Description of Device Parameters

Proline Cubemass 100
Modbus RS485

Coriolis flowmeter
Table of contents

1 Document information .......................... 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 .......................... 6

2 Overview of the Expert operating menu ....................... 7

3 Description of device parameters .......................... 9
   3.1 "System" submenu .................................. 11
      3.1.1 "Diagnostic handling" submenu ................. 11
      3.1.2 "Administration" submenu .................... 19
   3.2 "Sensor" submenu .................................. 22
      3.2.1 "Measured values" submenu ................. 22
      3.2.2 "System units" submenu .................... 28
      3.2.3 "Process parameters" submenu .............. 42
      3.2.4 "Measurement mode" submenu .............. 49
      3.2.5 "External compensation" submenu .......... 51
      3.2.6 "Calculated values" submenu ............. 53
      3.2.7 "Sensor adjustment" submenu ........... 56
      3.2.8 "Calibration" submenu ..................... 62
      3.2.9 "Testpoints" submenu ....................... 64
      3.2.10 "Supervision" submenu ..................... 68
   3.3 "Communication" submenu .......................... 69
      3.3.1 "Modbus configuration" submenu .......... 69
      3.3.2 "Modbus information" submenu .......... 73
      3.3.3 "Modbus data map" submenu ........... 74
   3.4 "Application" submenu ............................ 75
      3.4.1 "Totalizer 1 to 3" submenu ............ 76
      3.4.2 "Concentration" submenu ................ 81
   3.5 "Diagnostics" submenu ............................ 81
      3.5.1 "Diagnostic list" submenu .............. 84
      3.5.2 "Event logbook" submenu ............. 88
      3.5.3 "Device information" submenu .......... 89
      3.5.4 "Min/max values" submenu ........... 92
      3.5.5 "Heartbeat" submenu ...................... 98
      3.5.6 "Simulation" submenu ..................... 99

4 Country-specific factory settings .......................... 101
   4.1 SI units ......................................... 101
      4.1.1 System units ................................ 101
      4.1.2 Full scale values .......................... 101
      4.1.3 On value low flow cut off ............... 101
   4.2 US units ......................................... 102
      4.2.1 System units ................................ 102

5 Explanation of abbreviated units ........................ 104
   5.1 SI units ......................................... 104
   5.2 US units ......................................... 104
   5.3 Imperial units .................................... 106

6 Modbus RS485 Register Information ........................ 107
   6.1 Notes ............................................. 107
      6.1.1 Structure of the register information ............... 107
      6.1.2 Address model ................................ 107
   6.2 Overview of the Expert operating menu ............... 108
   6.3 Register information ................................ 114
      6.3.1 "System" submenu ............................ 114
      6.3.2 "Sensor" submenu ............................. 116
      6.3.3 "Communication" submenu .................. 125
      6.3.4 "Application" submenu ...................... 126
      6.3.5 "Diagnostics" submenu ...................... 128

Index .................................................. 132
1 Document information

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

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

1.3 Using this document

1.3.1 Information on the document structure
This document lists the submenus and their parameters according to the structure of the Expert menu (→ 7) menu that are available once the "Operator" user role or the "Maintenance" user role is enabled.

![Sample graphic](image.png)

For information on the arrangement of the parameters according to the structure of the Operation menu, Setup menu, Diagnostics menu (→ 81), along with a brief description, see the Operating Instructions for the device.
For information about the operating philosophy, see the "Operating philosophy" chapter in the device's Operating Instructions
1.3.2 Structure of a parameter description
The individual parts of a parameter description are described in the following section:

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

Navigation

- Navigation path to the parameter via the operating tool
- The names of the menus, submenus and parameters are displayed in abbreviated format.

Prerequisite

- The parameter is only available under these specific conditions

Description

- Description of the parameter function

Selection

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

User entry

- Input range for the parameter

User interface

- Display value/data for the parameter

Factory setting

- Default setting ex works

Additional information

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

1.4 Symbols used

1.4.1 Symbols for certain types of information

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️</td>
<td>Tip \nIndicates additional information.</td>
</tr>
<tr>
<td>📚</td>
<td>Reference to documentation</td>
</tr>
<tr>
<td>📚</td>
<td>Reference to page</td>
</tr>
<tr>
<td>📚</td>
<td>Reference to graphic</td>
</tr>
<tr>
<td>📚</td>
<td>Operation via operating tool</td>
</tr>
<tr>
<td>☑️</td>
<td>Write-protected parameter</td>
</tr>
</tbody>
</table>

1.4.2 Symbols in graphics

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

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

<table>
<thead>
<tr>
<th>Expert</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking status</td>
<td>→ 9</td>
</tr>
<tr>
<td>Access status tooling</td>
<td>→ 10</td>
</tr>
<tr>
<td>Enter access code</td>
<td>→ 10</td>
</tr>
<tr>
<td>System</td>
<td>→ 11</td>
</tr>
<tr>
<td>Diagnostic handling</td>
<td>→ 11</td>
</tr>
<tr>
<td>Administration</td>
<td>→ 19</td>
</tr>
<tr>
<td>Sensor</td>
<td>→ 22</td>
</tr>
<tr>
<td>Measured values</td>
<td>→ 22</td>
</tr>
<tr>
<td>System units</td>
<td>→ 28</td>
</tr>
<tr>
<td>Process parameters</td>
<td>→ 42</td>
</tr>
<tr>
<td>Measurement mode</td>
<td>→ 49</td>
</tr>
<tr>
<td>External compensation</td>
<td>→ 51</td>
</tr>
<tr>
<td>Calculated values</td>
<td>→ 53</td>
</tr>
<tr>
<td>Sensor adjustment</td>
<td>→ 56</td>
</tr>
<tr>
<td>Calibration</td>
<td>→ 62</td>
</tr>
<tr>
<td>Testpoints</td>
<td>→ 64</td>
</tr>
<tr>
<td>Supervision</td>
<td>→ 68</td>
</tr>
<tr>
<td>Communication</td>
<td>→ 69</td>
</tr>
<tr>
<td>Modbus configuration</td>
<td>→ 69</td>
</tr>
<tr>
<td>Modbus information</td>
<td>→ 73</td>
</tr>
<tr>
<td>Modbus data map</td>
<td>→ 74</td>
</tr>
</tbody>
</table>
### Overview of the Expert operating menu

<table>
<thead>
<tr>
<th>Application</th>
<th>→</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset all totalizers</td>
<td>→</td>
<td>75</td>
</tr>
<tr>
<td>Totalizer 1 to 3</td>
<td>→</td>
<td>76</td>
</tr>
<tr>
<td>Concentration</td>
<td>→</td>
<td>81</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnostics</th>
<th>→</th>
<th>81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual diagnostics</td>
<td>→</td>
<td>82</td>
</tr>
<tr>
<td>Timestamp</td>
<td>→</td>
<td>82</td>
</tr>
<tr>
<td>Previous diagnostics</td>
<td>→</td>
<td>83</td>
</tr>
<tr>
<td>Operating time from restart</td>
<td>→</td>
<td>83</td>
</tr>
<tr>
<td>Operating time</td>
<td>→</td>
<td>84</td>
</tr>
<tr>
<td>Diagnostic list</td>
<td>→</td>
<td>84</td>
</tr>
<tr>
<td>Event logbook</td>
<td>→</td>
<td>88</td>
</tr>
</tbody>
</table>

| Device information | → | 89 |
| Min/max values | → | 92 |
| Heartbeat | → | 98 |
| Simulation | → | 99 |
3 Description of device parameters

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

<table>
<thead>
<tr>
<th>Expert</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking status</td>
<td>→ 9</td>
</tr>
<tr>
<td>Access status tooling</td>
<td>→ 10</td>
</tr>
<tr>
<td>Enter access code</td>
<td>→ 10</td>
</tr>
<tr>
<td>System</td>
<td>→ 11</td>
</tr>
<tr>
<td>Sensor</td>
<td>→ 22</td>
</tr>
<tr>
<td>Communication</td>
<td>→ 69</td>
</tr>
<tr>
<td>Application</td>
<td>→ 75</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>→ 81</td>
</tr>
</tbody>
</table>

Locking status

**Navigation**

Expert → Locking status

**Description**

Use this function to view the active write protection.

**User interface**

- Hardware locked
- Temporarily locked
Additional information

User interface

In the operating tool all active types of write protection are selected.

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the Locking status parameter (→  9).

“Hardware locked” option (priority 1)

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

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

“Temporarily locked” option (priority 2)

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

Access status tooling

Navigation

Expert → Access stat.tool

Description

Use this function to view the access authorization to the parameters via the operating tool.

User interface

• Operator
• Maintenance

Factory setting

Maintenance

Additional information

Description

The access authorization can be modified via the Enter access code parameter.

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the Locking status parameter (→  9).

Display

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

Enter access code

Navigation

Expert → Ent. access code

Description

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

*Navigation*  
Expert → System

- **System**
- **Diagnostic handling** → 11
- **Administration** → 19

### 3.1.1 "Diagnostic handling" submenu

*Navigation*  
Expert → System → Diagn. handling

- **Diagnostic handling**
  - **Alarm delay** → 11
  - **Diagnostic behavior** → 12

---

#### Alarm delay

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

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

The diagnostic message is reset without a time delay.

**User entry**  
0 to 60 s

**Factory setting**  
0 s

**Additional information**  
*Effect*

This setting affects the following diagnostic messages:

- 046 Sensor limit exceeded
- 140 Sensor signal
- 144 Measuring error too high
- 190 Special event 1
- 191 Special event 5
- 192 Special event 9
- 830 Sensor temperature too high
- 831 Sensor temperature too low
“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 (→ 12).

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 measured value output via Modbus RS485 and the totalizers assume the defined alarm condition. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Warning</td>
<td>The device continues to measure. The measured value output via Modbus RS485 and the totalizers are not affected. A diagnostic message is generated.</td>
</tr>
<tr>
<td>Logbook entry only</td>
<td>The device continues to measure. The diagnostic message is entered only in the Event logbook submenu (→ 88).</td>
</tr>
<tr>
<td>Off</td>
<td>The diagnostic event is ignored, and no diagnostic message is generated or entered.</td>
</tr>
</tbody>
</table>

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

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

Assign behavior of diagnostic no. 140  → 13
Assign behavior of diagnostic no. 046  → 13
Assign behavior of diagnostic no. 144  → 14
Assign behavior of diagnostic no. 832  → 14
Assign behavior of diagnostic no. 833  → 14
Assign behavior of diagnostic no. 834  → 15
Assign behavior of diagnostic no. 835  → 15
Assign behavior of diagnostic no. 140 (Sensor signal)

Navigation

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

Description

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

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see

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

Navigation

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

Description

Use this function to change the diagnostic behavior of the diagnostic message 046 Sensor limit exceeded.

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Alarm

**Additional information**

For a detailed description of the options available, see

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting**

Warning

**Additional information**

For a detailed description of the options available, see

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

**Navigation**

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

**Description**

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

**Selection**

- Off
- Alarm
- Warning
- Logbook entry only
Assign behavior of diagnostic no. 834 (Process temperature too high)

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

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

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

**Factory setting**
Warning

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

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

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

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

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

**Factory setting**
Warning

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

Assign behavior of diagnostic no. 912 (Medium inhomogeneous)

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

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

Proline Cubemass 100 Modbus RS485

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see

Assign behavior of diagnostic no. 913 (Medium unsuitable)

Navigation

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

Description

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

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

For a detailed description of the options available, see

Assign behavior of diagnostic no. 944 (Monitoring failed)

Navigation

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

Description

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

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting

Warning

Additional information

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see Assign behavior of diagnostic no. 192 (Special event 9).

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

Additional information
For a detailed description of the options available, see Assign behavior of diagnostic no. 274 (Main electronic failure).

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

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

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning

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

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting
Warning
Additional information

For a detailed description of the options available, see

3.1.2 "Administration" submenu

Navigation

Expert → System → Administration

<table>
<thead>
<tr>
<th>Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device reset</td>
<td>19</td>
</tr>
<tr>
<td>Activate SW option</td>
<td>20</td>
</tr>
<tr>
<td>Software option overview</td>
<td>20</td>
</tr>
<tr>
<td>Permanent storage</td>
<td>21</td>
</tr>
<tr>
<td>Device tag</td>
<td>21</td>
</tr>
</tbody>
</table>

Device reset

Navigation

Expert → System → Administration → Device reset

Description

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

Selection

- Cancel
- To fieldbus defaults *
- To delivery settings
- Restart device

Factory setting

Cancel

* Visibility depends on communication
**Additional information**

*"Cancel" option*

No action is executed and the user exits the parameter.

*"To fieldbus defaults" option*

Every parameter is reset to fieldbus default values.

*"To delivery settings" option*

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

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

*"Restart device" option*

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

---

**Activate SW option**

**Navigation**

Expert → System → Administration → Activate SW opt.

**Description**

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

**User entry**

Max. 10-digit string consisting of numbers.

**Factory setting**

0

**Additional information**

*User entry*

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

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

*Example for a software option*

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

---

**Software option overview**

**Navigation**

Expert → System → Administration → SW option overv.

**Description**

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

- Heartbeat Verification
- Heartbeat Monitoring
- Concentration

Additional information

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

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

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

Permanent storage

Navigation

Expert → System → Administration → Perm. storage

Description
Use this function to switch permanent storage on and off.

Selection

- Off
- On

Factory setting

On

Additional information

Description

**NOTE!**

If non-volatile device parameters are modified via the MODBUS RS485 function codes 06, 16 or 23, the change is saved in the EEPROM of the measuring device. The number of writes to the EEPROM is technically restricted to a maximum of 1 million.

- Make sure to comply with this limit since, if it is exceeded, data loss and measuring device failure will result.
- Avoid constantly writing non-volatile device parameters via the MODBUS RS485.

Device tag

Navigation

Expert → System → Administration → Device tag

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

User entry

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

Factory setting

Cubemass
3.2 "Sensor" submenu

**Navigation**  
Expert → Sensor  

- **Sensor**
  - **Measured values**  \(\Rightarrow 22\)
  - **System units**  \(\Rightarrow 28\)
  - **Process parameters**  \(\Rightarrow 42\)
  - **Measurement mode**  \(\Rightarrow 49\)
  - **External compensation**  \(\Rightarrow 51\)
  - **Calculated values**  \(\Rightarrow 53\)
  - **Sensor adjustment**  \(\Rightarrow 56\)
  - **Calibration**  \(\Rightarrow 62\)
  - **Testpoints**  \(\Rightarrow 64\)
  - **Supervision**  \(\Rightarrow 68\)

3.2.1 "Measured values" submenu

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

- **Measured values**
  - **Process variables**  \(\Rightarrow 22\)
  - **Totalizer**  \(\Rightarrow 26\)

"Process variables" submenu

**Navigation**  

- **Process variables**
  - Mass flow  \(\Rightarrow 23\)
  - Volume flow  \(\Rightarrow 23\)
  - Corrected volume flow  \(\Rightarrow 24\)
Mass flow

**Navigation**


**Description**
Displays the mass flow that is currently measured.

**User interface**
Signed floating-point number

**Additional information**

*Dependency*

1. The unit is taken from the Mass flow unit parameter (→ 29)

Volume flow

**Navigation**


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

**User interface**
Signed floating-point number

**Additional information**

*Dependency*

1. The unit is taken from the Volume flow unit parameter (→ 30)

Density

**Navigation**


**Description**
Displays the density currently measured.
### Description of device parameters

#### Proline Cubemass 100 Modbus RS485

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>User interface</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrected volume flow</strong></td>
<td>Displays the corrected volume flow currently measured.</td>
<td>Signed floating-point number</td>
<td>Dependency&lt;br&gt;The unit is taken from the <strong>Corrected volume flow unit</strong> parameter (→ 32)</td>
</tr>
<tr>
<td><strong>Reference density</strong></td>
<td>Displays the reference density currently calculated.</td>
<td>Signed floating-point number</td>
<td>Dependency&lt;br&gt;The unit is taken from the <strong>Reference density unit</strong> parameter (→ 35)</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>Displays the medium temperature currently measured.</td>
<td>Signed floating-point number</td>
<td>Dependency&lt;br&gt;The unit is taken from the <strong>Temperature unit</strong> parameter (→ 35)</td>
</tr>
</tbody>
</table>
### Pressure value

**Navigation**


**Description**

Displays the fixed or external pressure value.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the Pressure unit parameter (→ 36)

### Concentration

**Navigation**


**Prerequisite**

For the following order code:

"Application package", option ED 'Concentration'

The software options currently enabled are displayed in the Software option overview parameter (→ 20).

**Description**

Displays the concentration currently calculated.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the Concentration unit parameter.

### Target mass flow

**Navigation**


**Prerequisite**

With the following conditions:

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

The software options currently enabled are displayed in the Software option overview parameter (→ 20).

**Description**

Displays the mass flow currently measured for the target medium.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the Mass flow unit parameter (→ 29)
Carrier mass flow

Navigation


Prerequisite

With the following conditions:

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

The software options currently enabled are displayed in the Software option overview parameter (→  20).

Description

Displays the mass flow currently measured for the carrier medium.

User interface

Signed floating-point number

Additional information

Dependency

The unit is taken from the Mass flow unit parameter (→  29)

"Totalizer" submenu

Navigation

Expert → Sensor → Measured val. → Totalizer

Prerequisite

One of the following options is selected in the Assign process variable parameter (→  76) of the Totalizer 1 to 3 submenu:

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

Description

Displays the current totalizer reading.

User interface

Signed floating-point number

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

Description

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

In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 80).

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 (→ → 78).

The unit of the selected process variable is specified for the totalizer depending on the selection made in the Assign process variable parameter (→ → 76):

- Volume flow option: Volume flow unit parameter (→ → 30)
- Mass flow option, Target mass flow option, Carrier mass flow option: Mass flow unit parameter (→ → 29)
- Corrected volume flow option: Corrected volume unit parameter (→ → 78)

Example

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

- Value in the Totalizer value 1 parameter: 196 845.7 m³
- Value in the Totalizer overflow 1 parameter: 1 ⋅ 10⁷ (1 overflow) = 10000000 m³
- Current totalizer reading: 10 196 845.7 m³

Totalizer overflow 1 to 3

Navigation

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

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ → 76) of the Totalizer 1 to 3 submenu:

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

Description

Displays the current totalizer overflow.

User interface

Integer with sign

Additional information

Description

If the current totalizer reading has more than 7 digits, which is the maximum value range that can be displayed, the value above this range is output as an overflow. The current

** Visibility depends on order options or device settings
totalizer value is therefore the sum of the overflow value and the totalizer value from the **Totalizer value 1 to 3** parameter.

**User interface**

The unit of the selected process variable is specified for the totalizer depending on the selection made in the **Assign process variable** parameter (→ 76):

- **Volume flow** option: **Volume flow unit** parameter (→ 30)
- **Mass flow** option, **Target mass flow** option, **Carrier mass flow** option: **Mass flow unit** parameter (→ 29)
- **Corrected volume flow** option: **Corrected volume unit** parameter (→ 78)

**Example**

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

- Value in the **Totalizer value 1** parameter: 196 845.7 m$^3$
- Value in the **Totalizer overflow 1** parameter: 2 · 10$^7$ (2 overflows) = 20 000 000 [m$^3$]
- Current totalizer reading: 20 196 845.7 m$^3$

### 3.2.2 "System units" submenu

**Navigation**

![Diagram of system units]

<table>
<thead>
<tr>
<th>System units</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow unit</td>
<td>→ 29</td>
</tr>
<tr>
<td>Mass unit</td>
<td>→ 29</td>
</tr>
<tr>
<td>Volume flow unit</td>
<td>→ 30</td>
</tr>
<tr>
<td>Volume unit</td>
<td>→ 32</td>
</tr>
<tr>
<td>Corrected volume flow unit</td>
<td>→ 32</td>
</tr>
<tr>
<td>Corrected volume unit</td>
<td>→ 33</td>
</tr>
<tr>
<td>Density unit</td>
<td>→ 34</td>
</tr>
<tr>
<td>Reference density unit</td>
<td>→ 35</td>
</tr>
<tr>
<td>Temperature unit</td>
<td>→ 35</td>
</tr>
<tr>
<td>Pressure unit</td>
<td>→ 36</td>
</tr>
<tr>
<td>Date/time format</td>
<td>→ 36</td>
</tr>
<tr>
<td><strong>User-specific units</strong></td>
<td>→ 37</td>
</tr>
</tbody>
</table>
Mass flow unit

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

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

**Selection**

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

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

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

**Factory setting**
Country-specific:
- kg/h
- lb/min

**Additional information**

**Result**
The selected unit applies for:
- Mass flow parameter (→ 23)

**Selection**
For an explanation of the abbreviated units: → 104

**Customer-specific units**
The unit for the customer-specific mass is specified in the User mass text parameter (→ 37).

Mass unit

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

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

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

**Custom-specific units**

- User mass

### Factory setting

Country-specific:

- kg
- lb

### Additional information

**Selection**

For an explanation of the abbreviated units: → 104

**Customer-specific units**

The unit for the customer-specific mass is specified in the User mass text parameter (→ 37).

### Volume flow unit

**Navigation**

- Expert → Sensor → System units → Volume flow unit

**Description**

Use this function to select the unit for the volume flow.
<table>
<thead>
<tr>
<th>Selection</th>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cm³/s</td>
<td>af/s</td>
<td>gal/s (imp)</td>
</tr>
<tr>
<td></td>
<td>cm³/min</td>
<td>af/min</td>
<td>gal/min (imp)</td>
</tr>
<tr>
<td></td>
<td>cm³/h</td>
<td>af/h</td>
<td>gal/h (imp)</td>
</tr>
<tr>
<td></td>
<td>cm³/d</td>
<td>af/d</td>
<td>gal/d (imp)</td>
</tr>
<tr>
<td></td>
<td>dm³/s</td>
<td>ft³/s</td>
<td>Mgal/s (imp)</td>
</tr>
<tr>
<td></td>
<td>dm³/min</td>
<td>ft³/min</td>
<td>Mgal/min (imp)</td>
</tr>
<tr>
<td></td>
<td>dm³/h</td>
<td>ft³/h</td>
<td>Mgal/h (imp)</td>
</tr>
<tr>
<td></td>
<td>dm³/d</td>
<td>ft³/d</td>
<td>Mgal/d (imp)</td>
</tr>
<tr>
<td></td>
<td>m³/s</td>
<td>fl oz/s (us)</td>
<td>bbl/s (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>m³/min</td>
<td>fl oz/min (us)</td>
<td>bbl/min (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>m³/h</td>
<td>fl oz/h (us)</td>
<td>bbl/h (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>m³/d</td>
<td>fl oz/d (us)</td>
<td>bbl/d (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>ml/s</td>
<td>gal/s (us)</td>
<td>bbl/s (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>ml/min</td>
<td>gal/min (us)</td>
<td>bbl/min (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>ml/h</td>
<td>gal/h (us)</td>
<td>bbl/h (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>ml/d</td>
<td>gal/d (us)</td>
<td>bbl/d (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>l/s</td>
<td>kgal/s (us)</td>
<td>bbl/s (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>l/min</td>
<td>kgal/min (us)</td>
<td>bbl/min (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>l/h</td>
<td>kgal/h (us)</td>
<td>bbl/h (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>l/d</td>
<td>kgal/d (us)</td>
<td>bbl/d (imp;beer)</td>
</tr>
<tr>
<td></td>
<td>hl/s</td>
<td>Mgal/s (us)</td>
<td>bbl/s (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>hl/min</td>
<td>Mgal/min (us)</td>
<td>bbl/min (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>hl/h</td>
<td>Mgal/h (us)</td>
<td>bbl/h (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>hl/d</td>
<td>Mgal/d (us)</td>
<td>bbl/d (imp;oil)</td>
</tr>
<tr>
<td></td>
<td>MI/s</td>
<td>bbl/s (us;liq.)</td>
<td>bbl/s (us;tank)</td>
</tr>
<tr>
<td></td>
<td>MI/min</td>
<td>bbl/min (us;liq.)</td>
<td>bbl/min (us;tank)</td>
</tr>
<tr>
<td></td>
<td>MI/h</td>
<td>bbl/h (us;liq.)</td>
<td>bbl/h (us;tank)</td>
</tr>
<tr>
<td></td>
<td>MI/d</td>
<td>bbl/d (us;liq.)</td>
<td>bbl/d (us;tank)</td>
</tr>
</tbody>
</table>

Custom-specific units
- User vol./s
- User vol./min
- User vol./h
- User vol./d

Factory setting
Country-specific:
- l/h
- gal/min (us)
Description of device parameters

Proline Cubemass 100 Modbus RS485

Additional information

Result

The selected unit applies for:

**Volume flow** parameter (→  23)

Selection

For an explanation of the abbreviated units: →  104

Customer-specific units

The unit for the customer-specific volume is specified in the **User volume text** parameter (→  38).

Volume unit

**Navigation**

Expert → Sensor → System units → Volume unit

**Description**

Use this function to select the unit for the volume.

**Selection**

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

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

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

**Custom-specific units**

User vol.

**Factory setting**

Country-specific:
- l
- gal (us)

**Additional information**

Selection

For an explanation of the abbreviated units: →  104

Customer-specific units

The unit for the customer-specific volume is specified in the **User volume text** parameter (→  38).

Corrected volume flow unit

**Navigation**

Expert → Sensor → System units → Cor.volflow unit

**Description**

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

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nl/s</td>
<td>Sft³/s</td>
</tr>
<tr>
<td>Nl/min</td>
<td>Sft³/min</td>
</tr>
<tr>
<td>Nl/h</td>
<td>Sft³/h</td>
</tr>
<tr>
<td>Nl/d</td>
<td>Sft³/d</td>
</tr>
<tr>
<td>Nm³/s</td>
<td>Sgal/s (us)</td>
</tr>
<tr>
<td>Nm³/min</td>
<td>Sgal/min (us)</td>
</tr>
<tr>
<td>Nm³/h</td>
<td>Sgal/h (us)</td>
</tr>
<tr>
<td>Nm³/d</td>
<td>Sgal/d (us)</td>
</tr>
<tr>
<td>Sm³/s</td>
<td>Sbbl/s (us;liq.)</td>
</tr>
<tr>
<td>Sm³/min</td>
<td>Sbbl/min (us;liq.)</td>
</tr>
<tr>
<td>Sm³/h</td>
<td>Sbbl/h (us;liq.)</td>
</tr>
<tr>
<td>Sm³/d</td>
<td>Sbbl/d (us;liq.)</td>
</tr>
<tr>
<td></td>
<td>Sgal/s (imp)</td>
</tr>
<tr>
<td></td>
<td>Sgal/min (imp)</td>
</tr>
<tr>
<td></td>
<td>Sgal/h (imp)</td>
</tr>
<tr>
<td></td>
<td>Sgal/d (imp)</td>
</tr>
</tbody>
</table>

**Custom-specific units**

- UserCrVol./s
- UserCrVol./min
- UserCrVol./h
- UserCrVol./d

## Factory setting

**Country-specific:**

- Nl/h
- Sft³/min

## Additional information

### Result

The selected unit applies for:

**Corrected volume flow** parameter (→ 24)

### Selection

For an explanation of the abbreviated units: → 104

---

## Corrected volume unit

**Navigation**

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

**Description**

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

**Selection**

<table>
<thead>
<tr>
<th>SI units</th>
<th>US units</th>
<th>Imperial units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nl</td>
<td>Sft³</td>
<td>Sgal</td>
</tr>
<tr>
<td>Nm³</td>
<td>Sgal (us)</td>
<td>Sbbl (us;liq.)</td>
</tr>
<tr>
<td>Sl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sm³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Custom-specific units**

UserCrVol.

**Factory setting**

**Country-specific:**

- Nl
- Sft³
Description of device parameters  Proline Cubemass 100 Modbus RS485

**Additional information**

*Selection*

For an explanation of the abbreviated units: →  104

**Density unit**

![Density unit icon](image)

**Navigation**

![Expert icon](image)  Sensor → System units → Density unit

**Description**

Use this function to select the unit for the density.

**Selection**

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

*Custom-specific units*

User dens.

**Factory setting**

Country-specific:
- kg/l
- lb/ft³

**Additional information**

*Result*

The selected unit applies for:
**Density** parameter (→  23)

*Selection*

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

For an explanation of the abbreviated units: →  104

*Customer-specific units*

The unit for the customer-specific density is specified in the **User density text** parameter (→  40).
Reference density unit

**Navigation**

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

**Description**

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

**Selection**

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

- **US units**
  - lb/Sft³

**Factory setting**

Country-dependent

- kg/Nl
- lb/Sft³

**Additional information**

**Result**

The selected unit applies for:

- [External reference density](#) parameter (→ 54)
- [Fixed reference density](#) parameter (→ 54)
- [Reference density](#) parameter (→ 24)

**Selection**

For an explanation of the abbreviated units: → 104

Temperature unit

**Navigation**

Expert → Sensor → System units → Temperature unit

**Description**

Use this function to select the unit for the temperature.

**Selection**

- **SI units**
  - °C
  - K

- **US units**
  - °F
  - °R

**Factory setting**

Country-specific:

- °C
- °F

**Additional information**

**Result**

The selected unit applies for:

- [Maximum value](#) parameter (→ 94)
- [Minimum value](#) parameter (→ 93)
- [Maximum value](#) parameter (→ 94)
- [Minimum value](#) parameter (→ 94)
- [Maximum value](#) parameter (→ 94)
- [Minimum value](#) parameter (→ 95)
**Pressure unit**

**Navigation**

Expert → Sensor → System units → Pressure unit

**Description**

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

**Selection**

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

**US units**
- psi a
- psi g

**Custom-specific units**
- User pres.

**Factory setting**

Country-specific:
- bar a
- psi a

**Additional information**

**Result**

The unit is taken from:
- Pressure value parameter (→ 25)
- External pressure parameter (→ 52)
- Pressure value parameter (→ 52)

**Selection**

For an explanation of the abbreviated units: → 104

**Date/time format**

**Navigation**

Expert → Sensor → System units → Date/time format

**Description**

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

**Selection**

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

For an explanation of the abbreviated units: → 104
Factory setting  dd.mm.yy hh:mm

Additional information  Selection

For an explanation of the abbreviated units: →  104

"User-specific units" submenu

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

User mass text
User mass factor
User volume text
User volume factor
User corrected volume text
User corrected volume factor
User density text
User density offset
User density factor
User pressure text
User pressure offset
User pressure factor

User mass text

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

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

User entry  Max. 10 characters such as letters, numbers or special characters (@, %, /)
Description of device parameters  Proline Cubemass 100 Modbus RS485

Factory setting  User mass

Additional information  Result
- The defined unit is shown as an option in the choose list of the following parameters:
  - Mass flow unit parameter (→  29)
  - Mass unit parameter (→  29)

Example
- If the text CENT for 'centner' is entered, the following options are displayed in the picklist for the Mass flow unit parameter (→  29):
  - CENT/s
  - CENT/min
  - CENT/h
  - CENT/d

User mass factor

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

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

User entry  Signed floating-point number

Factory setting  1.0

Additional information  Example
- Mass of 1 Zentner = 50 kg → 0.02 Zentner = 1 kg → entry: 0.02

User volume text

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

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

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

Factory setting  User vol.
Additional information

Result

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

- **Volume flow unit** parameter (→ 30)
- **Volume unit** parameter (→ 32)

Example

If the text GLAS is entered, the choose list of the **Volume flow unit** parameter (→ 30) shows the following options:

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

User volume factor

Navigation

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

Description

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

User entry

Signed floating-point number

Factory setting

1.0

User corrected volume text

Navigation

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

Description

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

User entry

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

Factory setting

UserCrVol.

Additional information

Result

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

- **Corrected volume flow unit** parameter (→ 32)
- **Corrected volume unit** parameter (→ 33)

Example

If the text GLAS is entered, the choose list of the **Corrected volume flow unit** parameter (→ 32) shows the following options:

- GLAS/s
- GLAS/min
- GLAS/h
- GLAS/d
### User corrected volume factor

**Navigation**

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

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

1.0

### User density text

**Navigation**

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

**Description**

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

**User entry**

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

**Factory setting**

User dens.

**Additional information**

*Result*

The defined unit is shown as an option in the choose list of the Density unit parameter (→ 34).

*Example*

Enter text “CE_L” for centners per liter

### User density offset

**Navigation**

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

**Description**

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

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

**User entry**

Signed floating-point number

**Factory setting**

0

### User density factor

**Navigation**

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

**Description**

Use this function to enter a quantity factor for the user-specific density unit.
Proline Cubemass 100 Modbus RS485

Description of device parameters

User entry
Signed floating-point number

Factory setting
1.0

User pressure text

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

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

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

Factory setting
User pres.

Additional information
Result
The defined unit is shown as an option in the choose list of the Pressure unit parameter (→ 36).

User pressure offset

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

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

User entry
Signed floating-point number

Factory setting
0

User pressure factor

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

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

User entry
Signed floating-point number

Factory setting
1.0

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

**Navigation**


---

### Flow damping

**Description**

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

**User entry**

0 to 100.0 s

**Factory setting**

0 s

**Additional information**

- **User entry**
  - Value = 0: no damping
  - Value > 0: damping is increased

**Effect**

The damping affects the following variables of the device:

- Outputs
- Low flow cut off → 44
- Totalizers

---

### Density damping

**Navigation**

Expert → Sensor → Process param. → Density damping

**Description**

Use this function to enter the time constant for the damping of the density measured value.
Temperature damping

**Navigation**

Expert → Sensor → Process param. → Temp. damping

**Description**

Use this function to enter a time constant for the damping of the temperature measured value.

**User entry**

0 to 999.9 s

**Factory setting**

0 s

Flow override

**Navigation**


**Description**

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

**Selection**

- Off
- On

**Factory setting**

Off

**Additional information**

Result

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

**Description**

Flow override is active

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

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign process variable</td>
<td>→ 44</td>
</tr>
<tr>
<td>On value low flow cutoff</td>
<td>→ 44</td>
</tr>
<tr>
<td>Off value low flow cutoff</td>
<td>→ 45</td>
</tr>
<tr>
<td>Pressure shock suppression</td>
<td>→ 45</td>
</tr>
</tbody>
</table>

**Assign process variable**

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

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

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

**Factory setting**
Mass flow

**On value low flow cutoff**

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

**Prerequisite**
One of the following options is selected in the Assign process variable parameter (→ 44):
- Mass flow
- Volume flow
- Corrected volume flow

**Description**
Use this function to enter a switch-on value for low flow cutoff. Low flow cut off is activated if the value entered is not equal to 0 → 45.

**User entry**
Positive floating-point number

**Factory setting**
Depends on country and nominal diameter → 101

**Additional information**
**Dependency**
The unit depends on the process variable selected in the Assign process variable parameter (→ 44).
**Off value low flow cutoff**

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

**Prerequisite**
One of the following options is selected in the Assign process variable parameter (→ 44):
- Mass flow
- Volume flow
- Corrected volume flow

**Description**
Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value (→ 44).

**User entry**
0 to 100.0 %

**Factory setting**
50 %

**Additional information**
Example

![Diagram](image)

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

---

**Pressure shock suppression**

**Navigation**

**Prerequisite**
One of the following options is selected in the Assign process variable parameter (→ 44):
- Mass flow
- Volume flow
- Corrected volume flow

**Description**
Use this function to enter the time interval for signal suppression (= active pressure shock suppression).

**User entry**
0 to 100 s

**Factory setting**
0 s
Additional information

*Description*

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

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

**Example**

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

<table>
<thead>
<tr>
<th>Q</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>Time</td>
</tr>
<tr>
<td>A</td>
<td>Drip</td>
</tr>
<tr>
<td>B</td>
<td>Pressure shock</td>
</tr>
<tr>
<td>C</td>
<td>Pressure shock suppression active as specified by the time entered</td>
</tr>
<tr>
<td>D</td>
<td>Pressure shock suppression inactive</td>
</tr>
<tr>
<td>1</td>
<td>Valve closes</td>
</tr>
<tr>
<td>2</td>
<td>Flow falls below the on-value of the low flow cut off: pressure shock suppression is activated</td>
</tr>
<tr>
<td>3</td>
<td>The time entered has elapsed: pressure shock suppression is deactivated</td>
</tr>
<tr>
<td>4</td>
<td>The actual flow value is now displayed and output</td>
</tr>
<tr>
<td>5</td>
<td>On value for low flow cut off</td>
</tr>
<tr>
<td>6</td>
<td>Off value for low flow cut off</td>
</tr>
</tbody>
</table>
"Partially filled pipe detection" submenu

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

Assign process variable

Low value partial filled pipe detection

High value partial filled pipe detection

Response time part. filled pipe detect.

Maximum damping partial filled pipe det.

Assign process variable

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

Description
Use this function to select a process variable to detect empty or partially filled measuring tubes.
For gas measurement: Deactivate monitoring due to low gas density.

Selection
- Off
- Density
- Reference density

Factory setting
Off

Low value partial filled pipe detection

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

Prerequisite
One of the following options is selected in the Assign process variable parameter (→ 47):
- Density
- Reference density

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

User entry
Signed floating-point number

Factory setting
200
### Additional information

**User entry**

The lower limit value must be less than the upper limit value defined in the **High value partial filled pipe detection** parameter (→ 48).

- The unit depends on the process variable selected in the **Assign process variable** parameter (→ 47).

**Limit value**

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

---

### High value partial filled pipe detection

#### Navigation

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

#### Prerequisite

One of the following options is selected in the **Assign process variable** parameter (→ 47):

- Density
- Reference density

#### Description

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

**User entry**

Signed floating-point number

**Factory setting**

6000

**Additional information**

**User entry**

The upper limit value must be greater than the lower limit value defined in the **Low value partial filled pipe detection** parameter (→ 47).

- The unit depends on the process variable selected in the **Assign process variable** parameter (→ 47).

**Limit value**

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

---

### Response time part. filled pipe detect.

#### Navigation


#### Prerequisite

One of the following options is selected in the **Assign process variable** parameter (→ 47):

- Density
- Reference density

#### Description

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

**Navigation**

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

**Prerequisite**

One of the following options is selected in the Assign process variable parameter (→ 47):

- Density
- Reference density

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

0

**Additional information**

*Description*

If pipe damping (Testpoints submenu (→ 64)) exceeds the specified value, the measuring device presumes that the pipe is partially filled and the flow signal is set to 0. The measuring device displays the diagnostic message ΔS862 Partly filled pipe. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases.

*User entry*

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

3.2.4 "Measurement mode" submenu

**Navigation**

Expert → Sensor → Measurement mode

- Select medium → 50
- Select gas type → 50
- Reference sound velocity → 51
- Temperature coefficient sound velocity → 51
Select medium

Navigation

Expert → Sensor → Measurement mode → Select medium

Description

Use this function to select the type of medium.

Selection

- Liquid
- Gas

Factory setting

Liquid

Select gas type

Navigation

Expert → Sensor → Measurement mode → Select gas type

Prerequisite

The Gas option is selected in the Select medium parameter (→ 50).

Description

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

Selection

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

Factory setting

Methane CH4
Reference sound velocity

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

**Prerequisite**
The Others option is selected in the Select gas type parameter (→ 50).

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

**User entry**
1 to 99999.9999 m/s

**Factory setting**
0 m/s

Temperature coefficient sound velocity

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

**Prerequisite**
The Others option is selected in the Select gas type parameter (→ 50).

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

**User entry**
Positive floating-point number

**Factory setting**
0 (m/s)/K

3.2.5 "External compensation" submenu

**Navigation**

<table>
<thead>
<tr>
<th>External compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure compensation  → 52</td>
</tr>
<tr>
<td>Pressure value         → 52</td>
</tr>
<tr>
<td>External pressure      → 52</td>
</tr>
<tr>
<td>Temperature mode       → 53</td>
</tr>
<tr>
<td>External temperature   → 53</td>
</tr>
</tbody>
</table>
Description of device parameters

Proline Cubemass 100 Modbus RS485

Pressure compensation

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Gas</strong> option is selected in the <strong>Select medium</strong> parameter (→ 50).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function select the type of pressure compensation.</td>
</tr>
</tbody>
</table>
| Selection | • Off  
• Fixed value  
• External value |
| Factory setting | Off |

Pressure value

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → External comp. → Pressure value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>Fixed value</strong> option is selected in the <strong>Pressure compensation</strong> parameter (→ 52).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter a value for the process pressure that is used for pressure correction.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 bar</td>
</tr>
</tbody>
</table>
| Additional information | **User entry**  
The unit is taken from the **Pressure unit** parameter (→ 36) |

External pressure

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite</td>
<td>The <strong>External value</strong> option is selected in the <strong>Pressure compensation</strong> parameter (→ 52).</td>
</tr>
<tr>
<td>Description</td>
<td>Use this function to enter an external pressure value.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 bar</td>
</tr>
</tbody>
</table>
| Additional information | **User entry**  
The unit is taken from the **Pressure unit** parameter (→ 36) |
Temperature mode

**Navigation**
- Expert → Sensor → External comp. → Temperature mode

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

**Selection**
- Internal measured value
- External value

**Factory setting**
Internal measured value

External temperature

**Navigation**

**Prerequisite**
The **External value** option is selected in the **Temperature mode** parameter (→ 53) parameter.

**Description**
Use this function to enter the external temperature.

**User entry**
-273.15 to 99 999 °C

**Factory setting**
- 0 °C
- +32 °F

**Additional information**
*Description*

The unit is taken from the **Temperature unit** parameter (→  35)

3.2.6 "Calculated values" submenu

**Navigation**
- Expert → Sensor → Calculated value

"Corrected volume flow calculation" submenu

**Navigation**
Description of device parameters

Proline Cubemass 100 Modbus RS485

Corrected volume flow calculation

Navigation


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

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

Factory setting
Calculated reference density

External reference density

Navigation


Prerequisite
The External reference density option is selected in the Corrected volume flow calculation parameter (→ 54).

Description
Use this function to enter the external reference density.

User entry
Floating point number with sign

Factory setting
0 kg/Nl

Fixed reference density

Navigation


Prerequisite
The Fixed reference density option is selected in the Corrected volume flow calculation parameter (→ 54) parameter.

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

Factory setting  1 kg/Nl

Additional information  

**Dependency**

The unit is taken from the **Reference density unit** parameter (→ 35).

Reference temperature

**Navigation**


**Prerequisite**

In the **Corrected volume flow calculation** parameter (→ 54) the **Calculated reference density** option is selected.

**Description**

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

**User entry**

−273.15 to 99 999 °C

**Factory setting**

Country-specific:

- +20 °C
- +68 °F

**Additional information  

**Dependency**

The unit is taken from the **Temperature unit** parameter (→ 35)


**Reference density calculation**

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

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

Linear expansion coefficient

**Navigation**

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

**Prerequisite**

In the **Corrected volume flow calculation** parameter (→ 54) the **Calculated reference density** option is selected.

**Description**

Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.
User entry
Signed floating-point number

Factory setting
0.0

Square expansion coefficient

Navigation

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

User entry
Signed floating-point number

Factory setting
0.0

3.2.7 "Sensor adjustment" submenu

Navigation

Installation direction

Navigation

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

Selection
- Flow in arrow direction
- Flow against arrow direction

Factory setting
Flow in arrow direction

Additional information
Description
Before changing the sign: ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor nameplate.
“Zero point adjustment” submenu

**Navigation**


**Zero point adjustment control**

**Navigation**


**Description**

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

**Note conditions.**

**Selection**

- Cancel
- Busy
- Zero point adjust failure
- Start

**Factory setting**

Cancel

**Additional information**

**Description**

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

**Progress**

**Navigation**


**Description**

The progress of the process is indicated.

**User interface**

0 to 100 %
**Description of device parameters**

**Proline Cubemass 100 Modbus RS485**

### "Process variable adjustment" submenu

**Navigation**

[ ] Expert → Sensor → Sensor adjustm. → Variable adjust

<table>
<thead>
<tr>
<th>Mass flow offset</th>
<th>58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow factor</td>
<td>59</td>
</tr>
<tr>
<td>Volume flow offset</td>
<td>59</td>
</tr>
<tr>
<td>Volume flow factor</td>
<td>59</td>
</tr>
<tr>
<td>Density offset</td>
<td>60</td>
</tr>
<tr>
<td>Density factor</td>
<td>60</td>
</tr>
<tr>
<td>Corrected volume flow offset</td>
<td>60</td>
</tr>
<tr>
<td>Corrected volume flow factor</td>
<td>61</td>
</tr>
<tr>
<td>Reference density offset</td>
<td>61</td>
</tr>
<tr>
<td>Reference density factor</td>
<td>61</td>
</tr>
<tr>
<td>Temperature offset</td>
<td>62</td>
</tr>
<tr>
<td>Temperature factor</td>
<td>62</td>
</tr>
</tbody>
</table>

**Mass flow offset**

**Navigation**


**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0 kg/s

**Additional information**

*Description*

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

**Navigation**


**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Description

Corrected value = (factor × value) + offset

### Volume flow offset

**Navigation**


**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0 m³/s

**Additional information**

Description

Corrected value = (factor × value) + offset

### Volume flow factor

**Navigation**


**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1

**Additional information**

Description

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

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

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

**User entry**
Signed floating-point number

**Factory setting**
0 kg/m³

**Additional information**

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

---

### Density factor

**Navigation**
- Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor

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

**User entry**
Positive floating-point number

**Factory setting**
1

**Additional information**

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

---

### Corrected volume flow offset

**Navigation**

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

**User entry**
Signed floating-point number

**Factory setting**
0 Nm³/s

**Additional information**

**Description**
Corrected value = (factor × value) + offset
### Corrected volume flow factor

**Navigation**  

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

**User entry**  
Positive floating-point number

**Factory setting**  
1

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

### Reference density offset

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

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

**User entry**  
Signed floating-point number

**Factory setting**  
0 kg/Nm³

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

### Reference density factor

**Navigation**  
- Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor

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

**User entry**  
Positive floating-point number

**Factory setting**  
1

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

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is K.</td>
</tr>
<tr>
<td>User entry</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 K</td>
</tr>
<tr>
<td>Additional information</td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>Corrected value = (factor × value) + offset</td>
</tr>
</tbody>
</table>

## Temperature factor

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Use this function to enter a quantity factor for the temperature. In each case, this factor refers to the temperature in K.</td>
</tr>
<tr>
<td>User entry</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1</td>
</tr>
<tr>
<td>Additional information</td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>Corrected value = (factor × value) + offset</td>
</tr>
</tbody>
</table>

### 3.2.8 "Calibration" submenu

<table>
<thead>
<tr>
<th>Navigation</th>
<th>Expert → Sensor → Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Navigation</td>
</tr>
<tr>
<td></td>
<td>Calibration</td>
</tr>
<tr>
<td></td>
<td>→ Calibration factor</td>
</tr>
<tr>
<td></td>
<td>→ Zero point</td>
</tr>
<tr>
<td></td>
<td>→ Nominal diameter</td>
</tr>
<tr>
<td></td>
<td>→ C0 to 5</td>
</tr>
</tbody>
</table>

Endress+Hauser
### Calibration factor

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

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

**User interface**
Signed floating-point number

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

### Zero point

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

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

**User entry**
Signed floating-point number

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

### Nominal diameter

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

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

**User interface**
DNxx / x"

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

**Additional information**
*Description*

The value is also specified on the sensor nameplate.

### C0 to 5

**Navigation**
- Expert → Sensor → Calibration → C0 to 5

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

**User interface**
Signed floating-point number

**Factory setting**
0
3.2.9 "Testpoints" submenu

- The Testpoints submenu (→ 64) is used to test the measuring device or the application.
- The parameters can only be accessed via CDI interface or Modbus.

**Navigation**  
Expert → Sensor → Testpoints

<table>
<thead>
<tr>
<th>Testpoints</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillation frequency 0</td>
<td>→ 64</td>
</tr>
<tr>
<td>Frequency fluctuation 0</td>
<td>→ 65</td>
</tr>
<tr>
<td>Oscillation amplitude 0</td>
<td>→ 65</td>
</tr>
<tr>
<td>Oscillation damping 0</td>
<td>→ 65</td>
</tr>
<tr>
<td>Tube damping fluctuation 0</td>
<td>→ 66</td>
</tr>
<tr>
<td>Signal asymmetry</td>
<td>→ 66</td>
</tr>
<tr>
<td>Electronic temperature</td>
<td>→ 67</td>
</tr>
<tr>
<td>Carrier pipe temperature</td>
<td>→ 67</td>
</tr>
<tr>
<td>Exciter current 0</td>
<td>→ 68</td>
</tr>
<tr>
<td>RawMassFlow</td>
<td>→ 68</td>
</tr>
</tbody>
</table>

### Oscillation frequency 0

**Navigation**  
Expert → Sensor → Testpoints → Osc. freq. 0

**Description**  
Displays the current oscillation frequency.

**User interface**  
Positive floating point number

**Additional information**  
**Typical values**

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Material</th>
<th>DN [mm]</th>
<th>DN [in]</th>
<th>f\text{Air} Min. nom. [Hz]</th>
<th>f\text{Air} max. nom. [Hz]</th>
<th>f\text{Water} Min. nom. [Hz]</th>
<th>f\text{Water} max. nom. [Hz]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cubemass C</td>
<td>Stainless steel, 1.4539 (904L)</td>
<td>1</td>
<td>1/24</td>
<td>113</td>
<td>129</td>
<td>106</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1/16</td>
<td>227</td>
<td>261</td>
<td>199</td>
<td>229</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>1/8</td>
<td>290</td>
<td>334</td>
<td>250</td>
<td>288</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>1/4</td>
<td>430</td>
<td>494</td>
<td>360</td>
<td>414</td>
</tr>
</tbody>
</table>
Frequency fluctuation 0

Navigation  
Expert → Sensor → Testpoints → Freq. fluct. 0

Description  
Displays the current frequency fluctuation.

User interface  
Signed floating-point number

Oscillation amplitude 0

Navigation  
Expert → Sensor → Testpoints → Osc. ampl. 0

Description  
Displays the relative oscillation amplitude of the sensor in relation to the optimum value.

User interface  
Signed floating-point number

Additional information

Description  
This value is 100 % under optimum conditions. The value can fall in the case of complex media (two-phase, high viscosity or high gas velocity).

Limit values

5 %

If the displayed value is outside the limit value, the measuring device displays the following diagnostic messages:

- Diagnostic message .ObjectModel Medium unsuitable, associated service ID 205 Osc Amp Limit  
  Explanation: The measured oscillation amplitude has dropped below the xMin limit value.

- Diagnostic message .ObjectModel Medium inhomogeneous, associated service ID 196 Fluid Inhomogeneous Amp  
  - Explanation: The fluctuation (standard deviation) of the amplitude is too high.
  - Possible cause: Air or suspended solids in the medium (multiphase)

For detailed information about troubleshooting, refer to the section entitled “Overview of the service-specific diagnostics information”

Oscillation damping 0

Navigation  
Expert → Sensor → Testpoints → Osc. damping 0

Description  
Displays the current oscillation damping.

User interface  
Positive floating-point number
Additional information

Description

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

Typical values

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Material</th>
<th>DN</th>
<th>Nominal value, air [A/m]</th>
<th>Nominal value, water [A/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cubemass C</td>
<td>Stainless steel, 1.4539 (904L)</td>
<td>1</td>
<td>90</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>240</td>
<td>220</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>790</td>
<td>1150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>310</td>
<td>340</td>
</tr>
</tbody>
</table>

Limit values

The damping depends on the transmitter type and model and changes with the type of medium (differences between models: approx. ±30 %). The minimum value is reached when the sensor is empty. The value can be several 1 000 for viscous media and even several 10 000 in the case of multiphase media. In such cases, the relative oscillation amplitude should also be used for diagnosis.

If the displayed value is outside the limit value, the measuring device displays the following diagnostic message:

Diagnostic message \textit{S862 Partly filled pipe}, associated service ID \textbf{146 Density Monitoring}

For detailed information about troubleshooting, refer to the section entitled "Overview of the service-specific diagnostics information"
**Additional information**

*Description*

The measured value is the result of production tolerances of the sensor coils and should remain constant over the life time of a sensor.

*Limit values*

If the value is > 10 %, this is an indicator of a damaged sensor or sensor cable.

*Additional information*

If the displayed value is outside the limit value, the measuring device displays the following diagnostic message:

- **Diagnostic message** `S140 Sensor signal`, associated service ID **204 El Dyn Sensor**
  - Explanation: The amplitude asymmetry between the inlet and outlet sensor has exceeded the limit value.
  - Possible cause: Virtually only occurs if one of the two signal sensors is defective.

For detailed information about troubleshooting, refer to the section entitled "Overview of the service-specific diagnostics information".

---

**Electronic temperature**

**Navigation**

- Expert → Sensor → Testpoints → Electronic temp.

**Description**

Displays the current temperature inside the main electronics.

**User interface**

Signed floating-point number

**Additional information**

*Description*

As there is minimum internal heating in the electronics, the electronics temperature corresponds to the housing or ambient temperature.

*NOTE!*

Stay within the specified ambient temperature range.

*Dependency*

- The unit is taken from the **Temperature unit** parameter

---

**Carrier pipe temperature**

**Navigation**


**Prerequisite**

- Order code for "Application package", option EB "Heartbeat Verification + Monitoring"
- If the carrier tube temperature is provided: Cubemass C

**Description**

Use this function to display the current temperature of the measuring tube housing. Displays the 2nd measured temperature for compensation.

**User interface**

Signed floating-point number
**Additional information**

*Limit values*

In thermally insulated sensors, the carrier tube temperature can reach the temperature of the medium.

*Dependency*

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

---

**Exciter current 0**

**Navigation**

Expert → Sensor → Testpoints → Exc. current 0

**Description**

Displays the current excitation current.

**User interface**

Signed floating-point number

---

**RawMassFlow**

**Navigation**

Expert → Sensor → Testpoints → RawMassFlow

**Description**

Displays the unprocessed mass flow (contains all sensor corrections etc.).

**User interface**

Signed floating-point number

**Additional information**

*Description*

Displays the mass flow value before offset and factor correction, damping, low flow cut off and monitoring of a partially filled pipe. This value can be used to check the current zero point, similar to the zero point adjustment function.

*Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 29)

---

**3.2.10 "Supervision" submenu**

**Navigation**

Expert → Sensor → Supervision

- Limit value measuring tube damping → 69
Limit value measuring tube damping

Navigation
Expert → Sensor → Supervision → Limit tube damp.

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

User entry
Positive floating-point number

Factory setting
Positive floating-point number

Additional information
Limit value
- If the displayed value is outside the limit value, the measuring device displays the diagnostic message S948 Tube damping too high.
- For detecting inhomogeneous media, for example

3.3 "Communication" submenu

Navigation
Expert → Communication

3.3.1 "Modbus configuration" submenu

Navigation
Expert → Communication → Modbus config.
### Bus address

**Navigation**
- Expert → Communication → Modbus config. → Bus address

**Description**
For entering the device address.

**User entry**
1 to 247

**Factory setting**
247

### Baudrate

**Navigation**
- Expert → Communication → Modbus config. → Baudrate

**Description**
Use this function to select a transmission rate.

**Selection**
- 1200 BAUD
- 2400 BAUD
- 4800 BAUD
- 9600 BAUD
- 19200 BAUD
- 38400 BAUD
- 57600 BAUD
- 115200 BAUD

**Factory setting**
19200 BAUD

### Data transfer mode

**Navigation**
- Expert → Communication → Modbus config. → Data trans. mode

**Description**
Use this function to select the data transmission mode.

**Selection**
- ASCII
- RTU

**Factory setting**
RTU
Additional information  

**Options**

- **ASCII**
  Transmission of data in the form of readable ASCII characters. Error protection via LRC.
- **RTU**
  Transmission of data in binary form. Error protection via CRC16.

### Parity

**Navigation**

Experts → Communication → Modbus config. → Parity

**Description**

Use this function to select the parity bit.

**Selection**

- Odd
- Even
- None / 1 stop bit
- None / 2 stop bits

**Factory setting**

Even

**Additional information**  

**Options**

Picklist **ASCII** option:
- 0 = **Even** option
- 1 = **Odd** option

Picklist **RTU** option:
- 0 = **Even** option
- 1 = **Odd** option
- 2 = **None / 1 stop bit** option
- 3 = **None / 2 stop bits** option

---

### Byte order

**Navigation**

Experts → Communication → Modbus config. → Byte order

**Description**

Use this function to select the sequence in which the bytes are transmitted. The transmission sequence must be coordinated with the Modbus master.

**Selection**

- 0-1-2-3
- 3-2-1-0
- 1-0-3-2
- 2-3-0-1

**Factory setting**

1-0-3-2
Telegram delay

Navigation
Expert → Communication → Modbus config. → Telegram delay

Description
Use this function to enter a delay time after which the measuring device replies to the request telegram of the Modbus master. This allows communication to be adapted to slow Modbus RS485 masters.

User entry
0 to 100 ms

Factory setting
6 ms

Assign diagnostic behavior

Navigation
Expert → Communication → Modbus config. → Assign diag. beh

Description
Use this function to select the diagnostic behavior for Modbus communication.

Selection
- Off
- Alarm or warning
- Warning
- Alarm

Factory setting
Alarm

Additional information
Description
Defines the category of messages to which data transmission responds:
- Off
  The device continues to measure. The diagnostic event is ignored, and no diagnostic message is generated.
- Alarm or warning
  The device continues to measure. A diagnostic message is generated. In the event of an alarm, the signal outputs assume the specified alarm condition.
- Warning
  The device continues to measure. A diagnostic message is generated.
- Alarm
  The device continues to measure. The signal outputs assume the specified alarm condition. A diagnostic message is generated.

Failure mode

Navigation
Expert → Communication → Modbus config. → Failure mode

Description
Use this function to select the measured value output in the event of a diagnostic message via Modbus communication.

Selection
- NaN value
- Last valid value
Factory setting

NaN value

Additional information

Options
- NaN value
  The device outputs the NaN value 1).
- Last valid value
  The device outputs the last valid measured value before the fault occurred.

This effect of this parameter depends on the option selected in the Assign diagnostic behavior parameter (→ 72).

Interpreter mode

Navigation

Expert → Communication → Modbus config. → Interpreter mode

Description

Use this function to select the interpreter mode. This mode defines the behavior of the telegram reception interpreter.

Selection

- Standard
- Ignore surplus bytes

Factory setting

Standard

Additional information

"Standard" option
Behaves according to the Modbus standard, i.e. the last two bytes received are the checksum CRC16.

NOTE!
The selection is only relevant in the RTU mode. In the ASCII mode, the device always behaves according to the Modbus standard.

"Ignore surplus bytes" option
If supported by the function code, the two bytes for the checksum CRC16 are determined from the anticipated telegram length. Surplus bytes at the end of the actual telegram are ignored. This is not the standard Modbus behavior.

3.3.2 "Modbus information" submenu

Navigation

Expert → Communication → Modbus info

Modbus information

Device ID

→ 74

Device revision

→ 74

1) Not a Number
Description of device parameters

Proline Cubemass 100 Modbus RS485

Device ID

Navigation

Expert → Communication → Modbus info → Device ID

Description
Displays the device ID for identifying the measuring device.

User interface
4-digit hexadecimal number

Device revision

Navigation

Expert → Communication → Modbus info → Device revision

Description
Displays the device revision.

User interface
4-digit hexadecimal number

3.3.3 "Modbus data map" submenu

Navigation

Expert → Communication → Modbus data map

Scan list register 0 to 15

Navigation

Expert → Communication → Modbus data map → Scan list reg.0 to 15

Description
Use this function to enter the scan list register. By entering the register address (1-based), up to 16 device parameters can be grouped in the auto-scan buffer by assigning them to the scan list registers 0 to 15. The data of the device parameters assigned here are read out via the register addresses 5051 to 5081.

User entry
1 to 65535

Factory setting
1
Additional information

Description

- Scan list: Configuration area
  The device parameters to be grouped are defined in a list in that their Modbus RS485 register addresses are entered in the list.
- Data area
  The measuring device reads out the register addresses entered in the scan list cyclically and writes the associated device data (values) to the data area.

3.4 "Application" submenu

Navigation

Expert → Application

Reset all totalizers

Reset all totalizers

Navigation

Expert → Application → Reset all tot.

Description

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

Selection

- Cancel
- Reset + totalize

Factory setting

Cancel

Additional information

Selection

- Cancel
  No action is executed and the user exits the parameter.
- Reset + totalize
  All totalizers are reset to 0 and the totaling process is restarted.
3.4.1 "Totalizer 1 to 3" submenu

Navigation

Expert → Application → Totalizer 1 to 3

Assign process variable → 76
Mass unit → 77
Volume unit → 77
Corrected volume unit → 78
Totalizer operation mode → 78
Control Totalizer 1 to 3 → 79
Preset value 1 to 3 → 80
Failure mode → 80

Assign process variable

Navigation

Expert → Application → Totalizer 1 to 3 → Assign variable

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

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

Factory setting
Mass flow

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

Selection
If the Off option is selected, only Assign process variable parameter (→ 76) is still displayed in the Totalizer 1 to 3 submenu. All other parameters in the submenu are hidden.

** Visibility depends on order options or device settings
Mass unit

**Navigation**

Expert → Application → Totalizer 1 to 3 → Mass unit

**Prerequisite**
The Mass flow option is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu.

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

**Selection**

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

Custom-specific units
User mass

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

**Additional information**
Selection

For an explanation of the abbreviated units: → 104

Volume unit

**Navigation**

Expert → Application → Totalizer 1 to 3 → Volume unit

**Prerequisite**
One of the following options is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu:
- Volume flow
- Target mass flow **
- Carrier mass flow **

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

**Selection**

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

Custom-specific units
User vol.

**Visibility depends on order options or device settings**
## Corrected volume unit

**Navigation**

Expert → Application → Totalizer 1 to 3 → Corr. vol. unit

**Prerequisite**

The Corrected volume flow option is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu.

**Description**

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

**Selection**

- **SI units**
  - Nl
  - Nm³
  - Sl
  - Sm³

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

- **Imperial units**
  - Sgal (imp)

**Custom-specific units**

UserCrVol.

**Factory setting**

Country-specific:
- Nl
- Sft³

**Additional information**

For an explanation of the abbreviated units: → 104

---

## Totalizer operation mode

**Navigation**

Expert → Application → Totalizer 1 to 3 → Operation mode

**Prerequisite**

One of the following options is selected in the Assign process variable parameter (→ 76) Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow**
- Carrier mass flow**

**Description**

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

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

---

*78*
Selection
- Net flow total
- Forward flow total
- Reverse flow total

Factory setting
Net flow total

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

Control Totalizer 1 to 3

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

Prerequisite
One of the following options is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow **
- Carrier mass flow **

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

Selection
- Totalize
- Reset + hold
- Preset + hold
- Reset + totalize
- Preset + totalize

Factory setting
Totalize

Additional information
Selection
- Totalize
  The totalizer is started or continues totalizing with the current counter reading.
- Reset + hold
  The totaling process is stopped and the totalizer is reset to 0.
- Preset + hold
  The totaling process is stopped and the totalizer is set to its defined start value from the Preset value parameter (→ 80).
- Reset + totalize
  The totalizer is reset to 0 and the totaling process is restarted.
- Preset + totalize
  The totalizer is set to the defined start value from the Preset value parameter (→ 80) and the totaling process is restarted.

** Visibility depends on order options or device settings
Preset value 1 to 3

Navigation

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

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow **
- Carrier mass flow **

Description

Use this function to enter a start value for the Totalizer 1 to 3.

User entry

Signed floating-point number

Factory setting

Country-specific:
- 0 kg
- 0 lb

Additional information

User entry

The unit of the selected process variable is specified for the totalizer depending on the selection made in the Assign process variable parameter (→ 76):
- Volume flow option: Volume flow unit parameter (→ 30)
- Mass flow option, Target mass flow option, Carrier mass flow option: Mass flow unit parameter (→ 29)
- Corrected volume flow option: Corrected volume unit parameter (→ 78)

Example

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

Failure mode

Navigation

[Expert → Application → Totalizer 1 to 3 → Failure mode]

Prerequisite

One of the following options is selected in the Assign process variable parameter (→ 76) of the Totalizer 1 to 3 submenu:
- Volume flow
- Mass flow
- Corrected volume flow
- Target mass flow **
- Carrier mass flow **

Description

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

Selection

- Stop
- Actual value
- Last valid value

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

Stop

### Additional information

**Description**

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

**Selection**

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

#### 3.4.2 "Concentration" submenu

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

**Navigation**

Expert → Application → Concentration

#### 3.5 "Diagnostics" submenu

**Navigation**

Expert → Diagnostics

**Diagnostics**

- Actual diagnostics
- Timestamp
- Previous diagnostics
- Timestamp
- Operating time from restart
- Operating time
- Diagnostic list
- Event logbook
Actual diagnostics

Navigation
Expert → Diagnostics → Actual diagnos.

Prerequisite
A diagnostic event has occurred.

Description
Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

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

Additional information
Display
Additional pending diagnostic messages can be viewed in the Diagnostic list submenu (→ 84).

Example
For the display format:
F271 Main electronic failure

Timestamp

Navigation
Expert → Diagnostics → Timestamp

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

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

Additional information
Display
The diagnostic message can be viewed via the Actual diagnostics parameter (→ 82).

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

**Navigation**
Expert → Diagnostics → Prev.diagnostics

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

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

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

**Additional information**

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

**Timestamp**

**Navigation**
Expert → Diagnostics → Timestamp

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

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

**Additional information**

*Display*
The diagnostic message can be viewed via the **Previous diagnostics** parameter (→ 83).

*Example*
For the display format:
24d12h13m00s

**Operating time from restart**

**Navigation**
Expert → Diagnostics → Time fr. restart

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

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

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

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

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

**Additional information**
*User interface*
The maximum number of days is 9999, which is equivalent to 27 years.

---

#### 3.5.1 "Diagnostic list" submenu

**Navigation**
- Expert → Diagnostics → Diagnostic list

---

**Diagnostics 1**

**Navigation**
- Expert → Diagnostics → Diagnostic list → Diagnostics 1

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

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

Examples

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

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

Description

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

User interface

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

Additional information

Display

The diagnostic message can be viewed via the Diagnostics 1 parameter (→ 84).

Example

For the display format:
24d12h13m00s

Diagnostics 2

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 2

Description

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

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information

Examples

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

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

Description

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

User interface

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

**Display**

The diagnostic message can be viewed via the **Diagnostics 2** parameter (→ 85).

**Example**

For the display format:

24d12h13m00s

### Diagnostics 3

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 3

**Description**

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

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

**Examples**

For the display format:

- ⚠️F271 Main electronic failure
- ⚠️F276 I/O module failure

### Timestamp

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

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

**Additional information**

**Display**

The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 86).

**Example**

For the display format:

24d12h13m00s

### Diagnostics 4

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 4

**Description**

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

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.
**Additional information**

*Examples*

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

---

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

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

**Additional information**

*Display*

The diagnostic message can be viewed via the Diagnostics 4 parameter (→ ☑ 86).

*Example*

For the display format:
24d12h13m00s

---

**Diagnostics 5**

**Navigation**

Expert → Diagnostics → Diagnostic list → Diagnostics 5

**Description**

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

**User interface**

Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information**

*Examples*

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

---

**Timestamp**

**Navigation**

Expert → Diagnostics → Diagnostic list → Timestamp

**Description**

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

**User interface**

Days (d), hours (h), minutes (m) and seconds (s)
**3.5.2 "Event logbook" submenu**

**Navigation**
Expert → Diagnostics → Event logbook

**Filter options**

**Navigation**
Expert → Diagnostics → Event logbook → Filter options

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

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

**Factory setting**
All

**Additional information**

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
### 3.5.3 "Device information" submenu

**Navigation**

Expert → Diagnostics → Device info

<table>
<thead>
<tr>
<th>Device information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Device tag</strong></td>
</tr>
<tr>
<td><strong>Serial number</strong></td>
</tr>
<tr>
<td><strong>Firmware version</strong></td>
</tr>
<tr>
<td><strong>Device name</strong></td>
</tr>
<tr>
<td><strong>Order code</strong></td>
</tr>
<tr>
<td><strong>Extended order code 1</strong></td>
</tr>
<tr>
<td><strong>Extended order code 2</strong></td>
</tr>
<tr>
<td><strong>Extended order code 3</strong></td>
</tr>
<tr>
<td><strong>ENP version</strong></td>
</tr>
<tr>
<td><strong>Configuration counter</strong></td>
</tr>
</tbody>
</table>

#### Device tag

**Navigation**

Expert → Diagnostics → Device info → Device tag

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

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

**Factory setting**
Cubemass 100

#### Serial number

**Navigation**

Expert → Diagnostics → Device info → Serial number

**Description**
Displays the serial number of the measuring device.

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

**User interface**
A maximum of 11-digit character string comprising letters and numbers.
Description of device parameters

Proline Cubemass 100 Modbus RS485

Additional information

Description

Uses of the serial number

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

Firmware version

Navigation

Expert → Diagnostics → Device info → Firmware version

Description

Displays the device firmware version installed.

User interface

Character string in the format xx.yy.zz

Additional information

Display

The Firmware version is also located:

- On the title page of the Operating instructions
- On the transmitter nameplate

Device name

Navigation

Expert → Diagnostics → Device info → Device name

Description

Displays 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

Cubemass 100

Order code

Navigation

Expert → Diagnostics → Device info → Order code

Description

Displays the device order code.

User interface

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

Additional information

Description

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

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

### Extended order code 1

**Navigation**

![Expert → Diagnostics → Device info → Ext. order cd. 1](image)

**Description**
Displays the first part of the extended order code.
On account of length restrictions, the extended order code is split into a maximum of 3 parameters.

**User interface**
Character string

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

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

### Extended order code 2

**Navigation**

![Expert → Diagnostics → Device info → Ext. order cd. 2](image)

**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 (→ [91](#))

### Extended order code 3

**Navigation**

![Expert → Diagnostics → Device info → Ext. order cd. 3](image)

**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 (→ [91](#))
**ENP version**

**Navigation**

Expert → Diagnostics → Device info → ENP version

**Description**
Displays the version of the electronic nameplate.

**User interface**
Character string

**Factory setting**
2.02.00

**Additional information**

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

**Configuration counter**

**Navigation**

Expert → Diagnostics → Device info → Config. counter

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

**User interface**
0 to 65535

### 3.5.4 "Min/max values" submenu

**Navigation**

Expert → Diagnostics → Min/max val.
**Reset min/max values**

**Navigation**

- Expert → Diagnostics → Min/max val. → Reset min/max

**Description**

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

**Selection**

- Cancel
- Oscillation amplitude
- Oscillation damping
- Oscillation frequency
- Signal asymmetry

**Factory setting**

Cancel

### "Electronic temperature" submenu

**Navigation**

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

**Electronic temperature**

- Minimum value → 93
- Maximum value → 94

**Minimum value**

**Navigation**

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

**Description**

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

**User interface**

Signed floating-point number

**Additional information**

**Dependency**

- The unit is taken from the **Temperature unit** parameter (→ 35)
Maximum value

**Navigation**

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

**Description**

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

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 35)

"Medium temperature" submenu

**Navigation**

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

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

Minimum value

**Navigation**

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

**Description**

Displays the lowest previously measured medium temperature value.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 35)

Maximum value

**Navigation**

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

**Description**

Displays the highest previously measured medium temperature value.

**User interface**

Signed floating-point number
## Additional information

**Dependency**

The unit is taken from the **Temperature unit** parameter (→ [35])

---

### "Carrier pipe temperature" submenu

**Navigation**

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

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

Prerequisite

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

**Description**

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

**User interface**

Signed floating-point number

---

## Minimum value

**Navigation**

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

**Prerequisite**

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

**Description**

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

**User interface**

Signed floating-point number

**Additional information**

**Dependency**

The unit is taken from the **Temperature unit** parameter (→ [35])

---

## Maximum value

**Navigation**

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

**Prerequisite**

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

**Description**

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

**User interface**

Signed floating-point number

**Additional information**

**Dependency**

The unit is taken from the **Temperature unit** parameter (→ [35])
"Oscillation frequency" submenu

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

<table>
<thead>
<tr>
<th>➤ Oscillation frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
</tr>
<tr>
<td>96</td>
</tr>
<tr>
<td>Maximum value</td>
</tr>
<tr>
<td>96</td>
</tr>
</tbody>
</table>

**Minimum value**

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

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

**User interface**
Signed floating-point number

**Maximum value**

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

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

**User interface**
Signed floating-point number

"Oscillation amplitude" submenu

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

<table>
<thead>
<tr>
<th>➤ Oscillation amplitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
</tr>
<tr>
<td>97</td>
</tr>
<tr>
<td>Maximum value</td>
</tr>
<tr>
<td>97</td>
</tr>
</tbody>
</table>
Minimum value

**Navigation**

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

**Description**

Displays the lowest previously measured oscillation amplitude.

**User interface**

Signed floating-point number

Maximum value

**Navigation**

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

**Description**

Displays the highest previously measured oscillation amplitude.

**User interface**

Signed floating-point number

"Oscillation damping" submenu

**Navigation**

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

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

Minimum value

**Navigation**

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

**Description**

Displays the lowest previously measured oscillation damping.

**User interface**

Signed floating-point number

Maximum value

**Navigation**

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

**Description**

Displays the highest previously measured oscillation damping.
**User interface**  Signed floating-point number

**"Signal asymmetry" submenu**

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

![Signal asymmetry](image)

- **Minimum value**
  - **Description**  Displays the lowest previously measured signal asymmetry.
  - **User interface**  Signed floating-point number

- **Maximum value**
  - **Description**  Displays the highest previously measured signal asymmetry.
  - **User interface**  Signed floating-point number

**3.5.5 "Heartbeat" submenu**

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

**Navigation**  
Expert → Diagnostics → Heartbeat

![Heartbeat](image)

- **Performing verification**
3.5.6 "Simulation" submenu

Navigation

Expert → Diagnostics → Simulation

### Assign simulation process variable

**Navigation**

Expert → Diagnostics → Simulation → Assign proc.var.

**Description**

Use this function to select a process variable for the simulation process that is activated.

**Selection**

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

**Factory setting**

Off

**Additional information**

Description

The simulation value of the process variable selected is defined in the **Value process variable** parameter (→ 100).

** Visibility depends on order options or device settings**
Value process variable

Navigation

Expert → Diagnostics → Simulation → Value proc. var.

Prerequisite

One of the following options is selected in the Assign simulation process variable parameter (→ 99):
- Mass flow
- Volume flow
- Corrected volume flow
- Density
- Reference density
- Temperature
- Concentration **
- Target mass flow **
- Carrier mass flow **

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 (→ 28).

Simulation device alarm

Navigation

Expert → Diagnostics → Simulation → Sim. alarm

Description

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

Selection

- Off
- On

Factory setting

Off

** Visibility depends on order options or device settings
4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

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

4.1.2 Full scale values

The factory settings apply to the following parameters:

100% bar graph value 1

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

4.1.3 On value low flow cut off

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

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

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

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

### 4.2 US units

*Only valid for USA and Canada.*

#### 4.2.1 System units

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mass</strong></td>
<td>lb</td>
</tr>
<tr>
<td><strong>Mass flow</strong></td>
<td>lb/min</td>
</tr>
<tr>
<td><strong>Volume</strong></td>
<td>gal (us)</td>
</tr>
<tr>
<td><strong>Volume flow</strong></td>
<td>gal/min (us)</td>
</tr>
<tr>
<td><strong>Corrected volume</strong></td>
<td>Sft³</td>
</tr>
<tr>
<td><strong>Corrected volume flow</strong></td>
<td>Sft³/min</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>lb/ft³</td>
</tr>
<tr>
<td><strong>Reference density</strong></td>
<td>lb/Sft³</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>lb/ft³</td>
</tr>
<tr>
<td><strong>Pressure</strong></td>
<td>psi a</td>
</tr>
</tbody>
</table>

#### 4.2.2 Full scale values

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

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

#### 4.2.3 On value low flow cut off

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

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

## 5.1 SI units

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

## 5.2 US units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>lb/ft², lb/gal (us)</td>
<td>Pound/cubic foot, pound/gallon</td>
</tr>
<tr>
<td></td>
<td>lb/bbl (us:liq.), lb/bbl (us:beer), lb/bbl (us:oil), lb/bbl (us:tank)</td>
<td>Pound/volume unit</td>
</tr>
<tr>
<td>Process variable</td>
<td>Units</td>
<td>Explanation</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Pressure</strong></td>
<td>psi a</td>
<td>Pounds per square inch (absolute)</td>
</tr>
<tr>
<td></td>
<td>psi g</td>
<td>Pounds per square inch (gauge)</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>oz, lb, STon</td>
<td>Ounce, pound, standard ton</td>
</tr>
<tr>
<td><strong>Mass flow</strong></td>
<td>oz/s, oz/min, oz/h, oz/d</td>
<td>Ounce/time unit</td>
</tr>
<tr>
<td></td>
<td>lb/s, lb/min, lb/h, lb/d</td>
<td>Pound/time unit</td>
</tr>
<tr>
<td></td>
<td>STon/s, STon/min, STon/h, STon/d</td>
<td>Standard ton/time unit</td>
</tr>
<tr>
<td><strong>Reference density</strong></td>
<td>lb/ft³</td>
<td>Weight unit/standard volume unit</td>
</tr>
<tr>
<td><strong>Corrected volume</strong></td>
<td>ft³, Sgal (us), Sbbl (us;liq.)</td>
<td>Standard cubic foot, standard gallon, standard barrel</td>
</tr>
<tr>
<td><strong>Corrected volume flow</strong></td>
<td>ft³/s, ft³/min, ft³/h, ft³/d</td>
<td>Standard cubic foot/time unit</td>
</tr>
<tr>
<td></td>
<td>Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)</td>
<td>Standard gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.)</td>
<td>Barrel/time unit (normal liquids)</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>°F, °R</td>
<td>Fahrenheit, Rankine</td>
</tr>
<tr>
<td><strong>Volume</strong></td>
<td>af</td>
<td>Acre foot</td>
</tr>
<tr>
<td></td>
<td>ft³</td>
<td>Cubic foot</td>
</tr>
<tr>
<td></td>
<td>fl oz (us), gal (us), kgal (us), Mgal (us)</td>
<td>Fluid ounce, gallon, kilogallon, million gallon</td>
</tr>
<tr>
<td></td>
<td>bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)</td>
<td>Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)</td>
</tr>
<tr>
<td><strong>Volume flow</strong></td>
<td>af/s, af/min, af/h, af/d</td>
<td>Acre foot/time unit</td>
</tr>
<tr>
<td></td>
<td>ft³/s, ft³/min, ft³/h, ft³/d</td>
<td>Cubic foot/time unit</td>
</tr>
<tr>
<td></td>
<td>fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)</td>
<td>Fluid ounce/time unit</td>
</tr>
<tr>
<td></td>
<td>gal/s (us), gal/min (us), gal/h (us), gal/d (us)</td>
<td>Gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)</td>
<td>Kilogallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)</td>
<td>Million gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)</td>
<td>Barrel/time unit (normal liquids)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Normal liquids: 3.15 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)</td>
<td>Barrel/time unit (beer)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beer: 31.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)</td>
<td>Barrel/time unit (petrochemicals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Petrochemicals: 42.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)</td>
<td>Barrel/time unit (filling tank)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Filling tanks: 55.0 gal/bbl</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem (before midday), post meridiem (after midday)</td>
</tr>
</tbody>
</table>
## 5.3 Imperial units

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Units</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)</td>
<td>Pound/volume unit</td>
</tr>
<tr>
<td>Corrected volume</td>
<td>Sgal (imp)</td>
<td>Standard gallon</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)</td>
<td>Standard gallon/time unit</td>
</tr>
<tr>
<td>Volume</td>
<td>gal (imp), Mgal (imp)</td>
<td>Gallon, mega gallon</td>
</tr>
<tr>
<td></td>
<td>bbl (imp;beer), bbl (imp;oil)</td>
<td>Barrel (beer), barrel (petrochemicals)</td>
</tr>
<tr>
<td>Volume flow</td>
<td>gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp)</td>
<td>Gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)</td>
<td>Mega gallon/time unit</td>
</tr>
<tr>
<td></td>
<td>bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)</td>
<td>Barrel/time unit (beer)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beer: 36.0 gal/bbl</td>
</tr>
<tr>
<td></td>
<td>bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil)</td>
<td>Barrel/time unit (petrochemicals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Petrochemicals: 34.97 gal/bbl</td>
</tr>
<tr>
<td>Time</td>
<td>s, m, h, d, y</td>
<td>Second, minute, hour, day, year</td>
</tr>
<tr>
<td></td>
<td>am, pm</td>
<td>Ante meridiem (before midday), post meridiem (after midday)</td>
</tr>
</tbody>
</table>
## 6 Modbus RS485 Register Information

### 6.1 Notes

#### 6.1.1 Structure of the register information

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

<table>
<thead>
<tr>
<th>Navigation: navigation path to the parameter</th>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access type</th>
<th>Selection/input</th>
<th>→ ?</th>
</tr>
</thead>
</table>
| Name of parameter                             | Indicated in decimal numerical format | • Float length = 4 byte  
• Integer length = 2 byte  
• String length, depending on parameter | Possible type of access to parameter:  
• Read access via function codes 03, 04 or 23  
• Write access via function codes 06, 16 or 23 | Selection  
List of the individual options for the parameter  
• Option 1  
• Option 2  
• Option 3 (+)  

Definition:  
• Factory setting highlighted in bold  
• (+) = Factory setting depends on country, order options or device settings |

**NOTICE**

If non-volatile device parameters are modified via the MODBUS RS485 function codes 06, 16 or 23, the change is saved in the EEPROM of the measuring device. The number of writes to the EEPROM is technically restricted to a maximum of 1 million.  
- Make sure to comply with this limit since, if it is exceeded, data loss and measuring device failure will result.  
- Avoid constantly writing non-volatile device parameters via the MODBUS RS485.

#### 6.1.2 Address model

The Modbus RS485 register addresses of the measuring device are implemented in accordance with the "Modbus Applications Protocol Specification V1.1". In addition, systems are used that work with the register address model "Modicon Modbus Protocol Reference Guide (PI-MBUS-300 Rev. J)". Depending on the function code used, a number is added at the start of the register address with this specification:

- "3" → 'Read' access  
- "4" → 'Write' access
### Modbus RS485 Register Information

#### Proline Cubemass 100 Modbus RS485

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>03 04 23</td>
<td>Read</td>
<td>XXXX Example: mass flow = 2007</td>
<td>3XXXX Example: mass flow = 32007</td>
</tr>
<tr>
<td>06 16 23</td>
<td>Write</td>
<td>XXXX Example: reset totalizer = 6401</td>
<td>4XXXX Example: reset totalizer = 46401</td>
</tr>
</tbody>
</table>

### 6.2 Overview of the Expert operating menu

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

![Expert menu diagram](image-url)
<table>
<thead>
<tr>
<th>System units</th>
<th>→ 117</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow unit</td>
<td>→ 117</td>
</tr>
<tr>
<td>Mass unit</td>
<td>→ 117</td>
</tr>
<tr>
<td>Volume flow unit</td>
<td>→ 118</td>
</tr>
<tr>
<td>Volume unit</td>
<td>→ 119</td>
</tr>
<tr>
<td>Corrected volume flow unit</td>
<td>→ 120</td>
</tr>
<tr>
<td>Corrected volume unit</td>
<td>→ 120</td>
</tr>
<tr>
<td>Density unit</td>
<td>→ 120</td>
</tr>
<tr>
<td>Reference density unit</td>
<td>→ 121</td>
</tr>
<tr>
<td>Temperature unit</td>
<td>→ 121</td>
</tr>
<tr>
<td>Pressure unit</td>
<td>→ 121</td>
</tr>
<tr>
<td>Date/time format</td>
<td>→ 121</td>
</tr>
<tr>
<td>User-specific units</td>
<td>→ 121</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Process parameters</th>
<th>→ 122</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow damping</td>
<td>→ 122</td>
</tr>
<tr>
<td>Density damping</td>
<td>→ 122</td>
</tr>
<tr>
<td>Temperature damping</td>
<td>→ 122</td>
</tr>
<tr>
<td>Flow override</td>
<td>→ 122</td>
</tr>
<tr>
<td>Low flow cut off</td>
<td>→ 122</td>
</tr>
<tr>
<td>Partially filled pipe detection</td>
<td>→ 122</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement mode</th>
<th>→ 123</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select medium</td>
<td>→ 123</td>
</tr>
<tr>
<td>Select gas type</td>
<td>→ 123</td>
</tr>
<tr>
<td>Reference sound velocity</td>
<td>→ 123</td>
</tr>
<tr>
<td>Temperature coefficient sound velocity</td>
<td>→ 123</td>
</tr>
<tr>
<td>Modbus RS485 Register Information</td>
<td>Proline Cubemass 100 Modbus RS485</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>External compensation</strong></td>
<td></td>
</tr>
<tr>
<td>Pressure compensation</td>
<td>123</td>
</tr>
<tr>
<td>Pressure value</td>
<td>123</td>
</tr>
<tr>
<td>External pressure</td>
<td>123</td>
</tr>
<tr>
<td>Temperature mode</td>
<td>123</td>
</tr>
<tr>
<td>External temperature</td>
<td>123</td>
</tr>
<tr>
<td><strong>Calculated values</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corrected volume flow calculation</strong></td>
<td>123</td>
</tr>
<tr>
<td><strong>Sensor adjustment</strong></td>
<td></td>
</tr>
<tr>
<td>Installation direction</td>
<td>124</td>
</tr>
<tr>
<td><strong>Zero point adjustment</strong></td>
<td>124</td>
</tr>
<tr>
<td><strong>Process variable adjustment</strong></td>
<td>124</td>
</tr>
<tr>
<td><strong>Calibration</strong></td>
<td></td>
</tr>
<tr>
<td>Calibration factor</td>
<td>124</td>
</tr>
<tr>
<td>Zero point</td>
<td>124</td>
</tr>
<tr>
<td>Nominal diameter</td>
<td>125</td>
</tr>
<tr>
<td>C0 to 5</td>
<td>125</td>
</tr>
<tr>
<td><strong>Testpoints</strong></td>
<td></td>
</tr>
<tr>
<td>Oscillation frequency 0</td>
<td>125</td>
</tr>
<tr>
<td>Frequency fluctuation 0</td>
<td>125</td>
</tr>
<tr>
<td>Oscillation amplitude 0</td>
<td>125</td>
</tr>
<tr>
<td>Oscillation damping 0</td>
<td>125</td>
</tr>
<tr>
<td>Tube damping fluctuation 0</td>
<td>125</td>
</tr>
<tr>
<td>Signal asymmetry</td>
<td>125</td>
</tr>
<tr>
<td>Electronic temperature</td>
<td>125</td>
</tr>
</tbody>
</table>
### Communication

#### Modbus configuration

- Bus address
- Baudrate
- Data transfer mode
- Parity
- Byte order
- Telegram delay
- Assign diagnostic behavior
- Failure mode
- Interpreter mode

#### Modbus information

- Device ID
- Device revision

#### Modbus data map

- Scan list register 0 to 15

#### Application

- Reset all totalizers

#### Totalizer 1 to 3

- Assign process variable
- Mass unit
- Volume unit
# Modbus RS485 Register Information

<table>
<thead>
<tr>
<th>Register Information</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected volume unit</td>
<td>127</td>
</tr>
<tr>
<td>Totalizer operation mode</td>
<td>127</td>
</tr>
<tr>
<td>Control Totalizer 1 to 3</td>
<td>127</td>
</tr>
<tr>
<td>Preset value 1 to 3</td>
<td>127</td>
</tr>
<tr>
<td>Failure mode</td>
<td>127</td>
</tr>
</tbody>
</table>

## Diagnostics

<table>
<thead>
<tr>
<th>Diagnostics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual diagnostics</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Previous diagnostics</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Operating time from restart</td>
<td>128</td>
</tr>
<tr>
<td>Operating time</td>
<td>128</td>
</tr>
</tbody>
</table>

## Diagnostic list

<table>
<thead>
<tr>
<th>Diagnostics 1</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Diagnostics 2</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Diagnostics 3</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Diagnostics 4</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
<tr>
<td>Diagnostics 5</td>
<td>128</td>
</tr>
<tr>
<td>Timestamp</td>
<td>128</td>
</tr>
</tbody>
</table>

## Event logbook

<table>
<thead>
<tr>
<th>Filter options</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>128</td>
</tr>
</tbody>
</table>
### Device information

- **Device tag**  
- **Serial number**  
- **Firmware version**  
- **Device name**  
- **Order code**  
- **Extended order code 1**  
- **Extended order code 2**  
- **Extended order code 3**  
- **ENP version**  
- **Configuration counter**

### Min/max values

- **Reset min/max values**  

### Electronic temperature

### Medium temperature

### Carrier pipe temperature

### Oscillation frequency

### Oscillation amplitude

### Oscillation damping

### Signal asymmetry

### Simulation

- **Assign simulation process variable**  
- **Value process variable**  
- **Simulation device alarm**
### 6.3 Register information

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking status</td>
<td>4918</td>
<td>Integer</td>
<td>Read</td>
<td>256 = Hardware locked</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>512 = Temporarily locked</td>
</tr>
<tr>
<td>Access status tooling</td>
<td>2178</td>
<td>Integer</td>
<td>Read</td>
<td>0 = Operator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Maintenance</td>
</tr>
<tr>
<td>Enter access code</td>
<td>2177</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 to 9999</td>
</tr>
</tbody>
</table>

### 6.3.1 "System" submenu

#### "Diagnostic handling" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm delay</td>
<td>6808</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 60 s</td>
</tr>
</tbody>
</table>

#### "Diagnostic behavior" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2757</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>140</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2756</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>046</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2081</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>144</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2759</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>832</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2762</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>833</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2761</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>834</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2760</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>835</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
<tr>
<td>Assign behavior of diagnostic no.</td>
<td>2758</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>912</td>
<td></td>
<td></td>
<td></td>
<td>1 = Logbook entry only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Warning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Alarm</td>
</tr>
</tbody>
</table>
## Navigation: Expert → System → Diagnostic handling → Diagnostic behavior

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Assign behavior of diagnostic no. 913 | 2754 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 16 |
| Assign behavior of diagnostic no. 944 | 2082 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 16 |
| Assign behavior of diagnostic no. 192 | 2022 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 17 |
| Assign behavior of diagnostic no. 274 | 2755 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 17 |
| Assign behavior of diagnostic no. 392 | 2023 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 18 |
| Assign behavior of diagnostic no. 592 | 2024 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 18 |
| Assign behavior of diagnostic no. 992 | 2021 | Integer | Read / Write | 0 = Off  
1 = Logbook entry only  
2 = Warning  
3 = Alarm | 18 |

## "Administration" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Device reset | 6817 | Integer | Read / Write | 0 = Cancel  
1 = Restart device  
2 = To delivery settings  
14 = To fieldbus defaults | 19 |
| Activate SW option | 2795 | Integer | Read / Write | Max. 10-digit string consisting of numbers. | 20 |
| Software option overview | 2902 | Integer | Read | 4 = Concentration  
16384 = Heartbeat Monitoring  
32768 = Heartbeat Verification | 20 |
| Permanent storage | 6907 | Integer | Read / Write | 0 = Off  
1 = On | 21 |
| Device tag | 4901 | String | Read / Write | Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /). | 21 |

* Visibility depends on communication
### 6.3.2 "Sensor" submenu

**"Measured values" submenu**

**"Process variables" submenu**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow</td>
<td>2007</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Volume flow</td>
<td>2009</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Corrected volume flow</td>
<td>2011</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Density</td>
<td>2013</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Reference density</td>
<td>2015</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Temperature</td>
<td>2017</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Pressure value</td>
<td>2089</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Concentration</td>
<td>2598</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Target mass flow</td>
<td>2797</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Carrier mass flow</td>
<td>2799</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

**"Totalizer" submenu**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totalizer value 1 to 3</td>
<td>1: 2610</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td></td>
<td>2: 2810</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 3010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totalizer overflow 1 to 3</td>
<td>1: 2612</td>
<td>Float</td>
<td>Read</td>
<td>Integer with sign</td>
</tr>
<tr>
<td></td>
<td>2: 2812</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 3012</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## "System units" submenu

**Navigation:** Expert → Sensor → System units

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Mass flow unit | 2101     | Integer   | Read / Write| 0 = g/s  
1 = g/min  
2 = g/h  
3 = g/d  
4 = kg/s  
5 = kg/min  
6 = kg/h (*)  
7 = kg/d  
8 = t/s  
9 = t/min  
10 = t/h  
11 = t/d  
12 = oz/s  
13 = oz/min  
14 = oz/h  
15 = oz/d  
16 = lb/s  
17 = lb/min  
18 = lb/h  
19 = lb/d  
20 = STon/s  
21 = STon/min  
22 = STon/h  
23 = STon/d  
24 = User mass/s  
25 = User mass/min  
26 = User mass/h  
27 = User mass/d |
| Mass unit    | 2102     | Integer   | Read / Write| 0 = g  
1 = kg (*)  
2 = t  
3 = oz  
4 = lb  
5 = STon  
6 = User mass |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Volume flow unit          | 2103     | Integer   | Read / Write | 0 = cm³/s  
1 = cm³/min  
2 = cm³/h  
3 = cm³/d  
4 = dm³/s  
5 = dm³/min  
6 = dm³/h  
7 = dm³/d  
8 = m³/s  
9 = m³/min  
10 = m³/h  
11 = m³/d  
12 = ml/s  
13 = ml/min  
14 = ml/h  
15 = ml/d  
16 = l/s  
17 = l/min  
18 = l/h (**)  
19 = l/d  
20 = hl/s  
21 = hl/min  
22 = hl/h  
23 = hl/d  
24 = Ml/s  
25 = Ml/min  
26 = Ml/h  
27 = Ml/d  
32 = af/s  
33 = af/min  
34 = af/h  
35 = af/d  
36 = fl³/s  
37 = fl³/min  
38 = fl³/h  
39 = fl³/d  
40 = fl oz/s (us)  
41 = fl oz/min (us)  
42 = fl oz/h (us)  
43 = fl oz/d (us)  
44 = gal/s (us)  
45 = gal/min (us)  
46 = gal/h (us)  
47 = gal/d (us)  
48 = Mgal/s (us)  
49 = Mgal/min (us)  
50 = Mgal/h (us)  
51 = Mgal/d (us)  
52 = bbl/s (us;liqu.)  
53 = bbl/min (us;liqu.)  
54 = bbl/h (us;liqu.)  
55 = bbl/d (us;liqu.)  
56 = bbl/s (us;beer)  
57 = bbl/min (us;beer)  
58 = bbl/h (us;beer)  
59 = bbl/d (us;beer)  
60 = bbl/s (us;oiler)  
61 = bbl/min (us;oiler)  
62 = bbl/h (us;oiler)  
63 = bbl/d (us;oiler)  
64 = bbl/s (us;tank)  
65 = bbl/min (us;tank)  
66 = bbl/h (us;tank)  
67 = bbl/d (us;tank)  
68 = gal/s (imp)  
69 = gal/min (imp)  
70 = gal/h (imp)  |

**Note:**
- **Volume flow unit** parameter in Endress+Hauser Proline Cubemass 100 Modbus RS485 system units can be configured to display flow rate in various units, including cubic meters per second (m³/s), cubic meters per minute (m³/min), cubic meters per hour (m³/h), and others.
- The selection of units is indicated by the register value, with each value corresponding to a specific unit as listed in the table.
## Navigation: Expert → Sensor → System units

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>71 = gal/d (imp)</td>
<td></td>
<td></td>
<td></td>
<td>71 = gal/d (imp)</td>
</tr>
<tr>
<td>72 = Mgal/s (imp)</td>
<td></td>
<td></td>
<td></td>
<td>72 = Mgal/s (imp)</td>
</tr>
<tr>
<td>73 = Mgal/min (imp)</td>
<td></td>
<td></td>
<td></td>
<td>73 = Mgal/min (imp)</td>
</tr>
<tr>
<td>74 = Mgal/h (imp)</td>
<td></td>
<td></td>
<td></td>
<td>74 = Mgal/h (imp)</td>
</tr>
<tr>
<td>75 = Mgal/d (imp)</td>
<td></td>
<td></td>
<td></td>
<td>75 = Mgal/d (imp)</td>
</tr>
<tr>
<td>76 = bbl/s (imp;beer)</td>
<td></td>
<td></td>
<td></td>
<td>76 = bbl/s (imp;beer)</td>
</tr>
<tr>
<td>77 = bbl/min (imp;beer)</td>
<td></td>
<td></td>
<td></td>
<td>77 = bbl/min (imp;beer)</td>
</tr>
<tr>
<td>78 = bbl/h (imp;beer)</td>
<td></td>
<td></td>
<td></td>
<td>78 = bbl/h (imp;beer)</td>
</tr>
<tr>
<td>79 = bbl/d (imp;beer)</td>
<td></td>
<td></td>
<td></td>
<td>79 = bbl/d (imp;beer)</td>
</tr>
<tr>
<td>80 = bbl/s (imp;oil)</td>
<td></td>
<td></td>
<td></td>
<td>80 = bbl/s (imp;oil)</td>
</tr>
<tr>
<td>81 = bbl/min (imp;oil)</td>
<td></td>
<td></td>
<td></td>
<td>81 = bbl/min (imp;oil)</td>
</tr>
<tr>
<td>82 = bbl/h (imp;oil)</td>
<td></td>
<td></td>
<td></td>
<td>82 = bbl/h (imp;oil)</td>
</tr>
<tr>
<td>83 = bbl/d (imp;oil)</td>
<td></td>
<td></td>
<td></td>
<td>83 = bbl/d (imp;oil)</td>
</tr>
<tr>
<td>84 = User vol./s</td>
<td></td>
<td></td>
<td></td>
<td>84 = User vol./s</td>
</tr>
<tr>
<td>85 = User vol./min</td>
<td></td>
<td></td>
<td></td>
<td>85 = User vol./min</td>
</tr>
<tr>
<td>86 = User vol./h</td>
<td></td>
<td></td>
<td></td>
<td>86 = User vol./h</td>
</tr>
<tr>
<td>87 = User vol./d</td>
<td></td>
<td></td>
<td></td>
<td>87 = User vol./d</td>
</tr>
<tr>
<td>88 = kgal/s (us)</td>
<td></td>
<td></td>
<td></td>
<td>88 = kgal/s (us)</td>
</tr>
<tr>
<td>89 = kgal/min (us)</td>
<td></td>
<td></td>
<td></td>
<td>89 = kgal/min (us)</td>
</tr>
<tr>
<td>90 = kgal/h (us)</td>
<td></td>
<td></td>
<td></td>
<td>90 = kgal/h (us)</td>
</tr>
<tr>
<td>91 = kgal/d (us)</td>
<td></td>
<td></td>
<td></td>
<td>91 = kgal/d (us)</td>
</tr>
</tbody>
</table>

### Volume unit

<table>
<thead>
<tr>
<th>Volume unit</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = cm³</td>
<td>2104</td>
<td>Integer</td>
<td>Read / Write</td>
</tr>
<tr>
<td>1 = dm³</td>
<td></td>
<td></td>
<td>0 = cm³</td>
</tr>
<tr>
<td>2 = m³</td>
<td></td>
<td></td>
<td>1 = dm³</td>
</tr>
<tr>
<td>3 = ml</td>
<td></td>
<td></td>
<td>2 = m³</td>
</tr>
<tr>
<td>4 = l</td>
<td></td>
<td></td>
<td>3 = ml</td>
</tr>
<tr>
<td>5 = hl</td>
<td></td>
<td></td>
<td>4 = l</td>
</tr>
<tr>
<td>6 = Ml Mega</td>
<td></td>
<td></td>
<td>5 = hl</td>
</tr>
<tr>
<td>8 = ft³</td>
<td></td>
<td></td>
<td>6 = Ml Mega</td>
</tr>
<tr>
<td>9 = ft³</td>
<td></td>
<td></td>
<td>8 = ft³</td>
</tr>
<tr>
<td>10 = fl oz (us)</td>
<td></td>
<td></td>
<td>9 = ft³</td>
</tr>
<tr>
<td>11 = gal (us)</td>
<td></td>
<td></td>
<td>10 = fl oz (us)</td>
</tr>
<tr>
<td>12 = Mgal (us)</td>
<td></td>
<td></td>
<td>11 = gal (us)</td>
</tr>
<tr>
<td>13 = bbl (us;liq.)</td>
<td></td>
<td></td>
<td>12 = Mgal (us)</td>
</tr>
<tr>
<td>14 = bbl (us;beer)</td>
<td></td>
<td></td>
<td>13 = bbl (us;liq.)</td>
</tr>
<tr>
<td>15 = bbl (us;oil)</td>
<td></td>
<td></td>
<td>14 = bbl (us;beer)</td>
</tr>
<tr>
<td>16 = bbl (us;tank)</td>
<td></td>
<td></td>
<td>15 = bbl (us;oil)</td>
</tr>
<tr>
<td>17 = gal (imp)</td>
<td></td>
<td></td>
<td>16 = bbl (us;tank)</td>
</tr>
<tr>
<td>18 = Mgal (imp)</td>
<td></td>
<td></td>
<td>17 = gal (imp)</td>
</tr>
<tr>
<td>19 = bbl (imp;beer)</td>
<td></td>
<td></td>
<td>18 = Mgal (imp)</td>
</tr>
<tr>
<td>20 = bbl (imp;oil)</td>
<td></td>
<td></td>
<td>19 = bbl (imp;beer)</td>
</tr>
<tr>
<td>21 = User vol.</td>
<td></td>
<td></td>
<td>20 = bbl (imp;oil)</td>
</tr>
<tr>
<td>22 = kgal (us)</td>
<td></td>
<td></td>
<td>21 = User vol.</td>
</tr>
</tbody>
</table>

| 32          |          |           |          |
## Modbus RS485 Register Information

### Proline Cubemass 100 Modbus RS485

**Navigation:** Expert → Sensor → System units

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected volume flow unit</td>
<td>2105</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = NI/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = NI/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = NI/h (+)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = NI/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 = Nm³/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5 = Nm³/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 = Nm³/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 = Nm³/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 = Sm³/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9 = Sm³/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 = Sm³/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11 = Sm³/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12 = Sft³/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13 = Sft³/min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14 = Sft³/h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15 = Sft³/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 = Sgal/s (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17 = Sgal/min (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18 = Sgal/h (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19 = Sgal/d (us)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20 = Sbbl/s (us;liq.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21 = Sbbl/min (us;liq.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 = Sbbl/h (us;liq.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23 = Sbbl/d (us;liq.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24 = Sgal/s (imp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 = Sgal/min (imp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26 = Sgal/h (imp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27 = Sgal/d (imp)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28 = UserCrVol./s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29 = UserCrVol./min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30 = UserCrVol./h</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31 = UserCrVol./d</td>
</tr>
</tbody>
</table>

| Corrected volume unit      | 2106     | Integer   | Read / Write| 0 = NI (+)                                |
|                            |          |           |             | 1 = Nm³                                  |
|                            |          |           |             | 2 = Sm³                                  |
|                            |          |           |             | 3 = Sft³                                 |
|                            |          |           |             | 4 = SI                                   |
|                            |          |           |             | 5 = Sgal (us)                            |
|                            |          |           |             | 6 = Sbbl (us;liq.)                       |
|                            |          |           |             | 7 = Sgal (imp)                           |
|                            |          |           |             | 8 = UserCrVol.                           |

| Density unit               | 2107     | Integer   | Read / Write| 0 = g/cm³                                 |
|                            |          |           |             | 2 = kg/dm³                                |
|                            |          |           |             | 3 = kg/l (+)                              |
|                            |          |           |             | 4 = kg/m³                                 |
|                            |          |           |             | 5 = SD4°C                                 |
|                            |          |           |             | 6 = SD15°C                                |
|                            |          |           |             | 7 = SD20°C                                |
|                            |          |           |             | 8 = SG4°C                                 |
|                            |          |           |             | 9 = SG15°C                                |
|                            |          |           |             | 10 = SG20°C                               |
|                            |          |           |             | 11 = lb/ft³                               |
|                            |          |           |             | 12 = lb/gal (us)                          |
|                            |          |           |             | 13 = lb/bbl (us;liq.)                     |
|                            |          |           |             | 14 = lb/bbl (us;beer)                     |
|                            |          |           |             | 15 = lb/bbl (us;oil)                      |
|                            |          |           |             | 16 = lb/bbl (us;tank)                     |
|                            |          |           |             | 17 = lb/gal (imp)                         |
|                            |          |           |             | 18 = lb/bbl (imp;beer)                    |
|                            |          |           |             | 19 = lb/bbl (imp;oil)                     |
|                            |          |           |             | 20 = User dens.                           |
|                            |          |           |             | 21 = g/m³                                |
|                            |          |           |             | 22 = g/ml                                |
### Proline Cubemass 100 Modbus RS485

#### Modbus RS485 Register Information

**Navigation: Expert → Sensor → System units**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Reference density unit        | 2108     | Integer   | Read / Write | 0 = g/Scm³
1 = kg/NL
2 = kg/Nm²
3 = kg/Sm³
4 = lb/Sft³ |
| Temperature unit              | 2109     | Integer   | Read / Write | 0 = °C
1 = K
2 = °F
3 = °R |
| Pressure unit                 | 2130     | Integer   | Read / Write | 0 = bar
1 = psi a
2 = bar g
3 = psi g
4 = Pa a
5 = kPa a
6 = MPa a
7 = Pa g
8 = kPa g
9 = MPa g
10 = User pres. |
| Date/time format              | 2150     | Integer   | Read / Write | 0 = dd.mm.yy hh:mm
1 = mm/dd/yy hh:mm am/pm
2 = dd.mm.yy hh:mm am/pm
3 = mm/dd/yy hh:mm |

#### "User-specific units" submenu

**Navigation: Expert → Sensor → System units → User-specific units**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>User mass text</td>
<td>2531</td>
<td>String</td>
<td>Read / Write</td>
<td>Max. 10 characters such as letters, numbers or special characters (@, %, /)</td>
</tr>
<tr>
<td>User mass factor</td>
<td>2115</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User volume text</td>
<td>2542</td>
<td>String</td>
<td>Read / Write</td>
<td>Max. 10 characters such as letters, numbers or special characters (@, %, /)</td>
</tr>
<tr>
<td>User volume factor</td>
<td>2119</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User corrected volume text</td>
<td>2568</td>
<td>String</td>
<td>Read / Write</td>
<td>Max. 10 characters such as letters, numbers or special characters (@, %, /)</td>
</tr>
<tr>
<td>User corrected volume factor</td>
<td>2573</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User density text</td>
<td>2549</td>
<td>String</td>
<td>Read / Write</td>
<td>Max. 10 characters such as letters, numbers or special characters (@, %, /)</td>
</tr>
<tr>
<td>User density offset</td>
<td>2556</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User density factor</td>
<td>2123</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User pressure text</td>
<td>2559</td>
<td>String</td>
<td>Read / Write</td>
<td>Max. 10 characters such as letters, numbers or special characters (@, %, /)</td>
</tr>
<tr>
<td>User pressure offset</td>
<td>2566</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>User pressure factor</td>
<td>2564</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>
### "Process parameters" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow damping</td>
<td>5510</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 100.0 s</td>
</tr>
<tr>
<td>Density damping</td>
<td>5508</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 999.9 s</td>
</tr>
<tr>
<td>Temperature damping</td>
<td>5127</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 999.9 s</td>
</tr>
<tr>
<td>Flow override</td>
<td>5503</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = On</td>
</tr>
</tbody>
</table>

### "Low flow cut off" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign process variable</td>
<td>5101</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Mass flow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Volume flow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = Corrected volume flow</td>
</tr>
<tr>
<td>On value low flow cutoff</td>
<td>5138</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Off value low flow cutoff</td>
<td>5104</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 100.0 %</td>
</tr>
<tr>
<td>Pressure shock suppression</td>
<td>5140</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 100 s</td>
</tr>
</tbody>
</table>

### "Partially filled pipe detection" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign process variable</td>
<td>5106</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off</td>
</tr>
<tr>
<td>Low value partial filled pipe detection</td>
<td>5110</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>High value partial filled pipe detection</td>
<td>5112</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Response time part. filled pipe detect.</td>
<td>5108</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 100 s</td>
</tr>
<tr>
<td>Maximum damping partial filled pipe det.</td>
<td>2414</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
</tbody>
</table>
### "Measurement mode" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select medium</td>
<td>2442</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Liquid&lt;br&gt;1 = Gas</td>
</tr>
<tr>
<td>Select gas type</td>
<td>5229</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Air&lt;br&gt;1 = Nitrogen N2&lt;br&gt;2 = Argon Ar&lt;br&gt;3 = Helium He&lt;br&gt;4 = Carbon dioxide CO2&lt;br&gt;5 = Oxygen O2&lt;br&gt;6 = Methane CH4&lt;br&gt;7 = Ammonia NH3&lt;br&gt;9 = Hydrogen H2&lt;br&gt;10 = Ethane C2H6&lt;br&gt;11 = Propane C3H8&lt;br&gt;12 = Butane C4H10&lt;br&gt;13 = Chlorine Cl2&lt;br&gt;14 = Hydrogen chloride HCl&lt;br&gt;15 = Carbon monoxide CO&lt;br&gt;16 = Nitrous oxide N2O&lt;br&gt;17 = Nitrogen oxide NOx&lt;br&gt;18 = Hydrogen sulfide H2S&lt;br&gt;19 = Sulfur hexafluoride SF6&lt;br&gt;20 = Propylene C3H6&lt;br&gt;21 = Ozone O3&lt;br&gt;22 = Others&lt;br&gt;23 = Ethylene C2H4</td>
</tr>
<tr>
<td>Reference sound velocity</td>
<td>7413</td>
<td>Float</td>
<td>Read / Write</td>
<td>1 to 99999.9999 m/s</td>
</tr>
<tr>
<td>Temperature coefficient sound velocity</td>
<td>7411</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
</tbody>
</table>

### "External compensation" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure compensation</td>
<td>5184</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off&lt;br&gt;1 = Fixed value&lt;br&gt;2 = External value</td>
</tr>
<tr>
<td>Pressure value</td>
<td>5185</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>External pressure</td>
<td>2440</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Temperature mode</td>
<td>5515</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Internal measured value&lt;br&gt;1 = External value</td>
</tr>
<tr>
<td>External temperature</td>
<td>2507</td>
<td>Float</td>
<td>Read / Write</td>
<td>–273.15 to 99 999 °C</td>
</tr>
</tbody>
</table>

### "Calculated values" submenu

#### 'Corrected volume flow calculation' submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected volume flow calculation</td>
<td>5129</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Calculated reference density&lt;br&gt;1 = Fixed reference density&lt;br&gt;2 = External reference density&lt;br&gt;3 = Reference density by API table 53</td>
</tr>
<tr>
<td>External reference density</td>
<td>2509</td>
<td>Float</td>
<td>Read / Write</td>
<td>Floating point number with sign</td>
</tr>
</tbody>
</table>
### Modbus RS485 Register Information

**Proline Cubemass 100 Modbus RS485**

#### Navigation: Expert → Sensor → Calculated values → Corrected volume flow calculation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed reference density</td>
<td>5130</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Reference temperature</td>
<td>5136</td>
<td>Float</td>
<td>Read / Write</td>
<td>-273.15 to 99999 °C</td>
</tr>
<tr>
<td>Linear expansion coefficient</td>
<td>5132</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Square expansion coefficient</td>
<td>5134</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

#### "Sensor adjustment" submenu

**Navigation: Expert → Sensor → Sensor adjustment**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation direction</td>
<td>5501</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Flow in arrow direction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Flow against arrow direction</td>
</tr>
</tbody>
</table>

#### "Zero point adjustment" submenu

**Navigation: Expert → Sensor → Sensor adjustment → Zero point adjustment**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero point adjustment control</td>
<td>5121</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Cancel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = Start</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = Zero point adjust failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 = Busy</td>
</tr>
<tr>
<td>Progress</td>
<td>6797</td>
<td>Integer</td>
<td>Read</td>
<td>0 to 100 %</td>
</tr>
</tbody>
</table>

#### "Process variable adjustment" submenu

**Navigation: Expert → Sensor → Sensor adjustment → Process variable adjustment**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass flow offset</td>
<td>5521</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Mass flow factor</td>
<td>5519</td>
<td>Float</td>
<td>Read / Write</td>
<td>Positive floating-point number</td>
</tr>
<tr>
<td>Volume flow offset</td>
<td>5525</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Volume flow factor</td>
<td>5523</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Density offset</td>
<td>5529</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Density factor</td>
<td>5527</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Corrected volume flow offset</td>
<td>2044</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Corrected volume flow factor</td>
<td>2076</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Reference density offset</td>
<td>2046</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Reference density factor</td>
<td>2042</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Temperature offset</td>
<td>5533</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Temperature factor</td>
<td>5531</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

#### "Calibration" submenu

**Navigation: Expert → Sensor → Calibration**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration factor</td>
<td>7513</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Zero point</td>
<td>7527</td>
<td>Float</td>
<td>Read / Write</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Parameter</td>
<td>Register</td>
<td>Data type</td>
<td>Access</td>
<td>Selection / User entry / User interface</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>---------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Nominal diameter</td>
<td>2048</td>
<td>String</td>
<td>Read</td>
<td>DNxx / x&quot;</td>
</tr>
<tr>
<td>C0 to 5</td>
<td>0: 7501</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td></td>
<td>1: 7503</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: 7505</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: 7507</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: 7509</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5: 7511</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

"Testpoints" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oscillation frequency 0</td>
<td>0: 9501</td>
<td>Float</td>
<td>Read</td>
<td>Positive floating point number</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>1: 9503</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency fluctuation 0</td>
<td>0: 2498</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>1: 2500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillation amplitude 0</td>
<td>0: 2449</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>1: 2451</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscillation damping 0</td>
<td>0: 9505</td>
<td>Float</td>
<td>Read</td>
<td>Positive floating-point number</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>1: 9507</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube damping fluctuation 0</td>
<td>0: 2502</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>1: 2504</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal asymmetry</td>
<td>2443</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>66</td>
</tr>
<tr>
<td>Electronic temperature</td>
<td>2457</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>67</td>
</tr>
<tr>
<td>Carrier pipe temperature</td>
<td>9513</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>67</td>
</tr>
<tr>
<td>Exciter current 0</td>
<td>0: 9509</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>1: 9511</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RawMassFlow</td>
<td>10232</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
<td>68</td>
</tr>
</tbody>
</table>

6.3.3 "Communication" submenu

"Modbus configuration" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus address</td>
<td>4910</td>
<td>Integer</td>
<td>Read / Write</td>
<td>1 to 247</td>
<td>70</td>
</tr>
</tbody>
</table>
| Baudrate                | 4912     | Integer   | Read / Write | 0 = 1200 BAUD  
1 = 2400 BAUD  
2 = 4800 BAUD  
3 = 9600 BAUD  
4 = 19200 BAUD  
5 = 38400 BAUD  
6 = 57600 BAUD  
7 = 115200 BAUD | 70|
| Data transfer mode      | 4913     | Integer   | Read / Write | 0 = RTU  
1 = ASCII | 70|
| Parity                  | 4914     | Integer   | Read / Write | 0 = Even  
1 = Odd  
2 = None / 2 stop bits  
3 = None / 1 stop bit | 71|
### Modbus RS485 Register Information

#### Proline Cubemass 100 Modbus RS485

**Navigation: Expert → Communication → Modbus configuration**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byte order</td>
<td>4915</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = 0-1-2-3; 1 = 3-2-1-0; 2 = 2-3-0-1; 3 = 1-0-3-2</td>
</tr>
<tr>
<td>Telegram delay</td>
<td>4916</td>
<td>Float</td>
<td>Read / Write</td>
<td>0 to 100 ms</td>
</tr>
<tr>
<td>Assign diagnostic behavior</td>
<td>4921</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off; 1 = Warning; 2 = Alarm; 3 = Alarm or warning</td>
</tr>
<tr>
<td>Failure mode</td>
<td>4920</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = NaN value; 1 = Last valid value</td>
</tr>
<tr>
<td>Interpreter mode</td>
<td>4925</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Standard; 1 = Ignore surplus bytes</td>
</tr>
</tbody>
</table>

#### "Modbus information" submenu

**Navigation: Expert → Communication → Modbus information**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device ID</td>
<td>2547</td>
<td>Integer</td>
<td>Read</td>
<td>4-digit hexadecimal number</td>
</tr>
<tr>
<td>Device revision</td>
<td>4481</td>
<td>Integer</td>
<td>Read</td>
<td>4-digit hexadecimal number</td>
</tr>
</tbody>
</table>

#### "Modbus data map" submenu

**Navigation: Expert → Communication → Modbus data map**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>

#### 6.3.4 "Application" submenu

**Navigation: Expert → Application**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset all totalizers</td>
<td>2609</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Cancel; 1 = Reset + totalize</td>
</tr>
</tbody>
</table>
"Totalizer 1 to 3" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
<th>→</th>
<th></th>
</tr>
</thead>
</table>
| Assign process variable          | 1: 2601  2: 2801  3: 3001 | Integer   | Read / Write    | 0 = Off  
1 = Mass flow  
2 = Volume flow  
3 = Corrected volume flow  
13 = Target mass flow  
14 = Carrier mass flow |
| Mass unit                         | 1: 2602  2: 2802  3: 3002 | Integer   | Read / Write    | 0 = g  
1 = kg (+)  
2 = t  
3 = oz  
4 = lb  
5 = STon  
6 = User mass |
| Volume unit                       | 1: 2603  2: 2803  3: 3003 | Integer   | Read / Write    | 0 = cm³  
1 = dm³  
2 = m³  
3 = ml  
4 = l (+)  
5 = hl  
6 = Ml Mega  
8 = af  
9 = ft³  
10 = ft oz (us)  
11 = gal (us)  
12 = Mgal (us)  
13 = bbl (us;liq.)  
14 = bbl (us;beer)  
15 = bbl (us;oil)  
16 = bbl (us;tank)  
17 = gal (imp)  
18 = Mgal (imp)  
19 = bbl (imp;beer)  
20 = bbl (imp;oil)  
21 = User vol.  
22 = kgal (us) |
| Corrected volume unit             | 1: 2604  2: 2804  3: 3004 | Integer   | Read / Write    | 0 = Nl (+)  
1 =Nm³  
2 = Sm³  
3 = Sh³  
4 = SL  
5 = Sgal (us)  
6 = Sbbl (us;liq.)  
7 = Sgal (imp)  
8 = UserCrVol. |
| Totalizer operation mode          | 1: 2605  2: 2805  3: 3005 | Integer   | Read / Write    | 0 = Net flow total  
1 = Forward flow total  
2 = Reverse flow total |
| Control Totalizer 1 to 3          | 1: 2608  2: 2808  3: 3008 | Integer   | Read / Write    | 0 = Totalize  
1 = Reset + totalize  
2 = Preset + hold  
3 = Reset + hold  
4 = Preset + totalize |
| Preset value 1 to 3               | 1: 2590  2: 2592  3: 2594 | Float     | Read / Write    | Signed floating-point number |
| Failure mode                      | 1: 2606  2: 2806  3: 3006 | Integer   | Read / Write    | 0 = Stop  
1 = Actual value  
2 = Last valid value |

* Visibility depends on order options or device settings
### 6.3.5 "Diagnostics" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual diagnostics</td>
<td>2732</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 82</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2719</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 82</td>
</tr>
<tr>
<td>Previous diagnostics</td>
<td>2734</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 83</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2068</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 83</td>
</tr>
<tr>
<td>Operating time from restart</td>
<td>2624</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 83</td>
</tr>
<tr>
<td>Operating time</td>
<td>2631</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 84</td>
</tr>
</tbody>
</table>

### "Diagnostic list" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostics 1</td>
<td>2736</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 84</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2710</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 85</td>
</tr>
<tr>
<td>Diagnostics 2</td>
<td>2738</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 85</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2701</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 85</td>
</tr>
<tr>
<td>Diagnostics 3</td>
<td>2740</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 86</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2692</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 86</td>
</tr>
<tr>
<td>Diagnostics 4</td>
<td>2742</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 86</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2683</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 87</td>
</tr>
<tr>
<td>Diagnostics 5</td>
<td>2744</td>
<td>Integer</td>
<td>Read</td>
<td>Symbol for diagnostic behavior, diagnostic code and short message. 87</td>
</tr>
<tr>
<td>Timestamp</td>
<td>2675</td>
<td>Integer</td>
<td>Read</td>
<td>Days (d), hours (h), minutes (m) and seconds (s) 87</td>
</tr>
</tbody>
</table>

### "Event logbook" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter options</td>
<td>2639</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Failure (F) 88</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 = Maintenance required (M)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 = Function check (C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12 = Out of specification (S)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 = Information (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>255 = All</td>
</tr>
</tbody>
</table>

128
### "Device information" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device tag</td>
<td>2026</td>
<td>String</td>
<td>Read</td>
<td>Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).</td>
</tr>
<tr>
<td>Serial number</td>
<td>7003</td>
<td>String</td>
<td>Read</td>
<td>A maximum of 11-digit character string comprising letters and numbers.</td>
</tr>
<tr>
<td>Firmware version</td>
<td>7277</td>
<td>String</td>
<td>Read</td>
<td>Character string in the format xx.yy.zz</td>
</tr>
<tr>
<td>Device name</td>
<td>7263</td>
<td>String</td>
<td>Read</td>
<td>Max. 32 characters such as letters or numbers.</td>
</tr>
<tr>
<td>Order code</td>
<td>2058</td>
<td>String</td>
<td>Read</td>
<td>Character string composed of letters, numbers and certain punctuation marks (e.g. /).</td>
</tr>
<tr>
<td>Extended order code 1</td>
<td>2212</td>
<td>String</td>
<td>Read</td>
<td>Character string</td>
</tr>
<tr>
<td>Extended order code 2</td>
<td>2222</td>
<td>String</td>
<td>Read</td>
<td>Character string</td>
</tr>
<tr>
<td>Extended order code 3</td>
<td>2232</td>
<td>String</td>
<td>Read</td>
<td>Character string</td>
</tr>
<tr>
<td>ENP version</td>
<td>4003</td>
<td>String</td>
<td>Read</td>
<td>Character string</td>
</tr>
<tr>
<td>Configuration counter</td>
<td>3100</td>
<td>Integer</td>
<td>Read</td>
<td>0 to 65535</td>
</tr>
</tbody>
</table>

### "Min/max values" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
</table>
| Reset min/max values    | 2525     | Integer   | Read / Write | 0 = Cancel  
8 = Oscillation amplitude  
10 = Oscillation damping  
12 = Oscillation frequency  
13 = Signal asymmetry | 93 |

### "Electronic temperature" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>2421</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>2419</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

### "Medium temperature" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>7529</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>7531</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>
### "Carrier pipe temperature" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>7533</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>7535</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

### "Oscillation frequency" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>2459</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>2468</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

### "Oscillation amplitude" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>2472</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>2470</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

### "Oscillation damping" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>2478</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>2423</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>

### "Signal asymmetry" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
<td>2474</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
<tr>
<td>Maximum value</td>
<td>2476</td>
<td>Float</td>
<td>Read</td>
<td>Signed floating-point number</td>
</tr>
</tbody>
</table>
### "Simulation" submenu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Register</th>
<th>Data type</th>
<th>Access</th>
<th>Selection / User entry / User interface</th>
<th>→</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign simulation process variable</td>
<td>6813</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off&lt;br&gt;1 = Mass flow&lt;br&gt;2 = Volume flow&lt;br&gt;3 = Corrected volume flow&lt;br&gt;4 = Density&lt;br&gt;5 = Reference density&lt;br&gt;7 = Temperature&lt;br&gt;13 = Target mass flow&lt;sup&gt;<em>&lt;/sup&gt;&lt;br&gt;14 = Carrier mass flow&lt;sup&gt;</em>&lt;/sup&gt;&lt;br&gt;15 = Concentration&lt;sup&gt;*&lt;/sup&gt;</td>
<td>99</td>
</tr>
<tr>
<td>Value process variable</td>
<td>6814</td>
<td>Float</td>
<td>Read / Write</td>
<td>Depends on the process variable selected</td>
<td>100</td>
</tr>
<tr>
<td>Simulation device alarm</td>
<td>6812</td>
<td>Integer</td>
<td>Read / Write</td>
<td>0 = Off&lt;br&gt;1 = On</td>
<td>100</td>
</tr>
</tbody>
</table>

* Visibility depends on order options or device settings
# Index

| A | Density (Parameter) .................................. 23 |
|   | Density damping (Parameter) .......................... 42 |
|   | Density factor (Parameter) ........................... 60 |
|   | Density offset (Parameter) ......................... 60 |
|   | Density unit (Parameter) .................... 34, 74, 79 |
|   | Device ID (Parameter) ............................... 74 |
|   | Device information (Submenu) ...................... 89 |
|   | Device name (Parameter) ............................. 90 |
|   | Device revision (Parameter) ......................... 19 |
|   | Device tag (Parameter) ................................ 21, 89 |
|   | Diagnostic behavior (Submenu) ...................... 12 |
|   | Diagnostic handling (Submenu) ...................... 11 |
|   | Diagnostic list (Submenu) .......................... 84 |
|   | Diagnostics (Submenu) ................................ 81 |
|   | Diagnostics 1 (Parameter) ........................... 84 |
|   | Diagnostics 2 (Parameter) ........................... 85 |
|   | Diagnostics 3 (Parameter) ........................... 86 |
|   | Diagnostics 4 (Parameter) ........................... 86 |
|   | Diagnostics 5 (Parameter) ........................... 87 |
|   | Direct access ........................................ 10 |
|   | Access status tooling ................................ 10 |
|   | Activate SW option .................................... 20 |
|   | Actual diagnostics ................................... 82 |
|   | Alarm delay ............................................ 11 |
|   | Assign behavior of diagnostic no. 046 .............. 13 |
|   | Assign behavior of diagnostic no. 140 .............. 13 |
|   | Assign behavior of diagnostic no. 144 .............. 14 |
|   | Assign behavior of diagnostic no. 192 .............. 17 |
|   | Assign behavior of diagnostic no. 274 .............. 17 |
|   | Assign behavior of diagnostic no. 392 .............. 18 |
|   | Assign behavior of diagnostic no. 592 .............. 18 |
|   | Assign behavior of diagnostic no. 832 .............. 14 |
|   | Assign behavior of diagnostic no. 833 .............. 14 |
|   | Assign behavior of diagnostic no. 834 .............. 15 |
|   | Assign behavior of diagnostic no. 835 .............. 15 |
|   | Assign behavior of diagnostic no. 912 .............. 15 |
|   | Assign behavior of diagnostic no. 913 .............. 16 |
|   | Assign behavior of diagnostic no. 944 .............. 16 |
|   | Assign behavior of diagnostic no. 948 .............. 17 |
|   | Assign behavior of diagnostic no. 992 .............. 18 |
|   | Assign diagnostic behavior .......................... 72 |
|   | Assign process variable ................................ 44, 47, 76 |
|   | Assign simulation process variable .................. 99 |
| B | Baudrate (Parameter) .................................. 70 |
|   | Bus address (Parameter) .............................. 70 |
|   | Byte order (Parameter) ............................... 71 |
| C | C0 to 5 (Parameter) ................................... 63 |
|   | Calculated values (Submenu) ......................... 53 |
|   | Calibration (Submenu) ................................. 62 |
|   | Calibration factor (Parameter) ....................... 63 |
|   | Carrier mass flow (Parameter) ....................... 26 |
|   | Carrier pipe temperature (Parameter) ............... 67 |
|   | Carrier pipe temperature (Submenu) ................. 95 |
|   | Communication (Submenu) ................................ 69 |
|   | Concentration (Parameter) ............................ 25 |
|   | Concentration (Submenu) .............................. 81 |
|   | Configuration counter (Parameter) .................... 92 |
|   | Control Totalizer 1 to 3 (Parameter) ............... 79 |
|   | Corrected volume flow (Parameter) ................... 24 |
|   | Corrected volume flow calculation (Parameter) ....... 54 |
|   | Corrected volume flow calculation (Submenu) ......... 53 |
|   | Corrected volume flow factor (Parameter) .......... 61 |
|   | Corrected volume flow offset (Parameter) ........... 60 |
|   | Corrected volume flow unit (Parameter) ............. 32 |
|   | Corrected volume unit (Parameter) ................... 33, 78 |
| D | Data transfer mode (Parameter) ...................... 70 |
|   | Date/time format (Parameter) ......................... 36 |
Corrected volume flow calculation .... 54
Corrected volume flow factor .... 61
Corrected volume flow offset .... 60
Corrected volume flow unit .... 32
Corrected volume unit .... 33
  Totalizer 1 to 3 .... 78
Data transfer mode .... 70
Date/time format .... 36
Density .... 23
Density damping .... 42
Density factor .... 60
Density offset .... 60
Density unit .... 34
Device ID .... 74
Device name .... 90
Device reset .... 19
Device revision .... 74
Device tag .... 21, 89
Diagnoses 1 .... 84
Diagnoses 2 .... 85
Diagnoses 3 .... 86
Diagnoses 4 .... 86
Diagnoses 5 .... 87
Electronic temperature .... 67
ENP version .... 92
Enter access code .... 10
Exciter current 0 .... 68
Extended order code 1 .... 91
Extended order code 2 .... 91
Extended order code 3 .... 91
External pressure .... 52
External reference density .... 54
External temperature .... 53
Failure mode .... 72
  Totalizer 1 to 3 .... 80
Filter options .... 88
Firmware version .... 90
Fixed reference density .... 54
Flow damping .... 42
Flow override .... 43
Frequency fluctuation 0 .... 65
High value partial filled pipe detection .... 48
Installation direction .... 56
Interpreter mode .... 73
Limit value measuring tube damping .... 69
Linear expansion coefficient .... 55
Locking status .... 9
Low value partial filled pipe detection .... 47
Mass flow .... 23
Mass flow factor .... 59
Mass flow offset .... 58
Mass flow unit .... 29
Mass unit .... 29
  Totalizer 1 to 3 .... 77
Maximum damping partial filled pipe det. .... 49
Maximum value .... 94, 95, 96, 97, 98
Minimum value .... 93, 94, 95, 96, 97, 98
Nominal diameter .... 63
Off value low flow cutoff .... 45
On value low flow cutoff .... 44
Operating time .... 84
Operating time from restart .... 83
Order code .... 90
Oscillation amplitude 0 .... 65
Oscillation damping 0 .... 65
Oscillation frequency 0 .... 64
Parity .... 71
Permanent storage .... 21
Preset value 1 to 3 .... 80
Pressure compensation .... 52
Pressure shock suppression .... 45
Pressure unit .... 36
Pressure value .... 25, 52
Previous diagnostics .... 83
Progress .... 57
RawMassFlow .... 68
Reference density .... 24
Reference density factor .... 61
Reference density offset .... 61
Reference density unit .... 35
Reference sound velocity .... 51
Reference temperature .... 55
Reset all totalizers .... 75
Reset min/max values .... 93
Response time part. filled pipe detect. .... 48
Scan list register 0 to 15 .... 74
Select gas type .... 50
Select medium .... 50
Serial number .... 89
Signal asymmetry .... 66
Simulation device alarm .... 100
Software option overview .... 20
Square expansion coefficient .... 56
Target mass flow .... 25
Telegram delay .... 72
Temperature .... 24
Temperature coefficient sound velocity .... 51
Temperature damping .... 43
Temperature factor .... 62
Temperature mode .... 53
Temperature offset .... 62
Temperature unit .... 35
Timestamp .... 82, 83, 85, 86, 87
Totalizer operation mode
  Totalizer 1 to 3 .... 78
Totalizer overflow 1 to 3 .... 27
Totalizer value 1 to 3 .... 26
Tube damping fluctuation 0 .... 66
User corrected volume factor .... 40
User corrected volume text .... 39
User density factor .... 40
User density offset .... 40
User density text .... 40
User mass factor .... 38
User mass text .... 37
User pressure factor .... 41
User pressure offset .... 41
User pressure text .... 41

Endress+Hauser

133

Index
| Reference density offset (Parameter) | 61 |
| Reference density unit (Parameter) | 35 |
| Reference sound velocity (Parameter) | 51 |
| Reference temperature (Parameter) | 55 |
| Reset all totalizers (Parameter) | 75 |
| Reset min/max values (Parameter) | 93 |
| Response time part. filled pipe detect. (Parameter) | 48 |
| Scan list register 0 to 15 (Parameter) | 74 |
| Select gas type (Parameter) | 50 |
| Select medium (Parameter) | 50 |
| Sensor (Submenu) | 22 |
| Sensor adjustment (Submenu) | 56 |
| Serial number (Parameter) | 89 |
| Signal asymmetry (Parameter) | 66 |
| Signal asymmetry (Submenu) | 98 |
| Simulation (Submenu) | 99 |
| Simulation device alarm (Parameter) | 100 |
| Software option overview (Parameter) | 20 |
| Square expansion coefficient (Parameter) | 56 |

**S**

| Scan list register 0 to 15 (Parameter) | 74 |
| Select gas type (Parameter) | 50 |
| Select medium (Parameter) | 50 |
| Sensor (Submenu) | 22 |
| Sensor adjustment (Submenu) | 56 |
| Serial number (Parameter) | 89 |
| Signal asymmetry (Parameter) | 66 |
| Signal asymmetry (Submenu) | 98 |
| Simulation (Submenu) | 99 |
| Simulation device alarm (Parameter) | 100 |
| Software option overview (Parameter) | 20 |
| Square expansion coefficient (Parameter) | 56 |

**Administration** | 19
**Application** | 75
**Calculated values** | 53
**Calibration** | 62
**Carrier pipe temperature** | 95
**Communication** | 69
**Concentration** | 81
**Corrected volume flow calculation** | 53
**Device information** | 89
**Diagnostic behavior** | 12
**Diagnostic handling** | 11
**Diagnostics** | 81
**Electronic temperature** | 93
**Event logbook** | 88
**External compensation** | 51
**Heartbeat** | 98
**Low flow cut off** | 44
**Measured values** | 22
**Measurement mode** | 49
**Medium temperature** | 94
**Min/max values** | 92
**Modbus configuration** | 69
**Modbus data map** | 74
**Modbus information** | 73
**Oscillation amplitude** | 96
**Oscillation damping** | 97
**Oscillation frequency** | 96
**Partially filled pipe detection** | 47
**Process parameters** | 42
**Process variable adjustment** | 58
**Process variables** | 22
**Sensor** | 22
**Sensor adjustment** | 56
**Signal asymmetry** | 98
**Simulation** | 99
**Supervision** | 68

**System** | 11
**System units** | 28
**Testpoints** | 64
**Totalizer** | 26
**Totalizer 1 to 3** | 76
**User-specific units** | 37
**Zero point adjustment** | 57
**Supervision (Submenu)** | 68
**System (Submenu)** | 11
**System units (Submenu)** | 28

**T**

| Target group | 4 |
| Target mass flow (Parameter) | 25 |
| Telegram delay (Parameter) | 72 |
| Temperature (Parameter) | 24 |
| Temperature coefficient sound velocity (Parameter) | 51 |
| Temperature damping (Parameter) | 43 |
| Temperature factor (Parameter) | 62 |
| Temperature mode (Parameter) | 53 |
| Temperature offset (Parameter) | 62 |
| Temperature unit (Parameter) | 35 |
| Testpoints (Submenu) | 64 |
| Timestamp (Parameter) | 82, 83, 85, 86, 87 |
| Totalizer (Submenu) | 26 |
| Totalizer 1 to 3 (Submenu) | 76 |
| Totalizer operation mode (Parameter) | 78 |
| Totalizer overflow 1 to 3 (Parameter) | 27 |
| Totalizer value 1 to 3 (Parameter) | 26 |
| Tube damping fluctuation 0 (Parameter) | 66 |

**U**

| User corrected volume factor (Parameter) | 40 |
| User corrected volume text (Parameter) | 39 |
| User density factor (Parameter) | 40 |
| User density offset (Parameter) | 40 |
| User density text (Parameter) | 40 |
| User mass factor (Parameter) | 38 |
| User mass text (Parameter) | 37 |
| User pressure factor (Parameter) | 41 |
| User pressure offset (Parameter) | 41 |
| User pressure text (Parameter) | 41 |
| User volume factor (Parameter) | 39 |
| User volume text (Parameter) | 38 |
| User-specific units (Submenu) | 37 |

**V**

| Value process variable (Parameter) | 100 |
| Volume flow (Parameter) | 23 |
| Volume flow factor (Parameter) | 59 |
| Volume flow offset (Parameter) | 59 |
| Volume flow unit (Parameter) | 30 |
| Volume unit (Parameter) | 32, 77 |

**Z**

| Zero point (Parameter) | 63 |
| Zero point adjustment (Submenu) | 57 |
| Zero point adjustment control (Parameter) | 57 |