type, manufacturer ID and the HART commands used by the master must be defined.

Device ID

Navigation  
Expert → Communication → HART input → Configuration → Device ID (7007)

Prerequisite  
The [Master network](#) option is selected in the Capture mode parameter (→ 118).

Description  
Use this function to enter the device ID of the HART slave device whose data are to be recorded.

User entry  
6-digit value:
- Via local operation: enter as hexadecimal or decimal number
- Via operating tool: enter as decimal number

Factory setting  
0

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

<table>
<thead>
<tr>
<th>Navigation</th>
<th></th>
<th>Expert → Communication → HART input → Configuration → Device type (7008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td></td>
<td>In the Capture mode parameter (→ 118), the Master network option is selected.</td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td>Use this function to enter the device type of the HART slave device whose data are to be recorded.</td>
</tr>
<tr>
<td>User entry</td>
<td></td>
<td>2-digit hexadecimal number</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td>0x00</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
<td>In addition to the device ID and manufacturer ID, the device type is part of the unique ID. Each HART device is uniquely identified by the unique device ID.</td>
</tr>
</tbody>
</table>

## Manufacturer ID

<table>
<thead>
<tr>
<th>Navigation</th>
<th></th>
<th>Expert → Communication → HART input → Configuration → Manufacturer ID (7009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td></td>
<td>The Master network option is selected in the Capture mode parameter (→ 118).</td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td>Use this function to enter the manufacturer ID of the HART slave device whose data are to be recorded.</td>
</tr>
<tr>
<td>User entry</td>
<td></td>
<td>2-digit value:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Via local operation: enter as hexadecimal or decimal number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Via operating tool: enter as decimal number</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
<td>In addition to the device ID and manufacturer ID, the device type is part of the unique ID. Each HART device is uniquely identified by the unique device ID.</td>
</tr>
</tbody>
</table>

## Burst command

<table>
<thead>
<tr>
<th>Navigation</th>
<th></th>
<th>Expert → Communication → HART input → Configuration → Burst command (7006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td></td>
<td>The Burst network option or the Master network option are selected in the Capture mode parameter (→ 118).</td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td>Use this function to select the burst command to be recorded.</td>
</tr>
<tr>
<td>Selection</td>
<td></td>
<td>• Command 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Command 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Command 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Command 33</td>
</tr>
</tbody>
</table>
**Factory setting**

Command 1

**Additional information**

*Selection*

- Command 1
  - Use this function to capture the primary variable.
- Command 3
  - Use this function to capture the dynamic HART variables and the current.
- Command 9
  - Use this function to capture the dynamic HART variables including the associated status.
- Command 33
  - Use this function to capture the dynamic HART variables including the associated unit.

### Slot number

**Navigation**

Expert → Communication → HART input → Configuration → Slot number (7010)

**Prerequisite**

The **Burst network** option or the **Master network** option is selected in the **Capture mode** parameter (→ 118).

**Description**

Use this function to enter the position of the process variable to be recorded in the burst command.

**User entry**

1 to 8

**Factory setting**

1

**Additional information**

*User entry*

<table>
<thead>
<tr>
<th>Slot</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>PV</td>
<td>PV</td>
<td>HART variable (slot 1)</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>SV</td>
<td>HART variable (slot 2)</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>TV</td>
<td>HART variable (slot 3)</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>QV</td>
<td>HART variable (slot 4)</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>HART variable (slot 5)</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>HART variable (slot 6)</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
<td>HART variable (slot 7)</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>-</td>
<td>HART variable (slot 8)</td>
</tr>
</tbody>
</table>

### Timeout

**Navigation**

Expert → Communication → HART input → Configuration → Timeout (7005)

**Prerequisite**

The **Burst network** option or the **Master network** option is selected in the **Capture mode** parameter (→ 118).

**Description**

Use this function to enter the maximum permitted interval between two HART frames.
User entry 1 to 120 s
Factory setting 5 s
Additional information Description
If the interval is exceeded, the measuring device displays the **F882 Input signal** diagnostic message.

### Failure mode

**Navigation**
- Expert → Communication → HART input → Configuration → Failure mode (7011)

**Prerequisite**
In the **Capture mode** parameter (→ 118), the **Burst network** option or **Master network** option is selected.

**Description**
Use this function to select the device behavior if no data are recorded within the maximum permitted interval.

**Selection**
- Alarm
- Last valid value
- Defined value

**Factory setting**
Alarm

**Additional information** Options
- Alarm
  - An error message is set.
- Last valid value
  - The last valid measured value is used.
- Defined value
  - A user-defined measured value is used: (Failure value parameter (→ 121)).

### Failure value

**Navigation**
- Expert → Communication → HART input → Configuration → Failure value (7012)

**Prerequisite**
The following conditions are met:
- In the **Capture mode** parameter (→ 118), the **Burst network** option or **Master network** option is selected.
- In the **Failure mode** parameter (→ 121), the **Defined value** option is selected.

**Description**
Use this function to enter the measured value to be used if no data are recorded within the maximum permitted interval.

**User entry**
Signed floating-point number

**Factory setting**
0
Additional information

Dependency

The unit is taken from the **Pressure unit** parameter

"Input" submenu

**Navigation**

Expert → Communication → HART input → Input

<table>
<thead>
<tr>
<th>Input</th>
<th>Value (7003)</th>
<th>Status (7004)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>122</td>
<td>122</td>
</tr>
</tbody>
</table>

**Value**

**Navigation**

Expert → Communication → HART input → Input → Value (7003)

**Description**

Displays the value of the device variable recorded by the HART input.

**User interface**

Signed floating-point number

**Status**

**Navigation**

Expert → Communication → HART input → Input → Status (7004)

**Description**

Displays the value of the device variable recorded by the HART input in accordance with the HART specification.

**User interface**

- Manual/Fixed
- Good
- Poor accuracy
- Bad

**Additional information**

**Description**

If the measuring device reads in an invalid pressure measured value, the **F882 Input signal** diagnostic message is output.
3.5.2 "HART output" submenu

**Navigation**  
Expert → Communication → HART output

- **HART output**
- **Configuration** → [123]
- **Burst configuration** → [125]
- **Information** → [132]
- **Output** → [135]

"Configuration" submenu

**Navigation**  
Expert → Communication → HART output → Configuration

- **Configuration**
  - HART short tag (0220) → [123]
  - Device tag (0215) → [124]
  - HART address (0219) → [124]
  - No. of preambles (0217) → [124]
  - Fieldbus writing access (0273) → [125]

**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

### 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 (→ 88) (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.
**Fieldbus writing access**

**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

<table>
<thead>
<tr>
<th>Burst configuration 1 to n</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst mode 1 to n (2032–1 to n)</td>
<td>→ 126</td>
</tr>
<tr>
<td>Burst command 1 to n (2031–1 to n)</td>
<td>→ 126</td>
</tr>
<tr>
<td>Burst variable 0 (2033)</td>
<td>→ 127</td>
</tr>
<tr>
<td>Burst variable 1 (2034)</td>
<td>→ 128</td>
</tr>
<tr>
<td>Burst variable 2 (2035)</td>
<td>→ 128</td>
</tr>
<tr>
<td>Burst variable 3 (2036)</td>
<td>→ 129</td>
</tr>
<tr>
<td>Burst variable 4 (2037)</td>
<td>→ 129</td>
</tr>
<tr>
<td>Burst variable 5 (2038)</td>
<td>→ 129</td>
</tr>
<tr>
<td>Burst variable 6 (2039)</td>
<td>→ 129</td>
</tr>
<tr>
<td>Burst variable 7 (2040)</td>
<td>→ 130</td>
</tr>
</tbody>
</table>
Description of device parameters

**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
- Acceptance rate *
- Turbulence *
- Signal strength *
- Signal to noise ratio *
- Percent of range
- Measured current
- Primary variable (PV)
- Secondary variable (SV)
- Tertiary variable (TV)
- Quaternary variable (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 (→ 87).

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

- Not used
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity

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

- Signal strength *
- Signal to noise ratio *
- Turbulence
- Acceptance rate *
- Temperature *
- Density *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Measured current
- Percent of range
- Primary variable (PV)
- Quaternary variable (QV)
- Secondary variable (SV)
- Tertiary variable (TV)

Factory setting

Volume flow

Additional information

Selection

If a burst message is not configured, the **Not used** option is set.

---

**Burst variable 1**

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 1 (2034)

**Description**

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

**Selection**

See the **Burst variable 0** parameter (→ 127).

**Factory setting**

Not used

---

**Burst variable 2**

**Navigation**

Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 2 (2035)

**Description**

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

**Selection**

See the **Burst variable 0** parameter (→ 127).

**Factory setting**

Not used

* Visibility depends on order options or device settings
<table>
<thead>
<tr>
<th>Burst variable 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
<td>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 3 (2036)</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>For HART command 9 and 33: select the HART device variable or the process variable.</td>
</tr>
<tr>
<td><strong>Selection</strong></td>
<td>See the Burst variable 0 parameter (→ 127).</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>Not used</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Burst variable 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
<td>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 4 (2037)</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>For HART command 9: select the HART device variable or the process variable.</td>
</tr>
<tr>
<td><strong>Selection</strong></td>
<td>See the Burst variable 0 parameter (→ 127).</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>Not used</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Burst variable 5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
<td>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 5 (2038)</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>For HART command 9: select the HART device variable or the process variable.</td>
</tr>
<tr>
<td><strong>Selection</strong></td>
<td>See the Burst variable 0 parameter (→ 127).</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>Not used</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Burst variable 6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Navigation</strong></td>
<td>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Burst variable 6 (2039)</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>For HART command 9: select the HART device variable or the process variable.</td>
</tr>
<tr>
<td><strong>Selection</strong></td>
<td>See the Burst variable 0 parameter (→ 127).</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>Not used</td>
</tr>
</tbody>
</table>
Description of device parameters

Proline Prosonic Flow W 400

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 (→ 127).

Factory setting

Not used

Burst 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

Selection

- Continuous
  The message is sent continuously, at least at intervals corresponding to the time frame
  specified in the Burst min period parameter (→ 131).
- Window
  The message is sent if the specified measured value has changed by the value in the
  Burst trigger level parameter (→ 131).
- Rising
  The message is sent if the specified measured value exceeds the value in the Burst
  trigger level parameter (→ 131).
- Falling
  The message is sent if the specified measured value drops below the value in the Burst
  trigger level parameter (→ 131).
- On change
  The message is sent if a measured value changes in the burst message.

* Visibility depends on order options or device settings
### Burst trigger level

<table>
<thead>
<tr>
<th>Navigation</th>
<th><strong>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Trigger level (2043–1 to n)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>For entering the burst trigger value.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>
| Additional information | **Description**
Together with the option selected in the Burst trigger mode parameter (→ 130) the burst trigger value determines the time of burst message X. |

### Min. update period

<table>
<thead>
<tr>
<th>Navigation</th>
<th><strong>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Min. upd. per. (2042–1 to n)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the minimum time span between two burst commands of burst message X.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1 000 ms</td>
</tr>
</tbody>
</table>

### Max. update period

<table>
<thead>
<tr>
<th>Navigation</th>
<th><strong>Expert → Communication → HART output → Burst config. → Burst config. 1 to n → Max. upd. per. (2041–1 to n)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the maximum time span between two burst commands of burst message X.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Factory setting</td>
<td>2 000 ms</td>
</tr>
</tbody>
</table>
"Information" submenu

**Navigation**

Expert → Communication → HART output → Information

---

### 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**

1

**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
0x69 (for Prosonic Flow W 400)

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.

Manufacturer ID

Navigation
Expert → Communication → HART output → Information → Manufacturer ID (0259)

Description
Use this function to view the manufacturer ID with which the measuring device is registered with the HART Communication Foundation.

User interface
2-digit hexadecimal number

Factory setting
0x11 (for Endress+Hauser)

HART revision

Navigation
Expert → Communication → HART output → Information → HART revision (0205)

Description
Use this function to display the HART protocol revision of the measuring device.
### User interface

- **User interface**: 5 to 7
- **Factory setting**: 7

### HART descriptor

- **Navigation**: Expert → Communication → HART output → Information → HART descriptor (0212)
- **Description**: Use this function to enter a description for the measuring point. This can be edited and displayed via HART protocol or using the local display.
- **User entry**: Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /)
- **Factory setting**: Pros. Flow 400

### HART message

- **Navigation**: Expert → Communication → HART output → Information → HART message (0216)
- **Description**: Use this function to enter a HART message which is sent via the HART protocol when requested by the master.
- **User entry**: Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /)
- **Factory setting**: Pros. Flow 400

### Hardware revision

- **Navigation**: Expert → Communication → HART output → Information → Hardware rev. (0206)
- **Description**: Displays the hardware revision of the measuring device.
- **User interface**: 0 to 255
- **Factory setting**: 1

### Software revision

- **Navigation**: Expert → Communication → HART output → Information → Software rev. (0224)
- **Description**: Displays the software revision of the measuring device.
- **User interface**: 0 to 255
**Factory setting**

1

**HART date code**

**Navigation**

Expert → Communication → HART output → Information → HART date code (0202)

**Description**

Use this function to enter the date information for individual use.

**User entry**

Date entry format: yyyy-mm-dd

**Factory setting**

2009-07-20

**Additional information**

*Example*

Device installation date

---

"Output" submenu

**Navigation**

Expert → Communication → HART output → Output

<table>
<thead>
<tr>
<th>Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign PV (0234)</td>
<td>→ 136</td>
</tr>
<tr>
<td>Primary variable (PV) (0201)</td>
<td>→ 136</td>
</tr>
<tr>
<td>Assign SV (0235)</td>
<td>→ 136</td>
</tr>
<tr>
<td>Secondary variable (SV) (0226)</td>
<td>→ 137</td>
</tr>
<tr>
<td>Assign TV (0236)</td>
<td>→ 137</td>
</tr>
<tr>
<td>Tertiary variable (TV) (0228)</td>
<td>→ 138</td>
</tr>
<tr>
<td>Assign QV (0237)</td>
<td>→ 138</td>
</tr>
<tr>
<td>Quaternary variable (QV) (0203)</td>
<td>→ 139</td>
</tr>
</tbody>
</table>
Assign PV

Navigation

Expert → Communication → HART output → Output → Assign PV (0234)

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
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature

Factory setting

Volume flow

Primary variable (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 (→ 136).

Dependency

The unit of the displayed measured value is taken from the System units submenu (→ 54).

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).

* Visibility depends on order options or device settings
Proline Prosonic Flow W 400

Description of device parameters

Selection

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3
- HART input

Factory setting

Totalizer 1

Secondary variable (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

Additional information

User interface

The measured value displayed depends on the process variable selected in the Assign SV parameter (→ 136).

Dependency

The unit of the displayed measured value is taken from the System units submenu (→ 54).

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
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *

* Visibility depends on order options or device settings
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3
- HART input

**Factory setting**
Totalizer 2

### Tertiary variable (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**

*User interface*
The measured value displayed depends on the process variable selected in the **Assign TV** parameter (→ 137).

*Dependency*
The unit of the displayed measured value is taken from the **System units** submenu (→ 54).

### 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
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Totalizer 1

* Visibility depends on order options or device settings
- Totalizer 2
- Totalizer 3
- HART input

**Factory setting**
Totalizer 3

---

**Quaternary variable (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 (→ 138).

*Dependency*
The unit of the displayed measured value is taken from the **System units** submenu (→ 54).

---

### 3.5.3 "Web server" submenu

**Navigation**
Expert → Communication → Web server

<table>
<thead>
<tr>
<th>Web server</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Web server language (7221)</td>
<td></td>
</tr>
<tr>
<td>MAC address (7214)</td>
<td></td>
</tr>
<tr>
<td>DHCP client (7212)</td>
<td></td>
</tr>
<tr>
<td>IP address (7209)</td>
<td></td>
</tr>
<tr>
<td>Subnet mask (7211)</td>
<td></td>
</tr>
<tr>
<td>Default gateway (7210)</td>
<td></td>
</tr>
<tr>
<td>Web server functionality (7222)</td>
<td></td>
</tr>
<tr>
<td>Login page (7273)</td>
<td></td>
</tr>
</tbody>
</table>

→ 140
→ 140
→ 141
→ 141
→ 141
→ 142
→ 142
→ 142
Web server language

Navigation

Expert → Communication → Web server → Webserv.language (7221)

Description

Use this function to select the Web server language setting.

Selection

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

Factory setting

English

MAC address

Navigation

Expert → Communication → Web server → MAC Address (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

* Visibility depends on order options or device settings

5) Media Access Control
**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**

On

**Additional information**

*Effect*

If the DHCP client functionality of the web server is selected, the IP address (→ 141), Subnet mask (→ 141) and Default gateway (→ 142) are set automatically.

- Identification is via the MAC address of the measuring device.
- The IP address (→ 141) in the IP address parameter (→ 141) is ignored as long as the DHCP client parameter (→ 141) is active. This is also the case, in particular, if the DHCP server cannot be reached. The IP address (→ 141) in the parameter of the same name is only used if the DHCP client parameter (→ 141) is inactive.

---

**IP address**

**Navigation**

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

**Description**

Display or enter the IP address of the Web server integrated in the measuring device.

**User entry**

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

**Factory setting**

192.168.1.212

---

**Subnet mask**

**Navigation**

- Expert → Communication → Web server → Subnet mask (7211)

**Description**

Display or enter 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**

Display or enter the Default gateway (→ 142).

**User entry**

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

**Factory setting**

0.0.0.0

### Web server functionality

**Navigation**

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

**Description**

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

**Selection**

- Off
- On

**Factory setting**

On

**Additional information**

*Description*

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

**Selection**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Off    | - The web server is completely disabled.  
  - Port 80 is locked. |
| On     | - The complete functionality of the web server is available.  
  - JavaScript is used.  
  - The password is transferred in an encrypted state.  
  - Any change to the password is also transferred in an encrypted state. |

### Login page

**Navigation**

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

**Description**

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

**Selection**

- Without header
- With header

**Factory setting**

With header
3.5.4 "Diagnostic configuration" submenu

For a list of all the diagnostic events, see the Operating Instructions for the device → 7

Assign a category to the particular diagnostic event:

<table>
<thead>
<tr>
<th>Category</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure (F)</td>
<td>A device error is present. The measured value is no longer valid.</td>
</tr>
<tr>
<td>Function check (C)</td>
<td>The device is in service mode (e.g. during a simulation).</td>
</tr>
<tr>
<td>Out of specification (S)</td>
<td>• Outside its technical specification limits (e.g. outside the process temperature range)</td>
</tr>
<tr>
<td></td>
<td>• Outside of the configuration carried out by the user (e.g. maximum flow in parameter 20 mA value)</td>
</tr>
<tr>
<td>Maintenance required (M)</td>
<td>Maintenance is required. The measured value is still valid.</td>
</tr>
<tr>
<td>No effect (N)</td>
<td>Has no effect on the condensed status (^1).</td>
</tr>
</tbody>
</table>

1) Condensed status according to NAMUR recommendation NE107


<table>
<thead>
<tr>
<th>Diagnostic configuration</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Event category 019 (0277)</td>
<td>→ 144</td>
</tr>
<tr>
<td>Event category 160 (0272)</td>
<td>→ 144</td>
</tr>
<tr>
<td>Event category 441 (0210)</td>
<td>→ 144</td>
</tr>
<tr>
<td>Event category 442 (0230)</td>
<td>→ 145</td>
</tr>
<tr>
<td>Event category 443 (0231)</td>
<td>→ 145</td>
</tr>
<tr>
<td>Event category 832 (0218)</td>
<td>→ 145</td>
</tr>
<tr>
<td>Event category 833 (0225)</td>
<td>→ 146</td>
</tr>
<tr>
<td>Event category 840 (0267)</td>
<td>→ 146</td>
</tr>
<tr>
<td>Event category 842 (0295)</td>
<td>→ 147</td>
</tr>
<tr>
<td>Event category 870 (0250)</td>
<td>→ 147</td>
</tr>
<tr>
<td>Event category 930 (0296)</td>
<td>→ 148</td>
</tr>
<tr>
<td>Event category 931 (0297)</td>
<td>→ 148</td>
</tr>
</tbody>
</table>
Event category 019 (Device initialization active)

**Navigation**

Expert → Communication → Diag. config. → Event category 019 (0277)

**Description**

Use this function to assign a category to the **S019 Device initialization active** diagnostic message.

**Selection**

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

**Factory setting**

Out of specification (S)

**Additional information**

For a detailed description of the event categories available for selection: → 143

Event category 160 (Signal path switched off)

**Navigation**

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

**Description**

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

**Selection**

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

**Factory setting**

Maintenance required (M)

**Additional information**

For a detailed description of the event categories available for selection: → 143

Event category 441 (Current output 1 to n)

**Navigation**

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

**Description**

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

**Selection**

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

**Factory setting**

Out of specification (S)
Additional information

For a detailed description of the event categories available for selection: → 143

Event category 442 (Frequency output 1 to n)

Navigation

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

Prerequisite

The pulse/frequency/switch output is available.

Description

Use this function to select a category for the 442 Frequency output 1 to n diagnostic message.

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting

Out of specification (S)

Additional information

For a detailed description of the event categories available for selection: → 143

Event category 443 (Pulse output 1 to n)

Navigation

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

Prerequisite

The pulse/frequency/switch output is available.

Description

Use this function to select a category for the 443 Pulse output 1 to n diagnostic message.

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting

Out of specification (S)

Additional information

For a detailed description of the event categories available for selection: → 143

Event category 832 (Electronics temperature too high)

Navigation

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

Description

Use this function to select a category for the 832 Electronics temperature too high diagnostic message.
Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting

Out of specification (S)

Additional information

For a detailed description of the event categories available for selection: → 143

---

Event category 833 (Electronics temperature too low)

Navigation

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

Description

Use this option to select a category for the 833 Electronics temperature too low diagnostic message.

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting

Out of specification (S)

Additional information

Selection

For a detailed description of the event categories available for selection: → 143

---

Event category 841 (Sensor range)

Navigation

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

Description

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

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting

Out of specification (S)

Additional information

For a detailed description of the event categories available for selection: → 143
Event category 842 (Process limit)

Navigation
- Expert → Communication → Diag. config. → Event category 842 (0295)

Description
Use this function to select a category for the **842 Process limit** diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting
Out of specification (S)

Additional information
For a detailed description of the event categories available for selection: → 143

Event category 870 (Measuring inaccuracy increased)

Navigation
- Expert → Communication → Diag. config. → Event category 870 (0250)

Description
Use this function to select a category for the **870 Measuring inaccuracy increased** diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Factory setting
Out of specification (S)

Additional information
For a detailed description of the event categories available for selection: → 143

Event category 881 (Sensor signal path 1 to n)

Navigation
- Expert → Communication → Diag. config. → Event category 881 (0268)

Description
Use this function to select a category for the **881 Sensor signal path 1 to n** diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)
**Event category 930 (Process fluid)**

**Navigation**
- Expert → Communication → Diag. config. → Event category 930 (0296)

**Description**
Use this function to select a category for the **S930** Process fluid diagnostic message.

**Selection**
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

**Factory setting**
Out of specification (S)

**Additional information**
- For a detailed description of the event categories available for selection: → 143

**Event category 931 (Process fluid)**

**Navigation**
- Expert → Communication → Diag. config. → Event category 931 (0297)

**Description**
Use this function to select a category for the **S931** Process fluid diagnostic message.

**Selection**
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

**Factory setting**
Out of specification (S)

**Additional information**
- For a detailed description of the event categories available for selection: → 143
### 3.5.5 "WLAN settings" wizard

**Navigation**  
Expert → Communication → WLAN settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLAN (2702)</td>
<td>150</td>
</tr>
<tr>
<td>WLAN mode (2717)</td>
<td>150</td>
</tr>
<tr>
<td>SSID name (2714)</td>
<td>150</td>
</tr>
<tr>
<td>Network security (2705)</td>
<td>150</td>
</tr>
<tr>
<td>Security identification (2718)</td>
<td>151</td>
</tr>
<tr>
<td>User name (2715)</td>
<td>151</td>
</tr>
<tr>
<td>WLAN password (2716)</td>
<td>151</td>
</tr>
<tr>
<td>WLAN IP address (2711)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN MAC address (2703)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN subnet mask (2709)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN MAC address (2703)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN passphrase (2706)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN MAC address (2703)</td>
<td>152</td>
</tr>
<tr>
<td>Assign SSID name (2708)</td>
<td>153</td>
</tr>
<tr>
<td>SSID name (2707)</td>
<td>153</td>
</tr>
<tr>
<td>2.4 GHz WLAN channel (2704)</td>
<td>153</td>
</tr>
<tr>
<td>Select antenna (2713)</td>
<td>154</td>
</tr>
<tr>
<td>Connection state (2722)</td>
<td>154</td>
</tr>
<tr>
<td>Received signal strength (2721)</td>
<td>154</td>
</tr>
<tr>
<td>WLAN IP address (2711)</td>
<td>152</td>
</tr>
<tr>
<td>Gateway IP address (2719)</td>
<td>155</td>
</tr>
<tr>
<td>IP address domain name server (2720)</td>
<td>155</td>
</tr>
</tbody>
</table>
### WLAN

**Navigation**

Expert → Communication → WLAN settings → WLAN (2702)

**Description**

Use this function to enable and disable the WLAN connection.

**Selection**

- Disable
- Enable

**Factory setting**

Enable

### WLAN mode

**Navigation**

Expert → Communication → WLAN settings → WLAN mode (2717)

**Description**

Use this function to select the WLAN mode.

**Selection**

- WLAN access point

**Factory setting**

WLAN access point

### SSID name

**Navigation**

Expert → Communication → WLAN settings → SSID name (2714)

**Prerequisite**

The client is activated.

**Description**

Use this function to enter the user-defined SSID name (max. 32 characters) of the WLAN network.

**User entry**

-

**Factory setting**

-

### Network security

**Navigation**

Expert → Communication → WLAN settings → Network security (2705)

**Description**

Use this function to select the type of security for the WLAN interface.
Selection
- Unsecured
- WPA2-PSK
- EAP-PEAP with MSCHAPv2 *
- EAP-PEAP MSCHAPv2 no server authentic. *
- EAP-TLS *

Factory setting
WPA2-PSK

Additional information
Selection
- Unsecured
  Access the WLAN connection without identification.
- WPA2-PSK
  Access the WLAN connection with a network key.

Security identification

Navigation
▶ Expert → Communication → WLAN settings → Sec. identific. (2718)

Description
Use this function to select the security settings (download via the menu: Data Management > Security > Download WLAN).

User interface
- Trusted issuer certificate
- Device certificate
- Device private key

User name

Navigation
▶ Expert → Communication → WLAN settings → User name (2715)

Description
Use this function to enter the username of the WLAN network.

User entry
–

Factory setting
–

WLAN password

Navigation
▶ Expert → Communication → WLAN settings → WLAN password (2716)

Description
Use this function to enter the WLAN password for the WLAN network.

User entry
–

Factory setting
–

* Visibility depends on order options or device settings
**WLAN IP address**

**Navigation**

Expert → Communication → WLAN settings → WLAN IP address (2711)

**Description**

Use this function to enter the IP address of the measuring device's WLAN connection.

**User entry**

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

**Factory setting**

192.168.1.212

---

**WLAN MAC address**

**Navigation**

Expert → Communication → WLAN settings → WLAN MAC address (2703)

**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

---

**WLAN subnet mask**

**Navigation**

Expert → Communication → WLAN settings → WLAN subnet mask (2709)

**Description**

Use this function to enter the subnet mask.

**User entry**

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

**Factory setting**

255.255.255.0

---

**WLAN passphrase**

**Navigation**

Expert → Communication → WLAN settings → WLAN passphrase (2706)

**Prerequisite**

The **WPA2-PSK** option is selected in the **Security type** parameter (→ 150).

**Description**

Use this function to enter the network key.

---

6) Media Access Control
**Assign SSID name**

**Navigation**

Expert → Communication → WLAN settings → Assign SSID name (2708)

**Description**

Use this function to select which name is used for the SSID.

**Selection**

- Device tag
- User-defined

**Factory setting**

User-defined

**Additional information**

Selection

- Device tag
  The device tag name is used as the SSID.
- User-defined
  A user-defined name is used as the SSID.

**SSID name**

**Navigation**

Expert → Communication → WLAN settings → SSID name (2707)

**Prerequisite**

- The User-defined option is selected in the Assign SSID name parameter (→ 153).
- The WLAN access point option is selected in the WLAN mode parameter (→ 150).

**Description**

Use this function to enter a user-defined SSID name.

**User entry**

Max. 32-digit character string comprising numbers, letters and special characters

**Factory setting**

EH_device designation_last 7 digits of the serial number (e.g. EH_Prosonic_Flow_400_A802000)

**2.4 GHz WLAN channel**

**Navigation**

Expert → Communication → WLAN settings → WLAN channel (2704)

**Description**

Use this function to enter the 2.4 GHz WLAN channel.

**User entry**

1 to 11
Description of device parameters

Proline Prosonic Flow W 400

**Factory setting**
6

**Additional information**

*Description*
- It is only necessary to enter a 2.4 GHz WLAN channel if multiple WLAN devices are in use.
- If just one measuring device is in use, it is recommended to keep the factory setting.

### Select antenna

**Navigation**
Expert → Communication → WLAN settings → Select antenna (2713)

**Description**
Use this function to select whether the external or internal antenna is used for reception.

**Selection**
- External antenna
- Internal antenna

**Factory setting**
Internal antenna

### Connection state

**Navigation**
Expert → Communication → WLAN settings → Connection state (2722)

**Description**
The connection status is displayed.

**User interface**
- Connected
- Not connected

**Factory setting**
Not connected

### Received signal strength

**Navigation**
Expert → Communication → WLAN settings → Rec.sig.strength (2721)

**Description**
Displays the signal strength received.

**User interface**
- Low
- Medium
- High

**Factory setting**
High
**Gateway IP address**

**Navigation**  
Expert → Communication → WLAN settings → Gateway IP addr. (2719)

**Description**  
Use this function to enter the IP address of the gateway.

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

**Factory setting**  
192.168.1.212

**IP address domain name server**

**Navigation**  
Expert → Communication → WLAN settings → IP address DNS (2720)

**Description**  
Use this function to enter the IP address of the domain name server.

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

**Factory setting**  
192.168.1.212

### 3.6 "Application" submenu

**Navigation**  
Expert → Application

![Application menu]

- **Reset all totalizers (2806)**  
  
  ▶  155

- **Totalizer 1 to n**  
  
  ▶  156

**Reset all totalizers**

**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
### 3.6.1 "Totalizer 1 to n" submenu

**Navigation**

Expert → Application → Totalizer 1 to n

**Assign process variable**

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.

If the **Off** option is selected, only the **Assign process variable** parameter (→ 156) is still displayed in the **Totalizer 1 to n** submenu. All other parameters in the submenu are hidden.

<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>
Navigation

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

Prerequisite

A process variable is selected in the Assign process variable parameter (→ 156) of the Totalizer 1 to n submenu.

Description

Use this function to select the process variable unit for the Totalizer 1 to n (→ 156).

Selection

- g*
- kg*
- t*
- oz*
- lb*
- STon*
- cm³*
- dm³*
- m³*
- ml*
- l*
- hl*
- ML Mega*
- af*
- ft³*
- Mft³*
- fl oz (us)*
- gal (us)*
- kgal (us)*
- Mgal (us)*
- bbl (us;liq.)*
- bbl (us;beer)*
- bbl (us;oil)*
- bbl (us;tank)*
- gal (imp)*
- Mgal (imp)*
- bbl (imp;beer)*
- bbl (imp;oil)*
- None*

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 (→ 54).

Selection

The selection is dependent on the process variable selected in the Assign process variable parameter (→ 156).
**Totalizer operation mode**

**Navigation**

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

**Prerequisite**

A process variable is selected in the **Assign process variable** parameter (→ 156) of the **Totalizer 1 to n** submenu.

**Description**

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

**Selection**

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

**Factory setting**

Net flow total

**Additional information**

<table>
<thead>
<tr>
<th>Selection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net flow total</td>
<td>Flow values in the forward and reverse flow direction are totalized and balanced against one another. Net flow is registered in the flow direction.</td>
</tr>
<tr>
<td>Forward flow total</td>
<td>Only the flow in the forward flow direction is totalized.</td>
</tr>
<tr>
<td>Reverse flow total</td>
<td>Only the flow in the reverse flow direction is totalized (= reverse flow quantity).</td>
</tr>
</tbody>
</table>

---

**Control Totalizer 1 to n**

**Navigation**

Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (0912–1 to n)

**Prerequisite**

A process variable is selected in the **Assign process variable** parameter (→ 156) of the **Totalizer 1 to n** submenu.

**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**

<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 totalizing process is stopped and the totalizer is reset to 0.</td>
</tr>
<tr>
<td>Preset + hold</td>
<td>The totalizing process is stopped and the totalizer is set to its defined start value from the <strong>Preset value</strong> parameter.</td>
</tr>
<tr>
<td>Options</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</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**

A process variable is selected in the Assign process variable parameter (→ 156) of the Totalizer 1 to n submenu.

**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 (→ 157).

*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**

A process variable is selected in the Assign process variable parameter (→ 156) of the Totalizer 1 to n submenu.

**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 (current) measured value; the device alarm is ignored.
- Last valid value
  The totalizer continues to count based on the last valid measured value before the device alarm occurred.

3.7 "Diagnostics" submenu

Navigation

Expert → Diagnostics

<table>
<thead>
<tr>
<th>► Diagnostics</th>
<th>→ 161</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual diagnostics (0691)</td>
<td></td>
</tr>
<tr>
<td>Previous diagnostics (0690)</td>
<td></td>
</tr>
<tr>
<td>Operating time from restart (0653)</td>
<td></td>
</tr>
<tr>
<td>Operating time (0652)</td>
<td></td>
</tr>
<tr>
<td>► Diagnostic list</td>
<td></td>
</tr>
<tr>
<td>► Event logbook</td>
<td></td>
</tr>
<tr>
<td>► Device information</td>
<td></td>
</tr>
<tr>
<td>► Main electronic module</td>
<td></td>
</tr>
<tr>
<td>► Sensor electronic module (ISEM)</td>
<td></td>
</tr>
<tr>
<td>► Display module</td>
<td></td>
</tr>
<tr>
<td>► Heartbeat Technology</td>
<td></td>
</tr>
<tr>
<td>► Simulation</td>
<td></td>
</tr>
</tbody>
</table>
Actual diagnostics

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 (→ 163).

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Example

For the display format:

F271 Main electronics failure

Timestamp

Navigation

Expert → Diagnostics → Timestamp

Description

Displays the operating time when the current diagnostic message occurred.

User interface

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

Additional information

Display

The diagnostic message can be viewed via the Actual diagnostics parameter (→ 161).

Example

For the display format:

24d12h13m00s

Previous 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

Display

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Example

For the display format:

F271 Main electronics failure

Timestamp

Navigation

Expert → Diagnostics → Timestamp

Description

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

User interface

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

Additional information

Display

The diagnostic message can be viewed via the Previous diagnostics parameter (→ 161).

Example

For the display format:

24d12h13m00s

Operating time from 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.

### 3.7.1 "Diagnostic list" submenu

**Navigation**

Expert → Diagnostics → Diagnostic list

<table>
<thead>
<tr>
<th>Diagnostic list</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostics 1 (0692)</td>
</tr>
<tr>
<td>Diagnostics 2 (0693)</td>
</tr>
<tr>
<td>Diagnostics 3 (0694)</td>
</tr>
<tr>
<td>Diagnostics 4 (0695)</td>
</tr>
<tr>
<td>Diagnostics 5 (0696)</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**

**Display**
Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

**Examples**
For the display format:
- △ S442 Frequency output
- ✗ F276 I/O module failure

#### Timestamp 1

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**
Displays the operating time when the diagnostic message with the highest priority occurred.
Description of device parameters

### 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 (→ 163).

*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

Display

* Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

*Examples*

For the display format:

- ![S442](image) Frequency output
- ![F276](image) I/O module failure

---

### Timestamp 2

#### 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 (→ 164).

*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**

*Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

*Examples*

For the display format:

- ΔS442 Frequency output
- X F276 I/O module failure

Timestamp 3

**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 (→ 165).

*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**

Display

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

*Examples*

For the display format:

- S442 Frequency output
- F276 I/O module failure

---

**Timestamp 4**

**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 (→ 165).

*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**

Display

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

*Examples*

For the display format:

- S442 Frequency output
- F276 I/O module failure
**Timestamp 5**

**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 (→  166).

*Example*

For the display format:

24d12h13m00s

---

### 3.7.2 "Event logbook" submenu

**Viewing event messages**

Event messages are displayed in chronological order. The event history includes both diagnostic events and information events. The symbol in front of the timestamp indicates whether the event has started or ended.

**Navigation**

Expert → Diagnostics → Event logbook

---

**Filter options**

**Navigation**

Expert → Diagnostics → Event logbook → Filter options (0705)

**Description**

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

**Selection**

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

- All

### Additional information

**Description**

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:

- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

### "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 (→ 167).

**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
- △ S442 Frequency output
  ☐ 01d04h12min30s

Additional information, such as remedial measures, can be retrieved via the ☐ key.

**HistoROM**

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

To order the **Extended HistoROM** application package, see the "Application packages" section of the "Technical Information" document.

### 3.7.3 "Device information" submenu

**Navigation**

Expert → Diagnostics → Device info

<table>
<thead>
<tr>
<th>Device Information</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device tag (0011)</td>
<td>170</td>
</tr>
<tr>
<td>Serial number (0009)</td>
<td>170</td>
</tr>
<tr>
<td>Firmware version (0010)</td>
<td>170</td>
</tr>
<tr>
<td>Device name (0013)</td>
<td>171</td>
</tr>
<tr>
<td>Order code (0008)</td>
<td>171</td>
</tr>
<tr>
<td>Extended order code 1 (0023)</td>
<td>171</td>
</tr>
<tr>
<td>Extended order code 2 (0021)</td>
<td>172</td>
</tr>
<tr>
<td>Extended order code 3 (0022)</td>
<td>172</td>
</tr>
<tr>
<td>Configuration counter (0233)</td>
<td>172</td>
</tr>
<tr>
<td>ENP version (0012)</td>
<td>172</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. It is displayed in the header.

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

**Factory setting**
Prosonic Flow

**Additional information**

![Position of the header text on the display](image)

1  Position of the header text on the display

The number of characters displayed depends on the characters used.

---

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**

<table>
<thead>
<tr>
<th>Uses of the serial number</th>
</tr>
</thead>
<tbody>
<tr>
<td>To identify the measuring device quickly, e.g. when contacting Endress+Hauser.</td>
</tr>
<tr>
<td>To obtain specific information on the measuring device using the Device Viewer: <a href="http://www.endress.com/deviceviewer">www.endress.com/deviceviewer</a></td>
</tr>
</tbody>
</table>

---

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
**Device name**

**Navigation**

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 400

---

**Order code**

**Navigation**

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.

---

**Extended order code 1**

**Navigation**

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
Description of device parameters

**Additional information**

*Description*

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

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

---

**Extended order code 2**

**Navigation**

Expert → Diagnostics → Device info → Ext. order cd. 2 (0021)

**Description**

Displays the second part of the extended order code.

**User interface**

Character string

**Additional information**

For additional information, see *Extended order code 1* parameter (→ 171)

---

**Extended order code 3**

**Navigation**

Expert → Diagnostics → Device info → Ext. order cd. 3 (0022)

**Description**

Displays the third part of the extended order code.

**User interface**

Character string

**Additional information**

For additional information, see *Extended order code 1* parameter (→ 171)

---

**Configuration counter**

**Navigation**

Expert → Diagnostics → Device info → Config. counter (0233)

**Description**

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

**User interface**

0 to 65535

---

**ENP version**

**Navigation**

Expert → Diagnostics → Device info → ENP version (0012)

**Description**

Displays the version of the electronic nameplate.

**User interface**

Character string
Factory setting  2.02.00

Additional information

Description

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

3.7.4 "Main electronic module + I/O module 1" submenu

Navigation  

Expert → Diagnostics → Mainboard module

<table>
<thead>
<tr>
<th>Function</th>
<th>Navigation</th>
<th>Description</th>
<th>User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware version</td>
<td>Expert → Diagnostics → Main elec. mod. → Firmware version (0072)</td>
<td>Use this function to display the software revision of the module.</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Build no. software</td>
<td>Expert → Diagnostics → Main elec. mod. → Build no. softw. (0079)</td>
<td>Use this function to display the software build number of the module.</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Bootloader revision</td>
<td>Expert → Diagnostics → Main elec. mod. → Bootloader rev. (0073)</td>
<td>Use this function to display the bootloader revision of the software.</td>
<td></td>
</tr>
</tbody>
</table>
### User interface

Positive integer

### 3.7.5 "Sensor electronic module (ISEM)" submenu

**Navigation**

- Expert → Diagnostics → Sens. electronic → Firmware version (0072)
- Expert → Diagnostics → Sens. electronic → Build no. software (0079)
- Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)

**Description**

- Use this function to display the software revision of the module.
- Use this function to display the software build number of the module.
- Use this function to display the bootloader revision of the software.

**User interface**

Positive integer

<table>
<thead>
<tr>
<th>Description</th>
<th>Navigation</th>
<th>User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware version</td>
<td>Expert → Diagnostics → Sens. electronic → Firmware version (0072)</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Build no. software</td>
<td>Expert → Diagnostics → Sens. electronic → Build no. softw. (0079)</td>
<td>Positive integer</td>
</tr>
<tr>
<td>Bootloader revision</td>
<td>Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)</td>
<td>Positive integer</td>
</tr>
</tbody>
</table>
### 3.7.6 "Display module" submenu

**Navigation**

![Nested menu](Expert → Diagnostics → Display module)

<table>
<thead>
<tr>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware version (0072)</td>
<td><img src="175" alt="Icon" /></td>
</tr>
<tr>
<td>Build no. software (0079)</td>
<td><img src="175" alt="Icon" /></td>
</tr>
<tr>
<td>Bootloader revision (0073)</td>
<td><img src="175" alt="Icon" /></td>
</tr>
</tbody>
</table>

#### Firmware version

**Navigation**

![Nested menu](Expert → Diagnostics → Display module → Firmware version (0072))

**Description**

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

**User interface**

Positive integer

#### Build no. software

**Navigation**

![Nested menu](Expert → Diagnostics → Display module → Build no. softw. (0079))

**Description**

Use this function to display the software build number of the module.

**User interface**

Positive integer

#### Bootloader revision

**Navigation**

![Nested menu](Expert → Diagnostics → Display module → Bootloader rev. (0073))

**Description**

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

**User interface**

Positive integer
3.7.7 "Data logging" submenu

Navigation

Expert → Diagnostics → Data logging

![Diagram of the "Data logging" submenu]

Assign channel 1 (0851) → 176
Assign channel 2 (0852) → 177
Assign channel 3 (0853) → 178
Assign channel 4 (0854) → 178
Logging interval (0856) → 178
Clear logging data (0855) → 179
Data logging (0860) → 179
Logging delay (0859) → 180
Data logging control (0857) → 180
Data logging status (0858) → 181
Entire logging duration (0861) → 181

Display channel 1 → 181
Display channel 2 → 182
Display channel 3 → 183
Display channel 4 → 183

Assign channel 1

Navigation

Expert → Diagnostics → Data logging → Assign chan. 1 (0851)

Prerequisite

The Extended HistoROM application package is available.

The software options currently enabled are displayed in the Software option overview parameter (→ 44).

Description

Use this function to select a process variable for the data logging channel.
Selection

- Off
- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Signal strength *
- Signal to noise ratio *
- Turbulence *
- Acceptance rate *
- Temperature *
- Density *
- Electronics temperature
- Current output 1

Factory setting

Off

Additional information

Description

A total of 1000 measured values can be logged. This means:
- 1000 data points if 1 logging channel is used
- 500 data points if 2 logging channels are used
- 333 data points if 3 logging channels are used
- 250 data points if 4 logging channels are used

Once the maximum number of data points is reached, the oldest data points in the data log are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle).

The log contents are cleared if the option selected is changed.

Assign channel 2

Navigation

Expert → Diagnostics → Data logging → Assign chan. 2 (0852)

Prerequisite

The Extended HistoROM application package is available.

The software options currently enabled are displayed in the Software option overview parameter (→ 44).

Description

Use this function to select a process variable for the data logging channel.

Selection

For the picklist, see the Assign channel 1 parameter (→ 176)

Factory setting

Off

* Visibility depends on order options or device settings
**Assign channel 3**

**Navigation**  
Expert → Diagnostics → Data logging → Assign chan. 3 (0853)

**Prerequisite**  
The **Extended HistoROM** application package is available.

**Description**  
Use this function to select a process variable for the data logging channel.

**Selection**  
For the picklist, see the Assign channel 1 parameter (→  44)

**Factory setting**  
Off

---

**Assign channel 4**

**Navigation**  
Expert → Diagnostics → Data logging → Assign chan. 4 (0854)

**Prerequisite**  
The **Extended HistoROM** application package is available.

**Description**  
Use this function to select a process variable for the data logging channel.

**Selection**  
For the picklist, see the Assign channel 1 parameter (→  44)

**Factory setting**  
Off

---

**Logging interval**

**Navigation**  
Expert → Diagnostics → Data logging → Logging interval (0856)

**Prerequisite**  
The **Extended HistoROM** application package is available.

**Description**  
Use this function to enter the logging interval $T_{log}$ for data logging.

**User entry**  
0.1 to 3 600.0 s

**Factory setting**  
1.0 s
Additional information

Description
This defines the interval between the individual data points in the data log, and thus the maximum loggable process time $T_{log}$:

- If 1 logging channel is used: $T_{log} = 1000 \times t_{log}$
- If 2 logging channels are used: $T_{log} = 500 \times t_{log}$
- If 3 logging channels are used: $T_{log} = 333 \times t_{log}$
- If 4 logging channels are used: $T_{log} = 250 \times t_{log}$

Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of $T_{log}$ always remains in the memory (ring memory principle).

The log contents are cleared if the length of the logging interval is changed.

Example
If 1 logging channel is used:
- $T_{log} = 1000 \times 1 \text{ s} = 1000 \text{ s} \approx 15 \text{ min}$
- $T_{log} = 1000 \times 10 \text{ s} = 10000 \text{ s} \approx 3 \text{ h}$
- $T_{log} = 1000 \times 80 \text{ s} = 80000 \text{ s} \approx 1 \text{ d}$
- $T_{log} = 1000 \times 3600 \text{ s} = 3600000 \text{ s} \approx 41 \text{ d}$

Clear logging data

Navigation
Expert → Diagnostics → Data logging → Clear logging (0855)

Prerequisite
The Extended HistoROM application package is available.

Description
Use this function to clear the entire logging data.

Selection
- Cancel
- Clear data

Factory setting
Cancel

Additional information
Selection
- Cancel
  The data is not cleared. All the data is retained.
- Clear data
  The logging data is cleared. The logging process starts from the beginning.
Description of device parameters

Proline Prosonic Flow W 400

Factory setting
Overwriting

Additional information Selection
- Overwriting
  The device memory applies the FIFO principle.
- Not overwriting
  Data logging is canceled if the measured value memory is full (single shot).

Logging delay

Navigation
Expert → Diagnostics → Data logging → Logging delay (0859)

Prerequisite
In the Data logging parameter (→ 179), the Not overwriting option is selected.

Description
Use this function to enter the time delay for measured value logging.

User entry
0 to 999 h

Factory setting
0 h

Additional information Description
Once measured value logging has been started with the Data logging control parameter (→ 180), the device does not save any data for the duration of the time delay entered.

Data logging control

Navigation
Expert → Diagnostics → Data logging → Data log.control (0857)

Prerequisite
In the Data logging parameter (→ 179), the Not overwriting option is selected.

Description
Use this function to start and stop measured value logging.

Selection
- None
- Delete + start
- Stop

Factory setting
None

Additional information Selection
- None
  Initial measured value logging status.
- Delete + start
  All the measured values recorded for all the channels are deleted and measured value logging starts again.
- Stop
  Measured value logging is stopped.
Data logging status

**Navigation**  
Expert → Diagnostics → Data logging → Data log. status (0858)

**Prerequisite**  
In the Data logging parameter (→ 179), the Not overwriting option is selected.

**Description**  
Displays the measured value logging status.

**User interface**
- Done
- Delay active
- Active
- Stopped

**Factory setting**  
Done

**Additional information**
- **Selection**
  - Done  
    Measured value logging has been performed and completed successfully.
  - Delay active  
    Measured value logging has been started but the logging interval has not yet elapsed.
  - Active  
    The logging interval has elapsed and measured value logging is active.
  - Stopped  
    Measured value logging is stopped.

Entire logging duration

**Navigation**  
Expert → Diagnostics → Data logging → Logging duration (0861)

**Prerequisite**  
In the Data logging parameter (→ 179), the Not overwriting option is selected.

**Description**  
Displays the total logging duration.

**User interface**  
Positive floating-point number

**Factory setting**  
0 s

"Display channel 1" submenu

**Navigation**  
Expert → Diagnostics → Data logging → Displ.channel 1

[Display channel 1] → 182
Display channel 1

Navigation

Expert → Diagnostics → Data logging → Displ.channel 1

Prerequisite

The Extended HistoROM application package is available.

The software options currently enabled are displayed in the Software option overview parameter (→ 44).

Description

Displays the measured value trend for the logging channel in the form of a chart.

Additional information

Description

![Chart of a measured value trend](image)

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

"Display channel 2" submenu

Navigation

Expert → Diagnostics → Data logging → Displ.channel 2

Display channel 2

Display channel 2

→ 182

Display channel 2

Navigation

Expert → Diagnostics → Data logging → Displ.channel 2

Prerequisite

A process variable is specified in the Assign channel 2 parameter.

Description

See the Display channel 1 parameter → 182
"Display channel 3" submenu

**Navigation**

Expert → Diagnostics → Data logging → Displ.channel 3

**Display channel 3**

**Prerequisite**

A process variable is specified in the Assign channel 3 parameter.

**Description**

See the Display channel 1 parameter → 182

"Display channel 4" submenu

**Navigation**

Expert → Diagnostics → Data logging → Displ.channel 4

**Display channel 4**

**Prerequisite**

A process variable is specified in the Assign channel 4 parameter.

**Description**

See the Display channel 1 parameter → 182

3.7.8 "Heartbeat" submenu

For detailed information on the parameter descriptions for the Heartbeat Verification+Monitoring: Special Documentation for the device → 7

**Navigation**

Expert → Diagnostics → HBT

**Heartbeat Technology**
### 3.7.9 "Simulation" submenu

**Navigation**  
Expert → Diagnostics → Simulation → Assign proc.var. (1810)

#### Assign Simulation Process Variable

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign simulation process variable</td>
<td>184</td>
</tr>
<tr>
<td>Process variable value (1811)</td>
<td>185</td>
</tr>
<tr>
<td>Status input simulation 1 (1355–1)</td>
<td>185</td>
</tr>
<tr>
<td>Input signal level 1 (1356–1)</td>
<td>186</td>
</tr>
<tr>
<td>Current output 1 simulation (0354–1)</td>
<td>186</td>
</tr>
<tr>
<td>Current output value (0355)</td>
<td>187</td>
</tr>
<tr>
<td>Frequency output 1 to n simulation (0472–1 to n)</td>
<td>187</td>
</tr>
<tr>
<td>Frequency output 1 to n value (0473–1 to n)</td>
<td>187</td>
</tr>
<tr>
<td>Pulse output simulation 1 to n (0458–1 to n)</td>
<td>188</td>
</tr>
<tr>
<td>Pulse value 1 to n (0459–1 to n)</td>
<td>188</td>
</tr>
<tr>
<td>Switch output simulation 1 to n (0462–1 to n)</td>
<td>189</td>
</tr>
<tr>
<td>Switch state 1 to n (0463–1 to n)</td>
<td>189</td>
</tr>
<tr>
<td>Device alarm simulation (0654)</td>
<td>190</td>
</tr>
<tr>
<td>Diagnostic event category (0738)</td>
<td>190</td>
</tr>
<tr>
<td>Diagnostic event simulation (0737)</td>
<td>190</td>
</tr>
</tbody>
</table>

**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 *
- Density *

Factory setting

Off

Additional information

*Description*

The simulation value of the process variable selected is defined in the Process variable value parameter (→ 185).

**Process variable value**

Navigation

- Expert → Diagnostics → Simulation → Proc. var. value (1811)

Prerequisite

A process variable is selected in the Assign simulation process variable parameter (→ 184).

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 (→ 54).

**Status input simulation 1**

Navigation

- Expert → Diagnostics → Simulation → Status inp.sim 1 (1355–1)

Prerequisite

For the following order code:
"Output; input", option I "4–20mA HART, 2x pul./freq./switch output; status input"

Description

Use this function to switch simulation of the status input 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

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

**Proline Prosonic Flow W 400**

### Factory setting

**Off**

### Additional information

**Description**

The desired simulation value is defined in the **Input signal level** parameter (→ 186).

**Selection**

- **Off**
  
  Simulation for the status input is switched off. The device is in normal measuring mode or another process variable is being simulated.

- **On**
  
  Simulation for the status input is active.

### Input signal level 1

**Navigation**

Expert → Diagnostics → Simulation → Signal level 1 (1356–1)

**Prerequisite**

In the **Status input simulation** parameter (→ 185), the **On** option is selected.

**Description**

Use this function to select the signal level for the simulation of the status input. In this way, users can verify the correct configuration of the status input and the correct function of upstream feed-in units.

**Selection**

- **High**
- **Low**

### Current output 1 simulation

**Navigation**

Expert → Diagnostics → Simulation → Curr.outp 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 current output 1** parameter (→ 187).

**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 current output 1

**Navigation**
- Expert → Diagnostics → Simulation → Curr.outp val. (0355)
- Expert → Diagnostics → Simulation → Value curr.out 1 (0355–1)

**Prerequisite**
In the **Current output 1 simulation** 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

**Additional information**
- The value must be entered with a period (.) as the separator.

### Frequency output 1 to n simulation

**Navigation**
- Expert → Diagnostics → Simulation → Freq.outp 1 to n sim. (0472–1 to n)

**Prerequisite**
In the **Operating mode** parameter (→  100), 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

**Factory setting**
Off

**Additional information**
- The desired simulation value is defined in the **Frequency value 1 to n** parameter.

### Frequency output 1 to n value

**Navigation**
- Expert → Diagnostics → Simulation → Freq.outp 1 to n val. (0473–1 to n)

**Prerequisite**
In the **Frequency simulation 1 to n** parameter, 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 12500.0 Hz

---

Pulse output simulation 1 to n

Navigation

Expert → Diagnostics → Simulation → Puls.outp.sim. 1 to n (0458–1 to n)

Prerequisite

In the Operating mode parameter (→ 100), 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-counting value

Factory setting

Off

Additional information

Description

The desired simulation value is defined in the Pulse value 1 to n parameter.

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 (→ 103).
- Down-counting value
  The pulses specified in the Pulse value parameter (→ 188) are output.

---

Pulse value 1 to n

Navigation

Expert → Diagnostics → Simulation → Pulse value 1 to n (0459–1 to n)

Prerequisite

In the Pulse output simulation 1 to n parameter, the Down-counting value 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 output simulation 1 to n

Navigation
Expert → Diagnostics → Simulation → Switch sim. 1 to n (0462–1 to n)

Prerequisite
In the Operating mode parameter (→ 100), 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 state 1 to n parameter.

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 state 1 to n

Navigation
Expert → Diagnostics → Simulation → Switch state 1 to n (0463–1 to n)

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.
Device alarm simulation

**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.

Diagnostic 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 Diagnostic event simulation parameter (→ 190).

**Selection**

- Sensor
- Electronics
- Configuration
- Process

**Factory setting**

Process

Diagnostic event simulation

**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 Diagnostic event category parameter (→ 190).
4  Country-specific factory settings

4.1  SI units

Not valid for USA and Canada.

4.1.1  System units

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>kg</td>
</tr>
<tr>
<td>Mass flow</td>
<td>kg/h</td>
</tr>
<tr>
<td>Volume</td>
<td>m³</td>
</tr>
<tr>
<td>Volume flow</td>
<td>m³/h</td>
</tr>
<tr>
<td>Velocity</td>
<td>m/s</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
</tr>
</tbody>
</table>

4.1.2  Output current span

| Current output 1   | 4 to 20 mA NAMUR |

4.2  US units

Only valid for USA and Canada.

4.2.1  System units

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>lb</td>
</tr>
<tr>
<td>Mass flow</td>
<td>lb/min</td>
</tr>
<tr>
<td>Volume</td>
<td>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>
</tbody>
</table>

4.2.2  Output current span

| Current output 1   | 4 to 20 mA US |
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>Volume</td>
<td>cm³, 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>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>Gram/time unit</td>
</tr>
<tr>
<td></td>
<td>kg/s, kg/min, kg/h, kg/d</td>
<td>Kilogram/time unit</td>
</tr>
<tr>
<td></td>
<td>t/h, t/d</td>
<td>Metric ton/time unit</td>
</tr>
<tr>
<td>Density</td>
<td>kg/l</td>
<td>Kilogram/liter</td>
</tr>
<tr>
<td>Velocity</td>
<td>m/s</td>
<td>Meter/time unit</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>m²/s</td>
<td>Square meter/second</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C, K</td>
<td>Celsius, Kelvin</td>
</tr>
<tr>
<td>Length</td>
<td>mm</td>
<td>Millimeters</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>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>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>Density</td>
<td>lb/ft³</td>
<td>Pound/cubic foot</td>
</tr>
<tr>
<td>Velocity</td>
<td>ft/s</td>
<td>Foot/time unit</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>cSt</td>
<td>Centistokes</td>
</tr>
<tr>
<td>Temperature</td>
<td>°F, °R</td>
<td>Fahrenheit, Rankine</td>
</tr>
<tr>
<td>Length</td>
<td>in</td>
<td>Inch</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) Beer: 36.0 gal/bbl</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>
Index

0 .. 9
0% bargraph value 1 (Parameter) ........................................... 18
0% bargraph value 3 (Parameter) ........................................... 21
0% bargraph value 5 (Parameter) ........................................... 24
0% bargraph value 7 (Parameter) ........................................... 27
2.4 GHz WLAN channel (Parameter) ...................................... 153
100% bargraph value 1 (Parameter) ........................................ 19
100% bargraph value 3 (Parameter) ........................................ 22
100% bargraph value 5 (Parameter) ........................................ 24
100% bargraph value 7 (Parameter) ........................................ 28

A
Acceptance rate (Parameter) .................................................. 49
Access status display (Parameter) ......................................... 32
Activate SW option (Parameter) ............................................. 43
Active level (Parameter) ....................................................... 86
Actual diagnostics (Parameter) ............................................. 161
Administration (Submenu) .................................................. 40
Alarm delay (Parameter) ..................................................... 33
Application (Submenu) ....................................................... 155
Assign behavior of diagnostic no. 019 (Parameter) .................. 35
Assign behavior of diagnostic no. 160 (Parameter) .................. 35
Assign behavior of diagnostic no. 302 (Parameter) .................. 35
Assign behavior of diagnostic no. 441 (Parameter) .................. 36
Assign behavior of diagnostic no. 442 (Parameter) .................. 36
Assign behavior of diagnostic no. 443 (Parameter) .................. 37
Assign behavior of diagnostic no. 832 (Parameter) .................. 37
Assign behavior of diagnostic no. 833 (Parameter) .................. 37
Assign behavior of diagnostic no. 840 (Parameter) .................. 38
Assign behavior of diagnostic no. 842 (Parameter) .................. 38
Assign behavior of diagnostic no. 870 (Parameter) .................. 38
Assign behavior of diagnostic no. 930 (Parameter) ................. 39
Assign behavior of diagnostic no. 931 (Parameter) ................. 39
Assign channel 1 (Parameter) .............................................. 176
Assign channel 2 (Parameter) .............................................. 177
Assign channel 3 (Parameter) .............................................. 178
Assign channel 4 (Parameter) .............................................. 178
Assign diagnostic behavior (Parameter) .............................. 110
Assign flow direction check (Parameter) .............................. 114
Assign frequency output (Parameter) .................................. 105
Assign limit (Parameter) ..................................................... 111
Assign process variable (Parameter) ................................... 74, 156
Assign pulse output 1 to n (Parameter) ................................. 102
Assign PV (Parameter) ....................................................... 136
Assign QV (Parameter) ...................................................... 138
Assign simulation process variable (Parameter) ..................... 184
Assign SSID name (Parameter) .......................................... 153
Assign status (Parameter) ................................................... 114
Assign status input (Parameter) .......................................... 85
Assign SV (Parameter) ....................................................... 136
Assign TV (Parameter) ....................................................... 137
B
Backlight (Parameter) ......................................................... 32
Bootloader revision (Parameter) ............................................ 174, 175
Build no. software (Parameter) .......................................... 174, 175

Burst command (Parameter) .................................................. 119
Burst command 1 to n (Parameter) ........................................ 126
Burst configuration 1 to n (Submenu) ................................... 125
Burst mode 1 to n (Parameter) ............................................. 126
Burst trigger level (Parameter) ............................................. 131
Burst trigger mode (Parameter) ........................................... 130
Burst variable 0 (Parameter) ............................................... 127
Burst variable 1 (Parameter) ............................................... 128
Burst variable 2 (Parameter) ............................................... 128
Burst variable 3 (Parameter) ............................................... 129
Burst variable 4 (Parameter) ............................................... 129
Burst variable 5 (Parameter) ............................................... 129
Burst variable 6 (Parameter) ............................................... 129
Burst variable 7 (Parameter) ............................................... 130

C
Cable length (Parameter) ..................................................... 67
Calibration (Submenu) ....................................................... 83
Calibration factor (Parameter) ............................................. 84
Capture mode (Parameter) ................................................ 118
Clear logging data (Parameter) ........................................... 179
Communication (Submenu) ............................................... 117
Configuration (Submenu) .................................................. 117, 123
Configuration counter (Parameter) ..................................... 172
Confirm access code (Parameter) ........................................ 41
Connection state (Parameter) ............................................. 154
Contrast display (Parameter) ............................................. 32
Control Totalizer 1 to n (Parameter) .................................. 158
Current output 1 (Submenu) .............................................. 87
Current output 1 simulation (Parameter) .............................. 186
Current output value (Parameter) ...................................... 187
Current range output (Parameter) ...................................... 88

D
Damping current output (Parameter) .................................... 96
Damping output 1 to n (Parameter) ...................................... 108
Data logging (Parameter) .................................................. 179
Data logging (Submenu) .................................................. 176
Data logging control (Parameter) ........................................ 180
Data logging status (Parameter) ........................................ 181
Date/time format (Parameter) ............................................ 60
Decimal places 1 (Parameter) ............................................. 19
Decimal places 2 (Parameter) ............................................. 20
Decimal places 3 (Parameter) ............................................. 22
Decimal places 4 (Parameter) ............................................. 23
Decimal places 5 (Parameter) ............................................. 25
Decimal places 6 (Parameter) ............................................. 26
Decimal places 7 (Parameter) ............................................. 27
Decimal places 8 (Parameter) ............................................. 29
Default gateway (Parameter) ............................................ 142
Define access code (Parameter) ....................................... 40, 42
Define access code (Wizard) ........................................... 40
Density (Parameter) ......................................................... 47
Density damping (Parameter) .......................................... 73
Density factor (Parameter) ............................................... 83
Density offset (Parameter) ............................................... 83
<table>
<thead>
<tr>
<th>Parameter/Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device revision</td>
<td>132</td>
</tr>
<tr>
<td>Device alarm</td>
<td>190</td>
</tr>
<tr>
<td>DHCP client</td>
<td>141</td>
</tr>
<tr>
<td>Device tag</td>
<td>124, 170</td>
</tr>
<tr>
<td>Device type</td>
<td>119, 133</td>
</tr>
<tr>
<td>Diagnostic behavior</td>
<td>33</td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>163</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>160</td>
</tr>
<tr>
<td>Diagnostics 1</td>
<td>163</td>
</tr>
<tr>
<td>Diagnostics 2</td>
<td>164</td>
</tr>
<tr>
<td>Diagnostics 3</td>
<td>165</td>
</tr>
<tr>
<td>Diagnostics 4</td>
<td>165</td>
</tr>
<tr>
<td>Diagnostics 5</td>
<td>166</td>
</tr>
<tr>
<td>Direct access</td>
<td></td>
</tr>
<tr>
<td>0% bargraph value 1</td>
<td>18</td>
</tr>
<tr>
<td>0% bargraph value 2</td>
<td>21</td>
</tr>
<tr>
<td>0% bargraph value 3</td>
<td>24</td>
</tr>
<tr>
<td>0% bargraph value 4</td>
<td>27</td>
</tr>
<tr>
<td>2.4 GHz WLAN channel</td>
<td>153</td>
</tr>
<tr>
<td>100% bargraph value 1</td>
<td>19</td>
</tr>
<tr>
<td>100% bargraph value 2</td>
<td>22</td>
</tr>
<tr>
<td>100% bargraph value 3</td>
<td>24</td>
</tr>
<tr>
<td>100% bargraph value 4</td>
<td>28</td>
</tr>
<tr>
<td>Acceptance rate</td>
<td>49</td>
</tr>
<tr>
<td>Access status display</td>
<td>32</td>
</tr>
<tr>
<td>Activate SW option</td>
<td>43</td>
</tr>
<tr>
<td>Active level</td>
<td>86</td>
</tr>
<tr>
<td>Actual diagnostics</td>
<td>161</td>
</tr>
<tr>
<td>Alarm delay</td>
<td>33</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 19</td>
<td>35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 160</td>
<td>35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 302</td>
<td>35</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 441</td>
<td>36</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 442</td>
<td>36</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 443</td>
<td>36</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 832</td>
<td>37</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 833</td>
<td>37</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 840</td>
<td>38</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 482</td>
<td>38</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 930</td>
<td>39</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no. 931</td>
<td>39</td>
</tr>
<tr>
<td>Assign channel 1</td>
<td>176</td>
</tr>
<tr>
<td>Assign channel 2</td>
<td>177</td>
</tr>
<tr>
<td>Assign channel 3</td>
<td>178</td>
</tr>
<tr>
<td>Assign channel 4</td>
<td>178</td>
</tr>
<tr>
<td>Assign diagnostic behavior</td>
<td>110</td>
</tr>
</tbody>
</table>

Assign flow direction check
- Pulse/frequency/switch output 1 to n (0484–1 to n) | 114

Assign frequency output
- Pulse/frequency/switch output 1 to n (0478–1 to n) | 105

Assign limit
- Pulse/frequency/switch output 1 to n (0483–1 to n) | 111

Assign process variable
- Totalizer 1 to n (0914–1 to n) | 156

Assign process variable (1837) | 74

Assign pulse output 1 to n (0460–1 to n) | 102

Assign PV (0234) | 136

Assign QV (0237) | 138

Assign simulation process variable (1810) | 184

Assign SSD name (2708) | 153

Assign status
- Pulse/frequency/switch output 1 to n (0485–1 to n) | 114

Assign status input (1352) | 85

Assign SV (0235) | 136

Assign TV (0236) | 137

Backlight (0111) | 32

Bootloader revision (0073) | 174, 175

Build no. software (0079) | 174, 175

Burst command (7006) | 119

Burst command 1 to n (2031–1 to n) | 126

Burst mode 1 to n (2032–1 to n) | 126

Burst trigger level
- Burst configuration 1 to n (2043–1 to n) | 131

Burst trigger mode
- Burst configuration 1 to n (2044–1 to n) | 130

Burst variable 0
- Burst configuration 1 to n (2033) | 127

Burst variable 1
- Burst configuration 1 to n (2034) | 128

Burst variable 2
- Burst configuration 1 to n (2035) | 128

Burst variable 3
- Burst configuration 1 to n (2036) | 129

Burst variable 4
- Burst configuration 1 to n (2037) | 129

Burst variable 5
- Burst configuration 1 to n (2038) | 129

Burst variable 6
- Burst configuration 1 to n (2039) | 129

Burst variable 7
- Burst configuration 1 to n (2040) | 130

Cable length
- Measuring point 1 (2939–1) | 67

Calibration factor (2920) | 84

Capture mode (7001) | 118

Clear logging data (0855) | 179

Configuration counter (0233) | 172

Connection state (2722) | 154

Contrast display (0105) | 32

Control Totalizer 1 to n (0914–1 to n) | 158

Current output 1 simulation (0354–1) | 186
Index

Event category 442 (0295) .......... 147
Event category 870 (0250) .......... 147
Event category 881 (0268) .......... 147
Event category 930 (0296) .......... 148
Event category 931 (0297) .......... 148
Extended order code 1 (0023) ...... 171
Extended order code 2 (0021) ...... 172
Extended order code 3 (0022) ...... 172
External density (3060) .......... 77
External temperature (3058) ....... 76
Failure behavior current output
  Current output 1 (0364–1) ...... 97
Failure current
  Current output 1 (0352–1) ...... 98
Failure frequency
  Pulse/frequency/switch output 1 to n (0474–1 to n) .......... 109
Failure mode
  Pulse/frequency/switch output 1 to n (0451–1 to n) .......... 109
  Pulse/frequency/switch output 1 to n (0480–1 to n) .......... 104
  Pulse/frequency/switch output 1 to n (0486–1 to n) .......... 115
  Totalizer 1 to n (0901–1 to n) .......... 159
Failure mode (7011) .......... 121
Failure value (7012) .......... 121
Fieldbus writing access (0273) .... 125
Filter options (0705) .......... 167
Firmware version (0010) .......... 170
Firmware version (0072) .......... 174, 175
Fixed current
  Current output 1 (0365–1) .......... 89
Fixed density (3171) .......... 77
Fixed reference density (3178) .... 78
Flow damping (1802) .......... 72
Flow override (1839) .......... 71
Flow velocity (1852) .......... 47
FlowDC inlet configuration
  Measuring point 1 (3049–1) .......... 67
  Measuring point 1 (3054–1) .......... 68
FlowDC inlet configuration
  Measuring point 1 (3094–1) .......... 67
Format display (0098) .......... 15
Frequency output 1 to n simulation (0472–1 to n) .......... 187
Frequency output 1 to n value (0473–1 to n) .......... 187
Gateway IP address (2719) .......... 155
Hardware revision (0206) .......... 134
HART address (0219) .......... 124
HART date code (0202) .......... 135
HART descriptor (0212) .......... 134
HART message (0216) .......... 134
HART revision (0205) .......... 133
HART short tag (0220) .......... 123
Header (0097) .......... 30
Header text (0112) .......... 31
Inlet diameter
  Measuring point 1 (3054–1) .......... 68
Inlet run
  Measuring point 1 (3050–1) .......... 68
Input signal level 1 (1356–1) .......... 186

Current output value (0355) .......... 187
Current range output
  Current output 1 (0353–1) .......... 88
Damping current output
  Current output 1 (0363–1) .......... 96
Damping output 1 to n (0477–1 to n) .......... 108
Data logging (0860) .......... 179
Data logging control (0857) .......... 180
Data logging status (0858) .......... 181
Date/time format (2812) .......... 60
Decimal places 1 (0095) .......... 19
Decimal places 2 (0117) .......... 20
Decimal places 3 (0118) .......... 22
Decimal places 4 (0119) .......... 23
Decimal places 5 (0149) .......... 25
Decimal places 6 (0150) .......... 26
Decimal places 7 (0151) .......... 27
Decimal places 8 (0152) .......... 29
Default gateway (7210) .......... 142
Define access code .......... 42
Density (1851) .......... 47
Density damping (1889) .......... 73
Density factor (1878) .......... 83
Density offset (1877) .......... 83
Density source (3048) .......... 76
Density unit (0555) .......... 76
Device alarm simulation (0654) .......... 190
Device ID (0221) .......... 133
Device ID (7007) .......... 118
Device name (0013) .......... 171
Device reset (0003) .......... 43
Device revision (0204) .......... 132
Device tag (0011) .......... 170
Device tag (0215) .......... 124
Device type (0209) .......... 133
Device type (7008) .......... 119
Diagnostic event category (0738) .......... 190
Diagnostic event simulation (0737) .......... 190
Diagonistics 1 (0692) .......... 163
Diagonistics 2 (0693) .......... 164
Diagonistics 3 (0694) .......... 165
Diagonistics 4 (0695) .......... 165
Diagonistics 5 (0696) .......... 166
Direct access (0106) .......... 11
Display damping (0094) .......... 30
Display interval (0096) .......... 29
Display language (0104) .......... 15
ENP version (0012) .......... 172
Enter access code (0003) .......... 13
Entire logging duration (0861) .......... 181
Event category 019 (0277) .......... 144
Event category 160 (0272) .......... 144
Event category 441 (0210) .......... 144
Event category 442 (0230) .......... 145
Event category 443 (0231) .......... 145
Event category 832 (0218) .......... 145
Event category 833 (0225) .......... 146
Event category 840 (0267) .......... 146
Index

Installation direction (1809) ............................... 79
Installation status (2958) ............................... 70
Invert output signal
  Pulse/frequency/switch output 1 to n (0470–1 to n) .... 116
IP address (7209) ........................................... 141
IP address domain name server (2720) ............ 155
Kinematic viscosity unit (0578) ......................... 59
Length unit (0551) ....................................... 59
Linear expansion coefficient (3153) ................. 77
Liner material
  Measuring point 1 (2928–1) ......................... 65
Liner sound velocity
  Measuring point 1 (2936–1) ......................... 65
Liner thickness
  Measuring point 1 (2935–1) ......................... 66
Locking status (0004) .................................. 12
Logging delay (0859) .................................... 180
Logging interval (0856) .................................. 178
Login page (7273) ....................................... 142
Lower range value output
  Current output 1 (0367–1) ......................... 89
MAC address (7214) .................................... 140
Manufacturer ID (0259) ................................. 133
Manufacturer ID (7009) ................................ 119
Mass flow (1847) ......................................... 46
Mass flow factor (1846) .................................. 81
Mass flow offset (1841) ................................ 80
Mass flow unit (0554) .................................. 56
Mass unit (0574) .......................................... 57
Max. update period
  Burst configuration 1 to n (2041–1 to n) ....... 131
Maximum frequency value
  Pulse/frequency/switch output 1 to n (0454–1 to n) ...... 106
Measured current 1 (0366–1) ............................ 52, 99
Measuring mode
  Pulse/frequency/switch output 1 to n (0457–1 to n) ...... 103
  Pulse/frequency/switch output 1 to n (0479–1 to n) ...... 107
Measuring mode current output
  Current output 1 (0351–1) ......................... 92
Measuring point configuration
  Measuring point 1 (5675–1) ......................... 61
Measuring value at maximum frequency
  Pulse/frequency/switch output 1 to n (0475–1 to n) ...... 107
Measuring value at minimum frequency
  Pulse/frequency/switch output 1 to n (0476–1 to n) ...... 106
Medium temperature
  Measuring point 1 (3053–1) ......................... 62
Medium temperature (2925) ............................. 76
Min. update period
  Burst configuration 1 to n (2042–1 to n) ....... 131
Minimum frequency value
  Pulse/frequency/switch output 1 to n (0453–1 to n) ...... 106
Mounting type
  Measuring point 1 (2938–1) ......................... 67
Network security (2705) ................................ 150
No. of preambles (0217) ................................ 124
Nominal diameter (2807) ................................ 84
Off value low flow cutoff (1804) ...................... 74
On value low flow cutoff (1805) ...................... 74
Operating mode
  Pulse/frequency/switch output 1 to n (0469–1 to n) ...... 100
Operating time (0652) .................................... 41, 162
Operating time from restart (0653) .................. 162
Order code (0008) ....................................... 171
Output current 1 (0361–1) ................................ 52, 98
Output frequency 1 (0471–1) ........................... 53
Output frequency 1 to n (0471–1 to n) ............ 110
Output frequency 2 (0471–2) ........................... 53
Pipe circumference
  Measuring point 1 (2934–1) ......................... 64
Pipe dimensions
  Measuring point 1 (2943–1) ......................... 64
Pipe material
  Measuring point 1 (2927–1) ......................... 63
Pipe outer diameter
  Measuring point 1 (2910–1) ......................... 64
Pipe sound velocity
  Measuring point 1 (2933–1) ......................... 63
Pipe wall thickness
  Measuring point 1 (2916–1) ......................... 65
Preset value 1 to n (0913–1 to n) .................. 159
Previous diagnostics (0690) ......................... 161
Primary variable (PV) (0201) ......................... 136
Process fluid
  Measuring point 1 (2926–1) ......................... 62
Process variable current output
  Current output 1 (0359–1) ............................ 87
Process variable value (1811) ......................... 185
Pulse output 1 (0456–1) ................................ 53
Pulse output 1 to n (0456–1 to n) .............. 105
Pulse output 2 (0456–2) ................................ 53
Pulse output simulation 1 to n (0458–1 to n) .... 188
Pulse scaling
  Pulse/frequency/switch output 1 to n (0455–1 to n) ...... 102
Pulse value 1 to n (0459–1 to n) .................. 188
Pulse width
  Pulse/frequency/switch output 1 to n (0452–1 to n) ...... 103
Quaternary variable (QV) (0203) ..................... 139
Received signal strength (2721) .................... 154
Reference temperature (3147) ....................... 78
Relative sensor position
  Measuring point 1 (2985–1) ......................... 69
Reset access code (0024) ................................ 42
Reset all totalizers (2806) ......................... 155
Response time
  Pulse/frequency/switch output 1 to n (0491–1 to n) ...... 108
Response time status input (1354) .................. 86
<table>
<thead>
<tr>
<th>Result sensor distance / measuring aid</th>
<th>69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring point 1 (2947–1)</td>
<td></td>
</tr>
<tr>
<td>Result sensor type / mounting type</td>
<td>69</td>
</tr>
<tr>
<td>Measuring point 1 (2946–1)</td>
<td></td>
</tr>
<tr>
<td>Secondary variable (SV) (0226)</td>
<td>137</td>
</tr>
<tr>
<td>Security identification (2718)</td>
<td>151</td>
</tr>
<tr>
<td>Select antenna (2713)</td>
<td>154</td>
</tr>
<tr>
<td>Sensor coupling</td>
<td></td>
</tr>
<tr>
<td>Measuring point 1 (2957–1)</td>
<td>66</td>
</tr>
<tr>
<td>Sensor type</td>
<td></td>
</tr>
<tr>
<td>Measuring point 1 (2924–1)</td>
<td>66</td>
</tr>
<tr>
<td>Separator (0101)</td>
<td>31</td>
</tr>
<tr>
<td>Serial number (0009)</td>
<td>170</td>
</tr>
<tr>
<td>Signal strength (2914)</td>
<td>48,</td>
</tr>
<tr>
<td>Signal to noise ratio (2917)</td>
<td>49,</td>
</tr>
<tr>
<td>Slot number (7010)</td>
<td>120</td>
</tr>
<tr>
<td>Software option overview (0015)</td>
<td>44</td>
</tr>
<tr>
<td>Software revision (0224)</td>
<td>134</td>
</tr>
<tr>
<td>Sound velocity</td>
<td></td>
</tr>
<tr>
<td>Measuring point 1 (2929–1)</td>
<td>62</td>
</tr>
<tr>
<td>Sound velocity (1850)</td>
<td>47</td>
</tr>
<tr>
<td>Sound velocity (2915)</td>
<td>71</td>
</tr>
<tr>
<td>Sound velocity damping (1888)</td>
<td>73</td>
</tr>
<tr>
<td>Sound velocity factor (1849)</td>
<td>81</td>
</tr>
<tr>
<td>Sound velocity offset (1848)</td>
<td>81</td>
</tr>
<tr>
<td>Square expansion coefficient (3172)</td>
<td>78</td>
</tr>
<tr>
<td>SSID name (2707)</td>
<td>153</td>
</tr>
<tr>
<td>SSID name (2714)</td>
<td>150</td>
</tr>
<tr>
<td>Status (7004)</td>
<td>122</td>
</tr>
<tr>
<td>Status input simulation 1 (1355–1)</td>
<td>185</td>
</tr>
<tr>
<td>Subnet mask (7211)</td>
<td>141</td>
</tr>
<tr>
<td>Switch output function</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (0481–1 to n)</td>
<td>110</td>
</tr>
<tr>
<td>Switch output simulation 1 to n (0462–1 to n)</td>
<td>189</td>
</tr>
<tr>
<td>Switch state 1 (0461–1)</td>
<td>54</td>
</tr>
<tr>
<td>Switch state 1 to n (0461–1 to n)</td>
<td>116</td>
</tr>
<tr>
<td>Switch state 1 to n (0463–1 to n)</td>
<td>189</td>
</tr>
<tr>
<td>Switch state 2 (0461–2)</td>
<td>54</td>
</tr>
<tr>
<td>Switch-off delay</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (0465–1 to n)</td>
<td>115</td>
</tr>
<tr>
<td>Switch-off value</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (0464–1 to n)</td>
<td>113</td>
</tr>
<tr>
<td>Switch-on delay</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (0467–1 to n)</td>
<td>115</td>
</tr>
<tr>
<td>Switch-on value</td>
<td></td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (0466–1 to n)</td>
<td>113</td>
</tr>
<tr>
<td>Temperature (1853)</td>
<td>48</td>
</tr>
<tr>
<td>Temperature compensation (3025)</td>
<td>76</td>
</tr>
<tr>
<td>Temperature damping (1886)</td>
<td>73</td>
</tr>
<tr>
<td>Temperature factor (1871)</td>
<td>82</td>
</tr>
<tr>
<td>Temperature offset (1870)</td>
<td>82</td>
</tr>
<tr>
<td>Temperature unit (0557)</td>
<td>58</td>
</tr>
<tr>
<td>Tertiary variable (TV) (0228)</td>
<td>138</td>
</tr>
<tr>
<td>Timeout (7005)</td>
<td>120</td>
</tr>
<tr>
<td>Timestamp . . . 161, 162, 163, 164, 165, 166, 167</td>
<td></td>
</tr>
<tr>
<td>Totalizer operation mode</td>
<td></td>
</tr>
<tr>
<td>Totalizer  operation mode</td>
<td></td>
</tr>
<tr>
<td>Totalizer operation mode</td>
<td></td>
</tr>
<tr>
<td>Totalizer operation mode</td>
<td></td>
</tr>
<tr>
<td>Transition length</td>
<td></td>
</tr>
<tr>
<td>Measuring point 1 (3065–1)</td>
<td>68</td>
</tr>
<tr>
<td>Turbulence (2907)</td>
<td>49</td>
</tr>
<tr>
<td>Unit totalizer 1 to n (0915–1 to n)</td>
<td>157</td>
</tr>
<tr>
<td>Upper range value output</td>
<td></td>
</tr>
<tr>
<td>Current output 1 (0372–1)</td>
<td>91</td>
</tr>
<tr>
<td>User name (2715)</td>
<td>151</td>
</tr>
<tr>
<td>User role (0005)</td>
<td>13</td>
</tr>
<tr>
<td>Value (7003)</td>
<td>122</td>
</tr>
<tr>
<td>Value 1 display (0107)</td>
<td>18</td>
</tr>
<tr>
<td>Value 2 display (0108)</td>
<td>20</td>
</tr>
<tr>
<td>Value 3 display (0110)</td>
<td>21</td>
</tr>
<tr>
<td>Value 4 display (0109)</td>
<td>22</td>
</tr>
<tr>
<td>Value 5 display (0145)</td>
<td>23</td>
</tr>
<tr>
<td>Value 6 display (0146)</td>
<td>25</td>
</tr>
<tr>
<td>Value 7 display (0147)</td>
<td>26</td>
</tr>
<tr>
<td>Value 8 display (0148)</td>
<td>28</td>
</tr>
<tr>
<td>Value current output 1 (0355–1)</td>
<td>187</td>
</tr>
<tr>
<td>Value status input (1353)</td>
<td>51,</td>
</tr>
<tr>
<td>Velocity unit (0566)</td>
<td>57</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Measuring point 1 (2932–1)</td>
<td>63</td>
</tr>
<tr>
<td>Volume flow (1838)</td>
<td>46</td>
</tr>
<tr>
<td>Volume flow factor (1832)</td>
<td>80</td>
</tr>
<tr>
<td>Volume flow offset (1831)</td>
<td>80</td>
</tr>
<tr>
<td>Volume flow unit (0553)</td>
<td>55</td>
</tr>
<tr>
<td>Volume unit (0563)</td>
<td>56</td>
</tr>
<tr>
<td>Web server functionality (7222)</td>
<td>142</td>
</tr>
<tr>
<td>Web server language (7221)</td>
<td>140</td>
</tr>
<tr>
<td>WLAN (2702)</td>
<td>150</td>
</tr>
<tr>
<td>WLAN IP address (2711)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN MAC address (2703)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN mode (2717)</td>
<td>150</td>
</tr>
<tr>
<td>WLAN passphrase (2706)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN password (2716)</td>
<td>151</td>
</tr>
<tr>
<td>WLAN subnet mask (2709)</td>
<td>152</td>
</tr>
<tr>
<td>Zero point (2921)</td>
<td>84</td>
</tr>
<tr>
<td>Direct access (Parameter)</td>
<td></td>
</tr>
<tr>
<td>Display (Submenu)</td>
<td>14</td>
</tr>
<tr>
<td>Display channel 1 (Submenu)</td>
<td>181</td>
</tr>
<tr>
<td>Display channel 2 (Submenu)</td>
<td>182</td>
</tr>
<tr>
<td>Display channel 3 (Submenu)</td>
<td>183</td>
</tr>
<tr>
<td>Display channel 4 (Submenu)</td>
<td>183</td>
</tr>
<tr>
<td>Display damping (Parameter)</td>
<td>30</td>
</tr>
<tr>
<td>Display interval (Parameter)</td>
<td>29</td>
</tr>
<tr>
<td>Display language (Parameter)</td>
<td>15</td>
</tr>
<tr>
<td>Display module (Parameter)</td>
<td>175</td>
</tr>
<tr>
<td>Document</td>
<td></td>
</tr>
<tr>
<td>Explanation of the structure of a parameter</td>
<td>6</td>
</tr>
<tr>
<td>description</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>4</td>
</tr>
<tr>
<td>Structure</td>
<td>4</td>
</tr>
<tr>
<td>Symbols used</td>
<td>6</td>
</tr>
<tr>
<td>Target group</td>
<td>4</td>
</tr>
<tr>
<td>Parameter</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Failure value</td>
<td>121</td>
</tr>
<tr>
<td>Hardware revision</td>
<td>134</td>
</tr>
<tr>
<td>Event category 833</td>
<td>146</td>
</tr>
<tr>
<td>Extended order code 2</td>
<td>172</td>
</tr>
<tr>
<td>Event category 842</td>
<td>147</td>
</tr>
<tr>
<td>Frequency output 1 to n simulation</td>
<td>187</td>
</tr>
<tr>
<td>Failure behavior current output</td>
<td>97</td>
</tr>
<tr>
<td>Failure frequency</td>
<td>109</td>
</tr>
<tr>
<td>Event logbook</td>
<td>167</td>
</tr>
<tr>
<td>Extended order code 1</td>
<td>171</td>
</tr>
<tr>
<td>Extended order code 2</td>
<td>172</td>
</tr>
<tr>
<td>Extended order code 3</td>
<td>172</td>
</tr>
<tr>
<td>External compensation</td>
<td>75</td>
</tr>
<tr>
<td>External density</td>
<td>77</td>
</tr>
<tr>
<td>External temperature</td>
<td>76</td>
</tr>
<tr>
<td>Factory settings</td>
<td>191</td>
</tr>
<tr>
<td>SI units</td>
<td>191</td>
</tr>
<tr>
<td>US units</td>
<td>191</td>
</tr>
<tr>
<td>Failure behavior current output</td>
<td>97</td>
</tr>
<tr>
<td>Failure current</td>
<td>98</td>
</tr>
<tr>
<td>Failure frequency</td>
<td>109</td>
</tr>
<tr>
<td>Failure mode</td>
<td>104, 109, 115, 121, 159</td>
</tr>
<tr>
<td>Failure value</td>
<td>121</td>
</tr>
<tr>
<td>Fieldbus writing access</td>
<td>125</td>
</tr>
<tr>
<td>Filter options</td>
<td>167</td>
</tr>
<tr>
<td>Firmware version</td>
<td>170, 174, 175</td>
</tr>
<tr>
<td>Fixed current</td>
<td>89</td>
</tr>
<tr>
<td>Fixed density</td>
<td>77</td>
</tr>
<tr>
<td>Fixed reference density</td>
<td>78</td>
</tr>
<tr>
<td>Flow damping</td>
<td>72</td>
</tr>
<tr>
<td>Flow override</td>
<td>71</td>
</tr>
<tr>
<td>Flow velocity</td>
<td>47</td>
</tr>
<tr>
<td>FlowDC inlet configuration</td>
<td>67</td>
</tr>
<tr>
<td>Format display</td>
<td>15</td>
</tr>
<tr>
<td>Frequency output 1 to n simulation</td>
<td>187</td>
</tr>
<tr>
<td>Frequency output 1 to n value</td>
<td>187</td>
</tr>
<tr>
<td>Gateway IP address</td>
<td>155</td>
</tr>
<tr>
<td>Hardware revision</td>
<td>134</td>
</tr>
<tr>
<td>HART address</td>
<td>124</td>
</tr>
<tr>
<td>HART date code</td>
<td>135</td>
</tr>
<tr>
<td>HART descriptor</td>
<td>134</td>
</tr>
<tr>
<td>HART input</td>
<td>117</td>
</tr>
<tr>
<td>HART message</td>
<td>134</td>
</tr>
<tr>
<td>HART output</td>
<td>123</td>
</tr>
<tr>
<td>HART revision</td>
<td>133</td>
</tr>
<tr>
<td>HART short tag</td>
<td>123</td>
</tr>
<tr>
<td>Header</td>
<td>30</td>
</tr>
<tr>
<td>Header text</td>
<td>31</td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>183</td>
</tr>
<tr>
<td>Information</td>
<td>132</td>
</tr>
<tr>
<td>Inlet diameter</td>
<td>68</td>
</tr>
<tr>
<td>Inlet run</td>
<td>68</td>
</tr>
<tr>
<td>Input</td>
<td>84, 122</td>
</tr>
<tr>
<td>Input signal level 1</td>
<td>186</td>
</tr>
<tr>
<td>Input values</td>
<td>51</td>
</tr>
<tr>
<td>Installation direction</td>
<td>79</td>
</tr>
<tr>
<td>Installation status</td>
<td>70</td>
</tr>
<tr>
<td>Installation status Submenu</td>
<td>69</td>
</tr>
<tr>
<td>Invert output signal</td>
<td>116</td>
</tr>
<tr>
<td>IP address</td>
<td>141</td>
</tr>
<tr>
<td>IP address domain name server</td>
<td>155</td>
</tr>
<tr>
<td>Kinematic viscosity unit</td>
<td>59</td>
</tr>
<tr>
<td>Length unit</td>
<td>59</td>
</tr>
<tr>
<td>Linear expansion coefficient</td>
<td>77</td>
</tr>
<tr>
<td>Liner material</td>
<td>65</td>
</tr>
<tr>
<td>Liner sound velocity</td>
<td>65</td>
</tr>
<tr>
<td>Liner thickness</td>
<td>66</td>
</tr>
<tr>
<td>Locking status</td>
<td>12</td>
</tr>
<tr>
<td>Logging delay</td>
<td>180</td>
</tr>
<tr>
<td>Logging interval</td>
<td>178</td>
</tr>
<tr>
<td>Login page</td>
<td>142</td>
</tr>
<tr>
<td>Low flow cut off</td>
<td>73</td>
</tr>
<tr>
<td>Lower range value output</td>
<td>89</td>
</tr>
<tr>
<td>MAC address</td>
<td>140</td>
</tr>
<tr>
<td>Mainboard module Submenu</td>
<td>173</td>
</tr>
<tr>
<td>Manufacturer ID</td>
<td>119, 133</td>
</tr>
<tr>
<td>Mass flow</td>
<td>46</td>
</tr>
<tr>
<td>Mass flow factor</td>
<td>81</td>
</tr>
<tr>
<td>Mass flow offset</td>
<td>80</td>
</tr>
<tr>
<td>Mass flow unit</td>
<td>56</td>
</tr>
<tr>
<td>Mass unit</td>
<td>57</td>
</tr>
<tr>
<td>Max. update period</td>
<td>131</td>
</tr>
<tr>
<td>Maximum frequency value</td>
<td>106</td>
</tr>
<tr>
<td>Measured current 1</td>
<td>52, 99</td>
</tr>
<tr>
<td>Measured values Submenu</td>
<td>45</td>
</tr>
<tr>
<td>Measuring mode</td>
<td>103, 107</td>
</tr>
<tr>
<td>Measuring mode current output</td>
<td>92</td>
</tr>
<tr>
<td>Measuring point Submenu</td>
<td>60</td>
</tr>
<tr>
<td>Measuring point configuration</td>
<td>61</td>
</tr>
<tr>
<td>Measuring value at maximum</td>
<td>107</td>
</tr>
</tbody>
</table>

Endress+Hauser
<table>
<thead>
<tr>
<th>Measuring value at minimum frequency (Parameter)</th>
<th>106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium temperature (Parameter)</td>
<td>62, 76</td>
</tr>
<tr>
<td>Min. update period (Parameter)</td>
<td>131</td>
</tr>
<tr>
<td>Minimum frequency value (Parameter)</td>
<td>106</td>
</tr>
<tr>
<td>Mounting type (Parameter)</td>
<td>67</td>
</tr>
</tbody>
</table>

**N**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Network security (Parameter)</td>
<td>150</td>
</tr>
<tr>
<td>No. of preambles (Parameter)</td>
<td>124</td>
</tr>
<tr>
<td>Nominal diameter (Parameter)</td>
<td>84</td>
</tr>
</tbody>
</table>

**O**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Off value low flow cutoff (Parameter)</td>
<td>74</td>
</tr>
<tr>
<td>On value low flow cutoff (Parameter)</td>
<td>74</td>
</tr>
<tr>
<td>Operating mode (Parameter)</td>
<td>100</td>
</tr>
<tr>
<td>Operating time (Parameter)</td>
<td>41, 162</td>
</tr>
<tr>
<td>Operating time from restart (Parameter)</td>
<td>162</td>
</tr>
<tr>
<td>Order code (Parameter)</td>
<td>171</td>
</tr>
<tr>
<td>Output (Submenu)</td>
<td>87, 135</td>
</tr>
<tr>
<td>Output current 1 (Parameter)</td>
<td>52, 98</td>
</tr>
<tr>
<td>Output frequency 1 (Parameter)</td>
<td>53</td>
</tr>
<tr>
<td>Output frequency 1 to n (Parameter)</td>
<td>110</td>
</tr>
<tr>
<td>Output frequency 2 (Parameter)</td>
<td>53</td>
</tr>
<tr>
<td>Output values (Submenu)</td>
<td>52</td>
</tr>
</tbody>
</table>

**P**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe circumference (Parameter)</td>
<td>64</td>
</tr>
<tr>
<td>Pipe dimensions (Parameter)</td>
<td>64</td>
</tr>
<tr>
<td>Pipe material (Parameter)</td>
<td>63</td>
</tr>
<tr>
<td>Pipe outer diameter (Parameter)</td>
<td>64</td>
</tr>
<tr>
<td>Pipe sound velocity (Parameter)</td>
<td>63</td>
</tr>
<tr>
<td>Pipe wall thickness (Parameter)</td>
<td>65</td>
</tr>
<tr>
<td>Preset value 1 to n (Parameter)</td>
<td>159</td>
</tr>
<tr>
<td>Previous diagnostics (Parameter)</td>
<td>161</td>
</tr>
<tr>
<td>Primary variable (PV) (Parameter)</td>
<td>136</td>
</tr>
<tr>
<td>Process fluid (Parameter)</td>
<td>62</td>
</tr>
<tr>
<td>Process parameters (Submenu)</td>
<td>71</td>
</tr>
<tr>
<td>Process variable adjustment (Submenu)</td>
<td>79</td>
</tr>
<tr>
<td>Process variable current output (Parameter)</td>
<td>87</td>
</tr>
<tr>
<td>Process variable value (Parameter)</td>
<td>185</td>
</tr>
<tr>
<td>Process variables (Submenu)</td>
<td>46</td>
</tr>
<tr>
<td>Pulse output 1 (Parameter)</td>
<td>53</td>
</tr>
<tr>
<td>Pulse output 1 to n (Parameter)</td>
<td>105</td>
</tr>
<tr>
<td>Pulse output 2 (Parameter)</td>
<td>53</td>
</tr>
<tr>
<td>Pulse output simulation 1 to n (Parameter)</td>
<td>188</td>
</tr>
<tr>
<td>Pulse scaling (Parameter)</td>
<td>102</td>
</tr>
<tr>
<td>Pulse value 1 to n (Parameter)</td>
<td>188</td>
</tr>
<tr>
<td>Pulse width (Parameter)</td>
<td>103</td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n (Submenu)</td>
<td>99</td>
</tr>
</tbody>
</table>

**Q**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quaternary variable (QV) (Parameter)</td>
<td>139</td>
</tr>
</tbody>
</table>

**R**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Received signal strength (Parameter)</td>
<td>154</td>
</tr>
<tr>
<td>Reference temperature (Parameter)</td>
<td>78</td>
</tr>
<tr>
<td>Relative sensor position (Parameter)</td>
<td>69</td>
</tr>
<tr>
<td>Reset access code (Parameter)</td>
<td>42</td>
</tr>
<tr>
<td>Reset access code (Submenu)</td>
<td>41</td>
</tr>
<tr>
<td>Reset all totalizers (Parameter)</td>
<td>155</td>
</tr>
<tr>
<td>Response time (Parameter)</td>
<td>108</td>
</tr>
<tr>
<td>Response time status input (Parameter)</td>
<td>86</td>
</tr>
<tr>
<td>Result sensor distance / measuring aid (Parameter)</td>
<td>69</td>
</tr>
<tr>
<td>Result sensor type / mounting type (Parameter)</td>
<td>69</td>
</tr>
</tbody>
</table>

**S**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary variable (SV) (Parameter)</td>
<td>137</td>
</tr>
<tr>
<td>Security identification (Parameter)</td>
<td>151</td>
</tr>
<tr>
<td>Select antenna (Parameter)</td>
<td>154</td>
</tr>
<tr>
<td>Sensor (Submenu)</td>
<td>45</td>
</tr>
<tr>
<td>Sensor adjustment (Submenu)</td>
<td>79</td>
</tr>
<tr>
<td>Sensor coupling (Parameter)</td>
<td>66</td>
</tr>
<tr>
<td>Sensor electronic module (ISEM) (Submenu)</td>
<td>174</td>
</tr>
<tr>
<td>Sensor type (Parameter)</td>
<td>66</td>
</tr>
<tr>
<td>Separator (Parameter)</td>
<td>31</td>
</tr>
<tr>
<td>Serial number (Parameter)</td>
<td>170</td>
</tr>
<tr>
<td>Signal strength (Parameter)</td>
<td>48, 70</td>
</tr>
<tr>
<td>Signal to noise ratio (Parameter)</td>
<td>49, 70</td>
</tr>
<tr>
<td>Simulation (Submenu)</td>
<td>184</td>
</tr>
<tr>
<td>Slot number (Parameter)</td>
<td>120</td>
</tr>
<tr>
<td>Software option overview (Parameter)</td>
<td>44</td>
</tr>
<tr>
<td>Software revision (Parameter)</td>
<td>134</td>
</tr>
<tr>
<td>Sound velocity (Parameter)</td>
<td>47, 62, 71</td>
</tr>
<tr>
<td>Sound velocity damping (Parameter)</td>
<td>73</td>
</tr>
<tr>
<td>Sound velocity factor (Parameter)</td>
<td>81</td>
</tr>
<tr>
<td>Sound velocity offset (Parameter)</td>
<td>81</td>
</tr>
<tr>
<td>Square expansion coefficient (Parameter)</td>
<td>78</td>
</tr>
<tr>
<td>SSID name (Parameter)</td>
<td>150, 153</td>
</tr>
<tr>
<td>Status (Parameter)</td>
<td>122</td>
</tr>
<tr>
<td>Status input 1 to n (Submenu)</td>
<td>85</td>
</tr>
<tr>
<td>Status input simulation 1 (Parameter)</td>
<td>185</td>
</tr>
</tbody>
</table>

**Submenu**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>40</td>
</tr>
<tr>
<td>Application</td>
<td>155</td>
</tr>
<tr>
<td>Burst configuration 1 to n</td>
<td>125</td>
</tr>
<tr>
<td>Calibration</td>
<td>83</td>
</tr>
<tr>
<td>Communication</td>
<td>117</td>
</tr>
<tr>
<td>Configuration</td>
<td>117, 123</td>
</tr>
<tr>
<td>Current output 1</td>
<td>87</td>
</tr>
<tr>
<td>Data logging</td>
<td>176</td>
</tr>
<tr>
<td>Device information</td>
<td>169</td>
</tr>
<tr>
<td>Diagnostic behavior</td>
<td>33</td>
</tr>
<tr>
<td>Diagnostic configuration</td>
<td>143</td>
</tr>
<tr>
<td>Diagnostic handling</td>
<td>33</td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>163</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>160</td>
</tr>
<tr>
<td>Display</td>
<td>14</td>
</tr>
<tr>
<td>Display channel 1</td>
<td>181</td>
</tr>
<tr>
<td>Display channel 2</td>
<td>182</td>
</tr>
<tr>
<td>Display channel 3</td>
<td>183</td>
</tr>
<tr>
<td>Display channel 4</td>
<td>183</td>
</tr>
<tr>
<td>Display module</td>
<td>175</td>
</tr>
<tr>
<td>Event list</td>
<td>168</td>
</tr>
<tr>
<td>Event logbook</td>
<td>167</td>
</tr>
<tr>
<td>External compensation</td>
<td>75</td>
</tr>
<tr>
<td>HART input</td>
<td>117</td>
</tr>
<tr>
<td>Category</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>HART output</td>
<td>123</td>
</tr>
<tr>
<td>Heartbeat Technology</td>
<td>183</td>
</tr>
<tr>
<td>Information</td>
<td>132</td>
</tr>
<tr>
<td>Input</td>
<td>84, 122</td>
</tr>
<tr>
<td>Input values</td>
<td>51</td>
</tr>
<tr>
<td>Installation status</td>
<td>69</td>
</tr>
<tr>
<td>Low flow cut off</td>
<td>73</td>
</tr>
<tr>
<td>Mainboard module</td>
<td>173</td>
</tr>
<tr>
<td>Measured values</td>
<td>45</td>
</tr>
<tr>
<td>Measuring point</td>
<td>60</td>
</tr>
<tr>
<td>Output</td>
<td>87, 135</td>
</tr>
<tr>
<td>Output values</td>
<td>52</td>
</tr>
<tr>
<td>Process parameters</td>
<td>71</td>
</tr>
<tr>
<td>Process variable adjustment</td>
<td>79</td>
</tr>
<tr>
<td>Process variables</td>
<td>46</td>
</tr>
<tr>
<td>Pulse/frequency/switch output 1 to n</td>
<td>99</td>
</tr>
<tr>
<td>Reset access code</td>
<td>41</td>
</tr>
<tr>
<td>Sensor</td>
<td>45</td>
</tr>
<tr>
<td>Sensor adjustment</td>
<td>79</td>
</tr>
<tr>
<td>Sensor electronic module (ISEM)</td>
<td>174</td>
</tr>
<tr>
<td>Simulation</td>
<td>184</td>
</tr>
<tr>
<td>Status input 1 to n</td>
<td>85</td>
</tr>
<tr>
<td>System</td>
<td>13</td>
</tr>
<tr>
<td>System units</td>
<td>54</td>
</tr>
<tr>
<td>System values</td>
<td>48</td>
</tr>
<tr>
<td>Totalizer</td>
<td>50</td>
</tr>
<tr>
<td>Totalizer 1 to n</td>
<td>156</td>
</tr>
<tr>
<td>Web server</td>
<td>139</td>
</tr>
<tr>
<td>Subnet mask (Parameter)</td>
<td>141</td>
</tr>
<tr>
<td>Switch output function (Parameter)</td>
<td>110</td>
</tr>
<tr>
<td>Switch output simulation 1 to n (Parameter)</td>
<td>189</td>
</tr>
<tr>
<td>Switch state 1 (Parameter)</td>
<td>54</td>
</tr>
<tr>
<td>Switch state 1 to n (Parameter)</td>
<td>116, 189</td>
</tr>
<tr>
<td>Switch state 2 (Parameter)</td>
<td>54</td>
</tr>
<tr>
<td>Switch-off delay (Parameter)</td>
<td>115</td>
</tr>
<tr>
<td>Switch-off value (Parameter)</td>
<td>113</td>
</tr>
<tr>
<td>Switch-on delay (Parameter)</td>
<td>115</td>
</tr>
<tr>
<td>Switch-on value (Parameter)</td>
<td>113</td>
</tr>
<tr>
<td>System (Submenu)</td>
<td>13</td>
</tr>
<tr>
<td>System units (Submenu)</td>
<td>54</td>
</tr>
<tr>
<td>System values (Submenu)</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition length (Parameter)</td>
<td>68</td>
</tr>
<tr>
<td>Turbulence (Parameter)</td>
<td>49</td>
</tr>
</tbody>
</table>

**U**

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit totalizer 1 to n (Parameter)</td>
<td>157</td>
</tr>
<tr>
<td>Upper range value output (Parameter)</td>
<td>91</td>
</tr>
<tr>
<td>User name (Parameter)</td>
<td>151</td>
</tr>
<tr>
<td>User role (Parameter)</td>
<td>13</td>
</tr>
</tbody>
</table>

**V**

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value (Parameter)</td>
<td>122</td>
</tr>
<tr>
<td>Value 1 display (Parameter)</td>
<td>18</td>
</tr>
<tr>
<td>Value 2 display (Parameter)</td>
<td>20</td>
</tr>
<tr>
<td>Value 3 display (Parameter)</td>
<td>21</td>
</tr>
<tr>
<td>Value 4 display (Parameter)</td>
<td>22</td>
</tr>
<tr>
<td>Value 5 display (Parameter)</td>
<td>23</td>
</tr>
<tr>
<td>Value 6 display (Parameter)</td>
<td>25</td>
</tr>
<tr>
<td>Value 7 display (Parameter)</td>
<td>26</td>
</tr>
<tr>
<td>Value 8 display (Parameter)</td>
<td>28</td>
</tr>
<tr>
<td>Value current output 1 (Parameter)</td>
<td>187</td>
</tr>
<tr>
<td>Value status input (Parameter)</td>
<td>51, 86</td>
</tr>
<tr>
<td>Velocity unit (Parameter)</td>
<td>57</td>
</tr>
<tr>
<td>Viscosity (Parameter)</td>
<td>63</td>
</tr>
<tr>
<td>Volume flow (Parameter)</td>
<td>46</td>
</tr>
<tr>
<td>Volume flow factor (Parameter)</td>
<td>80</td>
</tr>
<tr>
<td>Volume flow offset (Parameter)</td>
<td>80</td>
</tr>
<tr>
<td>Volume flow unit (Parameter)</td>
<td>55</td>
</tr>
<tr>
<td>Volume unit (Parameter)</td>
<td>56</td>
</tr>
</tbody>
</table>

**W**

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web server (Submenu)</td>
<td>139</td>
</tr>
<tr>
<td>Web server functionality (Parameter)</td>
<td>142</td>
</tr>
<tr>
<td>Web server language (Parameter)</td>
<td>140</td>
</tr>
<tr>
<td>Wizard</td>
<td></td>
</tr>
<tr>
<td>Define access code</td>
<td>40</td>
</tr>
<tr>
<td>WLAN settings</td>
<td>149</td>
</tr>
<tr>
<td>WLAN (Parameter)</td>
<td>150</td>
</tr>
<tr>
<td>WLAN IP address (Parameter)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN MAC address (Parameter)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN mode (Parameter)</td>
<td>150</td>
</tr>
<tr>
<td>WLAN passphrase (Parameter)</td>
<td>152</td>
</tr>
<tr>
<td>WLAN password (Parameter)</td>
<td>151</td>
</tr>
<tr>
<td>WLAN settings (Wizard)</td>
<td>149</td>
</tr>
<tr>
<td>WLAN subnet mask (Parameter)</td>
<td>152</td>
</tr>
</tbody>
</table>

**Z**

<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero point (Parameter)</td>
<td>84</td>
</tr>
</tbody>
</table>