Proline Promag 500 EtherNet/IP

Electromagnetic flowmeter







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1 About this document

1.1 Document function

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

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

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

1.2 Target group

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

1.3 Using this document

1.3.1 Information on the document structure

The document lists the submenus and their parameters according to the structure from the **Expert** menu ($\rightarrow \textcircled{B}$ 8), which is displayed when the **"Maintenance" user role** is enabled.



■ 1 Sample graphic for the schematic layout of the operating menu

A0023100 EN

Ad

Additional information regarding:

- - Operating concept of the operating menus: Operating Instructions \rightarrow \bigcirc 7

1.3.2 Structure of a parameter description

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

Complete parameter name	V	Nrite-protected parameter = 🕅
Navigation	 Navigation path to the parameter via the local display (direct access code) Navigation path to the parameter via the operating tool The names of the menus, submenus and parameters are abbreviated to the the display and in the operating tool. 	or web browser e form in which they appear on
Prerequisite	The parameter is only available under these specific conditions	
Description	Description of the parameter function	
Selection	List of the individual options for the parameterOption 1Option 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

Symbol	Meaning
i	Tip Indicates additional information.
Ĩ	Reference to documentation
	Reference to page
	Reference to graphic
	Operation via local display
	Operation via operating tool
	Write-protected parameter

1.4.2 Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3	Item numbers	A, B, C,	Views
A-A, B-B, C-C,	Sections		

1.5 Documentation

1.5.1 Standard documentation

Operating Instructions

Measuring device	Documentation code
Promag H 500	BA01720D
Promag P 500	BA01721D
Promag W 500	BA01722D

1.5.2 Supplementary device-dependent documentation

Special Documentation

Contents	Documentation code
Information on the Pressure Equipment Directive	SD01614D
Radio approvals for WLAN interface for A309/A310 display module	SD01793D

Contents	Documentation code		
Heartbeat Technology	SD01981D		
Web server	SD01978D		

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			
Di	irect access (0106)		→ 🗎 11
Lc	ocking status (0004	÷)	→ 🗎 12
A	ccess status (0005)		→ 🗎 13
Er	nt. access code (000	03)	→ 🗎 13
Þ	System		→ 🗎 13
		► Display] → 🗎 14
	[► Config. backup] → 🗎 28
	[► Diagn. handling] → 🗎 31
		► Administration) → 🗎 39
►	Sensor		→ 🗎 43
		► Measured val.] → 🗎 44
		► System units] → 🗎 54
		► Process param.) → 🗎 69
		► External comp.] → 🗎 82
		► Sensor adjustm.] → 🗎 87
		► Calibration] → 🗎 94
►	I/O config.		→ 🗎 95
		I/O 1 to n terminals (3902–1 to n)) → 🗎 96
		I/O 1 to n info (3906–1 to n)) → 🗎 96
		I/O 1 to n type (3901–1 to n)	→ 🗎 97

Apply I	/O config (3907)	→ [97
Alterat	ion code (2762)	→ 🖺	€ 97
► Input		→ [€ 98
► Curr	ent input 1 to n	→ [€ 98
► Statu	is input 1 to n	→ 🖺	101
► Output		→ [103
► Curr	output 1 to n	> [103
► PFS (output 1 to n	→ 🖺	117
► Rela	y output 1 to n	→ 🖺	1 37
► Communication	-	> ₫	144
► Conf	iguration	> ₫	144
► WLA	N settings	> ₫	1 55
► Application	-	> ₫	161
Reset a	ll tot. (2806)	→ [161
► Tota	lizer 1 to n	→ [162
► Diagnostics	-	→ 🖺	166
Actual	diagnos. (0691) -	→ [167
Prev.dia	agnostics (0690)	→ [1 68
Time fr	. restart (0653)	→ [169
Operati	ng time (0652)	→ [169
► Diag	nostic list	→ 🖺	169
► Even	t logbook –	> ₫	173
► Devi	ce info	→ [176
► Mair	a elec.+I/O1	→ [1 79
► Sens	. electronic	> ₫	180



3 Description of device parameters

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

∓ Expert	
Direct access (0106)] → 🗎 11
Locking status (0004)] → 🗎 12
Access status (0005)] → 🗎 13
Ent. access code (0003)] → 🗎 13
► System) → 🗎 13
► Sensor	→ 🗎 43
► I/O config.	 → ≌ 95
► Input) → 🗎 98
► Output	→ 🗎 103
► Communication	→ 🗎 144
► Application	→ 🗎 161
► Diagnostics	→ 🗎 166

Direct access	
Navigation	Expert \rightarrow Direct access (0106)
Description	Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.
User entry	0 to 65 535
Additional information	User entry
	The direct access code consists of a 5-digit number (at maximum) and the channel number, which identifies the channel of a process variable: e.g. 00914-2. In the navigatior view, this appears on the right-hand side in the header of the selected parameter.



1 Direct access code

Note the following when entering the direct access code:

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

Example: Enter $00914\text{-}2 \rightarrow Assign \ variable$ parameter

Locking status

Navigation	Image: Barbon Expert → Locking status (0004)
Description	Displays the active write protection.
User interface	Hardware lockedTemp. locked

Additional information

User interface

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

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

Selection

Options	Description
None	The access status displayed in the Access status parameter ($\Rightarrow \square$ 13) applies . Only appears on local display.
Hardware locked (priority 1)	The DIP switch for hardware locking is activated on the PCB board. This locks write access to the parameters (e.g. via local display or operating tool) .
Temp. locked	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		
Navigation	■ Expert \rightarrow Access status (0005)	
Description	Displays the access authorization to the parameters via the local display, Web browser or operating tool.	
User interface	OperatorMaintenance	
Factory setting	Maintenance	
Additional information	 Description Access authorization can be modified via the Ent. access code parameter (→ 13). If additional write protection is active, this restricts the current access authorization even further. Display Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations 	

Ent. access code	
Navigation	■ Expert \rightarrow Ent. access code (0003)
Description	Use this function to enter the user-specific release code to remove parameter write protection.
User entry	0 to 9 999

3.1 "System" submenu



► System	
► Display) → 🗎 14
► Config. backup] → 🗎 28
► Diagn. handling] → 🗎 31
► Administration) → 🗎 39

3.1.1 "Display" submenu

```
Navigation
```

► Display	
Display language (0104)	→ 🗎 15
Format display (0098)	→ 🖺 15
Value 1 display (0107)	→ 🗎 18
0% bargraph 1 (0123)	→ 🖺 18
100% bargraph 1 (0125)	→ 🖺 19
Decimal places 1 (0095)	→ 🖺 19
Value 2 display (0108)	→ 🖺 20
Decimal places 2 (0117)	→ 🖺 20
Value 3 display (0110)	→ 🖺 21
0% bargraph 3 (0124)	→ 🗎 22
100% bargraph 3 (0126)	→ 🖺 22
Decimal places 3 (0118)	→ 🖺 23
Value 4 display (0109)	→ 🖺 23
Decimal places 4 (0119)	→ 🖺 24
Display interval (0096)	→ 🖺 24
Display damping (0094)	→ 🖺 25
Header (0097)	→ 🖺 25
Header text (0112)	→ 🖺 26
Separator (0101)	→ 🖺 27
Contrast display (0105)	→ 🖺 27
Backlight (0111)	→ 🗎 27

Display language Navigation 8 8 Expert \rightarrow System \rightarrow Display \rightarrow Display language (0104) Prerequisite A local display is provided. Description Use this function to select the configured language on the local display. Selection English Deutsch * Français^{*} Español 2 Italiano Nederlands² Portuguesa Polski русский язык(Ru) * Svenska Türkçe ■ 中文 (Chinese) * ■ 日本語 (Japanese)* ■ 한국어 (Korean) * (Ara) الْعَرَبِيَّة Bahasa Indonesia * ภาษาไทย (Thai) * tiếng Việt (Vit) * • čeština (Czech) * **Factory setting** English (alternatively, the ordered language is preset in the device)

Format display	
Navigation	Image: Barbon System → Display → Format display (0098)
Prerequisite	A local display is provided.
Description	Use this function to select how the measured value is shown on the local display.
Selection	 1 value, max. Bargr. + 1 value 2 values Val. large+2val. 4 values
Factory setting	1 value, max.

^{*} Visibility depends on order options or device settings

Description

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

- The Value 1 display parameter (→ ≅ 18) to Value 4 display parameter (→ ≅ 23) are used to specify which measured values are shown on the local display and in what order.

Possible measured values shown on the local display:

"1 value, max." option



"Bargr. + 1 value" option

前①	XXX	xxxxxx
900.00 kg/h 山田 900.00	m 🖯	
山田 900 00 1		900.00 kg/h
	00	900.00
l/h		l/h

"2 values" option

XXXXXXX	XX
тO	900.00 kg/h
ÚÐ	900.00 I/h

"Val. large+2val." option

XX	(XXXXXX	
ம் 00 ுற்று ப	900.00 kg/h 900.00 l/h 1.00 kg/l	
		A001310

"4 values" option

XXXXXX	XXX
ή () (1) (2) (1) (2) (1)	900.00 kg/h 900.00 l/h 1.0 kg/l 213.94 kg

A0013103

A0013098

A0013100

Value 1 display	
Navigation	Image: Barbon System → Display → Value 1 display (0107)
Prerequisite	A local display is provided.
Description	Use this function to select one of the measured values to be shown on the local display.
Selection	 Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity Conductivity CorrConductivity Totalizer 1 Totalizer 2 Totalizer 3 Curr.output 1 Curr.output 1 Curr.output 2 Curr.output 3 Curr.output 4 Temperature Electronic temp.
Factory setting	Volume flow
Additional information	 Description If several measured values are displayed at once, the measured value selected here will be the first value to be displayed. The value is only displayed during normal operation. Image: The Format display parameter (→ 🗎 15) is used to specify how many measured values are displayed simultaneously and how. Dependency The unit of the displayed measured value is taken from the System units submenu (→ 🖺 54).

0% bargraph 1		
Navigation	■ Expert → System → Display → 0% bargraph 1 (0123)	
Prerequisite	A local display is provided.	
Description	Use this function to enter the 0% bar graph value to be shown on the display for the measured value 1.	
User entry	Signed floating-point number	

^{*} Visibility depends on order options or device settings

Factory setting

Country-specific:	
■ 0 l/h	

0 gal/min (us)

Additional information



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

User entry

Description



The unit of the displayed measured value is taken from the **System units** submenu $(\rightarrow \cong 54)$.

	æ
■ Expert → System → Display → 100% bargraph 1 (0125)	
A local display is provided.	
Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1.	ġ
Signed floating-point number	
Depends on country and nominal diameter $\rightarrow \cong 208$	
 Description The Format display parameter (→ 15) is used to specify that the measured valis to be displayed as a bar graph. User entry The unit of the displayed measured value is taken from the System units subment 	lue u
	 Expert → System → Display → 100% bargraph 1 (0125) A local display is provided. Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1. Signed floating-point number Depends on country and nominal diameter → 🗎 208 Description The Format display parameter (→ 🖺 15) is used to specify that the measured value is to be displayed as a bar graph. User entry The unit of the displayed measured value is taken from the System units subment

Decimal places 1		£
Navigation	Image: Expert → System → Display → Decimal places 1 (0095)	
Prerequisite	A measured value is specified in the Value 1 display parameter ($\rightarrow \cong 18$).	
Description	Use this function to select the number of decimal places for measured value 1.	
Selection	■ X	
	■ X,X	
	X,XX	
	X,XXX	
	X.XXXX	
Factory setting	x.xx	

Description

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

Value 2 display	[2
Navigation	■ Expert → System → Display → Value 2 display (0108) A local display is provided	
Description	Use this function to select one of the measured values to be shown on the local display.	
Selection	 None Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity CorrConductivity Totalizer 1 Totalizer 2 Totalizer 3 Curr.output 1 Curr.output 2* Curr.output 3* Curr.output 4* Temperature Electronic temp. 	
Factory setting	None	
Additional information	DescriptionIf several measured values are displayed at once, the measured value selected here will be the second value to be displayed. The value is only displayed during normal operation.Image: The Format display parameter ($\rightarrow \cong 15$) is used to specify how many measured values are displayed simultaneously and how.DependencyImage: The unit of the displayed measured value is taken from the System units submenu ($\rightarrow \cong 54$).	Ĵ

Decimal places 2		æ
Navigation	Image: Barbon System → Display → Decimal places 2 (0117)	
Prerequisite	A measured value is specified in the Value 2 display parameter ($\rightarrow \square$ 20).	

* Visibility depends on order options or device settings

Description	Use this function to select the number of decimal places for measured value 2.
Selection	 X X.X X.XX X.XXX X.XXX
Factory setting	X.XX
Additional information	Description It is setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the
	device computes with more digits than are shown on the local display.

Value 3 display		
Navigation	Image: Boost and Boos	
Prerequisite	A local display is provided.	
Description	Use this function to select one of the measured values to be shown on the local display.	
Selection	 None Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity CorrConductivity Totalizer 1 Totalizer 2 Totalizer 3 Curr.output 1 Curr.output 2* Curr.output 3* Curr.output 4* Temperature Electronic temp. 	
Factory setting	None	

^{*} Visibility depends on order options or device settings

Description

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



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

Selection

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

0% bargraph 3		
Navigation	Image: Barbon System → Display → 0% bargraph 3 (0124)	
Prerequisite	A selection was made in the Value 3 display parameter ($\rightarrow \equiv 21$).	
Description	Use this function to enter the 0% bar graph value to be shown on the display for the measured value 3.	
User entry	Signed floating-point number	
Factory setting	Country-specific: • 0 l/h • 0 gal/min (us)	
Additional information	 Description The Format display parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph. User entry The unit of the displayed measured value is taken from the System units submeted value is taken from take	alue nu

100% bargraph 3		Â
Navigation	Image: Boost and Display → 100% bargraph 3 (0126)	
Prerequisite	A selection was made in the Value 3 display parameter ($\rightarrow \cong 21$).	
Description	Use this function to enter the 100% bar graph value to be shown on the display for the measured value 3.	Ĵ
User entry	Signed floating-point number	
Factory setting	0	

Description



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

User entry

The unit of the displayed measured value is taken from the **System units** submenu $(\Rightarrow \cong 54)$.

Decimal places 3		ß
Navigation	Image: Barbon System → Display → Decimal places 3 (0118)	
Prerequisite	A measured value is specified in the Value 3 display parameter ($\rightarrow \cong 21$).	
Description	Use this function to select the number of decimal places for measured value 3.	
Selection	 X X.X X.XX X.XXX X.XXXX 	
Factory setting	x.xx	
Additional information	 Description This setting does not affect the measuring or computational accuracy of the device The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display. 	ce.

Value 4 display		æ
Navigation	Image: Barbon System → Display → Value 4 display (0109)	
Prerequisite	A local display is provided.	
Description	Use this function to select one of the measured values to be shown on the local display	
Selection	 None Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity CorrConductivity CorrConductivity Totalizer 1 Totalizer 2 Totalizer 3 Curr.output 1 	

- Curr.output 2^{*} Curr.output 3 *
 Curr.output 4 *
- Temperature
- Electronic temp.

Factory setting

Additional information

Description

None

1

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



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

Selection

The unit of the displayed measured value is taken from the **System units** submenu $(\rightarrow \cong 54)$.

Decimal places 4		
Navigation	Image: Barbon System → Display → Decimal places 4 (0119)	
Prerequisite	A measured value is specified in the Value 4 display parameter ($\rightarrow \square 23$).	
Description	Use this function to select the number of decimal places for measured value 4.	
Selection	 x x.x x.xx x.xxx x.xxx 	
Factory setting	X.XX	
Additional information	 Description This setting does not affect the measuring or computational accuracy of the dev The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display. 	ice. e

Display interval	
Navigation	Image: Boost and Boos
Prerequisite	A local display is provided.

^{*} Visibility depends on order options or device settings

Description	Use this function to enter the length of time the measured values are displayed if the values alternate on the display.
User entry	1 to 10 s
Factory setting	5 s
Additional information	Description
	This type of alternating display only occurs automatically if the number of measured values defined exceeds the number of values the selected display format can display simultaneously.
	 The Value 1 display parameter (→ ≅ 18) to Value 4 display parameter (→ ≅ 23) are used to specify which measured values are shown on the local display. The display format of the displayed measured values is specified using the Format display parameter (→ ≅ 15).

Display damping		ß
Navigation	Image: Boost and Boos	
Prerequisite	A local display is provided.	
Description	Use this function to enter a time constant for the reaction time of the local display to fluctuations in the measured value caused by process conditions.	
User entry	0.0 to 999.9 s	
Factory setting	0.0 s	
Additional information	User entry	
	 Use this function to enter a time constant (PT1 element ¹⁾) for display damping: If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables. On the other hand, the display reacts more slowly if a high time constant is entered. Damping is switched off if 0 is entered (factory setting). 	J

Header		ß
Navigation	Image: Boost and Boos	
Prerequisite	A local display is provided.	
Description	Use this function to select the contents of the header of the local display.	

¹⁾ proportional transmission behavior with first order delay

Selection • Device tag
• Free text Factory setting Device tag Additional information Description
The header text only appears during normal operation. 1 XXXXXXXXX

1 Position of the header text on the display

Selection

- Device tag
 - Is defined in the **Device tag** parameter ($\rightarrow \square 176$).

Free text

Is defined in the **Header text** parameter ($\Rightarrow \cong 26$).

Header text		æ
Navigation	■ Expert \rightarrow System \rightarrow Display \rightarrow Header text (0112)	
Prerequisite	In the Header parameter ($\rightarrow \square 25$), the Free text option is selected.	
Description	Use this function to enter a customer-specific text for the header of the local display.	
User entry	Max. 12 characters such as letters, numbers or special characters (e.g. @, %, /)	
Factory setting		
Additional information	Description The header text only appears during normal operation. 1	

1 Position of the header text on the display

User entry

The number of characters displayed depends on the characters used.

Separator		
Navigation	Image: Barbon System → Display → Separator (0101)	
Prerequisite	A local display is provided.	
Description	Use this function to select the decimal separator.	
Selection	 . (point) , (comma) 	
Factory setting	. (point)	

Contrast display	
Navigation	Image: Barbon System → Display → Contrast display (0105)
Prerequisite	A local display is provided.
Description	Use this function to enter a value to adapt the display contrast to the ambient conditions (e.g. the lighting or viewing angle).
User entry	20 to 80 %
Factory setting	Depends on the display

Backlight	
Navigation	Image: Backlight (0111) Image: Backlight (0111)
Prerequisite	One of the following conditions is met: • Order code for "Display; operation", option F "4-line, illum.; touch control" • Order code for "Display; operation", option G "4-line, illum.; touch control +WLAN"
Description	Use this function to switch the backlight of the local display on and off.
Selection	DisableEnable
Factory setting	Enable

3.1.2 "Configuration backup" submenu

Navigation 🛛 🗐 🖾 Expe

□ □ Expert \rightarrow System \rightarrow Config. backup

► Config. backup	
Operating time	→ 🗎 28
Last backup	→ 🗎 28
Config. managem.) → 🗎 28
Backup state	→ 🗎 29
Compar. result	→ 🗎 30

Operating timeNavigationImage: Expert → System → Config. backup → Operating time (0652)DescriptionUse this function to display the length of time the device has been in operation.User interfaceDays (d), hours (h), minutes (m) and seconds (s)Additional informationUser interface
The maximum number of days is 9999, which is equivalent to 27 years.Last backupNavigationImage: Expert → System → Config. backup → Last backup (2757)DescriptionDisplays the time since a backup copy of the data was last saved to the device memory.

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

Config. managem.		
Navigation	Image: Barbon System → Config. backup → Config. managem. (2758)	
Description	Use this function to select an action to save the data to the device memory.	

Selection

- Cancel
- Execute backup
- Restore
- Compare

Cancel

Selection

Clear backup

Factory setting

Additional information

Options	Description
Cancel	No action is executed and the user exits the parameter.
Execute backup	A backup copy of the current device configuration is saved from the HistoROM backup to the memory of the device. The backup copy includes the transmitter data of the device. The following message appears on local display: Backup active, please wait!
Restore	The last backup copy of the device configuration is restored from the device memory to the device's HistoROM backup. The backup copy includes the transmitter data of the device. The following message appears on local display: Restore active! Do not interrupt power supply!
Compare	The device configuration saved in the device memory is compared with the current device configuration of the HistoROM backup. The following message appears on local display: Comparing files The result can be viewed in Compar. result parameter.
Clear backup	The backup copy of the device configuration is deleted from the memory of the device. The following message appears on local display: Deleting file

HistoROM

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

Backup state	
Navigation	■ Expert → System → Config. backup → Backup state (2759)
Description	Displays the status of the data backup process.
User interface	 None Backup in progr. Restore in progr Delete in progr. Comp. in progr. Restoring failed Backup failed
Factory setting	None

Compar. result	
Navigation	Image: Backup → Compar. result (2760)
Description	Displays the last result of the comparison of the data records in the device memory and in the HistoROM.
User interface	 Set. identical Set. not ident. No backup Backup corrupt Check not done Dataset incomp.
Factory setting	Check not done
Additional information	Description
	The comparison is started via the Compare option in the Config. managem. parameter ($\rightarrow \cong 28$).

Selection

Options	Description
Set. identical	The current device configuration of the HistoROM is identical to the backup copy in the device memory. If the transmitter configuration of another device has been transmitted to the device via HistoROM in the Config. managem. parameter, the current device configuration of the HistoROM is only partially identical to the backup copy in the device memory: The settings for the transmitter are not identical.
Set. not ident.	The current device configuration of the HistoROM is not identical to the backup copy in the device memory.
No backup	There is no backup copy of the device configuration of the HistoROM in the device memory.
Backup corrupt	The current device configuration of the HistoROM is corrupt or not compatible with the backup copy in the device memory.
Check not done	The device configuration of the HistoROM has not yet been compared to the backup copy in the device memory.
Dataset incomp.	The backup copy in the device memory is not compatible with the device.

HistoROM

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

3.1.3 "Diagn. handling" submenu

Navigation $\blacksquare \blacksquare$ Expert \rightarrow System \rightarrow Diagn. handling

► Diagn. handling	
Alarm delay (0651)] → 🗎 31
► Diagn. behavior] → 🗎 31

Alarm delay		Â
Navigation	■ Expert → System → Diagn. handling → Alarm delay (0651)	
Description	Use this function to enter the time interval until the device generates a diagnostic message.	
	The diagnostic message is reset without a time delay.	
User entry	0 to 60 s	
Factory setting	0 s	
Additional information	Result This setting affects the following diagnostic messages: 170 coil resistance 832 Electronic temp. 833 Electronic temp. 834 Process temp. 835 Process temp. 	

"Diagn. behavior" submenu

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagn. behavior** submenu ($\rightarrow \square$ 31).

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

Options	Description
Alarm	The device stops measurement. The totalizers assume the defined alarm condition. A diagnostic message is generated. The background lighting changes to red.
Warning	The device continues to measure. The totalizers are not affected. A diagnostic message is generated.

Options	Description
Logbook only	The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu ($\rightarrow \bigoplus 173$) (Event list submenu ($\rightarrow \bigoplus 175$)) and is not displayed in alternation with the operational display.
Off	The diagnostic event is ignored, and no diagnostic message is generated or entered.

For a list of all the diagnostic events, see the Operating Instructions for the device $\rightarrow \textcircled{B} 7$

Navigation	8 8	Expert →	System -	→ Diagn.	handling \rightarrow	Diagn.	behavior
------------	-----	----------	----------	----------	------------------------	--------	----------

► Diagn. behavior	
Diagnostic no. 043 (0650)	→ 🗎 33
Diagnostic no. 302 (0739)	→ 🗎 33
Diagnostic no. 376 (0645)	→ 🗎 33
Diagnostic no. 377 (0777)	→ 🗎 34
Diagnostic no. 441 (0657)	→ 🗎 34
Diagnostic no. 442 (0658)	→ 🗎 34
Diagnostic no. 443 (0659)	→ 🗎 35
Diagnostic no. 444 (0740)	→ 🗎 35
Diagnostic no. 531 (0741)	→ 🗎 35
Diagnostic no. 832 (0681)	→ 🗎 36
Diagnostic no. 833 (0682)	→ 🗎 36
Diagnostic no. 834 (0700)	→ 🗎 37
Diagnostic no. 835 (0702)	→ 🗎 37
Diagnostic no. 937 (0743)	→ 🗎 37
Diagnostic no. 938 (0642)	→ 🗎 38
Diagnostic no. 961 (0736)	→ 🗎 38
Diagnostic no. 962 (0745)	→ 🗎 38

Diagnostic no. 043 (Sens.short circ.)	
Navigation	■ Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 043 (0650)
Description	Option for changing the diagnostic behavior of the diagnostic message 043 Sens.short circ. .
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \square 31$

Diagnostic no. 302 (Verif	Diagnostic no. 302 (Verific. active)		
Navigation	Image: Boostimes and the second state of	(0739)	
Description	Use this function to change the diagnostic behavior of the diagnostic message 302 active .	Verific.	
Selection	AlarmWarning		
Factory setting	Warning		
Additional information	For a detailed description of the options available, see $\rightarrow \cong$ 31		

Diagnostic no. 376 (Sensor electron.)	
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 376 (0645)
Description	Option for changing the diagnostic behavior of the diagnostic message 376 Sensor electron.
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 377 (Sens	or electron.)	æ
Navigation	Image: Boostimes and the second state of	777)
Description	Option for changing the diagnostic behavior of the diagnostic message 377 Sensor electron	
Selection	 Off Alarm Warning Logbook only 	
Factory setting	Warning	
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$	
Diagnostic no. 441 (Curr.	output 1 to n)	ß
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 441 (0)	657)
Description	Use this function to change the diagnostic behavior of the diagnostic message	

	441 Curr.output 1 to n.
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 442 (Freq. output 1 to n)

Navigation	System → Diagn. handling → Diagn. behavior → Diagnostic no. 442 (0658)
Prerequisite	The measuring device has a pulse/frequency/switch output.
Description	Use this function to change the diagnostic behavior of the diagnostic message 442 Freq. output 1 to n .
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning

£

F

For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 443 (Pulse output 1 to n)		
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnos	tic no. 443 (0659)
Prerequisite	The measuring device has a pulse/frequency/switch output.	
Description	Use this function to change the diagnostic behavior of the diagnostic me output 1 to n .	ssage 443 Pulse
Selection	 Off Alarm Warning Logbook only 	
Factory setting	Warning	
Additional information	For a detailed description of the options available, see \rightarrow 🗎 31	

Diagnostic no. 444 (Curre	ent input 1 to n)	ß
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 444 (07)	40)
Prerequisite	The device has one current input.	
Description	Use this function to change the diagnostic behavior of the diagnostic message 444 Current input 1 to n .	
Selection	 Off Alarm Warning Logbook only 	
Factory setting	Warning	
Additional information	For a detailed description of the options available, see $\rightarrow \cong$ 31	

Diagnostic no. 531 (Empt	pipe det.)	â
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 531 (07)	41)
Description	Use this function to change the diagnostic behavior of the diagnostic message 531 Emp pipe det. .	oty

Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \cong$ 31
Diagnostic no. 832 (Electro	onic temp.)
Navigation	Image: Boostimes and the second state of
Description	Use this function to change the diagnostic behavior of the diagnostic message 832 Electronic temp. .
Solation	- Off

Selection	 Off Alarm Warning Logbook only
Factory setting	Logbook only
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 833 (Electronic temp.)	
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0682)
Description	Use this function to change the diagnostic behavior of the diagnostic message 833 Electronic temp. .
Selection	 Off Alarm Warning Logbook only
Factory setting	Logbook only
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$
Diagnostic no. 834 (Process temp.)	
------------------------------------	--
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0700)
Description	Use this function to change the diagnostic behavior of the diagnostic message 834 Process temp. .
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \square 31$

Diagnostic no. 835 (Process temp.)	
Navigation	■ Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0702)
Description	Use this function to change the diagnostic behavior of the diagnostic message 835 Process temp. .
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 937 (EMC interference)	
Navigation	Image: Barbon System → Diagn. handling → Diagn. behavior → Diagnostic no. 937 (0743)
Description	Use this function to change the diagnostic behavior of the diagnostic message 937 EMC interference.
Selection	 Off Alarm Warning Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see $\rightarrow \cong 31$

Diagnostic no. 938 (EMC	interference)
Navigation	Image: Bar and the second state of the se
Description	Option for changing the diagnostic behavior of the diagnostic message 938 EMC interference.
Selection	 Off Alarm Warning Logbook only
Factory setting	Alarm
Additional information	For a detailed description of the options available, see $\rightarrow \square 31$
Diagnostic no. 961	ß
Navigation	■ Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 961 (0736)
Description	Use this function to change the diagnostic behavior of the diagnostic message 861 Process fluid .
Selection	 Off Alarm Warning Logbook only
Factory setting	Alarm
Additional information	For a detailed description of the options available, see $\rightarrow \square$ 31
Diagnostic no. 962 (Pipe	empty)
Navigation	■ Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 962 (0745)
Description	Option for changing the diagnostic behavior of the diagnostic message 862 Pipe empty .
Selection	• Off

- Alarm
 - Warning
 - Logbook only

Factory setting

For a detailed description of the options available, see $\rightarrow \cong 31$

3.1.4 "Administration" submenu

Navigation $\square \square$ Expert \rightarrow System \rightarrow Administration

► Administration	
► Def. access code	→ 🗎 39
► Reset acc. code	→ 🗎 40
Device reset (0000)	→ 🗎 41
Activate SW opt. (0029)	→ 🗎 42
SW option overv. (0015)	→ 🗎 43

"Def. access code" wizard

The **Def. access code** wizard ($\Rightarrow \triangleq 39$) is only available when operating via the local display or Web browser.

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

Navigation \blacksquare Expert \rightarrow System \rightarrow Administration \rightarrow Def. access code

► Def. access code			
Def. access co	de]	→ 🗎 39
Confirm code]	→ 🗎 40

Image: Barbon System → Administration → Def. access code → Def. access code	
Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the device configuration against any inadvertent modific via the local display, Web browser, FieldCare or DeviceCare (via CDI-RJ45 service interface).	e ations
Max. 16-digit character string comprising numbers, letters and special characters	
	Image: Expert → System → Administration → Def. access code → Def. access code Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the device configuration against any inadvertent modific via the local display, Web browser, FieldCare or DeviceCare (via CDI-RJ45 service interface). Max. 16-digit character string comprising numbers, letters and special characters

Description

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

On the local display, the B symbol in front of a parameter indicates that the parameter is write-protected.

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

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

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

User entry

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

Factory setting

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

Confirm code		
Navigation		
Description	Enter the defined release code a second time to confirm the release code.	
User entry	Max. 16-digit character string comprising numbers, letters and special characters	

"Reset access code" submenu

Navigation \blacksquare Expert \rightarrow System \rightarrow Administration \rightarrow Reset acc. code

► Reset acc. code		
Operating	time (0652)	→ 🗎 40
Reset acc. c	code (0024)	→ 🖺 41

Operating time	
Navigation	Image: Barbon System → Administration → Reset acc. code → Operating time (0652)
Description	Use this function to display the length of time the device has been in operation.
User interface	Days (d), hours (h), minutes (m) and seconds (s)

User interface

Additional information

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

Reset acc. code	
Navigation	Image: Barbon Administration → Reset acc. code → Reset acc. code (0024)
Description	Use this function to enter a reset code to reset the user-specific release code to the factory setting.
User entry	Character string comprising numbers, letters and special characters
Factory setting	0x00
Additional information	<i>Description</i> For a reset code, contact your Endress+Hauser service organization.
	User entry
	The reset code can only be entered via: Web browser DeviceCare, FieldCare (via interface CDI RJ45) Fieldbus

Additional parameters in the "Administration" submenu

Device reset	
Navigation	Image: Barbon System → Administration → Device reset (0000)
Description	Use this function to choose whether to reset the device configuration - either entirely or in part - to a defined state.
Selection	 Cancel To delivery set. Restart device Rest.S-DATBackup
Factory setting	Cancel

Selection

Options	Description
Cancel	No action is executed and the user exits the parameter.
To delivery set.	Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting.
Restart device	The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.
Rest.S-DATBackup	Restore the data that are saved on the S-DAT. The data record is restored from the electronics memory to the S-DAT.

Activate SW opt.	
Navigation	Image: Boost and Boost Administration → Activate SW opt. (0029)
Description	Use this function to enter an activation code to enable an additional, ordered software option.
User entry	Max. 10-digit string consisting of numbers.
Factory setting	Depends on the software option ordered
Additional information	Description
	If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory.
	User entry
	To activate a software option subsequently, please contact your Endress+Hauser sales organization.
	NOTE!
	The activation code is linked to the serial number of the measuring device and varies according to the device and software option.
	If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated.
	\blacktriangleright Before you enter a new activation code, make a note of the current activation code .
	 Enter the new activation code provided by Endress+Hauser when the new software option was ordered.
	▶ Once the activation code has been entered, check if the new software option is displayed in the SW option overv. parameter ($\rightarrow \triangleq 43$).
	└╾ The new software option is active if it is displayed.
	└→ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid.
	\blacktriangleright If the code entered is incorrect or invalid, enter the old activation code .

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

Example for a software option

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



Web browser

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

SW option overv.	
Navigation	Image: Bar System → Administration → SW option overv. (0015)
Description	Displays all the software options that are enabled in the device.
User interface	 Extend. HistoROM ECC HBT Monitoring HBT Verification
Additional information	<i>Description</i> Displays all the options that are available if ordered by the customer.
	<i>"Extend. HistoROM" option</i> Order code for "Application package", option EA "Extended HistoROM"
	<i>"ECC" option</i> Order code for "Application package", option EC "ECC electrode cleaning"
	<i>"HBT Verification" option and "HBT Monitoring" option</i> Order code for "Application package", option EB "Heartbeat Verification + Monitoring"

3.2 "Sensor" submenu

Navigation \square Expert \rightarrow Sensor

► Sensor		
	► Measured val.	→ 🗎 44
	► System units	→ 🖺 54



3.2.1 "Measured val." submenu

Navigation	8 8	Expert \rightarrow Sensor \rightarrow Measured val.
5		1

► Measured val.	
► Process variab.	→ 🗎 44
► Totalizer	} ⇒ 🖹 47
► Input values) → 🗎 49
► Output values	→ 🗎 50

"Process variables" submenu

Navigation	
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 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Sensor} \rightarrow \text{Measured val.} \rightarrow \text{Process variab.}$

► Process variab.	
Volume flow (1838)	} ⇒ 🛱 45
Mass flow (1847)	} ⊉ 45
Correct.vol.flow (1851)	} ≙ 45
Flow velocity (1854)	} ⇒ 🛱 45
Conductivity (1850)] → 🗎 46
CorrConductivity (1853)] → 🗎 46
Temperature (1852)) → 🗎 46
Density (1857)] → 🗎 47

Volume flow	
Navigation	Image: Barbon Sensor → Measured val. → Process variab. → Volume flow (1838)
Description	Displays the volume flow that is currently measured.
User interface	Signed floating-point number

Mass flow	
Navigation	■ Expert → Sensor → Measured val. → Process variab. → Mass flow (1847)
Description	Displays the mass flow currently calculated.
User interface	Signed floating-point number
Additional information	Dependency The unit is taken from the Mass flow unit parameter ($\rightarrow \square 57$)

Correct.vol.flow	
Navigation	\blacksquare Expert → Sensor → Measured val. → Process variab. → Correct.vol.flow (1851)
Description	Displays the corrected volume flow currently measured.
User interface	Signed floating-point number
Additional information	Dependency
	The unit is taken from the Cor.volflow unit parameter ($\rightarrow \square$ 59)

Flow velocity	
Navigation	Image: Barbon Sensor → Measured val. → Process variab. → Flow velocity (1854)
Description	Displays the flow velocity currently calculated.
User interface	Signed floating-point number

Conductivity		
Navigation	Image: Barbon Amplitude Sensor → Measured val. → Process variab. → Conductivity (1850)	
Description	Displays the conductivity currently measured.	
User interface	Signed floating-point number	
Additional information	Dependency	
	1 The unit is taken from the Conductiv. unit parameter ($\rightarrow \square$ 56)	

CorrConductivity		
Navigation	Image: Barbon Amplitude Sensor → Measured val. → Process variab. → CorrConductivity (1853)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Displays the conductivity currently corrected.	
User interface	Positive floating-point number	
Additional information	Dependency 1 The unit is taken from the Conductiv. unit parameter ($\rightarrow \square$ 56)	

Temperature		
Navigation	Image: Barbon Sensor → Measured val. → Process variab. → Temperature (1852)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Displays the temperature currently calculated.	
User interface	Positive floating-point number	
Additional information	Dependency The unit is taken from the Temperature unit parameter ($\rightarrow \cong 57$)	

Density		
Navigation	Image: Barbon Amplitude Sensor → Measured val. → Process variab. → Density (1857)	
Description	Displays the current fixed density or density read in from an external device.	
User interface	Signed floating-point number	
Additional information	Dependency The unit is taken from the Density unit parameter ($\rightarrow \square$ 59)	

"Totalizer" submenu

Navigation

 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Sensor} \rightarrow \text{Measured val.} \rightarrow \text{Totalizer}$

► Totalizer		
	Totalizer val. 1 to n (0911–1 to n)	→ 🗎 47
	Tot. overflow 1 to n (0910–1 to n)	→ 🖺 48

Totalizer val. 1 to n		
Navigation	■ Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n (0911	–1 to n)
Prerequisite	A process variable is selected in the Assign variable parameter ($\rightarrow \implies 162$) of the Totalizer 1 to n submenu.	e
Description	Displays the current totalizer reading.	
User interface	Signed floating-point number	

Description

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

In the event of an error, the totalizer adopts the mode defined in the **Failure mode** parameter ($\rightarrow \cong 165$).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Operation mode** parameter ($\rightarrow \square 164$).

The unit of the selected process variable is specified for the totalizer in the **Unit** totalizer parameter ($\rightarrow \cong 163$).

Example

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

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

Tot. overflow 1 to n

Navigation	Image: Expert → Sensor → Measured val. → Totalizer → Tot. overflow 1 to n (0910-1 to n)	
Prerequisite	A process variable is selected in the Assign variable parameter ($\rightarrow \square$ 162) of the Totalizer 1 to n submenu.	
Description	Displays the current totalizer overflow.	
User interface	Integer with sign	
Additional information	Description	
	If the current totalizer reading exceeds 7 digits, which is the maximum value range that can be displayed by the operating tool, the value above this range is output as an overflow. The current totalizer value is therefore the sum of the overflow value and the totalizer value from the Totalizer val. 1 to n parameter.	
	User interface	
	The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter ($\rightarrow \square 163$).	
	Example	
	Calculation of the current totalizer reading when the value exceeds the 7-digit display range of the operating tool: • Value in the Totalizer val. 1 parameter: 1968457 m ³	

- Value in the **Tot. overflow 1** parameter: $2 \cdot 10^7$ (2 overflows) = 20000000 [m³]
- Current totalizer reading: 21968457 m³

A

"Input values" submenu

Navigation \blacksquare Expert \rightarrow Sensor \rightarrow Measured val. \rightarrow Input values

► Input values	
► Current input 1 to n	→ 🗎 49
► Val.stat.inp. 1 to n	→ 🗎 50

"Current input 1 to n" submenu

Navigation

 $\label{eq:expert} \fbox{Expert} \rightarrow \texttt{Sensor} \rightarrow \texttt{Measured val.} \rightarrow \texttt{Input values} \rightarrow \texttt{Current} \\ \texttt{input 1 to n} \\ \end{cases}$

► Current input 1 to n	
Measured val. 1 to n (1603–1 to n)] → 🗎 49
Measur. curr. 1 to n (1604-1 to n)] → 🖺 49

Measured val. 1 to n		
Navigation	■ Expert → Sensor → Measured val. → Input values → Current input 1 to n → Measured val. 1 to n (1603–1 to n)	
Description	Displays the current input value.	
User interface	Signed floating-point number	
Measur. curr. 1 to n		
Navigation	■ Expert → Sensor → Measured val. → Input values → Current input 1 to n → Measur. curr. 1 to n (1604–1 to n)	
Description	Displays the current value of the current input.	
User interface	0 to 22.5 mA	

"Value status input 1 to n" submenu

Navigation \blacksquare Expert \rightarrow Sensor \rightarrow Measured val. \rightarrow Input values \rightarrow Val.stat.inp.1 to n

► Val.stat.inp. 1 to n		
Val.stat.inp. (1353–	1 to n)	→ 🗎 50

Val.stat.inp.

Navigation

Image: Expert → Sensor → Measured val. → Input values → Val.stat.inp. 1 to n → Val.stat.inp. (1353–1 to n)

Description

User interface

■ High ■ Low

"Output values" submenu

Displays the current input signal level.

Navigation $\blacksquare \blacksquare$ Expert \rightarrow Sensor \rightarrow Measured val. \rightarrow Output values

► Output values	
► Value curr.out 1 to n	→ 🗎 50
► PFS output 1 to n	→ 🗎 51
► Relay output 1 to n	→ 🗎 53

"Value current output 1 to n" submenu

Navigation $\blacksquare \blacksquare$ Expert \rightarrow Sensor \rightarrow Measured val. \rightarrow Output values \rightarrow Value
curr.out 1 to n



Output curr. 1 to n		
Navigation	Expert → Sensor → Measured val. → Output values → Value curr.out 1 to n → Output curr. 1 to n (0361–1 to n)	
Description	Displays the current value currently calculated for the current output.	
User interface	0 to 22.5 mA	
Measur. curr. 1 to n		
Navigation	Expert → Sensor → Measured val. → Output values → Value curr.out 1 to n → Measur. curr. 1 to n (0366–1 to n)	
Description	Use this function to display the actual measured value of the output current.	

User interface 0 to 30 mA

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

Navigation

Image: Box Sensor → Measured val. → Output values → PFS output 1 to n

► PFS output 1 to n	
Output freq. 1 to n (0471–1 to n)	→ 🗎 51
Pulse output 1 to n (0456–1 to n)	→ 🗎 52
Switch status 1 to n (0461–1 to n)	→ 🗎 52

Output freq. 1 to n		
Navigation	■ Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Output freq. 1 to n (0471–1 to n)	
Prerequisite	In the Operating mode parameter ($\rightarrow \cong 119$), the Frequency option is selected.	
Description	Displays the actual value of the output frequency which is currently measured.	
User interface	0.0 to 12 500.0 Hz	

Pulse output 1 to n

Navigation	Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Pulse output 1 to n (0456-1 to n)			
Prerequisite	In the Operating mode parameter ($\rightarrow \cong 119$), the Pulse option is selected.			
Description	Displays the pulse frequency currently output.			
User interface	Positive floating-point number			
Additional information	 Description The pulse output is an open collector output. This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented. 			

0 Non-conductive

1 Conductive

NC NC contact (normally closed) NO NO contact (normally open)

The output behavior can be reversed via the **Invert outp.sig.** parameter ($\rightarrow \implies 137$) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (Failure mode parameter ($\rightarrow \square 123$)) can be configured.

Switch status 1 to n

Navigation	Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Switch status 1 to n (0461–1 to n)
Prerequisite	The Switch option is selected in the Operating mode parameter ($\Rightarrow \triangleq 119$).
Description	Displays the current switch status of the status output.
User interface	OpenClosed

User interface

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

"Relay output 1 to n" submenu

Navigation

 $\label{eq:expert_series} \fbox{ Sensor} \rightarrow \texttt{Measured val.} \rightarrow \texttt{Output values} \rightarrow \texttt{Relay} \\ \texttt{output 1 to n}$

► Relay output 1 to n		
Switch status (0801–1 to n)	→ 🗎 53	
Switch cycles (0815–1 to n)	→ 🗎 53	
Max. cycles no. (0817–1 to n)	→ 🗎 54	

Switch status		
Navigation	Expert → Sensor → Measured val. → Output values → Relay output 1 to n → Switch status (0801-1 to n)	
Description	Displays the current status of the relay output.	
User interface	OpenClosed	
Additional information	User interface	
	 Open The relay output is not conductive. Closed The relay output is conductive. 	

Switch cycles		
Navigation	Expert → Sensor → Measured val. → Output values → Relay output 1 to n → Switch cycles (0815–1 to n)	
Description	Displays all the switch cycles performed.	
User interface	Positive integer	

Max. cycles no.		
Navigation	■ Expert → Sensor → Measured val. → Output values → Relay output 1 to $n \rightarrow Max$. cycles no. (0817–1 to n)	
Description	Displays the maximum number of guaranteed switch cycles.	
User interface	Positive integer	

3.2.2 "System units" submenu

Navigation \square Expert \rightarrow Sensor \rightarrow System units

► System units			
	Volume flow unit (0553)]	→ 🖺 54
	Volume unit (0563)]	→ 🖺 56
	Conductiv. unit (0582)]	→ 🖺 56
	Temperature unit (0557)		→ 🖺 57
	Mass flow unit (0554)]	→ 🗎 57
	Mass unit (0574)]	→ 🗎 58
	Density unit (0555)]	→ 🗎 59
	Cor.volflow unit (0558)]	→ 🗎 59
	Corr. vol. unit (0575)		→ 🗎 60
	Date/time format (2812)		→ 🗎 61

Volume flow unit

Navigation

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

Description

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

Selection

- *SI units* • cm³/s
- cm^3/min
- $\sim \text{cm}^3/\text{h}$
- cm³/d
- dm³/s
- dm³/min
- dm³/h
- dm³/d
- m³/s
- m³/min
- m³/h
- m³/d
- ml/s
- ml/min
- ml/h
- ml/d
- ∎ l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- ∎ hl/h
- hl/d
- Ml/s
- Ml/min
- Ml/h
- Ml/d

- Description of device parameters
 - Imperial units
 - qal/s (imp)
 - gal/min (imp)
 - gal/h (imp)
 - gal/d (imp)
 - Mgal/s (imp)
 - Mgal/min (imp)
 - Mgal/h (imp)
 - Mgal/d (imp)
 - bbl/s (imp;beer)
 - bbl/min (imp;beer)
 - bbl/h (imp;beer)
 - bbl/d (imp;beer)
 - bbl/s (imp;oil)
 - bbl/min (imp;oil)
 - bbl/h (imp;oil)
 - bbl/d (imp;oil)

Country-spec

Result

Factory setting

Country-specific:

- l/h
- gal/min (us)

Additional information

The selected unit applies for: **Volume flow** parameter ($\rightarrow \square 45$)

Selection



For an explanation of the abbreviated units: $\rightarrow \cong 215$

Customer-specific units



The unit for the customer-specific volume is specified in the **Volume text** parameter ($\rightarrow \textcircled{B}$ 62).

- kgal/h (us)
 kgal/d (us)
 Mgal/s (us)
 Mgal/min (us)
 Mgal/h (us)
- Mgal/h (us)
- Mgal/d (us)

US units

af/min

af/s

■ af/h

af/d

• ft^3/s

• ft^3/h

• ft^3/d

• ft³/min

fl oz/s (us)

fl oz/h (us)

fl oz/d (us)

gal/min (us)

gal/s (us)

gal/h (us)

gal/d (us)

kgal/s (us)

kgal/min (us)

fl oz/min (us)

- bbl/s (us;liq.)
- bbl/min (us;liq.)
- bbl/h (us;liq.)
- bbl/d (us;liq.)
- bbl/s (us;beer)
- bbl/min (us;beer)
- bbl/h (us;beer)
- bbl/d (us;beer)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- bbl/s (us;tank)
- bbl/min (us;tank)
- bbl/h (us;tank)
- bbl/d (us;tank)

Volume unit			8
Navigation	Image: Barbon System units → Volume unit (0563)		nit (0563)
Description	Use this function to select the unit for the volume.		
Selection	SI units • cm ³ • dm ³ • m ³ • ml • l • hl • Ml Mega	US units af ft ³ fl oz (us) gal (us) kgal (us) Mgal (us) bbl (us;oil) bbl (us;liq.) bbl (us;tank)	Imperial units 9 gal (imp) 9 Mgal (imp) 9 bbl (imp;beer) 9 bbl (imp;oil)
Factory setting	Country-specific: • m ³ • gal (us)		
Additional information	Selection For an explanation	n of the abbreviated units: $ ightarrow$	🗎 215
	Customer-specific unit. The unit for the cult $(\rightarrow \cong 62)$.	s ustomer-specific volume is spe	ecified in the Volume text parameter

~ 1		• •
Innd	1101117	1101+
COLIC	LICTIV.	

Navigation Prerequisite	Image: Expert → Sensor → System units → Conductiv. unit (0582) The On option is selected in the Conduct. measur. parameter (→ ■ 73) parameter.
Description	Use this function to select the unit for the conductivity.
Selection	SI units nS/cm µS/cm µS/m mS/m mS/m S/cm S/cm S/m KS/m MS/m

Factory setting

Additional information	<i>Effect</i> The selected unit applies for: • Conductivity parameter ($\rightarrow \boxdot 46$) • CorrConductivity parameter ($\rightarrow \boxdot 46$) <i>Selection</i> For an explanation of the abbreviated units: $\rightarrow \boxdot 215$		
Temperature unit			
Navigation	■ Expert → Sensor → System units → Temperature unit (0557)		
Description	Use this function to select the unit for the temperature.		
Selection	SI units • °C • K US units • °F • °R		
Factory setting	Country-specific: • °C • °F		
Additional information	ResultThe selected unit applies for:• Temperature parameter ($\rightarrow ext{ } 46$)• Maximum value parameter ($\rightarrow ext{ } 197$)• Minimum value parameter ($\rightarrow ext{ } 196$)• External temp. parameter ($\rightarrow ext{ } 198$)• Maximum value parameter ($\rightarrow ext{ } 198$)• Minimum value parameter ($\rightarrow ext{ } 197$)SelectionImage: SelectionImage: SelectionIm		

Mass flow unit		ß
Navigation	■ Expert → Sensor → System units → Mass flow unit (0554)	
Description	Use this function to select the unit for the mass flow.	

Selection	SI units	US units	
	■ g/s	■ oz/s	
	• g/min	■ oz/min	
	■ g/h	■ oz/h	
	■ g/d	■ oz/d	
	■ kg/s	Ib/s	
	■ kg/min	Ib/min	
	■ kg/h	■ lb/h	
	■ kg/d	■ lb/d	
	■ t/s	STon/s	
	■ t/min	STon/min	
	■ t/h	■ STon/h	
	■ t/d	■ STon/d	
Factory setting	Country-specific:		
- accord occurry	■ kg/h		
	■ lb/min		
Additional information	Result		
	The selected unit appli	ies for:	
	Mass flow parameter	(→ 🖺 45)	
	Selection For an explanation of the abbreviated units: $\rightarrow \cong 215$		
	Customer-specific units		
	The unit for the sustamor-specific mass is specified in the Mass toxt perspector		
	$(\rightarrow \triangleq 63).$	ustomer speeme mass is speemed in the mass text parameter	
	(= = = =),		

	<u>A</u>	_
Image: Barbon And Section 2 System units → Mass unit (0574)		
Use this function to select the unit for the mass.		
SI units • g • kg • t	US units • oz • lb • STon	
Country-specific: • kg • lb		
Selection For an explana	ation of the abbreviated units: $\rightarrow \cong 215$	
Customer-specific u	units ne customer-specific mass is specified in the Mass text parameter	
	Expert → Set Use this function to SI units g kg t Country-specific: kg lb Selection For an explana Customer-specific u The unit for the 	 Image: Expert → Sensor → System units → Mass unit (0574) Use this function to select the unit for the mass. Stanits US units 02 1b 1 02 1b 1 05 Ton Country-specific: Ag B B Country-specific: Ag B D Selection For an explanation of the abbreviated units: → 1215 Customer-specific units The unit for the customer-specific mass is specified in the Mass text parameter

(→ 🗎 63).

Density unit			Â	
Navigation	Image: Bar and the second state of the se			
Description	Use this function to select the unit for the density.			
Selection	SI units 9/cm ³ 9/m ³ kg/l kg/dm ³ kg/m ³ SD4°C SD15°C SD20°C SG20°C SG15°C SG20°C	US units = lb/ft ³ = lb/gal (us) = lb/bbl (us;liq.) = lb/bbl (us;beer) = lb/bbl (us;oil) = lb/bbl (us;tank)	Imperial units • lb/gal (imp) • lb/bbl (imp;beer) • lb/bbl (imp;oil)	
Factory setting	Country-specific: • kg/l • lb/ft ³			
Additional information	Result			
	The selected unit applies for: • External density parameter ($\rightarrow \cong 84$) • Fixed density parameter ($\rightarrow \cong 83$)			
	Selection			
 SD = specific density The specific density is the ratio of the medium density to the water densit temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F). SG = specific gravity The specific gravity is the ratio of the medium density to the water density temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F). 		ty to the water density at a water C (+68 °F). y to the water density at a water C (+68 °F).		
	For an explanation of the abbreviated units: $\rightarrow \square 215$			

Cor.volflow unit		Â
Navigation	■ Expert → Sensor → System units → Cor.volflow unit (0558)	
Description	Use this function to select the unit for the corrected volume flow.	

Selection	SI units NI/s NI/min NI/h NI/d Nm ³ /s Nm ³ /min Nm ³ /h Nm ³ /d Sm ³ /s Sm ³ /min Sm ³ /h Sm ³ /h Sm ³ /d	US units Sft ³ /s Sft ³ /h Sft ³ /d Sgal/s (us) Sgal/min (us) Sgal/h (us) Sgal/d (us) Sbbl/s (us;liq.) Sbbl/min (us;liq.) Sbbl/h (us;liq.) Sbbl/d (us;liq.)	Imperial units • Sgal/s (imp) • Sgal/min (imp) • Sgal/h (imp) • Sgal/d (imp)
Factory setting	Country-specific: • Nl/h • Sft ³ /h		
Additional information	Result The selected unit applies for: Correct.vol.flow parameter ($\rightarrow \square 45$) Selection Image: The selected units of the abbreviated units: $\rightarrow \square 215$ Customer-specific units Image: The unit for the customer-specific corrected volume is defined in the Corr. vol. text parameter ($\rightarrow \square 64$).		

Corr. vol. unit				
Navigation	🗐 😑 Expert → Sei	nsor \rightarrow System units \rightarrow Corr. vol.	unit (0575)	
Description	Use this function to select the unit for the corrected volume.			
Selection	SI units • Nl • Nm ³ • Sm ³	US units • Sft ³ • Sgal (us) • Sbbl (us;liq.)	Imperial units Sgal (imp)	
Factory setting	Country-specific: • Nm ³ • Sft ³			
Additional information	Selection For an explanation of the abbreviated units: $\rightarrow \square 215$		₿ 215	
	Customer-specific ı	inits		

The unit for the customer-specific corrected volume is defined in the **Corr. vol. text** parameter ($\Rightarrow \cong 64$).

Date/time format		
Navigation	■ Expert → Sensor → System units → Date/time format (2812)	
Description	Use this function to select the desired time format for calibration history.	
Selection	 dd.mm.yy hh:mm dd.mm.yy am/pm mm/dd/yy hh:mm mm/dd/yy am/pm 	
Factory setting	dd.mm.yy hh:mm	
Additional information	Selection	
	For an explanation of the abbreviated units: $\rightarrow \cong 215$	

"User-spec. units" submenu

Navigation

 $\textcircled{\ } \boxdot \ \ \, Expert \rightarrow Sensor \rightarrow System units \rightarrow User-spec. units$

► User-spec. units	
Volume text (0567)	→ 🗎 62
Volume offset (0569)	→ 🗎 63
Volume factor (0568)	→ 🗎 63
Mass text (0560)	→ 🗎 63
Mass offset (0562)	→ 🗎 64
Mass factor (0561)	→ 🗎 64
Corr. vol. text (0592)	→ 🗎 64
Corr vol. offset (0602)	→ 🗎 65
Cor.vol. factor (0590)	→ 🗎 65
Density text (0570)	→ 🗎 65
Density offset (0571)	→ 🗎 66
Density factor (0572)	→ 🗎 66

→ 🗎 66
→ 🗎 67
→ 🗎 67
→ 🗎 67
→ 🗎 68
→ 🗎 68
→ 🗎 68
→ 🗎 69
→ 🗎 69

Volume text	8
Navigation	■ Expert → Sensor → System units → User-spec. units → Volume text (0567)
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	 <i>Result</i> The defined unit is shown as an option in the choose list of the following parameters: • Volume flow unit parameter (→ ^(⇒) 54) • Volume unit parameter (→ ^(⇒) 56)
	Example

If the text GLAS is entered, the choose list of the **Volume flow unit** parameter ($\Rightarrow \implies 54$) shows the following options:

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

Volume offset	Â
Navigation	■ Expert → Sensor → System units → User-spec. units → Volume offset (0569)
Description	Use this function to enter the offset for adapting the user-specific volume unit and volume flow unit (without time).
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i> Value in user-specific unit = (factor × value in base unit) + offset

Volume factor	ඕ
Navigation	■ Expert → Sensor → System units → User-spec. units → Volume factor (0568)
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

Mass text		
Navigation	Image: Barbon And Section 2 System units → User-spec. units → Mass text (0560)	
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.	<u>)</u>
User entry	Max. 10 characters such as letters, numbers or special characters (@, %, /)	
Factory setting	User mass	

Result

- The defined unit is shown as an option in the choose list of the following parameters: • Mass flow unit parameter ($\rightarrow \cong 57$)
 - Mass unit parameter ($\rightarrow \textcircled{58}$)

Example

If the text GLAS is entered, the following options are displayed in the picklist for the **Mass** flow unit parameter ($\rightarrow \square 57$):

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

Mass offset	8
Navigation	Image: Barbon And Section 2 System units → User-spec. units → Mass offset (0562)
Description	Use this function to enter the offset for adapting the user-specific mass unit and mass flow unit (without time).
User entry	Signed floating-point number
Factory setting	0
Additional information	Description
	Value in user-specific unit = (factor × value in base unit) + offset

Mass factor		Â
Navigation	Image: Barbon And Section 1 and Section 2 and Section	
Description	Use this function to enter a quantity factor (without time) for the user-specific mass a mass flow unit.	nd
User entry	Signed floating-point number	
Factory setting	1.0	

Corr. vol. text		Ê
Navigation	Image: Barbon And Sensor → System units → User-spec. units → Corr. vol. text (0592)	
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: Cor.volflow unit parameter (→ 59) Corr. vol. unit parameter (→ 60)
	Example
	If the text GLAS is entered, the choose list of the Cor.volflow unit parameter (→ 🗎 59) shows the following options: ■ GLAS/s

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

Corr vol. offset		Ê
Navigation	■ Expert → Sensor → System units → User-spec. units → Corr vol. offset (0602)	
Description	Use this function to enter the offset for adapting the user-specific corrected volume and corrected volume flow unit (without time).	unit
	Value in user-specific unit = (factor × value in base unit) + offset	
User entry	Signed floating-point number	
Factory setting	0	

	A
■ Expert → Sensor → System units → User-spec. units → Cor.vol. factor (0590)	
Use this function to enter a quantity factor (without time) for the user-specific corrected volume flow unit.	ted
Signed floating-point number	
1.0	
	 Expert → Sensor → System units → User-spec. units → Cor.vol. factor (0590) Use this function to enter a quantity factor (without time) for the user-specific correct volume unit and corrected volume flow unit. Signed floating-point number 1.0

Density text		Ê
Navigation	Image: Boundary Section And Antipactic States and Section 1. Image: Boundary Section 1. I	
Description	Use this function to enter a text or the user-specific unit of density.	

	A
Enter text CE_L for tentilers per inter	
Enter text "CF_L" for centners per liter	
Example	
The defined unit is shown as an option in the choose list of the Density unit parameter ($\rightarrow \square 59$).	
Result	
User dens.	
Max. 10 characters such as letters, numbers or special characters (@, %, /)	
-	Max. 10 characters such as letters, numbers or special characters (@, %, /) User dens. <i>Result</i> The defined unit is shown as an option in the choose list of the Density unit parameter ($\rightarrow \cong 59$). <i>Example</i> Enter text "CE_L" for centners per liter

Navigation	
Description	Use this function to enter the zero point shift for the user-specific density unit. Value in user-specific unit = (factor × value in base unit) + offset
User entry	Signed floating-point number
Factory setting	0

Density factor		Â
Navigation	Image: Barbon And Antiperiod Structure Image: Barbon Antiper	
Description	Use this function to enter a quantity factor for the user-specific density unit.	
User entry	Signed floating-point number	
Factory setting	1.0	

Spec. enth. text		Ê
Navigation	Image: Barbon A Sensor → System units → User-spec. units → Spec. enth. text (0585)	
User entry	Max. 10 characters such as letters, numbers or special characters (@, $\%$, /)	
Factory setting	User enth.	

A

Additional information Result

Example

If the text CAL is entered, the choose list of the **Cal. value unit** parameter shows the following options:

- CAL/Nm3
- CAL/m3
- CAL/ft3
- CAL/Sft3

Spec. enth. off.		A
Navigation	■ Expert → Sensor → System units → User-spec. units → Spec. enth. off. (0584)	
Description	Use this function to enter the offset for adapting the user-specific calorific value unit (without volume).	
User entry	Signed floating-point number	
Factory setting	0	

Spec. enth. fac.	Â
Navigation	Image: Barbon And Sensor → System units → User-spec. units → Spec. enth. fac. (0583)
Description	Use this function to enter a quantity factor (without volume) for the user-specific calorific value unit.
User entry	Signed floating-point number
Factory setting	1.0
Additional information	Example 1 W × min = 60 J \rightarrow 0.166 W × min = 1 J \rightarrow user entry: 0.0166

Energy text		
Navigation	Image: Barbon A Section 2 System units → User-spec. units → Energy text (0600)	
Description	Use this function to enter a text for the user-specific energy unit.	
User entry	Max. 10 characters such as letters, numbers or special characters (@, %, /)	
Factory setting	User en.	

Result

- The defined unit is shown as an option in the choose list of the following parameters: • Energy unit parameter
 - Energy flow unit parameter

Example

If the text W is entered, the choose list of the **Energy flow unit** parameter shows the following options:

- W/s
- W/min
- W/h
- W/d

Energy offset		
Navigation	Image: Barbon And Section 2 System units → User-spec. units → Energy offset (0599)	
Description	Use this function to enter the offset for adapting the user-specific energy unit (with time).	out
User entry	Signed floating-point number	
Factory setting	0	
Energy factor		
Navigation	Image: Barbon → System units → User-spec. units → Energy factor (0586)	
Description	Use this function to enter a quantity factor for the user-specific energy unit.	
User entry	Signed floating-point number	
Factory setting	1.0	
Pressure text		
Navigation	Image: Sensor → System units → User-spec. units → Pressure text (0581)	
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.	

Result

The defined unit is shown as an option in the choose list of the **Pressure unit** parameter.

Pressure offset		Ê
Navigation	Image: Barbon And Antiperiod Structure Image: Barbon Antiper	
Description	Use this function to enter the offset for adapting the user-specific pressure unit.	
User entry	Signed floating-point number	
Factory setting	0	
Pressure factor		
Navigation	■ Expert → Sensor → System units → User-spec. units → Pressure factor (0579)	
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 Dvn/cm ² = 0.1 Pa \rightarrow 10 Dvn/cm ² = 1 Pa \rightarrow user entry: 10	

3.2.3 "Process param." submenu

 Navigation
 Expert → Sensor → Process param.

 ▶ Process param.
 Filter options (6710)

 Flow damping (6661)
 Flow override (1839)

Conduct. measur. (6514)

Conduct. damping (1803)

→ 🗎 70

→ 🗎 72

→ 🗎 72

→ 🗎 73

→ 🗎 73



Filter options		Â
Navigation	■ Expert → Sensor → Process param. → Filter options (6710)	
Description	Use this function to select a filter option.	
Selection	 Adaptive Adaptive CIP on Dynamic Dynamic CIP on Binomial Binomial CIP on 	
Factory setting	Binomial	
Additional information	<i>Description</i> The user can choose from a range of filter combinations which can optimize the measurement result depending on the application. Each change in the filter setting affe	cts

the output signal of the measuring device. The response time of the output signal increases as the filter depth increases.

Selection

- Adaptive
 - Strong flow damping with a short output signal response time.
 - Some time is needed before a stable output signal can be generated.
 - Not suitable for pulsating flow as the average flow can be different here.
- Dynamic
 - Average flow damping with a delayed output signal response time.
 - The average flow is displayed correctly over a measuring interval determined over a long period.
- Binomial
 - Weak flow damping with a short output signal response time.
 - The average flow is displayed correctly over a measuring interval determined over a long period.
- CIP
 - This filter is also available for the **Adaptive** and **Dynamic** filter options.
 - If the CIP filter has detected a change in the medium (abrupt increase in the noise level, e.g. quickly changing medium conductivity values during CIP cleaning), flow damping is greatly increased and the raw value (before flow damping) is limited by the mean value (delimiter). This eliminates extremely high measured errors (up to several 100 m/s).
 - If the CIP filter is enabled, the response time of the entire measuring system increases and the output signal is delayed accordingly.

Examples

Possible applications for the filters

Application	Adaptive	Adaptive CIP	Dynamic	Dynamic CIP	Binomial	Binomial CP
Pulsating flow (flow is negative intermittently)			++		++	
Flow changes frequently (flow is dynamic)	-		++	-	++	
Clear signal, quick control loop (< 1 s)			+ 1)		++	
Poor signal, slow control loop (response time of a few seconds)	++	-				
Permanently bad signal	++		-		-	
Short and severe signal distortion after a while		++		++		
Replacement of a Promag 50/53: system damping Promag 100 = 0.5 * Promag 50/53					+++	
Replacement of a Promag 10: system damping Promag 100 = Promag 10 + 2			+++			
For a stable flow signal (no other requirements)	+++					

1) Flow damping value < 6

Flow damping	
Navigation	Image: Barbon Sensor → Process param. → Flow damping (6661)
Description	Use this function to enter flow damping. Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.
User entry	0 to 15
Factory setting	4
Additional information	User entry
	 Value = 0: no damping Value > 0: damping is increased
	 O is a weak damping and 15 a strong one. A damping of 0 is not recommended, as the measuring signal is then so noisy that it is almost impossible to carry out a measurement. The damping depends on the measuring period and the filter type selected. An increase or decrease in the damping depends on the application.
	Effect
	 The damping affects the following variables of the device: Outputs → □ 103 Low flow cut off → □ 75

■ Totalizers → 🗎 162

Flow override	
Navigation	Image: Barbon → Sensor → Process param. → Flow override (1839)
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	OffOn
Factory setting	Off
Additional information	Description
	 Flow override is active The diagnostic message diagnostic message △C453 Flow override is displayed. Output values Temperature: proceeding output Totalizers 1-3: Stop being totalized
	Positive zero return can also be enabled via the Status input: Assign stat.inp. parameter ($\rightarrow \cong 102$).
ß

Conduct. damping	
Navigation	\square = Expert → Sensor → Process param → Conduct damping (1803)
nungation	Ele Expert / Sensor / Hocess param. / Conduct. damping (1905)
Prerequisite	In the Conduct. measur. parameter ($\Rightarrow \square 73$), the On option is selected.
Description	Use this function to enter a time constant for conductivity damping (PT1 element).
User entry	0 to 999.9 s
Factory setting	0 s
Additional information	Description
	The damping is performed by a PT1 element $^{2)}$.
	User entry
	 Value = 0: no damping Value > 0: damping is increased
	Damping is switched off if 0 is entered (factory setting).

Temp. damping		
Navigation	■ Expert → Sensor → Process param. → Temp. damping (1886)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Use this function to enter the time constant for temperature damping.	
User entry	0 to 999.9 s	
Factory setting	0 s	
Conduct. measur.		
Navigation	Image: Barbon Amplitude Sensor → Process param. → Conduct. measur. (6514)	
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \square$ 73) parameter.	
Description	Use this function to enable and disable conductivity measurement.	

²⁾ Proportional behavior with first-order lag

Selection	OffOn
Factory setting	Off
Additional information	Description For conductivity measurement to work, the medium must have a minimum conductivity of 5 μ S/cm.

Cond. temp.coeff		
Navigation	Image: Barbon → Sensor → Process param. → Cond. temp.coeff (1891)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Use this function to enter the temperature coefficient for the conductivity.	
User entry	Signed floating-point number	
Factory setting	2.1 %/K	

Ref.density		
Navigation	Image: Barbon Amplitude Sensor → Process param. → Ref.density (1885)	
Description	Use this function to enter a fixed value for the reference density.	
User entry	Positive floating-point number	
Factory setting	Country-specific: • 1 kg/l • 1 lb/ft ³	
Additional information	Dependency The unit is taken from the Density unit parameter ($\rightarrow \cong 59$)	

"Low flow cut off" submenu

Navigation

 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Sensor} \rightarrow \text{Process param.} \rightarrow \text{Low flow cut off}$

► Low flow cut off	
Assign variable (1837)	→ 🗎 75
On value (1805)	→ 🗎 75
Off value (1804)	→ 🗎 76
Pres. shock sup. (1806)	→ 🗎 76

Assign variable		Ê
Navigation	Image: Barbon And Sensor → Process param. → Low flow cut off → Assign variable (1837))
Description	Use this function to select the process variable for low flow cutoff detection.	
Selection	 Off Volume flow Mass flow Correct.vol.flow 	
Factory setting	Volume flow	

On value		
Navigation	■ Expert → Sensor → Process param. → Low flow cut off → On value (1805)	
Prerequisite	 One of the following options is selected in the Assign variable parameter (→ [●] 75): Volume flow Mass flow 	
Description	Use this function to enter a switch-on value for low flow cut off. Low flow cut off is activated if the value entered is not equal to $0 \rightarrow \square 76$.	
User entry	Positive floating-point number	
Factory setting	Depends on country and nominal diameter $\rightarrow \cong 210$	
Additional information	Dependency The unit depends on the process variable selected in the Assign variable parametry $(\rightarrow \cong 75)$.	er

Off value	â
Navigation	■ Expert → Sensor → Process param. → Low flow cut off → Off value (1804)
Prerequisite	 One of the following options is selected in the Assign variable parameter (→ ● 75): Volume flow Mass flow Correct.vol.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 $\rightarrow \cong 75$.
User entry	0 to 100.0 %
Factory setting	50 %
Additional information	Example
	Q Flow t Time H Hysteresis A Low flow cut off active

- Low flow cut of active
 Low flow cut off is activated
 Low flow cut off is deactivated
 On value entered
- 4 Off value entered

Pres. shock sup.		
Navigation	Image: Barbon Amplitude Sensor → Process param. → Low flow cut off → Pres. shock sup. (1806)	5)
Prerequisite	 One of the following options is selected in the Assign variable parameter (→ P 75): Volume flow Mass flow Correct.vol.flow 	
Description	Use this function to enter the time interval for signal suppression (= active pressure s suppression).	hock
User entry	0 to 100 s	
Factory setting	0 s	

Description

Pressure shock suppression is enabled

- Prerequisite:
- Flow rate < on-value of low flow cut off
- Output values
 - Flow displayed: 0
 - Totalizer: the totalizers are pegged at the last correct value

Pressure shock suppression is disabled

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

Example

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



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

"Empty pipe det." submenu

Navigation \square Expert \rightarrow Sensor \rightarrow Process param. \rightarrow Empty pipe det.



Empty pipe det.		
Navigation	Image: Barbon Amplitude Sensor → Process param. → Empty pipe det. → Empty pipe det. (1860)))
Description	Use this function to switch empty pipe detection on and off.	
Selection	OffOn	
Factory setting	Off	

Switch point EPD		
Navigation	■ Expert → Sensor → Process param. → Empty pipe det. → Switch point EPD (65)	562)
Prerequisite	The On option is selected in the Empty pipe det. parameter ($\rightarrow \square$ 78).	
Description	Use this function to enter the percentage threshold value of the resistance in relatio the adjustment values.	n to
User entry	0 to 100 %	
Factory setting	10 %	

Response time	8
Navigation	Image: Barbon Sensor → Process param. → Empty pipe det. → Response time (1859)
Prerequisite	In the Empty pipe det. parameter ($\rightarrow \square$ 78), the On option is selected.
Description	Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message \triangle S862 Pipe empty to be triggered if the measuring pipe is empty or partially full.
User entry	0 to 100 s
Factory setting	1 s
New adjustment	8
Navigation	Image: Barbon Sensor → Process param. → Empty pipe det. → New adjustment (6560)
Prerequisite	The On option is selected in the Empty pipe det. parameter ($\rightarrow \square$ 78).
Description	For selecting whether to perform an empty pipe or full pipe adjustment.
Selection	CancelEmpty pipe adj.Full pipe adjust
Factory setting	Cancel

Progress	
Navigation	Image: Barbon → Sensor → Process param. → Empty pipe det. → Progress (6571)
Prerequisite	The On option is selected in the Empty pipe det. parameter ($\rightarrow \square$ 78).
Description	Use this function to view the progress.
User interface	OkBusyNot ok

Empty pipe value Image: Empty pipe value Navigation Image: Expert → Sensor → Process param. → Empty pipe det. → Empty pipe value (6527) Prerequisite Image: Im

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

User interface Positive floating-point number

Full pipe value		æ
Navigation	Image: Barbon Amplitude Sensor → Process param. → Empty pipe det. → Full pipe value (6548)	
Prerequisite	 In the Empty pipe det. parameter (→ Parameter (
Description	Displays the adjustment value when the measuring pipe is full.	
User interface	Positive floating-point number	

Meas. value EPD

Navigation	■ Expert → Sensor → Process param. → Empty pipe det. → Meas. value EPD (6559)
Prerequisite	In the Empty pipe det. parameter ($\Rightarrow \square 78$), the On option is selected.
Description	Displays the current measured value.
User interface	Positive floating-point number

"ECC" submenu

Navigation

□ Expert → Sensor → Process param. → ECC

► ECC	
ECC (6528)	→ 🖺 81
ECC duration (6555)	→ 🗎 81
ECC recov. time (6556)	→ 🗎 81

ECC clean. cycle (6557)	→ 🗎 82
ECC Polarity (6631)	→ 🗎 82

ECC		
Navigation	Image: Barbon And Sensor → Process param. → ECC → ECC (6528)	
Prerequisite	For the following order code: "Application package", option EC "ECC electrode cleaning"	
Description	Use this function to enable and disable cyclic electrode cleaning.	
Selection	OffOn	
Factory setting	Off	

ECC duration	

Navigation	■ Expert \rightarrow Sensor \rightarrow Process param. \rightarrow ECC \rightarrow ECC duration (6555)
Prerequisite	For the following order code: "Application package", option EC "ECC electrode cleaning"
Description	Use this function to enter the duration of electrode cleaning in seconds.
User entry	0.01 to 30 s
Factory setting	2 s

ECC recov. time		
Navigation	Image: Barbon → Sensor → Process param. → ECC → ECC recov. time (6556)	
Prerequisite	For the following order code: "Application package", option EC "ECC electrode cleaning"	
Description	Use this function to enter the recovery time after electrode cleaning to prevent sign output interference. The current output values are frozen in the meanwhile.	al
User entry	1 to 600 s	
Factory setting	60 s	

A

ECC clean. cycle

Navigation	Image: Barbon → Sensor → Process param. → ECC → ECC clean. cycle (6557)
Prerequisite	For the following order code: "Application package", option EC "ECC electrode cleaning"
Description	Use this function to enter the pause duration until the next electrode cleaning.
User entry	0.5 to 168 h
Factory setting	0.5 h

ECC Polarity Navigation Image: Expert → Sensor → Process param. → ECC → ECC Polarity (6631) Prerequisite For the following order code: "Application package", option EC "ECC electrode cleaning" Description Displays the polarity of the electrode cleaning circuit. User interface • Positive • Negative • Negative Depends on the electrode material: • Platinum: Negative option

• Tantalum, Alloy C22, stainless steel: **Positive** option

3.2.4 "External comp." submenu

Navigation \square Expert \rightarrow Sensor \rightarrow External comp.

► External comp.	
Density source (6615)	→ 🗎 83
Fixed density (6623)	→ 🖺 83
External density (6630)	→ 🗎 84
Linear exp coeff (1817)	→ 🗎 85
Square exp coeff (1818)	→ 🗎 86

Ref. density (1892)	→ 🗎 86
Temp. source (6712)	→ 🖹 84
External temp. (6673)	→ 🗎 84
Ref. temperature (1816)	→ 🗎 85

Density source		Â
Navigation	Image: Barbon Amplitude Sensor → External comp. → Density source (6615)	
Description	Use this function to select the density source.	
Selection	 Fixed density External density Current input 1 * Current input 2 * Current input 3 * Calculated value 	
Factory setting	Fixed density	
Fixed density		Ê
Navigation	□ Expert → Sensor → External comp. → Fixed density (6623)	

Prerequisite	The Fixed density option is selected in the Density source parameter (\rightarrow	83).
--------------	--	------

User entry Positive floating-point number

Factory settingCountry-specific:• 1000 kg/l• 1000 lb/ft³

Additional information

Dependency
The unit is taken from th

The unit is taken from the **Density unit** parameter ($\rightarrow \implies$ 59)

^{*} Visibility depends on order options or device settings

External density	
Navigation	■ Expert \rightarrow Sensor \rightarrow External comp. \rightarrow External density (6630)
Prerequisite	The External density option is selected in the Density source parameter ($\Rightarrow \square 83$).
Description	Displays the density read in from the external device.
User entry	Positive floating-point number
Additional information	Dependency
	1 The unit is taken from the Density unit parameter ($\rightarrow \square$ 59)

Temp. source		
Navigation	Image: Barbon Sensor → External comp. → Temp. source (6712)	
Description	Use this function to select the temperature source.	
Selection	 Int.temp. sensor Off External value Current input 1 * Current input 2 * Current input 3 * 	
Factory setting	Off	

External temp.	
Navigation	■ Expert → Sensor → External comp. → External temp. (6673)
Prerequisite	The External value option is selected in the Temp. source parameter ($\rightarrow \square 84$).
Description	Displays the temperature read in from the external device.
User entry	Floating point number with sign
Additional information	Dependency

The unit is taken from the **Temperature unit** parameter ($\rightarrow \square 57$)

^{*} Visibility depends on order options or device settings

Ref. temperature	
Navigation	Image: Barbon Amplitude Sensor → External comp. → Ref. temperature (1816)
Prerequisite	The Fixed density option or External density option are selected in the Density source parameter ($\rightarrow \blacksquare 83$).
Description	Use this function to enter a reference temperature for calculating the reference density.
User interface	–273.15 to 99999 °C
Factory setting	Country-specific: ■ +20 °C ■ +68 °F
Additional information	Dependency The unit is taken from the Temperature unit parameter ($\rightarrow \boxtimes 57$) Reference density calculation
	$\rho_n = \rho \cdot (1 + \alpha \cdot \Delta t + \beta \cdot \Delta t^2)$
	 ρ_N: reference density ρ: fluid density currently measured

- t: fluid temperature currently measured
- t_N : reference temperature at which the reference density is calculated (e.g. 20 °C)
- $\Delta t: t t_N$
- α : linear expansion coefficient of the fluid, unit = [1/K]; K = Kelvin
- β : square expansion coefficient of the fluid, unit = $[1/K^2]$

Navigation	Image: Expert → Sensor → External comp. → Linear exp coeff (1817)
Prerequisite	The Calculated value option is selected in the Density source parameter ($\rightarrow \square 83$) parameter.
Description	Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.
User interface	Signed floating-point number
Factory setting	-2.0295 · 10 ⁻⁰⁴ 1/K

A

Square exp coeff		
Navigation	Image: Barbon Amplitude Sensor → External comp. → Square exp coeff (1818)	
Prerequisite	The Calculated value option is selected in the Density source parameter ($\rightarrow \cong 83$) parameter.	
Description	For fluid with a non-linear expansion pattern: use this function to enter a quadratic, flu specific expansion coefficient for calculating the reference density.	ıid-
User interface	Signed floating-point number	
Factory setting	-3.8436 · 10 ⁻⁰⁶ 1/K ²	
Ref. density		
Navigation	Image: Expert → Sensor → External comp. → Ref. density (1892)	
Prerequisite	The Calculated value option is selected in the Density source parameter ($\Rightarrow \square 83$) parameter.	
Description	Displays the reference density.	
User interface	Positive floating-point number	
Additional information	Description	
	The reference density is required for density calculation.	
	Deviation of the process temperature from the reference temperature:	
	$\Delta T = T - T_{ref}$	
	ΔT : Deviation	
	T: Process temperature	
	T_{ref} . Ref. temperature ($\Rightarrow \boxtimes 85$)	
	Temperature-compensated density:	
	$\rho_{\rm comp} = \rho_{\rm ref} (1 + \alpha \Delta T + \beta \Delta T^2)$	
	ρ _{comp} : Calculated density	
	ρ _{ref} : Reference density	
	ΔT : Deviation of the process temperature from the reference temperature	
	a: Linear exp coeff ($\rightarrow \cong 85$)	
	β : Square exp coeff ($\rightarrow \square 86$)	

Example for water (factory setting) For a reference temperature of T_{ref} = 20 °C A quadratic fit of a number of density values results in the following coefficients:

- $\alpha = -2.0295 \cdot 10^{-4} 1/K$
- $\beta = -3.8436 \cdot 10^{-6} \ 1/K^2$
- $\rho_{ref} = 997.82 \text{ kg/m}^3$



2 Quadratic fit

Dependency

The unit is taken from the **Density unit** parameter ($\rightarrow \cong 59$)

3.2.5 "Sensor adjustment" submenu

Navigation

■ Expert \rightarrow Sensor \rightarrow Sensor adjustm.

► Sensor adjustm.	
Install. direct. (1809)	→ 🗎 88
Integration time (6533)	→ 🖹 88
Measuring period (6536)	→ 🖹 88
► Variable adjust	→ 🗎 88

A

Install. direct.

Navigation	Image: Expert → Sensor → Sensor adjustm. → Install. direct. (1809)
Description	Use this function to change the sign of the medium flow direction.
Selection	In arrow direct.Against arrow
Factory setting	In arrow direct.
Additional information	Description
	Before changing the sign: ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor nameplate.

Integration time		
Navigation	■ Expert → Sensor → Sensor adjustm. → Integration time (6533)	
Description	Display the duration of an integration cycle.	
User interface	1 to 65 ms	

Measuring period		æ
Navigation	■ Expert → Sensor → Sensor adjustm. → Measuring period (6536)	
Description	Display the time of a full measuring period.	
User interface	0 to 1 000 ms	

"Variable adjust" submenu

```
Navigation
```

 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Sensor} \rightarrow \text{Sensor adjustm.} \rightarrow \text{Variable adjust}$

► Variable adjust	
Vol. flow offset (1831)	→ 🗎 89
Vol. flow factor (1832)	→ 🗎 89
Mass flow offset (1841)	→ 曽 90

Mass flow factor (1846)	→ 🗎 90
Conduct. offset (1848)	→ 🗎 90
Conduct. factor (1849)	→ 🗎 91
Corr. vol offset (1866)	→ 🗎 91
Corr. vol factor (1867)	→ 🖺 91
Temp. offset (1868)	→ 🗎 92
Temp. factor (1869)	→ 🗎 92
Corr.cond.offset (1870)	→ 🗎 93
Corr.cond.factor (1871)	→ 🗎 93
Flow vel. offset (1879)	→ 🗎 93
Flow vel. factor (1880)	→ 🗎 94

Vol. flow offset		Â
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset (1831)	
Description	Use this function to enter the zero point shift for the volume flow trim. The volume flou unit on which the shift is based is m^3/s .	W
User entry	Signed floating-point number	
Factory setting	0 m³/s	
Additional information	Description	
	Corrected value = (factor × value) + offset	

Vol. flow factor		
Navigation	Image: Barbon Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor (1832)	
User entry	Positive floating-point number	
Factory setting	1	



Description

Corrected value = (factor × value) + offset

Mass flow offset		Ê
Navigation	\square = Fxpert → Sensor → Sensor adjustm → Variable adjust → Mass flow offset (18)	41)
Description	Use this function to enter the zero point shift for the mass flow trim. The mass flow on which the shift is based is kg/s.	unit
User entry	Signed floating-point number	
Factory setting	0 kg/s	
Additional information	Description Corrected value = (factor × value) + offset	

i6)
4

Conduct. offset		
Navigation	■ Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. offset (184)	8)
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \square$ 73) parameter.	
Description	Use this function to enter the zero point shift for the conductivity trim. The conducti unit on which the shift is based is S/m.	vity
User entry	Signed floating-point number	
Factory setting	0 S/m	

Description

Corrected value = (factor × value) + offset

Conduct. factor		
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Conduct. factor (1849))
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \square$ 73) parameter.	
Description	Use this function to enter a quantity factor for the conductivity. This multiplication fa is applied over the conductivity range.	ctor
User entry	Positive floating-point number	
Factory setting	1	
Additional information	Description	
	Corrected value = (factor × value) + offset	

Corr. vol offset		
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Corr. vol offset (1866)	
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 Nm ³ /s.	
User entry	Signed floating-point number	
Factory setting	0 Nm ³ /s	
Additional information	Description	
	Corrected value = (factor × value) + offset	

Corr. vol factor	8
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Corr. vol factor (1867)
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



Description

Corrected value = (factor × value) + offset

Temp. offset		A
Navigation	■ Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset (1868)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is 1 K.	ure
User entry	Signed floating-point number	
Factory setting	0 К	
Additional information	Description Corrected value = (factor × value) + offset	

Temp. factor		A
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Temp. factor (1869)	
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device. 	
Description	Use this function to enter a quantity factor (without time) for the temperature. This multiplication factor is applied over the temperature range.	
User entry	Positive floating-point number	
Factory setting	1	
Additional information	Description Corrected value = (factor × value) + offset	

Corr.cond.offset		Â
Navigation	Image: Barbon And Sensor → Sensor adjust: → Variable adjust → Corr.cond.offset (1870)	
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \square$ 73) parameter.	
Description	Use this function to enter the zero point shift to trim the corrected conductivity. The conductivity unit on which the shift is based is μ S/cm.	
User entry	Signed floating-point number	
Factory setting	0 S/m	
Additional information	Description	
	Corrected value = (factor × value) + offset	

Corr.cond.factor	[<u>-</u>
Navigation	□ Expert → Sensor → Sensor adjustm. → Variable adjust → Corr.cond.factor (1871)	
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \square$ 73) parameter.	
Description	Use this function to enter a quantity factor for the corrected conductivity. In each case, the factor refers to the conductivity in μ S/cm.	is
User entry	Positive floating-point number	
Factory setting	1	
Additional information	Description Corrected value = (factor × value) + offset	

Flow vel. offset	8
Navigation	Image: Barbon And Sensor → Sensor adjustm. → Variable adjust → Flow vel. offset (1879)
Description	Use this function to enter the zero point shift for the flow velocity trim. The flow velocity unit on which the shift is based is m/s.
User entry	Signed floating-point number
Factory setting	0 m/s
Additional information	Description
	Corrected value = (factor × value) + offset

Flow vel. factor		
Navigation	Image: Barbon Sensor → Sensor adjust: → Variable adjust → Flow vel. factor (1880)	
Description	Use this function to enter a quantity factor (without time) for the flow velocity. This multiplication factor is applied over the flow velocity range.	
User entry	Positive floating-point number	
Factory setting	1	
Additional information	Description Corrected value = (factor × value) + offset	

3.2.6 "Calibration" submenu

Navigation

► Calibration	
Nominal diameter (2807)) → 🗎 94
Cal. factor (6522)) → 🗎 95
Zero point (6546)] → 🗎 95
Cond. cal. fact. (6718)) → 🗎 95

Nominal diameter	
Navigation	Image: Expert → Sensor → Calibration → Nominal diameter (2807)
Description	Displays the nominal diameter of the sensor.
User interface	DNxx / x"
Factory setting	Depends on the size of the sensor
Additional information	Description
	The value is also specified on the sensor nameplate.

Cal. factor	
Navigation	Image: Expert → Sensor → Calibration → Cal. factor (6522)
Description	Displays the current calibration factor for the sensor.
User interface	Positive floating-point number
Factory setting	Depends on nominal diameter and calibration.

Zero point		A
Navigation	■ Expert → Sensor → Calibration → Zero point (6546)	
Description	This function shows the zero point correction value for the sensor.	
User interface	Signed floating-point number	
Factory setting	Depends on nominal diameter and calibration	

Cond. cal. fact.		
Navigation	Image: Expert → Sensor → Calibration → Cond. cal. fact. (6718)	
Prerequisite	The On option is selected in the Conduct. measur. parameter ($\rightarrow \implies$ 73) parameter.	
Description	Displays the calibration factor for the conductivity measurement.	
User interface	0.01 to 10000	

3.3 "I/O configuration" submenu

Navigation $\blacksquare \blacksquare$ Expert \rightarrow I/O config.

► I/O config.	
I/O 1 to n terminals (3902–1 to n)	→ 🗎 96
I/O 1 to n info (3906–1 to n)	→ 🗎 96
I/O 1 to n type (3901–1 to n)	→ 曽 97

Арр	ly I/O config (3907)	→	97
Alte	eration code (2762))	97

I/O 1 to n terminals	
Navigation	■ Expert \rightarrow I/O config. \rightarrow I/O 1 to n terminals (3902–1 to n)
Description	Displays the terminal numbers used by the I/O module.
User interface	 Not used 26-27 (I/O 1) 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)

I/O 1 to n info	
NT 1	

Navigation	\boxtimes \boxtimes Expert \rightarrow 1/0 config. \rightarrow 1/0 1 to n into (3906–1 to n)
Description	Displays information about the plugged in I/O module.
User interface	 Not plugged Invalid Not configurable Configurable EtherNet/IP
Additional information	"Not plugged" option
	The I/O module is not plugged in.
	"Invalid" option
	The I/O module is not plugged correctly.
	"Not configurable" option
	The I/O module is not configurable.
	"Configurable" option
	The I/O module is configurable.
	"Fieldbus" option
	The I/O module is configured for the fieldbus.

æ I/O 1 to n type Navigation 8 2 Expert \rightarrow I/O config. \rightarrow I/O 1 to n type (3901–1 to n) Prerequisite For the following order code: "Output; input 2", option **D** "Configurable I/O initial setting off" Description Use this function to select the I/O module type for the configuration of the I/O module. Selection • Off Curr.output^{*} Current input * Status input PFS output **Factory setting** Off A Apply I/O config Navigation ■ Expert \rightarrow I/O config. \rightarrow Apply I/O config (3907) Description Use this function to activate the newly configured I/O module type. Selection No Yes **Factory setting** No

Alteration code		Â
Navigation	ⓐ ■ Expert \rightarrow I/O config. \rightarrow Alteration code (2762)	
Description	Use this function to enter the ordered activation code to activate the I/O configuration change.	
User entry	Positive integer	
Factory setting	0	
Additional information	Description The I/O configuration is changed in the I/O type parameter ($\rightarrow \square$ 97).	

^{*} Visibility depends on order options or device settings

3.4 "Input" submenu

Navigation	$ \blacksquare \ = \ Expert \rightarrow Input $	
► Input		
	► Current input 1 to n	→ 🗎 98
	► Status input 1 to n	→ 🗎 101

3.4.1 "Current input 1 to n" submenu

Navigation

 $\blacksquare \Box \quad \text{Expert} \rightarrow \text{Input} \rightarrow \text{Current input 1 to n}$



Terminal no.

Navigation	■ Expert → Input → Current input 1 to $n \rightarrow$ Terminal no. (1611–1 to n)
Description	Displays the terminal numbers used by the current input module.
User interface	 Not used 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)
Additional information	<i>"Not used" option</i> The current input module does not use any terminal numbers.

Signal mode		Ê
Navigation	■ Expert → Input → Current input 1 to $n \rightarrow$ Signal mode (1610–1 to n)	
Prerequisite	The measuring device is not approved for use in the hazardous area with type of protection Ex-i.	
Description	Use this function to select the signal mode for the current input.	
Selection	PassiveActive	
Factory setting	Active	
Current span		ß
Navigation	■ Expert → Input → Current input 1 to $n \rightarrow$ Current span (1605–1 to n)	
Description	Use this function to select the current range for the process value output and the upper and lower level for signal on alarm.	r
Selection	 420 mA 420 mA NAMUR 420 mA US 020 mA 	
Factory setting	Country-specific: • 420 mA NAMUR • 420 mA US	
Additional information	<i>Examples</i> Sample values for the current range: Current span parameter ($\rightarrow \square$ 105)	

0/4 mA value		
Navigation	■ Expert → Input → Current input 1 to $n \rightarrow 0/4$ mA value (1606–1 to n)	
Description	Use this function to enter a value for the 4 mA current.	
User entry	Signed floating-point number	
Factory setting	0	

Current input behavior

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

- Current span ($\rightarrow \square 99$)
- Failure mode ($\rightarrow \square 100$)

Configuration examples

Pay attention to the configuration examples for **4 mA value** parameter ($\rightarrow \square 106$).

20 mA value		
Navigation	Image: Barbon Structure ■ Expert → Input → Current input 1 to n → 20 mA value (1607–1 to n)	
Description	Use this function to enter a value for the 20 mA current.	
llser entry	Signed floating-point number	
oser entry	Signed notifing point number	
Factory setting	Depends on country and nominal diameter	
Additional information	Configuration examples	
	Pay attention to the configuration examples for 4 mA value parameter ($ o extsf{ } 10 extsf{ }$)6).

Failure mode		
Navigation	Image: Barbon Structure </th <th></th>	
Description	Use this function to select the input behavior when measuring a current outside the configured Current span parameter ($\rightarrow \square 99$).	
Selection	AlarmLast valid valueDefined value	
Factory setting	Alarm	
Additional information	 Options Alarm An error message is set. Last valid value The last valid measured value is used. Defined value A user-defined measured value is used (Failure value parameter (→ 101)). 	

Failure value		Â
Novigation	@ _ Furnewt \ Input \ Current input 1 to n \ Failure value (1602, 1 to n)	
Ivavigation	\square Expert \neg Input \neg Current input 1 to ii \neg Failure value (1002–1 to ii)	
Prerequisite	In the Failure mode parameter ($\Rightarrow \cong 100$), the Defined value option is selected.	
Description	Use this function to enter the value that the device uses if it does not receive an input signal from the external device, or if the input signal is invalid.	
User entry	Signed floating-point number	
Factory setting	0	

3.4.2 "Status input 1 to n" submenu

Navigation \square Expert \rightarrow Input \rightarrow Status input 1 to n

► Status input 1 to n	
Terminal no. (1358–1 to n)	→ 🗎 101
Assign stat.inp. (1352–1 to n)	→ 🗎 102
Val.stat.inp. (1353–1 to n)	→ 🗎 102
Active level (1351–1 to n)	→ 🗎 102
Response time (1354–1 to n)	→ 🗎 103

Terminal no.

Navigation	Image: Boundary Status input 1 to n → Terminal no. (1358–1 to n) Image: Status input 1 to n → Terminal no. (1358–1 to n)
Description	Displays the terminal numbers used by the status input module.
User interface	 Not used 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)
Additional information	"Not used" option
	The status input module does not use any terminal numbers.

Assign stat.inp.	
Navigation	Image: Barbon Status input 1 to n → Assign stat.inp. (1352–1 to n) Barbon Status input 1 to n → Assign stat.inp. (1352–1 to n)
Description	Use this function to select the function for the status input.
Selection	 Off Reset totaliz. 1 Reset totaliz. 2 Reset totaliz. 3 Reset all tot. Flow override
Factory setting	Off
Additional information	 Selection Off The status input is switched off. Reset totaliz. 13 The individual totalizers are reset. Reset all tot. All totalizers are reset. Flow override The Flow override (→ 72) is activated. Note on the Flow override (→ 72): The Flow override (→ 72): The Flow override (→ 72) is enabled as long as the level is at the status input (continuous signal). All other assignments react to a change in level (pulse) at the status input.

Val.stat.inp.		
Navigation	■ Expert → Input → Status input 1 to $n \rightarrow$ Val.stat.inp. (1353–1 to n)	
Description	Displays the current input signal level.	
User interface	HighLow	

Active level		
Navigation	■ Expert → Input → Status input 1 to $n \rightarrow$ Active level (1351–1 to n)	
Description	Use this function to determine the input signal level at which the assigned function is activated.	
Selection	HighLow	

Factory setting	High
Response time	
Navigation	■ Expert → Input → Status input 1 to n → Response time (1354–1 to n)
Description	Use this function to enter the minimum time period for which the input signal level must be present before the selected function is activated.
User entry	5 to 200 ms
Factory setting	50 ms

3.5 "Output" submenu

Navigation \square Expert \rightarrow Output

► Output	
► Curr.output 1 to n	→ 🗎 103
► PFS output 1 to n	→ 🗎 117
► Relay output 1 to n	→ 🗎 137

3.5.1 "Current output 1 to n" submenu

Navigation B Expert \rightarrow Output \rightarrow Curr.output 1 to n

► Curr.output 1 to n	
Terminal no. (0379–1 to n)	→ 🗎 104
Signal mode (0377–1 to n)	→ 🗎 104
Assign curr. 1 to n (0359–1 to n)	→ 🗎 105
Current span (0353–1 to n)	→ 🗎 105
Fixed current (0365–1 to n)	→ 🗎 106
0/4 mA value (0367-1 to n)	→ 🗎 106
20 mA value (0372-1 to n)	→ 🗎 108

Measuring mode (0351–1 to n)	→ ● 109
Damping out. 1 to n (0363–1 to n)	→ 🗎 113
Response time (0378–1 to n)	→ 🗎 114
Failure mode (0364–1 to n)	→ 🗎 115
Failure current (0352–1 to n)	→ 🗎 116
Output curr. 1 to n (0361–1 to n)	→ 🗎 116
Measur. curr. 1 to n (0366–1 to n)	→ 🗎 117

Terminal no.	
Navigation	■ Expert → Output → Curr.output 1 to n → Terminal no. (0379–1 to n)
Description	Displays the terminal numbers used by the current output module.
User interface	 Not used 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)
Additional information	<i>"Not used" option</i> The current output module does not use any terminal numbers.

Signal mode		Â
Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow$ Signal mode (0377-1 to n)	
Description	Use this function to select the signal mode for the current output.	
Selection	PassiveActive	
Factory setting	Active	

Assign curr. 1 to n	8
Navigation	Image: Barbon Structure And Antipactic Action and Assign Curr. 1 to n (0359−1 to n) Image: Contract Action Ac
Description	Use this function to select a process variable for the current output.
Selection	 Off Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Temperature* Electronic temp.
Factory setting	Volume flow
Current span	۵
Navigation	Image: Second structure
Description	Use this function to select the current range for the process value output and the upper and lower level for signal on alarm.
Selection	 420 mA NAMUR 420 mA US 420 mA 020 mA Fixed current
Factory setting	Country-specific: • 420 mA NAMUR • 420 mA US
Additional information	 Description In the event of a device alarm, the current output adopts the value specified in the Failure mode parameter (→ 🗎 115). If the measured value is outside the measuring range, the diagnostic message AS441 Curr.output 1 to n is displayed. The measuring range is specified via the 0/4 mA value parameter (→ 🗎 106) and 20 mA value parameter (→ 🗎 108). <i>"Fixed current" option</i> The current value is set via the Fixed current parameter (→ 🗎 106). Example
	Shows the relationship between the current span for the output of the process variable and the lower and upper alarm levels:

^{*} Visibility depends on order options or device settings



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

Selection

Options	1	2	3
420 mA NAMUR	3.8 to 20.5 mA	< 3.6 mA	> 21.95 mA
420 mA US	3.9 to 20.8 mA US	< 3.6 mA	> 21.95 mA
420 mA	4 to 20.5 mA	< 3.6 mA	> 21.95 mA
020 mA	0 to 20.5 mA	< 0 mA	> 21.95 mA

If the flow exceeds or falls below the upper or lower signal on alarm level, the diagnostic message \triangle S441 Curr.output 1 to n is displayed.

Fixed current		
Navigation	Image: Barbon Barbon Structure And	
Prerequisite	The Fixed current option is selected in the Current span parameter ($\rightarrow \square 105$).	
Description	Use this function to enter a constant current value for the current output.	
User entry	0 to 22.5 mA	
Factory setting	22.5 mA	

0/4 mA value

Navigation	■ Expert → Output → Curr.output 1 to n → 0/4 mA value (0367–1 to n)
Prerequisite	 One of the following options is selected in the Current span parameter (→ 105): 420 mA NAMUR 420 mA US 420 mA 020 mA
Description	Use this function to enter a value for the 0/4 mA current.
User entry	Signed floating-point number

A

Factory setting

Country-specific:

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

Additional information

Description

Positive and negative values are permitted depending on the process variable assigned in the **Assign curr.** parameter ($\rightarrow \square$ 105). In addition, the value can be greater than or smaller than the value assigned for the 20 mA current in the **20 mA value** parameter ($\rightarrow \square$ 108).

Dependency

The unit depends on the process variable selected in the **Assign curr.** parameter $(\rightarrow \cong 105)$.

Current output behavior

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

- Current span ($\rightarrow \triangleq 105$)
- Failure mode ($\rightarrow \square 115$)

Configuration examples

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

Configuration example A

Measuring mode with Forward flow option

- 0/4 mA value parameter ($\rightarrow \equiv 106$) = not equal to zero flow (e.g. -250 m³/h)
- 20 mA value parameter ($\rightarrow \cong 108$) = not equal to zero flow (e.g. +750 m³/h)
- Calculated current value = 8 mA at zero flow



Q Flow

I Current

1 Measuring range is exceeded or undershot

The operational range of the measuring device is defined by the values entered for the **0/4 mA value** parameter ($\rightarrow \square$ 106) and **20 mA value** parameter ($\rightarrow \square$ 108). If the effective flow exceeds or falls below this operational range, the diagnostic message \triangle **S441 Curr.output 1 to n** is displayed.

Configuration example B

Measuring mode with Forward/Reverse option



I Current

Q Flow

1 Value assigned to the 0/4 mA current

2 Forward flow

3 Reverse flow

The current output signal is independent of the direction of flow (absolute amount of the measured variable). The values for the **0/4 mA value** parameter ($\rightarrow \boxminus 106$) and **20 mA value** parameter ($\rightarrow \boxminus 108$) must have the same sign. The value for the **20 mA value** parameter ($\rightarrow \boxminus 108$) (e.g. reverse flow) corresponds to the mirrored value for the **20 mA value** parameter ($\rightarrow \boxminus 108$) (e.g. forward flow).

Configuration example C

Measuring mode with **Rev. flow comp.** option

If flow is characterized by severe fluctuations (e.g. when using reciprocating pumps), flow components outside the measuring range are buffered, balanced and output after a maximum delay of $60 \text{ s} \rightarrow \bigoplus 109$.

20 mA value		
Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow 20$ mA value (0372–1 to n)	
Prerequisite	One of the following options is selected in the Current span parameter (→ 🗎 105): • 420 mA NAMUR • 420 mA US • 420 mA • 020 mA	
Description	Use this function to enter a value for the 20 mA current.	
User entry	Signed floating-point number	
Factory setting	Depends on country and nominal diameter $\rightarrow \cong 208$	
Additional information	Description	
	Positive and negative values are permitted depending on the process variable assigned the Assign curr. parameter ($\rightarrow \cong 105$). In addition, the value can be greater than or	in
smaller than the value assigned for the 0/4 mA current in the **0/4 mA value** parameter (→ 🗎 106).

Dependency

The unit depends on the process variable selected in the Assign curr. parameter (→ 🗎 105).

Example

- Value assigned to $0/4 \text{ mA} = -250 \text{ m}^3/\text{h}$
- Value assigned to $20 \text{ mA} = +750 \text{ m}^3/\text{h}$
- Calculated current value = 8 mA (at zero flow)

If the Forward/Reverse option is selected in the Measuring mode parameter (→ 🗎 109), different signs cannot be entered for the values of the **0/4 mA value** parameter ($\rightarrow \square$ 106) and **20 mA value** parameter ($\rightarrow \square$ 108). The diagnostic message **▲S441 Curr.output 1 to n** is displayed.

Configuration examples

• Observe the configuration examples for the **0/4 mA value** parameter ($\rightarrow \square$ 106).

Measuring mode		
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity • CorrConductivity • Temperature • Electronic temp.	
	 One of the following options is selected in the Current span parameter (→ 105): 420 mA NAMUR 420 mA US 420 mA 020 mA 	
Description	Use this function to select the measuring mode for the current output.	
Selection	Forward flowForward/ReverseRev. flow comp.	
Factory setting	Forward flow	

^{*} Visibility depends on order options or device settings

Description



The process variable that is assigned to the current output via the **Assign curr**. parameter ($\rightarrow \triangleq 105$) is displayed below the parameter.

"Forward flow" option

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

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

- Both values are defined such that they are not equal to zero flow e.g.:
 - $0/4 \text{ mA current value} = -5 \text{ m}^3/\text{h}$
 - $-20 \text{ mA current value} = 10 \text{ m}^3/\text{h}$
- If the effective flow exceeds or falls below this measuring range, the diagnostic message ▲S441 Curr.output 1 to n is displayed.





- I Current
- Q Flow
- 1 Value assigned to the 0/4 mA current
- 2 Forward flow
- 3 Reverse flow
- The current output signal is independent of the direction of flow (absolute amount of the measured variable). The values for the 0/4 mA value parameter (→ 🖹 106) and 20 mA value parameter (→ 🖺 108) must have the same sign.
- The value for the 20 mA value parameter (→
 ^(⇒) 108) (e.g. reverse flow) corresponds to the mirrored value for the 20 mA value parameter (→
 ^(⇒) 108) (e.g. forward flow).

"Rev. flow comp." option

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

If buffering cannot be processed within approx. 60 s, the diagnostic message \triangle **S441 Curr.output 1 to n** is displayed.

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

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

Examples of how the current output behaves

Example 1

Defined measuring range: lower range value and upper range value with the **same** sign



- ☑ 3 Measuring range
- I Current
- Q Flow
- 1 Lower range value (value assigned to 0/4 mA current)
- 2 Upper range value (value assigned to 20 mA current)

With the following flow response:



- Image: 4 Flow response
- Q Flow
- t Time

With Forward flow option

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



I Current

t Time

With Forward/Reverse option

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



- I Current
- t Time

With Rev. flow comp. option

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



- I Current
- t Time
- *S Flow components saved*
- A Balancing of saved flow components

Example 2

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



■ 5 Measuring range

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

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



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

With Forward flow option

• a (–): The flow components outside the scaled measuring range cannot be taken into account for signal output.

The diagnostic message \triangle **S441 Curr.output 1 to n** is displayed.

• b (- -): The current output signal is proportional to the process variable assigned.



I Current

t Time

With Forward/Reverse option

This option is not possible in this case as the values for the **0/4 mA value** parameter ($\Rightarrow \square$ 106) and **20 mA value** parameter ($\Rightarrow \square$ 108) have different signs.

With Rev. flow comp. option

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



- I Current
- t Time
- S Flow components saved
- A Balancing of saved flow components

Damping out. 1 to n		Ê
Navigation	Image: Barbon Barb	
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity • CorrConductivity • Temperature	

Electronic temp.

One of the following options is selected in the **Current span** parameter ($\rightarrow \square 105$): • 4...20 mA NAMUR

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

^{*} Visibility depends on order options or device settings

Description	Use this function to enter a time constant for the reaction time of the current output signal to fluctuations in the measured value caused by process conditions.
User entry	0.0 to 999.9 s
Factory setting	1.0 s
Additional information	 Entry Use this function to enter a time constant (PT1 element ³) for current output damping: If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables. On the other hand, the current output reacts more slowly if a high time constant is entered.
	\square Damping is switched off if 0 is entered (factory setting).

Response time	
Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow$ Response time (0378–1 to n)
Prerequisite	 One of the following options is selected in the Assign curr. parameter (→ 105): Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Temperature* Electronic temp.
	One of the following options is selected in the Current span parameter (→ 🗎 105): • 420 mA NAMUR • 420 mA US • 420 mA • 020 mA
Description	Displays the response time. This specifies how quickly the current output reaches the measured value change of 63 % of 100 % of the measured value change.
User interface	Positive floating-point number
Additional information	Description The response time is made up of the time specified for the following dampings: Current output damping → ⁽¹⁾ ⁽²⁾ ⁽²
	 Depending on the measured variable assigned to the output. Flow damping

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

Failure mode	
Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow$ Failure mode (0364–1 to n)
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity • CorrConductivity • Temperature • Electronic temp.
	One of the following options is selected in the Current span parameter (→ 🗎 105): • 420 mA NAMUR • 420 mA US • 420 mA • 020 mA
Description	Use this function to select the value of the current output in the event of a device alarm.
Selection	 Min. Max. Last valid value Actual value Defined value
Factory setting	Max.

^{*} Visibility depends on order options or device settings



f



"Min." option

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

The signal on alarm level is defined via the **Current span** parameter ($\rightarrow \square$ 105).

"Max." option

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



"Last valid value" option

The current output adopts the last measured value that was valid before the device alarm occurred.

"Actual value" option

The current output adopts the measured value on the basis of the current flow measurement; the device alarm is ignored.

"Defined value" option

The current output adopts a defined measured value.

The measured value is defined via the **Failure current** parameter ($\rightarrow \square 116$).

Failure current		A
Navigation	■ Expert → Output → Curr.output 1 to n → Failure current (0352–1 to n)	
Prerequisite	The Defined value option is selected in the Failure mode parameter ($\rightarrow \cong 115$).	
Description	Use this function to enter a fixed value that the current output adopts in the event of a device alarm.	ì
User entry	0 to 22.5 mA	
Factory setting	22.5 mA	

Output curr. 1 to n

Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow$ Output curr. 1 to n (0361–1 to n)			
Description	Displays the current value currently calculated for the current output.			
User interface	3.59 to 22.5 mA			

Measur. curr. 1 to n	
Navigation	■ Expert → Output → Curr.output 1 to $n \rightarrow$ Measur. curr. 1 to $n (0366-1 \text{ to } n)$
Description	Use this function to display the actual measured value of the output current.
User interface	0 to 30 mA

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

Navigation $\textcircled{B} \boxminus$ Expert \rightarrow Output \rightarrow PFS output 1 to n

► PFS output 1 to a	n	
	Terminal no. (0492–1 to n)	→ 🗎 118
	Signal mode (0490–1 to n)	→ 🖺 119
	Operating mode (0469–1 to n)	→ 🗎 119
	Assign pulse 1 to n (0460–1 to n)	→ 🖺 121
	Value per pulse (0455–1 to n)	→ 🗎 121
	Pulse width (0452–1 to n)	→ 🗎 122
	Measuring mode (0457-1 to n)	→ 🗎 122
	Failure mode (0480–1 to n)	→ 🗎 123
	Pulse output 1 to n (0456–1 to n)	→ 🗎 124
	Assign freq. (0478-1 to n)	→ 🗎 125
	Min. freq. value (0453–1 to n)	→ 🗎 125
	Max. freq. value (0454-1 to n)	→ 🗎 126
	Val. at min.freq (0476–1 to n)	→ 🗎 126
	Val. at max.freq (0475–1 to n)	→ 🖺 127
	Measuring mode (0479-1 to n)	→ 🖺 127
	Damping out. 1 to n (0477-1 to n)	→ 🖺 128

Response time (0491–1 to n)	→ 🗎 129
Failure mode (0451–1 to n)	→ 🖺 129
Failure freq. (0474–1 to n)	→ 🗎 130
Output freq. 1 to n (0471–1 to n)	→ 🗎 130
Switch out funct (0481–1 to n)	→ 🗎 131
Assign diag. beh (0482–1 to n)	→ 🗎 131
Assign limit (0483–1 to n)	→ 🗎 132
Switch-on value (0466–1 to n)	→ 🗎 134
Switch-off value (0464–1 to n)	→ 🗎 134
Assign dir.check (0484-1 to n)	→ 🗎 135
Assign status (0485–1 to n)	→ 🗎 135
Switch-on delay (0467–1 to n)	→ 🗎 135
Switch-off delay (0465–1 to n)	→ 🗎 136
Failure mode (0486–1 to n)	→ 🗎 136
Switch status 1 to n (0461–1 to n)	→ <a>Pmilling 136
Invert outp.sig. (0470–1 to n)	→ 🗎 137

Terminal no.	
Navigation	Image: Barbon Structure
Description	Displays the terminal numbers used by the pulse/frequency/switch output module.
User interface	 Not used 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)
Additional information	<i>"Not used" option</i> The pulse/frequency/switch output module does not use any terminal numbers.

Signal mode		æ
Navigation	■ Expert \rightarrow Output \rightarrow PFS output 1 to n \rightarrow Signal mode (0490–1 to n)	
Description	Use this function to select the signal mode for the pulse/frequency/switch output.	
Selection	PassiveActive	
Factory setting	Passive	

Operating mode	8
Navigation	■ Expert → Output → PFS output 1 to n → Operating mode (0469–1 to n)
Description	Use this function to select the operating mode of the output as a pulse, frequency or switch output.
Selection	PulseFrequencySwitch
Factory setting	Pulse
Additional information	 "Pulse" option Quantity-dependent pulse with configurable pulse width Whenever a specific mass, volume or corrected volume is reached (pulse value), a pulse is output, the duration of which was set previously (pulse width). The pulses are never shorter than the set duration. Example Flow rate approx. 100 g/s Pulse value 0.1 g Pulse width 0.05 ms Pulse rate 1 000 Impuls/s



Quantity-proportional pulse (pulse value) with pulse width to be configured

- B Pulse width entered
- P Pauses between the individual pulses

"Frequency" option

Flow-proportional frequency output with 1:1 on/off ratio An output frequency is output that is proportional to the value of a process variable, such as volume flow, mass flow, corrected volume flow, flow velocity, conductivity, corrected conductivity, temperature or electronic temperature.

Example

- Flow rate approx. 100 g/s
- Max. frequency 10 kHz
- Flow rate at max. frequency 1000 g/s
- Output frequency approx. 1000 Hz



■ 7 Flow-proportional frequency output

"Switch" option

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

Example

Alarm response without alarm





Example Alarm response in case of alarm



🖻 9 Alarm, low level

Assign pulse 1 to n		1
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	The Pulse option is selected in the Operating mode parameter ($\rightarrow \implies 119$).	
Description	Use this function to select the process variable for the pulse output.	
Selection	 Off Volume flow Mass flow Correct.vol.flow 	
Factory setting	Off	
Value per pulse		
Navigation	Image: Barbon Structure <td></td>	
Prerequisite	 In the Operating mode parameter (→ ^(⇒) 119), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ ^(⇒) 121): Mass flow Volume flow Correct.vol.flow 	
Description	Use this function to enter the value for the measured value that a pulse is equivalent to).
User entry	Signed floating-point number	
Factory setting	Depends on country and nominal diameter→ 🗎 209	
Additional information	 Entry Weighting of the pulse output with a quantity. The lower the pulse value, the better the resolution. the higher the frequency of the pulse response. 	

Pulse width		Â
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	 In the Operating mode parameter (→ ^(⇒) 119), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ ^(⇒) 121): Mass flow Volume flow Correct.vol.flow 	
Description	Use this function to enter the duration of the output pulse.	
User entry	0.05 to 2 000 ms	
Factory setting	100 ms	
Additional information	Description • Define how long a pulse is (duration). • The maximum pulse rate is defined by $f_{max} = 1 / (2 \times pulse width)$.	

- The interval between two pulses lasts at least as long as the set pulse width.
- The maximum flow is defined by $Q_{max} = f_{max} \times pulse$ value.
- If the flow exceeds these limit values, the measuring device displays the diagnostic message **△S443 Pulse output 1 to n**.



B Pulse width entered

P Pauses between the individual pulses

Example

- Pulse value: 0.1 g
- Pulse width: 0.1 ms
- f_{max} : 1 / (2 × 0.1 ms) = 5 kHz
- Q_{max} : 5 kHz × 0.1 g = 0.5 kg/s

Measuring mode

Navigation

Prerequisite

■ Expert \rightarrow Output \rightarrow PFS output 1 to n \rightarrow Measuring mode (0457–1 to n)

In the **Operating mode** parameter ($\rightarrow \square 119$) the **Pulse** option is selected and in the **Assign pulse** parameter ($\rightarrow \square 121$) one of the following options is selected:

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

Description	Use this function to select the measuring mode for the pulse output.
Selection	 Forward flow Forward/Reverse Reverse flow Rev. flow comp.
Factory setting	Forward flow
Additional information	 Selection Forward flow Positive flow is output, negative flow is not output. Forward/Reverse Positive and negative flow are output (absolute value), but a distinction is not made between positive and negative flow.
	 Reverse flow Reverse flow Negative flow is output, positive flow is not output. Rev. flow comp. The flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.
	For a detailed description of the options available, see the Measuring mode parameter ($\rightarrow \cong 109$)
	Examples
	For a detailed description of the configuration examples, see the Measuring mode parameter ($\rightarrow \cong 109$)

Failure mode	
Navigation	■ Expert → Output → PFS output 1 to n → Failure mode (0480–1 to n)
Prerequisite	 In the Operating mode parameter (→ 119), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 121): Mass flow Volume flow Correct.vol.flow
Description	Use this function to select the failure mode of the pulse output in the event of a device alarm.
Selection	Actual valueNo pulses
Factory setting	No pulses

Additional information Description

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

Selection

- Actual value In the event of a device alarm, the pulse output continues on the basis of the current flow measurement. The fault is ignored.
- No pulses

In the event of a device alarm, the pulse output is "switched off".

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

Pulse output 1 to n	
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Pulse output 1 to n (0456–1 to n)
Prerequisite	In the Operating mode parameter ($\rightarrow \cong 119$), the Pulse option is selected.
Description	Displays the pulse frequency currently output.
User interface	Positive floating-point number
Additional information	 Description The pulse output is an open collector output. This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.



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

The output behavior can be reversed via the **Invert outp.sig.** parameter ($\rightarrow \implies 137$) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (**Failure mode** parameter ($\rightarrow \implies 123$)) can be configured.

Assign freq.		ß
Navigation	■ Expert → Output → PFS output 1 to n → Assign freq. (0478–1 to n)	
Prerequisite	The Frequency option is selected in the Operating mode parameter ($\rightarrow \square$ 119) parameter.	
Description	Use this function to select the process variable for the frequency output.	
Selection	 Off Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity CorrConductivity Temperature Electronic temp. 	
Factory setting	Off	

Nin. freq. value				
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow Min$. freq. value (0453–1 to n)			
Prerequisite	 One of the following options is selected in the Assign curr. parameter (→ 105): Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Temperature* Electronic temp. 			
Description	Use this function to enter the start value frequency.			
User entry	0.0 to 10 000.0 Hz			
Factory setting	0.0 Hz			

A

^{*} Visibility depends on order options or device settings

Max. freq. value		
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow Max$. freq. value (0454–1 to n)	
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity * Conductivity • CorrConductivity * Temperature • Electronic temp.	
Description	Use this function to enter the end value frequency.	
User entry	0.0 to 10 000.0 Hz	
Factory setting	10000.0 Hz	

Val. at min.freq		æ
Navigation	■ Expert → Output → PFS output 1 to n → Val. at min.freq (0476–1 to n)	
Prerequisite	 One of the following options is selected in the Assign curr. parameter (→ 105): Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Temperature* Electronic temp. 	
Description	Use this function to enter the measured value for the start value frequency.	
User entry	Signed floating-point number	
Factory setting	Depends on country and nominal diameter	
Additional information	Dependency The entry depends on the process variable selected in the Assign freq. parameter $(\rightarrow \cong 125)$.	

^{*} Visibility depends on order options or device settings

Val. at max.freq		Ê
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	 One of the following options is selected in the Assign curr. parameter (→ 105): Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity[*] CorrConductivity[*] Temperature[*] Electronic temp. 	
Description	Use this function to enter the measured value for the end value frequency.	
User entry	Signed floating-point number	
Factory setting	Depends on country and nominal diameter	
Additional information	Description Use this function to enter the maximum measured value at the maximum frequency. selected process variable is output as a proportional frequency. Dependency The entry dependence on the process variable selected in the Action freq	The

THC	CI.	Ľ	чy	U
$(\rightarrow $	A	1	7	5

The entry depends on the process variable selected in the **Assign freq.** parameter $(\rightarrow \cong 125)$.

Measuring mode		ß
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Measuring mode (0479–1 to n)	
Prerequisite	One of the following options is selected in the Assign curr . parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity * • CorrConductivity * • Temperature * • Electronic temp.	
Description	Use this function to select the measuring mode for the frequency output.	
Selection	Forward flowForward/ReverseRev. flow comp.	
Factory setting	Forward flow	

^{*} Visibility depends on order options or device settings



For a detailed description of the options available, see the **Measuring mode** parameter ($\rightarrow \implies 109$)

Examples

For a detailed description of the configuration examples, see the **Measuring mode** parameter ($\rightarrow \triangleq 109$)

Damping out. 1 to n		æ
Navigation	■ Expert → Output → PFS output 1 to n → Damping out. 1 to n (0477–1 to n)	
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity * CorrConductivity • Temperature * • Electronic temp.	
Description	Use this function to enter a time constant for the reaction time of the output signal to fluctuations in the measured value.	
User entry	0 to 999.9 s	
Factory setting	0.0 s	
Additional information	 User entry Use this function to enter a time constant (PT1 element ⁴⁾) for frequency output damp If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables. On the other hand, the current output reacts more slowly if a high time constant is entered. Damping is switched off if 0 is entered (factory setting). 	ing:

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

^{*} Visibility depends on order options or device settings

⁴⁾ proportional transmission behavior with first order delay

Response time	
Navigation	Image: Barbon Structure
Prerequisite	 One of the following options is selected in the Assign curr. parameter (→ 105): Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Temperature* Electronic temp.
Description	Displays the response time. This specifies how quickly the pulse/frequency/switch output reaches the measured value change of 63 % of 100 % of the measured value change.
User interface	Positive floating-point number
Additional information	 Description The response time is made up of the time specified for the following dampings: Damping of pulse/frequency/switch output → 113 and Depending on the measured variable assigned to the output. Flow damping

Failure mode	ß
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Failure mode (0451–1 to n)
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity • Conductivity • Temperature * • Electronic temp.
Description	Use this function to select the failure mode of the frequency output in the event of a device alarm.
Selection	 Actual value Defined value 0 Hz
Factory setting	0 Hz

^{*} Visibility depends on order options or device settings

Additional information Selection

Actual value

In the event of a device alarm, the frequency output continues on the basis of the current flow measurement. The device alarm is ignored.

Defined value

In the event of a device alarm, the frequency output continues on the basis of a predefined value. The Failure freq. ($\Rightarrow \square 130$) replaces the current measured value, making it possible to bypass the device alarm. The actual measurement is switched off for the duration of the device alarm.

• 0 Hz

In the event of a device alarm, the frequency output is "switched off".

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

Failure freq.	l	1
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	One of the following options is selected in the Assign curr . parameter (→ 🗎 105): • Volume flow • Mass flow • Correct.vol.flow • Flow velocity • Conductivity • CorrConductivity • Temperature • Electronic temp.	
Description	Use this function to enter the value for the frequency output in the event of a device alarr in order to bypass the alarm.	n
User entry	0.0 to 12 500.0 Hz	
Factory setting	0.0 Hz	
Output freq. 1 to n		
Navigation	Image: Barbon Structure <td></td>	
Prerequisite	In the Operating mode parameter ($\Rightarrow extsf{B}$ 119), the Frequency option is selected.	
Description	Displays the actual value of the output frequency which is currently measured.	
User interface	0.0 to 12 500.0 Hz	

Visibility depends on order options or device settings

Switch out funct		A
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Switch out funct (0481–1 to n)	
Prerequisite	The Switch option is selected in the Operating mode parameter ($\rightarrow \equiv 119$).	
Description	Use this function to select a function for the switch output.	
Selection	 Off On Diag. behavior Limit Fl. direct.check Status 	
Factory setting	Off	
Additional information	 Selection Off The switch output is permanently switched off (open, non-conductive). On The switch output is permanently switched on (closed, conductive). Diag. behavior Indicates if the diagnostic event is present or not. Is used to output diagnostic information and to react to it appropriately at the system level. Limit Indicates if a specified limit value has been reached for the process variable. Is used output diagnostic information relating to the process and to react to it appropriately the system level. Fl. direct.check Indicates the flow direction (forward or reverse flow). Status Indicates the device status depending on whether empty pipe detection or low flow off is selected. 	to y at cut

Assign diag. beh	۵
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow Assign diag.$ beh (0482–1 to n)
Prerequisite	 In the Operating mode parameter (→ ^(⇒) 119), the Switch option is selected. In the Switch out funct parameter (→ ^(⇒) 131), the Diag. behavior option is selected.
Description	Use this function to select the diagnostic event category that is displayed for the switch output.
Selection	AlarmAlarm or warningWarning
Factory setting	Alarm

Description

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

Selection

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

Assign limit	ه
Navigation	■ Expert → Output → PFS output 1 to n → Assign limit (0483–1 to n)
Prerequisite	 The Switch option is selected in the Operating mode parameter (→ 119) parameter. The Limit option is selected in the Switch out funct parameter (→ 131) parameter.
Description	Use this function to select a process variable for the limit function.
Selection	 Off Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Totalizer 1 Totalizer 2 Totalizer 3 Temperature* Electronic temp.
Factory setting	Volume flow
Additional information	Description Behavior of status output when Switch-on value > Switch-off value: Process variable > Switch-on value: transistor is conductive Process variable < Switch-off value: transistor is non-conductive

^{*} Visibility depends on order options or device settings



- 1 Switch-on value
- 2 Switch-off value
- 3 Conductive
- 4 Non-conductive Process variable Α
- В Status output

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

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



- Switch-off value 1
- 2 Switch-on value
- 3 Conductive
- 4 Non-conductive
- Α Process variable В
- Status output

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

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



- Switch-on value = Switch-off value 1
- 2 Conductive
- 3 Non-conductive
- Α Process variable
- В Status output

Switch-on value		Ê
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Switch-on value (0466–1 to n)	
Prerequisite	 In the Operating mode parameter (→ In the Switch out funct parameter (→ 131), the Limit option is selected. 	
Description	Use this function to enter the measured value for the switch-on point.	
User entry	Signed floating-point number	
Factory setting	Country-specific: • 0 l/h • 0 gal/min (us)	
Additional information	Description	
	Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive).	
	When using a hysteresis: Switch-on value > Switch-off value.	
	Dependency	

The unit depends on the process variable selected in the **Assign limit** parameter $(\rightarrow \cong 132)$.

Switch-off value		Â
Navigation	Image: Barbon Sector And Antipactic Sector And Antipactic Sector Antipactic Sec	
Prerequisite	 In the Operating mode parameter (→ In the Switch out funct parameter (→ 131), the Limit option is selected. 	
Description	Use this function to enter the measured value for the switch-off point.	
User entry	Signed floating-point number	
Factory setting	Country-specific: • 0 l/h • 0 gal/min (us)	
Additional information	Description Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive). When using a hysteresis: Switch-on value > Switch-off value.	
	Dependency The unit depends on the process variable selected in the Assign limit parameter $(\rightarrow \cong 132)$.	

Assign dir.check	
Navigation	Image: Barbon Barbon Structure Image: Barbon B
Prerequisite	 The Switch option is selected in the Operating mode parameter (→ ☐ 119). The Fl. direct.check option is selected in the Switch out funct parameter (→ ☐ 131).
Description	Use this function to select a process variable for monitoring the flow direction.
Selection	 Off Volume flow Mass flow Correct.vol.flow
Factory setting	Volume flow

Assign status		Â
Navigation	■ Expert → Output → PFS output 1 to n → Assign status (0485–1 to n)	
Prerequisite	 The Switch option is selected in the Operating mode parameter (→ □ 119). The Status option is selected in the Switch out funct parameter (→ □ 131). 	
Description	Use this function to select a device status for the switch output.	
Selection	Empty pipe det.Low flow cut off	
Factory setting	Empty pipe det.	
Additional information	<i>Options</i> If empty pipe detection or low flow cut off are enabled, the output is conductive. Otherwise, the switch output is non-conductive.	

Switch-on delay	Switch-on delay	
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Switch-on delay (0467–1 to n)	
Prerequisite	 The Switch option is selected in the Operating mode parameter (→ 119). The Limit option is selected in the Switch out funct parameter (→ 131). 	
Description	Use this function to enter a delay time for switching on the switch output.	
User entry	0.0 to 100.0 s	
Factory setting	0.0 s	

Switch-off delay		Â
Navigation	□ Expert → Output → PFS output 1 to $n \rightarrow$ Switch-off delay (0465–1 to n)	
Prerequisite	 The Switch option is selected in the Operating mode parameter (→ 119). The Limit option is selected in the Switch out funct parameter (→ 131). 	
Description	Use this function to enter a delay time for switching off the switch output.	
User entry	0.0 to 100.0 s	
Factory setting	0.0 s	

Failure mode		Â
Navigation	Image: Barbon Berlin Amplitude	
Description	Use this function to select a failsafe mode for the switch output in the event of a device alarm.	e
Selection	Actual statusOpenClosed	
Factory setting	Open	
Additional information	Options	
	 Actual status In the event of a device alarm, faults are ignored and the current behavior of the inp value is output by the switch output. The Actual status option behaves in the same vas the current input value. Open In the event of a device alarm, the switch output's transistor is set to non-conductive. Closed In the event of a device alarm, the switch output's transistor is set to conductive.	ut way e .

Switch status 1 to n	
Navigation	■ Expert → Output → PFS output 1 to $n \rightarrow$ Switch status 1 to n (0461–1 to n)
Prerequisite	The Switch option is selected in the Operating mode parameter ($\Rightarrow \square 119$).
Description	Displays the current switch status of the status output.
User interface	OpenClosed

User interface

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

Invert outp.sig.		Â
Navigation	□ Expert → Output → PFS output 1 to $n \rightarrow$ Invert outp.sig. (0470–1 to n)	
Description	Use this function to select whether to invert the output signal.	
Selection	NoYes	
Factory setting	No	
Additional information	<i>Selection</i> No option (passive - negative)	

0

Yes option (passive - positive)



"Relay output 1 to n" submenu 3.5.3

 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Output} \rightarrow \text{Relay output 1 to n}$ Navigation

► Relay output 1 to n	
Terminal no.	→ 🗎 138
Relay outp.func.	→ 🗎 138
Assign dir.check	→ <a>Phi 139

Assign limit	→ 🗎 139
Assign diag. beh] → 🗎 140
Assign status) → 🖺 140
Switch-off value) → 🗎 141
Switch-off delay) → 🗎 141
Switch-on value) → 🗎 141
Switch-on delay) → 🗎 142
Failure mode) → 🗎 142
Switch status	→ 🗎 143
Powerless relay	→ 🗎 143

Terminal no.

Navigation	■ Expert → Output → Relay output 1 to n → Terminal no. (0812–1 to n)
Description	Displays the terminal numbers used by the relay output module.
User interface	 Not used 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)
Additional information	"Not used" option
	The relay output module does not use any terminal numbers.

Relay outp.func.		
Navigation	■ Expert → Output → Relay output 1 to n → Relay outp.func. (0804–1 to n)	
Description	Use this function to select an output function for the relay output.	
Selection	 Closed Open Diag. behavior Limit Fl. direct.check Digital Output 	

Factory setting	Closed
Additional information	 Selection Closed The relay output is permanently switched on (closed, conductive). Open The relay output is permanently switched off (open, non-conductive).
	 Diag. behavior Indicates if the diagnostic event is present or not. Is used to output diagnostic information and to react to it appropriately at the system level. Limit Indicates if a specified limit value has been reached for the process variable. Is used to output diagnostic information relating to the process and to react to it appropriately at the system level. El direct check
	 F1. direct.check Indicates the flow direction (forward or reverse flow). Digital Output Indicates the device status depending on whether empty pipe detection or low flow cut off is selected.

Assign dir.check		A
Navigation	Image: Barbon Structure <th></th>	
Prerequisite	In the Relay outp.func. parameter ($\Rightarrow extsf{B}$ 138), the Fl. direct.check option is selected.	
Description	Use this function to select a process variable for monitoring the flow direction.	
Selection	 Off Volume flow Mass flow Correct.vol.flow 	
Factory setting	Volume flow	
Assign limit		

Navigation	■ Expert → Output → Relay output 1 to n → Assign limit (0807–1 to n)
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \square$ 138), the Limit option is selected.
Description	Use this function to select a process variable for the limit value function.
Selection	 Off Volume flow Mass flow Correct.vol.flow

Flow velocity

	 Conductivity* CorrConductivity* Totalizer 1 Totalizer 2 Totalizer 3 Temperature* Electronic temp.
Factory setting	Volume flow
Assign diag. beh	Â
Navigation	Image: Barbon Barb
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \cong 138$), the Diag. behavior option is selected.
Description	Use this function to select the category of the diagnostic events that are displayed for the relay output.
Selection	AlarmAlarm or warningWarning
Factory setting	Alarm
Additional information	<i>Description</i> If no diagnostic event is pending, the relay output is closed and conductive.
	Selection
	 Alarm The relay output signals only diagnostic events in the alarm category. Alarm or warning The relay output signals diagnostic events in the alarm and warning category. Warning The relay output signals only diagnostic events in the warning category.

Assign status		Â
Navigation	Image: Barbon Barb	
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \cong 138$), the Digital Output option is selected.	
Description	Use this function to select the device status for the relay output.	
Selection	Partial pipe detLow flow cut off	

^{*} Visibility depends on order options or device settings

Factory setting

Partial pipe det

Switch-off value		Ê
Navigation	■ Expert → Output → Relay output 1 to n → Switch-off value (0809–1 to n)	
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \cong 138$), the Limit option is selected.	
Description	Use this function to enter the measured value for the switch-off point.	
User entry	Signed floating-point number	
Factory setting	Country-specific: • 0 l/h • 0 gal(us)/min	
Additional information	Description Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive). When using a hysteresis: Switch-on value > Switch-off value.	
	Dependency The unit is dependent on the process variable selected in the Assign limit param ($\rightarrow \cong 139$).	neter

Switch-off delayNavigation \blacksquare Expert \Rightarrow Output \Rightarrow Relay output 1 to n \Rightarrow Switch-off delay (0813-1 to n)

Prerequisite	In the Relay outp.func. parameter ($\rightarrow \square$ 138), the Limit option is selected.		
Description	Use this function to enter a delay time for switching off the switch output.		
User entry	0.0 to 100.0 s		
Factory setting	0.0 s		

Switch-on value		æ
Navigation	Image: Barbon Sector And Antipactic Action → Switch-on Value (0810–1 to n) Image: Barbon Sector Action	
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \cong 138$), the Limit option is selected.	
Description	Use this function to enter the measured value for the switch-on point.	

User entry	Signed floating-point number
Factory setting	Country-specific: • 0 l/h • 0 gal(us)/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive).
	When using a hysteresis: Switch-on value > Switch-off value.
	Dependency
	The unit is dependent on the process variable selected in the Assign limit parameter $(\rightarrow \cong 139)$.

Switch-on delay		
Navigation	■ Expert → Output → Relay output 1 to n → Switch-on delay (0814–1 to n)	
Prerequisite	In the Relay outp.func. parameter ($\rightarrow \cong$ 138), the Limit option is selected.	
Description	Use this function to enter a delay time for switching on the switch output.	
User entry	0.0 to 100.0 s	
Factory setting	0.0 s	

Navigation	■ Expert → Output → Relay output 1 to $n \rightarrow$ Failure mode (0811–1 to n)
Description	Use this function to select the failure mode of the relay output in the event of a device alarm.
Selection	Actual statusOpenClosed
Factory setting	Open

A

Failure mode

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

In the event of a device alarm, the relay output's transistor is set to **conductive**.

Switch status	
Navigation	■ Expert → Output → Relay output 1 to $n \rightarrow$ Switch status (0801–1 to n)
Description	Displays the current status of the relay output.
User interface	OpenClosed
Additional information	 User interface Open The relay output is not conductive. Closed The relay output is conductive.

Powerless relay		
Navigation	Image: Barbon Struct → Cutput → Relay output 1 to n → Powerless relay (0816–1 to n)	
Description	Use this function to select the quiescent state for the relay output.	
Selection	OpenClosed	
Factory setting	Open	
Additional information	 Selection Open The relay output is not conductive. Closed The relay output is conductive. 	

3.6 "Communication" submenu

Navigation		
► Communication		
	► Configuration	→ 🗎 144
	► WLAN settings	→ 🖺 155

3.6.1 "Configuration" submenu

Navigation	
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 \blacksquare Expert → Communication → Configuration

► Configuration		
	► Input assembly	→ 🗎 148
	Webserv.language (7221)	→ 🗎 144
	MAC Address (7214)	→ 🗎 145
	Default netw.set (7401)	→ 🖺 145
	DHCP client (7212)	→ 🗎 146
	IP address (7209)	→ 🗎 146
	Subnet mask (7211)	→ 🗎 146
	Default gateway (7210)	→ 🗎 147
	Webserver funct. (7222)	→ 🗎 147
	Login page (7273)	→ 🗎 147
	Capability flags (7439)	→ 🖺 148
	User description (7432)	→ 🗎 148

Webserv.language

Navigation $\blacksquare \Box$ Expert \rightarrow Communication \rightarrow Configuration \rightarrow Webserv.language (7221)

Description

Use this function to select the Web server language setting.
Selection	 English Deutsch * Français * Español * Italiano * Nederlands * Portuguesa * Polski * pycский язык(Ru) * Svenska * Türkçe * 中文 (Chinese) * 日本語 (Japanese) * 한국어 (Korean) * Bahasa Indonesia *
	• 한국어 (Korean) [*] • Bahasa Indonesia [*] • tiếng Việt (Vit) [*] • čeština (Czech) [*]

Factory setting

English

MAC Address

Navigation	Image: Expert → Communication → Configuration → MAC Address (7214)	
Description	Displays the MAC $^{5)}$ address of the measuring device.	
User interface	Unique 12-digit character string comprising letters and numbers	
Factory setting	Each measuring device is given an individual address.	
Additional information	<i>Example</i> For the display format 00:07:05:10:01:5F	

Default netw.set		
Navigation	■ Expert → Communication → Configuration → Default netw.set (7401)	
Description	Displays the use of default network settings.	
User interface	OffOn	
Factory setting	Off	

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

⁵⁾

User interface

The \mathbf{On} option is displayed as soon as the last octet of the IP address is set via DIP switches.

DHCP client		3
Navigation	Image: Barbon And Configuration → DHCP client (7212)	
Description	Use this function to activate and deactivate the DHCP client functionality.	
Selection	OffOn	
Factory setting	Off	
Additional information	<i>Result</i> If the DHCP client functionality of the Web server is activated, the IP address ($\rightarrow \square$ 146) Subnet mask ($\rightarrow \square$ 146) and Default gateway ($\rightarrow \square$ 147) are set automatically.	,

IP address		
Navigation	■ Expert → Communication → Configuration → IP address (7209)	
Description	Displays the IP address of the Web server of the measuring device.	
User entry	4 octet: 0 to 255 (in the particular octet)	
Factory setting	192.168.1.212	
Subnet mask		
Navigation	Image: Barbon And Communication → Configuration → Subnet mask (7211)	
Description	Use this function to enter the subnet mask.	
User entry	r entry 4 octet: 0 to 255 (in the particular octet)	
Factory setting	255.255.255.0	

Default gateway		æ
Navigation	Image: Barbon Amplitude State S	
Description	Use this function to enter the default gateway.	
User entry	y 4 octet: 0 to 255 (in the particular octet)	
Factory setting	0.0.0.0	

Webserver funct.		
Navigation	🗟 🖴 Expe	rt → Communication → Configuration → Webserver funct. (7222)
Description	Use this fur	action to switch the Web server on and off.
Selection	 Off HTML Off On 	
Factory setting	On	
Additional information	Description Once disabled, the Webserver funct. can only be re-enabled via or the operating tool FieldCare. Options	
	Option I	Description

Option	Description
Off	The web server is completely disabled.Port 80 is locked.
On	 The complete functionality of the web server is available. JavaScript is used. The password is transferred in an encrypted state. Any change to the password is also transferred in an encrypted state.

Login page		
Navigation	Image: Barbon Amplitude State Amplitude S	
Description	Use this function to select the format of the login page.	
Selection	Without headerWith header	
Factory setting	With header	

Capability flags		
Navigation \blacksquare Expert \rightarrow Communication \rightarrow Configuration \rightarrow Capability flags (7439)		
Description	Displays the DLR (Device Level Ring) properties of the device.	
User interface Announce-b. node Beacon-b. node Supervisor cap. Redund. gateway Flush tab. frame		
Factory setting	setting Beacon-b. node	
User description		
Navigation	■ Expert → Communication → Configuration → User description (7432)	
Description	Use this function to enter the user-defined device name and location (separated by a semicolon).	
Factory setting description;location		

"Input assembly" submenu

Navigation

 $\blacksquare \blacksquare \quad \text{Expert} \rightarrow \text{Communication} \rightarrow \text{Configuration} \rightarrow \text{Input assembly}$

► Input assembly	
Position 1 (7402)	→ 🗎 149
Position 2 (7413)	→ 🗎 150
Position 3 (7415)	→ 🗎 150
Position 4 (7416)	→ 🗎 150
Position 5 (7417)	→ 🗎 150
Position 6 (7418)	→ 🗎 151
Position 7 (7419)	→ 🗎 151
Position 8 (7420)	→ 🗎 151

Position 9 (7421)) → 🗎 151
Position 10 (7403)) → 🗎 152
Position 11 (7404)) → 🗎 152
Position 12 (7405)) → 🗎 152
Position 13 (7406)	→ 🗎 153
Position 14 (7407)	→ 🗎 153
Position 15 (7408)) → 🗎 153
Position 16 (7409)	→ 🗎 153
Position 17 (7410)	→ 🗎 154
Position 18 (7411)	→ 🗎 154
Position 19 (7412)	→ 🗎 154
Position 20 (7414)	→ 🗎 154
	-

Position 1	Â
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 1 (7402)
Description	Use this function to select a process variable for input value 1.
Selection	 Off Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity CorrConductivity Temperature Electronic temp. Totalizer 1 Totalizer 2 Totalizer 3
Factory setting	Volume flow

Position 2	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 2 (7413)
Description	Use this function to select a process variable for input value 2.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \square 149$)
Factory setting	Conductivity
Position 3	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 3 (7415)
Description	Use this function to select a process variable for input value 3.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \square$ 149)
Factory setting	Temperature
Position 4	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 4 (7416)
Description	Use this function to select a process variable for input value 4.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \implies$ 149)
Factory setting	Correct.vol.flow
Position 5	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 5 (7417)
Description	Use this function to select a process variable for input value 5.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \implies$ 149)
Factory setting	Mass flow

Position 6	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 6 (7418)
Description	Use this function to select a process variable for input value 6.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \square$ 149)
Factory setting	Totalizer 1
Position 7	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 7 (7419)
Description	Use this function to select a process variable for input value 7.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \square$ 149)
Factory setting	Totalizer 2
Position 9	<u>A</u>
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 8 (7420)
Description	Use this function to select a process variable for input value 8.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \cong$ 149)
Factory setting	Totalizer 3
Position 9	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 9 (7421)
Description	Use this function to select a process variable for input value 9.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \implies$ 149)
Factory setting	Flow velocity

Position 10	Â
Navigation	Image: Boost and Constraint → Configuration → Input assembly → Position 10 (7403)
Description	Use this function to select a process variable for input value 10.
Selection	Picklist, see Input assembly position 1 parameter ($\rightarrow \implies 149$)
Factory setting	Off
Position 11	ß
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 11 (7404)
Description	Use this function to select a process variable for input value 11.
Selection	 Off Actual diagnos. Prev.diagnostics Mass flow unit Volume flow unit Cor.volflow unit Temperature unit Conductiv. unit Unit totalizer 1 Unit totalizer 2 Unit totalizer 3 Verific. results Verific. status
Factory setting	Volume flow unit
Position 12	Â

Navigation	■ Expert → Communication → Configuration → Input assembly → Position 12 (7405)
Description	Use this function to select a process variable for input value 12.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \square$ 152)
Factory setting	Conductiv. unit

Position 13	۵
Navigation	Image: Bar and Ba
Description	Use this function to select a process variable for input value 13.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \square$ 152)
Factory setting	Temperature unit
Position 14	ß
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 14 (7407)
Description	Use this function to select a process variable for input value 14.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \cong 152$)
Factory setting	Cor.volflow unit
Position 15	ß
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 15 (7408)
Description	Use this function to select a process variable for input value 15.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \implies 152$)
Factory setting	Mass flow unit
Position 16	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 16 (7409)
Description	Use this function to select a process variable for input value 16.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \implies 152$)
Factory setting	Unit totalizer 1

Position 17	
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 17 (7410)
Description	Use this function to select a process variable for input value 17.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \implies 152$)
Factory setting	Unit totalizer 2
Position 18	۵
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 18 (7411)
Description	Use this function to select a process variable for input value 18.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \implies 152$)
Factory setting	Unit totalizer 3
Position 19	8
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 19 (7412)
Description	Use this function to select a process variable for input value 19.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \equiv 152$)
Factory setting	Off
Position 20	
Navigation	■ Expert → Communication → Configuration → Input assembly → Position 20 (7414)
Description	Use this function to select a process variable for input value 20.
Selection	Picklist, see Input assembly position 11 parameter ($\rightarrow \implies 152$)
Factory setting	Off

3.6.2 "WLAN settings" submenu

Navigation

□ Expert → Communication → WLAN settings

► WLAN settings	
WLAN (2702)	→ 🗎 156
WLAN mode (2717)	→ 🗎 156
SSID name (2714)	→ 🗎 156
Network security (2705)	→ 🗎 156
Sec. identific. (2718)	→ 🗎 157
User name (2715)	→ 🗎 157
WLAN password (2716)	→ 🗎 157
WLAN IP address (2711)	→ 🗎 158
WLAN MAC address (2703)	→ 🗎 158
WLAN subnet mask (2709)	→ 🗎 158
WLAN MAC address (2703)	→ 🗎 158
WLAN passphrase (2706)	→ 🗎 158
Assign SSID name (2708)	→ 🗎 159
SSID name (2707)	→ 🗎 159
WLAN channel (2704)	→ 🗎 159
Select antenna (2713)	→ 🗎 160
Connection state (2722)	→ 🗎 160
Rec.sig.strength (2721)	→ 🗎 160
WLAN IP address (2711)	→ 🗎 158
Gateway IP addr. (2719)	→ 🗎 160
IP address DNS (2720)	→ 🗎 161

WLAN		
Navigation		
Description	Use this function to enable and disable the WLAN connection.	
Selection	DisableEnable	
Factory setting	Enable	
WLAN mode		
Navigation	■ Expert → Communication → WLAN settings → WLAN mode (2717)	
Description	Use this function to select the WLAN mode.	
Selection	Access pointWLAN Client	
Factory setting	Access point	
SSID name		
Navigation	Image: Barbon Amplitude Solution → WLAN settings → SSID name (2714)	
Prerequisite	The client is activated.	
Description	Use this function to enter the user-defined SSID name (max. 32 characters).	
User entry	_	
Factory setting	_	
Network security		
Navigation	Image: Barbon Amplitude State Amplitude S	
Description	Use this function to select the type of security for the WLAN interface.	
Selection	 Unsecured WPA2-PSK EAP-PEAP MSCHAP2 EAP-PEAP NoAuth. 	

EAP-TLS

Factory setting	WPA2-PSK
Additional information	 Selection Unsecured Access the WLAN connection without identification. WPA2-PSK Access the WLAN connection with a network key.
Sec. identific.	
Navigation	■ Expert → Communication → WLAN settings → Sec. identific. (2718)
Description	Use this function to select the security settings (download via the menu: Data Management > Security > Download WLAN).
User interface	Root certificateDevice certific.

Dev. private key

User name		Ê
Navigation	■ Expert \rightarrow Communication \rightarrow WLAN settings \rightarrow User name (2715)	
Description	Use this function to enter the user name.	
User entry	_	
Factory setting	_	

WLAN password		
Navigation	Image: Barbon Amplitude State of the settings of the settings of the setting	
Description	Use this function to enter the WLAN password.	
User entry	_	
Factory setting	_	

A

A

WLAN IP address Navigation Image: Expert → Communication → WLAN settings → WLAN IP address (2711) Description Use this function to enter the IP address of the measuring device's WLAN connection. User entry 4 octet: 0 to 255 (in the particular octet) Factory setting 192.168.1.212

WLAN MAC address

Navigation	 Expert → Communication → WLAN settings → WLAN MAC address (2703) Expert → Communication → WLAN settings → WLAN MAC address (2703)
Description	Displays the MAC ⁶⁾ address of the measuring device.
User interface	Unique 12-digit character string comprising letters and numbers
Factory setting	Each measuring device is given an individual address.
Additional information	Example
	For the display format
	00:07:05:10:01:5F

WLAN subnet mask

Navigation	■ Expert → Communication → WLAN settings → WLAN subnet mask (2709)
Description	Use this function to enter the subnet mask.
User entry	4 octet: 0 to 255 (in the particular octet)
Factory setting	255.255.255.0

	Â
Image: Barbon Amplitude Strain Ampl	
The WPA2-PSK option is selected in the Security type parameter ($\Rightarrow \square 156$).	
Use this function to enter the network key.	
	■ Expert → Communication → WLAN settings → WLAN passphrase (2706) The WPA2-PSK option is selected in the Security type parameter (→ 🗎 156). Use this function to enter the network key.

6) Media Access Control

User entry8 to 32-digit character string comprising numbers, letters and special charactersFactory settingSerial number of the measuring device (e.g. L100A802000)

Assign SSID name		
Navigation	■ Expert → Communication → WLAN settings → Assign SSID name (2708)	
Description	Use this function to select which name is used for the SSID $^{7)}$.	
Selection	Device tagUser-defined	
Factory setting	User-defined	
Additional information	Selection	
	 Device tag The device tag name is used as the SSID. User-defined A user-defined name is used as the SSID. 	

SSID name	ß
Navigation	■ Expert → Communication → WLAN settings → SSID name (2707)
Prerequisite	 The User-defined option is selected in the Assign SSID name parameter (→
Description	Use this function to enter a user-defined SSID name.
User entry	Max. 32-digit character string comprising numbers, letters and special characters
Factory setting	EH_device designation_last 7 digits of the serial number (e.g. EH_Promag_500_A802000)

WLAN channel		
Navigation	Image: Barbon Amplitude Amplitu	
Description	Use this function to enter the WLAN channel.	
User entry	1 to 11	
Factory setting	6	

7) Service Set Identifier

Description



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

Select antenna		A
Navigation	Image: Boost and Communication → WLAN settings → Select antenna (2713)	
Description	Use this function to select whether the external or internal antenna is used for recep	tion.
Selection	External antennaInternal antenna	
Factory setting	Internal antenna	

Connection state	
Navigation	■ Expert → Communication → WLAN settings → Connection state (2722)
Description	The connection status is displayed.
User interface	ConnectedNot connected
Factory setting	Not connected

Navigation	■ Expert → Communication → WLAN settings → Rec.sig.strength (2721)
Description	Displays the signal strength received.
User interface	LowMediumHigh
Factory setting	High

Gateway IP addr.

Navigation	Image: Barbon Strain Stra
Description	Use this function to enter the IP address of the gateway.

Factory setting 192.168.1.212

IP address DNS	
Navigation	 Expert → Communication → WLAN settings → IP address DNS (2720) Expert → Communication → WLAN settings → IP address DNS (2720)
Description	Use this function to enter the IP address of the domain name server.
Factory setting	192.168.1.212

3.7 "Application" submenu

Navigation \square Expert \rightarrow Application

► Application	
Reset all tot. (2806)	→ 🗎 161
► Totalizer 1 to n	→ 🗎 162

Reset all tot.				
Navigation	Image: Barbon Barbo	Image: Barbon → Application → Reset all tot. (2806)		
Description	Use this function to deletes all the flow	Use this function to reset all totalizers to the value ${f 0}$ and restart the totaling process. This deletes all the flow values previously totalized.		
Selection	CancelReset + totalize	CancelReset + totalize		
Factory setting	Cancel			
Additional information	Selection			
	Options	Description		
	Cancel	No action is executed and the user exits the parameter.		
	Reset + totalize	Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow		

values previously totalized.

3.7.1 "Totalizer 1 to n" submenu

Navigation $\blacksquare \blacksquare$ Expert \rightarrow Application \rightarrow Totalizer 1 to n



Assign variable

■ Expert → Application → Totalizer 1 to $n \rightarrow Assign variable (0914-1 to n)$
Use this function to select a process variable for the Totalizer 1 to n.
 Off Volume flow Mass flow Correct.vol.flow
Volume flow
Description If the option selected is changed, the device resets the totalizer to 0.

Selection

If the **Off** option is selected, only **Assign variable** parameter ($\rightarrow \square$ 162) is still displayed in the **Totalizer 1 to n** submenu. All other parameters in the submenu are hidden.

A

Unit totalizer 1 to n			Â	
Navigation	$\textcircled{B} \boxminus \text{ Expert} \rightarrow \text{Appl}$	ication \rightarrow Totalizer 1 to n \rightarrow Uni	t totalizer 1 to n (0915–1 to n)	
Prerequisite	 One of the following options is selected in the Assign variable parameter (→ ¹ 162) of the Totalizer 1 to n submenu: Volume flow Mass flow Correct.vol.flow 			
Description	Use this function to s	Use this function to select the process variable unit for the Totalizer 1 to n ($ ightarrow$ [$ ightarrow$ 162).		
Selection	SI units • g • kg • t	US units • oz • lb • STon		
	or			
	SI units • cm ³ • dm ³ • m ³ • ml • l • hl • Ml Mega	US units af ft ³ fl oz (us) gal (us) kgal (us) Mgal (us) bbl (us;liq.) bbl (us;beer) bbl (us;oil) bbl (us;tank)	Imperial units • gal (imp) • Mgal (imp) • bbl (imp;beer) • bbl (imp;oil)	
	or			
	SI units NI Nm ³ Sm ³	US units • Sft ³ • Sgal (us) • Sbbl (us;liq.)	Imperial units Sgal (imp)	
	or			
	<i>Other units</i> None			
Factory setting	1			
Additional information	Description The unit is select made in the Sys t	ted separately for each totalizer tem units submenu (→ 🗎 54).	. It is independent of the selection	
	Selection			

The selection is dependent on the process variable selected in the **Assign variable** parameter ($\rightarrow \cong 162$).

Operation mode		
Navigation	Image: Barbon Application → Totalizer 1 to n → Operation mode (0908–1 to n)	
Description	Use this function to select how the totalizer summates the flow.	
Selection	Net flow totalForward totalReverse total	
Factory setting	Net flow total	
Additional information	 Selection Net flow total Flow values in the forward and reverse flow direction are totalized and balanced again one another. Net flow is registered in the flow direction. Forward total Only the flow in the forward flow direction is totalized. Reverse total Only the flow in the reverse flow direction is totalized (= reverse flow quantity) 	nst

Control Tot. 1 to n			
Navigation	■ Expert → Application → Totalizer 1 to $n \rightarrow$ Control Tot. 1 to $n (0912-1 \text{ to } n)$		
Prerequisite	One of the following of the Totalizer 1 to n s Volume flow	options is selected in the Assign variable parameter ($\rightarrow \square 162$) of ubmenu:	
Description	Use this function to se	elect the control of totalizer value 1-3.	
Selection	 Totalize Reset + hold Preset + hold Reset + totalize Preset+totalize Hold 		
Factory setting	Totalize		
Additional information	Selection		
	Options	Description	
	Totalize	The totalizer is started or continues running.	

Reset + hold

Preset + hold

Reset + totalize

The totaling process is stopped and the totalizer is reset to 0.

The totalizer is reset to $\ensuremath{0}$ and the totaling process is restarted.

The totaling process is stopped and the totalizer is set to its defined start value from the ${\bf Preset}\ {\bf value}\ {\bf parameter}.$

Hauser

Options	Description
Preset+totalize	The totalizer is set to the defined start value from the Preset value parameter and the totaling process is restarted.
Hold	Totalizing is stopped.

Preset value 1 to n	
Navigation	■ Expert → Application → Totalizer 1 to $n \rightarrow Preset$ value 1 to $n (0913-1 \text{ to } n)$
Prerequisite	One of the following options is selected in the Assign variable parameter ($\rightarrow \cong 162$) of the Totalizer 1 to n submenu: Volume flow
Description	Use this function to enter a start value for the Totalizer 1 to n.
User entry	Signed floating-point number
Factory setting	01
Additional information	 Entry The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ ≅ 163). Example This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

Failure mode		Ê
Navigation	Image: Barbon → Application → Totalizer 1 to n → Failure mode (0901–1 to n)	
Description	Use this function to select how a totalizer behaves in the event of a device alarm.	
Selection	StopActual valueLast valid value	
Factory setting	Stop	

Description



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

Selection

Stop

f

The totalizer is stopped in the event of a device alarm.

- Actual value The totalizer continues to count based on the actual measured value; the device alarm is ignored.
- Last valid value

The totalizer continues to count based on the last valid measured value before the device alarm occurred.

3.7.2 "Custody transfer" submenu

P Only available for Promag H.

For detailed information on the parameter descriptions for custody transfer measurement, see the Special Documentation for the device \rightarrow \square 7

Navigation □ Expert → Application → Custody transfer

Custody transfer

"Diagnostics" submenu 3.8

Navigation

 \blacksquare Expert → Diagnostics

► Diagnostics	
Actual diagnos. (0691)	→ 🗎 167
Prev.diagnostics (0690)	→ ● 168
Time fr. restart (0653)	→ 🗎 169
Operating time (0652)	→ 🗎 169
► Diagnostic list	→ 🗎 169
► Event logbook	→ 🗎 173
► Device info	→ 🗎 176
► Main elec.+I/01	→ 🗎 179

► Sens. electronic	-	→ 🗎 180
► I/O module 2	-	→ 🗎 182
► I/O module 3	-	→ 🖺 183
► I/O module 4	-	→ 🖺 185
► Display module	-	→ 🖺 186
► Min/max val.	-	→ 🗎 195
► Data logging	-	→ 🗎 187
► Heartbeat	-	→ 🗎 198
► Simulation	-	→ 🗎 198
	 Sens. electronic I/O module 2 I/O module 3 I/O module 4 Display module Min/max val. Data logging Heartbeat Simulation 	 Sens. electronic I/O module 2 I/O module 3 I/O module 4 Display module Min/max val. Data logging Heartbeat Simulation

Actual diagnos.

Navigation	Image: Expert → Diagnostics → Actual diagnos. (0691)
Prerequisite	A diagnostic event has occurred.
Description	Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display
	Additional pending diagnostic messages can be viewed in the Diagnostic list submenu ($\rightarrow \cong 169$).
	Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the \mathbb{E} key.
	Example
	For the display format: ✤F271 Main electronics

Timestamp Navigation □ Expert → Diagnostics → Timestamp Description Displays the operating time when the current diagnostic message occurred. User interface Days (d), hours (h), minutes (m) and seconds (s) Endress+Hauser 167

Display



The diagnostic message can be viewed via the **Actual diagnos.** parameter ($\rightarrow \square 167$).

Example For the display format: 24d12h13m00s

Prev.diagnostics

Navigation	Image: Second states and the second states and the second states are also been stated as a second state of the second states are also been states are a
Prerequisite	Two diagnostic events have already occurred.
Description	Displays the diagnostic message that occurred before the current message.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display
	Yia the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the 🗉 key.
	Example
	For the display format: SP271 Main electronics

Timestamp Navigation Expert → Diagnostics → Timestamp Description Displays the operating time when the last diagnostic message before the current message occurred. User interface Days (d), hours (h), minutes (m) and seconds (s) Additional information Display Image: Display </

For the display format: 24d12h13m00s

Time fr. restart	
Navigation	■ Expert \rightarrow Diagnostics \rightarrow Time fr. restart (0653)
Description	Use this function to display the time the device has been in operation since the last device restart.
User interface	Days (d), hours (h), minutes (m) and seconds (s)

Operating time

Navigation	Sequence Expert → Diagnostics → Operating time (0652)
Description	Use this function to display the length of time the device has been in operation.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<i>User interface</i> The maximum number of days is 9999, which is equivalent to 27 years.

3.8.1 "Diagnostic list" submenu

Navigation \square Expert \rightarrow Diagnostics \rightarrow Diagnostic list

► Diagnostic list	
Diagnostics 1 (0692)	→ ➡ 169
Diagnostics 2 (0693)	→ ● 170
Diagnostics 3 (0694)	→ 🗎 171
Diagnostics 4 (0695)	→ 🗎 172
Diagnostics 5 (0696)	→ 🗎 173

Diagnostics 1 Navigation B ■ Expert → Diagnostics → Diagnostic list → Diagnostics 1 (0692) Description Displays the current diagnostics message with the highest priority.

Endress+Hauser

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information

Display



Examples

For the display format:

- SF271 Main electronics
- SF276 I/O module

Timestamp	
Navigation	□ Expert → Diagnostics → Diagnostic list → Timestamp
Description	Displays the operating time when the diagnostic message with the highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	Display If the diagnostic message can be viewed via the Diagnostics 1 parameter ($\rightarrow \square$ 169).
	Example
	For the display format: 24d12h13m00s

Diagnostics 2

Navigation	Sequence Sequenc
Description	Displays the current diagnostics message with the second-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	 Display Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key. Examples

- For the display format:
- SF271 Main electronics
- SF276 I/O module

Timestamp	
Navigation	□ Expert → Diagnostics → Diagnostic list → Timestamp
Description	Displays the operating time when the diagnostic message with the second-highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	Display
	The diagnostic message can be viewed via the Diagnostics 2 parameter ($\Rightarrow \square 170$).
	Example
	For the display format: 24d12h13m00s

Diagnostics 3	
Navigation	Image: Barbon Structure Structu
Description	Displays the current diagnostics message with the third-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display I Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the 🗉 key.
	Examples
	For the display format: • SF271 Main electronics

Timestamp	
Navigation	Expert \rightarrow Diagnostics \rightarrow Diagnostic list \rightarrow 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)

Display

The diagnostic message can be viewed via the **Diagnostics 3** parameter ($\rightarrow \square 171$).

Example For the display format: 24d12h13m00s

Diagnostics 4	
Navigation	Image: Barbon Structure
Description	Displays the current diagnostics message with the fourth-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display I Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.
	Examples
	For the display format: ■ ⊗F271 Main electronics

■ SF276 I/O module

Timestamp	
Navigation	Expert \rightarrow Diagnostics \rightarrow Diagnostic list \rightarrow 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 172 The diagnostic message can be viewed via the Diagnostics 4 parameter ($\rightarrow \implies 172$).
	Example
	For the display format:

24d12h13m00s

Diagnostics 5	
Navigation	Image: Barbon Structure
Description	Displays the current diagnostics message with the fifth-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display I Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the 🗉 key.
	<i>Examples</i> For the display format: ■ SP271 Main electronics

■ SF276 I/O module

Timestamp	
Navigation	Expert \rightarrow Diagnostics \rightarrow Diagnostic list \rightarrow Timestamp
Description	Displays the operating time when the diagnostic message with the fifth-highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information Display Image: Display Image: Di	
	Example

For the display format: 24d12h13m00s

3.8.2 "Event logbook" submenu

Navigation \blacksquare Expert \rightarrow Diagnostics \rightarrow Event logbook

► Event logbook	
Filter options (0705)] → 🗎 174
► Event list] → 🗎 175

Filter options		ì
Navigation	Image: Expert → Diagnostics → Event logbook → Filter options (0705)	
Description	Use this function to select the category whose event messages are displayed in the event list of the local display.	
Selection	 All Failure (F) Funct. check (C) Out of spec. (S) Mainten. req.(M) Information (I) 	
Factory setting	All	
Additional information	 Description The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107: F = Failure C = Function Check S = Out of Specification M = Maintenance Required 	

Filter options	Â
Navigation	□ Expert \rightarrow Diagnostics \rightarrow Event logbook \rightarrow Filter options
Description	Use this function to select the category whose event messages are displayed in the event list of the operating tool.
Selection	 All Failure (F) Funct. check (C) Out of spec. (S) Mainten. req.(M) Information (I)
Factory setting	All
Additional information	 Description The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107: F = Failure C = Function Check S = Out of Specification M = Maintenance Required

"Event list" submenu



The **Event list** submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the Event logbook submenu.

Navigation □ Expert → Diagnostics → Event logbook → Event list

► Event list		
	Event list] → 🖺 175

Event list	
Navigation	ⓐ Expert → Diagnostics → Event logbook → Event list
Description	Displays the history of event messages of the category selected in the Filter options parameter ($\rightarrow \cong 174$).
User interface	 For a "Category I" event message Information event, short message, symbol for event recording and operating time when error occurred For a "Category F, C, S, M" event message (status signal) Diagnostics code, short message, symbol for event recording and operating time when error occurred
Additional information	Description
	A maximum of 20 event messages are displayed in chronological order.
	If the Extended HistoROM application package (order option) is enabled in the device, the event list can contain up to 100 entries .
	The following symbols indicate whether an event has occurred or has ended: ● ①: Occurrence of the event ● ①: End of the event
	Examples
	For the display format: • I1091 Configuration modified ⊕ 24d12h13m00s • ♥F271 Main electronics ⊕ 01d04h12min30s
	HistoROM
	A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

3.8.3 "Device info" submenu

Navigation

□ □ Expert → Diagnostics → Device info



Device tag	
Navigation	■ Expert → Diagnostics → Device info → Device tag (0011)
Description	Displays a unique name for the measuring point so it can be identified quickly within the plant. The name is displayed in the header.
User interface	Max. 32 characters, such as letters, numbers or special characters (e.g. $@$, %, /).
Factory setting	Promag
Additional information	User interface

1 Position of the header text on the display

The number of characters displayed depends on the characters used.

Sorial number	
Navigation	■ Expert \rightarrow Diagnostics \rightarrow Device info \rightarrow Serial number (0009)
Description	Displays the serial number of the measuring device.
	The number can be found on the nameplate of the sensor and transmitter.
User interface	A maximum of 11-digit character string comprising letters and numbers.
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	Image: Barbon State info → Firmware version (0010)
Description	Displays the device firmware version installed.
User interface	Character string in the format xx.yy.zz
Additional information	Display The Firmware version is also located: On the title page of the Operating instructions On the transmitter nameplate

Device name	
Navigation	Image: Barbon Structure
Description	Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.
User interface	Promag 300/500

Order code		
Navigation	■ Expert → Diagnostics → Device info → Order code (0008)	
Description	Displays the device order code.	
User interface	Character string composed of letters, numbers and certain punctuation marks (e.g.	/).
Endress+Hauser		177

Description

The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.

The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

Uses of the order code

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

Ext. order cd. 1		Â
Navigation	Image: Barbon Structure <th></th>	
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.	re
	The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.	

Ext. order cd. 2		
Navigation	Image: Barbon Structure Structu	
Description	Displays the second part of the extended order code.	
User interface	Character string	
Additional information	For additional information, see Ext. order cd. 1 parameter ($\rightarrow \square 178$)	

Ext. order cd. 3		
Navigation	Image: Barbon Structure <th></th>	
Description	Displays the third part of the extended order code.	
User interface	Character string	

Additional information For additional information, see Ext. order cd. 1 parameter ($\rightarrow \square 178$)

Config. counter	
Navigation	■ Expert → Diagnostics → Device info → Config. counter (2751)
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 65 535
ENP version	
Navigation	■ Expert \rightarrow Diagnostics \rightarrow Device info \rightarrow ENP version (0012)
Description	Displays the version of the electronic nameplate.
User interface	Character string
Factory setting	2.02.00

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

3.8.4 "Mainboard module" submenu

Navigation \square Expert \rightarrow Diagnostics \rightarrow Main elec.+I/O1

► Main elec.+I/O1		
Software rev.] → 🗎 180	
Build no. softw.] → 🗎 180	
Bootloader rev.] → 🗎 180	

Software rev.		
Navigation	■ Expert → Diagnostics → Main elec.+I/O1 → Software rev. (0072)	
Description	Use this function to display the software revision of the module.	
User interface	Positive integer	
Build no. softw.		
Navigation	■ Expert → Diagnostics → Main elec.+I/O1 → Build no. softw. (0079)	
Description	Displays the software build number of the module.	
User interface	Positive integer	
Bootloader rev.		
Navigation	■ Expert → Diagnostics → Main elec.+I/O1 → Bootloader rev. (0073)	
Description	Displays the bootloader revision of the software.	
User interface	Positive integer	

3.8.5 "Sens. electronic" submenu

Navigation \square Expert \rightarrow Diagnostics \rightarrow Sens. electronic

► Sens. electronic	
Software rev. (0072)	→ 🗎 181
Build no. softw. (0079)	→ 🗎 181
Bootloader rev. (0073)	→ 🗎 181
Software rev.	
------------------	---
Navigation	Image: Barbon Series → Sens. electronic → Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer
Build no. softw.	
Navigation	Image: Barbon Sensember 2018 Image: Barbon Sensember 2
Description	Displays the software build number of the module.
User interface	Positive integer
Bootloader rev.	
Navigation	Image: Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)
Description	Displays the bootloader revision of the software.
User interface	Positive integer

3.8.6 "I/O module 1" submenu

Navigation \square Expert \rightarrow Diagnostics \rightarrow I/O module 1

► I/O module 1		
	I/O 1 terminals (3902–1)	→ 🗎 181
	Software rev. (0072)	→ 🖺 182

I/O 1 terminals

I/O module 1 → I/O 1 terminals (3902–1)
Expert → Diagnostics → I/O module 1 → I/O 1 terminals (3902–1)

Description

Navigation

Displays the terminal numbers used by the I/O module.

User interface

- Not used
 26-27 (I/O 1)
 24-25 (I/O 2)
 22-23 (I/O 3)
 20-21 (I/O 4)
- Software rev.

 Navigation
 Image: Expert → Diagnostics → I/O module 2 → Software rev. (0072)

 Image: Expert → Diagnostics → I/O module 3 → Software rev. (0072)

 Image: Expert → Diagnostics → I/O module 4 → Software rev. (0072)

 Image: Description

 User interface

 Positive integer

3.8.7 "I/O module 2" submenu

Navigation

□ Expert → Diagnostics → I/O module 2

► I/O module 2	
I/O 2 terminals) → 🗎 182
Software rev.) → 🗎 183
Build no. softw.) → 🗎 183
Bootloader rev.) → 🗎 183

I/O 1 terminals	
Navigation	I Expert → Diagnostics → I/O module 1 → I/O 1 terminals (3902–1)
Description	Displays the terminal numbers used by the I/O module.
User interface	 Not used 26-27 (I/O 1) 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)

Software rev.	
Navigation	■ Expert \rightarrow Diagnostics \rightarrow I/O module 2 \rightarrow Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer
Build no. softw.	
Navigation	□ Expert → Diagnostics → I/O module 2 → Build no. softw. (0079)
Description	Displays the software build number of the module.
User interface	Positive integer
Bootloader rev.	
Navigation	I/O module 2 → Bootloader rev. (0073)
Description	Displays the bootloader revision of the software.
User interface	Positive integer

3.8.8 "I/O module 3" submenu

Navigation $\textcircled{B} \boxminus$ Expert \rightarrow Diagnostics \rightarrow I/O module 3

► I/O module 3		
I/O 3 terminals] → 🗎 184	
Software rev.] → 🗎 184	
Build no. softw.] → 🗎 184	
Bootloader rev.] → 🗎 184	

I/O 1 terminals		
Navigation	I = Expert → Diagnostics → I/O module 1 → I/O 1 terminals (3902–1)	
Description	Displays the terminal numbers used by the I/O module.	
User interface	 Not used 26-27 (I/O 1) 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4) 	
Software rev.		
Navigation	I/O module 3 → Software rev. (0072) Software rev. (0072)	
Description	Use this function to display the software revision of the module.	
User interface	Positive integer	
Build no. softw.		
Navigation	I/O module 3 → Build no. softw. (0079) Solution	
Description	Displays the software build number of the module.	
User interface	Positive integer	

Bootloader rev.		
Navigation	I Expert → Diagnostics → I/O module 3 → Bootloader rev. (0073)	
Description	Displays the bootloader revision of the software.	
User interface	Positive integer	

3.8.9 "I/O module 4" submenu

Navigation $\textcircled{B} \boxminus$ Expert \rightarrow Diagnostics \rightarrow I/O module 4

► I/O module 4	
I/O 4 terminals) → 🗎 185
Software rev.) → 🗎 185
Build no. softw.	→ 🗎 185
Bootloader rev.) → 🗎 186

I/O 1 terminals	
Navigation	I = Expert → Diagnostics → I/O module 1 → I/O 1 terminals (3902–1)
Description	Displays the terminal numbers used by the I/O module.
User interface	 Not used 26-27 (I/O 1) 24-25 (I/O 2) 22-23 (I/O 3) 20-21 (I/O 4)

Navigation	■ Expert \rightarrow Diagnostics \rightarrow I/O module 4 \rightarrow Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer

Build	no.	softw.
-------	-----	--------

Navigation	■ Expert → Diagnostics → I/O module 4 → Build no. softw. (0079)
Description	Displays the software build number of the module.
User interface	Positive integer

Bootloader rev.	
Navigation	■ Expert \rightarrow Diagnostics \rightarrow I/O module 4 \rightarrow Bootloader rev. (0073)
Description	Displays the bootloader revision of the software.
User interface	Positive integer

3.8.10 "Display module" submenu

Navigation

Image: Barbon Barb



Software rev.	
Navigation	Image: Bar and Ba
Description	Use this function to display the software revision of the module.
User interface	Positive integer
Build no. softw.	
Navigation	■ Expert → Diagnostics → Display module → Build no. softw. (0079)
Description	Displays the software build number of the module.
User interface	Positive integer

Bootloader rev. Navigation Description Displays the bootloader revision of the software. User interface

3.8.11 "Data logging" submenu

Navigation $\blacksquare \blacksquare$ Expert \rightarrow Diagnostics \rightarrow Data logging

► Data logging	
Assign chan. 1	→ 🗎 188
Assign chan. 2	→ 🗎 188
Assign chan. 3	→ 🗎 189
Assign chan. 4	→ 🗎 189
Logging interval	→ 🗎 189
Clear logging	→ 🗎 190
Data logging	→ 🗎 190
Logging delay	→ 🗎 191
Data log.control	→ 🗎 191
Data log. status	→ 🗎 192
Logging duration	→ 🗎 192
► Displ.channel 1	→ 🗎 192
► Displ.channel 2	→ <a> 193
► Displ.channel 3	→ 🗎 194
► Displ.channel 4	→ 🗎 194

Assign chan. 1		æ
Navigation	Image: Barbon Barb	
Prerequisite	The Extended HistoROM application package is available.	
	The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \cong 43$).	
Description	Use this function to select a process variable for the data logging channel.	
Selection	 Off Volume flow Mass flow Correct.vol.flow Flow velocity Conductivity* CorrConductivity* Curr.output 1 Curr.output 2* Curr.output 3* Curr.output 4* Temperature* Electronic temp. 	
Factory setting	Off	
Additional information	 Description A total of 1000 measured values can be logged. This means: 1000 data points if 1 logging channel is used 500 data points if 2 logging channels are used 333 data points if 3 logging channels are used 250 data points if 4 logging channels are used Once the maximum number of data points is reached, the oldest data points in the da are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle). The log contents are cleared if the option selected is changed. 	ta log 1

Assign chan. 2		
Navigation	Image: Barbon State	
Prerequisite	The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \boxtimes 43$).	
Description	Options for the assignment of a process variable to the data logging channel.	
Selection	Picklist, see Assign channel 1 parameter (→ 🗎 188)	

^{*} Visibility depends on order options or device settings

Factory setting Off

Assign chan. 3		Ê
Navigation	Image: Barbon Structure Structu	
Prerequisite	The Extended HistoROM application package is available.	
	The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \cong 43$).	
Description	Options for the assignment of a process variable to the data logging channel.	
Selection	Picklist, see Assign channel 1 parameter ($\rightarrow \square$ 188)	
Factory setting	Off	
Assign chan. 4		Â
Navigation	■ Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Assign chan. 4 (0854)	
Prerequisite	The Extended HistoROM application package is available.	
	The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \cong 43$).	
Description	Options for the assignment of a process variable to the data logging channel.	
Selection	Picklist, see Assign channel 1 parameter ($\rightarrow \square$ 188)	
Factory setting	Off	
Logging interval		
Navigation	Image: Expert → Diagnostics → Data logging → Logging interval (0856)	
Prerequisite	The Extended HistoROM application package is available.	
	The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \cong 43$).	
Description	Use this function to enter the logging interval T_{log} for data logging.	
User entry	0.1 to 3 600.0 s	
Factory setting	1.0 s	

Additional information

Description

This defines the interval between the individual data points in the data log, and thus the maximum loggable process time T_{log}:

- If 1 logging channel is used: $T_{log} = 1000 \times t_{log}$ If 2 logging channels are used: $T_{log} = 500 \times t_{log}$
- If 3 logging channels are used: $T_{log} = 333 \times t_{log}$
- If 4 logging channels are used: $T_{log} = 250 \times t_{log}$

Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of T_{log} always remains in the memory (ring memory principle).

The log contents are cleared if the length of the logging interval is changed. H

Example

If 1 logging channel is used:

- $T_{log} = 1000 \times 1 \text{ s} = 1000 \text{ s} \approx 15 \text{ min}$ $T_{log} = 1000 \times 10 \text{ s} = 10000 \text{ s} \approx 3 \text{ h}$ $T_{log} = 1000 \times 80 \text{ s} = 80000 \text{ s} \approx 1 \text{ d}$

- $T_{log} = 1000 \times 3600 \text{ s} = 3600000 \text{ s} \approx 41 \text{ d}$

Clear logging		
Navigation	Image: Barbon State	
Prerequisite	The Extended HistoROM application package is available.	
	The software options currently enabled are displayed in the SW option overv . parameter ($\rightarrow \cong 43$).	
Description	Use this function to clear the entire logging data.	
Selection	CancelClear data	
Factory setting	Cancel	
Additional information	Selection	
	 Cancel The data is not cleared. All the data is retained. Clear data The logging data is cleared. The logging process starts from the beginning. 	

Data logging		
Navigation	Image: Boostics → Data logging → Data logging (0860)	
Description	Use this function to select the data logging method.	
Selection	OverwritingNot overwriting	

Factory setting	Overwriting
Additional information	Selection
	 Overwriting The device memory applies the FIFO principle. Not overwriting Data logging is canceled if the measured value memory is full (single shot).

Logging delay		ß
Navigation	■ Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Logging delay (0859)	
Prerequisite	In the Data logging parameter ($ ightarrow extsf{B}$ 190), the Not overwriting option is selected.	
Description	Use this function to enter the time delay for measured value logging.	
User entry	0 to 999 h	
Factory setting	0 h	
Additional information	Description	
	Once measured value logging has been started with the Data log.control parameter $(\rightarrow \cong 191)$, the device does not save any data for the duration of the time delay enter	ced.

Data log.control		
Navigation	Image: Barbon State	
Prerequisite	In the Data logging parameter ($ ightarrow extsf{B}$ 190), the Not overwriting option is selected.	
Description	Use this function to start and stop measured value logging.	
Selection	 None Delete + start Stop 	
Factory setting	None	
Additional information	 Selection None Initial measured value logging status. Delete + start All the measured values recorded for all the channels are deleted and measured val logging starts again. Stop Measured value logging is stopped. 	ue

Data log. status	
Navigation	Image: Barbon Barb
Prerequisite	In the Data logging parameter ($ ightarrow extsf{B}$ 190), the Not overwriting option is selected.
Description	Displays the measured value logging status.
User interface	 Done Delay active Active Stopped
Factory setting	Done
Additional information	 Selection Done Measured value logging has been performed and completed successfully. Delay active Measured value logging has been started but the logging interval has not yet elapsed. Active The logging interval has elapsed and measured value logging is active. Stopped Measured value logging is stopped.

Logging duration	
Navigation	
Prerequisite	In the Data logging parameter ($\rightarrow \cong$ 190), the Not overwriting option is selected.
Description	Displays the total logging duration.
User interface	Positive floating-point number
Factory setting	0 s

"Displ.channel 1" submenu

Navigation

Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Displ.channel 1

► Displ.channel 1		
	Display channel 1	→ 🖺 193

Display channel 1	
Navigation	■ Expert → Diagnostics → Data logging → Displ.channel 1
Prerequisite	The Extended HistoROM application package is available.
	The software options currently enabled are displayed in the SW option overv. parameter ($\rightarrow \cong 43$).
	One of the following options is selected in the Assign chan. 1 parameter (→ 🗎 188): • Conductivity [*] • CorrConductivity [*] • Temperature [*]
Description	Displays the measured value trend for the logging channel in the form of a chart.
Additional information	Description
	3 ^e //XXXXXXXX 175.77 40.69 l/h -100s
	A0034352 10 Chart of a measured value trend
	 x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable. y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

"Displ.channel 2" submenu

Navigation \blacksquare Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Displ.channel 2

► Displ.channel 2		
	Display channel 2] → 🖺 193

Display channel 2		
Navigation		Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Displ.channel 2
Prerequisite	A pro	cess variable is defined in the Assign chan. 2 parameter.

^{*} Visibility depends on order options or device settings

Description

See the **Display channel 1** parameter $\rightarrow \implies 193$

"Displ.channel 3" submenu

Navigation \blacksquare Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Displ.channel 3

► Displ.channel 3		
	Display channel 3	→ 🗎 194

Display channel 3 Navigation Expert → Diagnostics → Data logging → Displ.channel 3 Prerequisite A process variable is defined in the Assign chan. 3 parameter. Description See the Display channel 1 parameter →

"Displ.channel 4" submenu

Navigation \blacksquare Expert \rightarrow Diagnostics \rightarrow Data logging \rightarrow Displ.channel 4

► Displ.channel 4		
	Display channel 4	→ 🗎 194

Display channel 4		
Navigation	Expert → Diagnostics → Data logging → Displ.channel 4	
Prerequisite	A process variable is defined in the Assign chan. 4 parameter.	
Description	See the Display channel 1 parameter $\rightarrow \cong$ 193	

"Min/max val." submenu 3.8.12

Navigation □ Expert → Diagnostics → Min/max val.

► Min/max val.	
Reset min/max (6541)) → 🗎 195
► Main elect.temp.	→ 🗎 195
► Sensor elec.temp	→ 🗎 196
► Temperature) → 🗎 197

Reset min/max		Ê
Navigation	Image: Barbon Structure <th></th>	
Description	Use this function to select measured variables whose minimum, maximum and aver measured values are to be reset.	age
Selection	CancelTerminal volt.IO module temp.	
Factory setting	Cancel	

"Main electronic temperature" submenu

Navigation	8 9	Expert \rightarrow Diagnostics \rightarrow <i>l</i>	Min/max val. → Main elect.temp.	
► Main elect.temp).			
	Minimu	m value (0688)	→ 🗎 196	

1m value (0688)

Maximum value (0665)

→ 🗎 196

Minimum value	
Navigation	Image: Barbon Strain Amplitude A
Description	Displays the lowest previously measured temperature value of the electronics module in the transmitter.
User interface	Signed floating-point number
Additional information	Dependency 1 The unit is taken from the Temperature unit parameter ($\rightarrow \cong 57$)

Maximum value	
Navigation	Image: Barbon Strain Strai
Description	Displays the highest previously measured temperature value of the electronics module in the transmitter.
User interface	Signed floating-point number
Additional information	Dependency The unit is taken from the Temperature unit parameter ($\rightarrow \cong 57$)

"Sensor electronic temperature (ISEM)" submenu

Navigation B Expert \rightarrow Diagnostics \rightarrow Min/max val. \rightarrow Sensor elec.temp

► Sensor elec.temp				
Minimum value (6547)] → 🗎 196			
Maximum value (6545)] → 🗎 197			

Minimum value	
Navigation	■ Expert → Diagnostics → Min/max val. → Sensor elec.temp → Minimum value (6547)
Description	Displays the lowest previously measured temperature value of the main electronics module.

User interface

Signed floating-point number

Dependency

Additional information

The unit is taken from the **Temperature unit** parameter ($\rightarrow \cong 57$)

Maximum value	
Navigation	Expert → Diagnostics → Min/max val. → Sensor elec.temp → Maximum value (6545)
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 ($\rightarrow \square$ 57)

"Temperature" submenu

Navigation \blacksquare Expert \rightarrow Diagnostics \rightarrow Min/max val. \rightarrow Temperature

► Temperature	
Minimum value (6681)	→ 🗎 197
Maximum value (6680)	→ 🗎 198

Minimum value	
Navigation	■ Expert → Diagnostics → Min/max val. → Temperature → Minimum value (6681)
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device.
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 ($\rightarrow \square 57$)

Maximum value	
Navigation	Image: Barbon Structure → Diagnostics → Min/max val. → Temperature → Maximum value (6680)
Prerequisite	 One of the following conditions is met: Order code for "Sensor option", option CI "Medium temperature measurement" or The temperature is read into the flowmeter from an external device.
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 ($\rightarrow \square 57$)

"Heartbeat" submenu 3.8.13

For detailed information on the parameter descriptions for the **Heartbeat** Verification+Monitoringapplication package, refer to the Special Documentation for the device $\rightarrow \square 7$

Navigation □ □ Expert \rightarrow Diagnostics \rightarrow Heartbeat

► Heartbeat	
► Base settings	
► Perform.verific.	
► Verific. results	
► Monitor. results	

"Simulation" submenu 3.8.14

Navigation

 $\blacksquare \boxminus Expert \rightarrow Diagnostics \rightarrow Simulation$

► Simulation			
	Assign proc.var. (18	10)	→ 🗎 199

Proc. var. value (1811)	→ 🗎 200
Status inp. sim. (1355)	→ 🖺 200
Signal level (1356)	→ 🖺 201
Curr.inp 1 to n sim. (1608–1 to n)	→ 🗎 201
Value curr.inp 1 to n (1609–1 to n)	→ 🗎 202
Curr.out. 1 to n sim. (0354–1 to n)	→ 🗎 202
Value curr.out 1 to n (0355–1 to n)	→ 🖺 202
FreqOutputSim 1 to n (0472-1 to n)	→ 🖺 203
Freq value 1 to n (0473-1 to n)	→ 🖺 203
Puls.outp.sim. 1 to n (0458-1 to n)	→ 🖺 204
Pulse value 1 to n (0459–1 to n)	→ 🖺 204
Switch sim. 1 to n (0462–1 to n)	→ 🖺 204
Switch status 1 to n (0463–1 to n)	→ 🗎 205
Relay out. 1 to n sim (0802–1 to n)	→ 🗎 205
Switch status 1 to n (0803–1 to n)	→ 🗎 206
Dev. alarm sim. (0654)	→ 🗎 206
Event category (0738)	→ 🗎 207
Diag. event sim. (0737)	→ 🗎 207

Assign proc.var.		A
Navigation	Image: Barbon Simulation → Assign proc.var. (1810)	
Description	Use this function to select a process variable for the simulation process that is activat The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.	ed.
Selection	 Off Volume flow Mass flow Correct.vol.flow 	

Flow velocity
· Conductivity*
· Conductivity*
· Temperature*Factory settingOffAdditional informationDescription
· The simulation value of the process variable selected is defined in the Proc. var. value

Proc. var. value	٨
Navigation	
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	Entry
	The unit of the displayed measured value is taken from the System units submenu $(\rightarrow \cong 54)$.

Status inp. sim.	8
Navigation	Image: Bar and Ba
Description	Use this function to switch simulation of the status input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	OffOn
Factory setting	Off

^{*} Visibility depends on order options or device settings

Additional information



The desired simulation value is defined in the **Signal level** parameter ($\rightarrow \square 201$).

Selection

```
• Off
```

Simulation for the status input is switched off. The device is in normal measuring mode or another process variable is being simulated.

```
• On
```

Simulation for the status input is active.

Signal level	8
Navigation	Image: Simulation → Signal level (1356) (1356)
Prerequisite	In the Status inp. sim. parameter ($\rightarrow \square 200$), the On option is selected.
Description	Use this function to select the signal level for the simulation of the status input. In this way, users can verify the correct configuration of the status input and the correct function of upstream feed-in units.
Selection	HighLow
Curr.inp 1 to n sim.	8
Navigation	\blacksquare = Expert → Diagnostics → Simulation → Curr.inp 1 to n sim. (1608–1 to n)
Description	Option for switching simulation of the current input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
	The desired simulation value is defined in the Value curr.inp 1 to n parameter.
Selection	OffOn
Factory setting	Off
Additional information	 Selection Off Current simulation is switched off. The device is in normal measuring mode or another
	 On Current simulation is active.

Value curr.inp 1 to n	6]
Navigation	■ Expert → Diagnostics → Simulation → Value curr.inp 1 to n (1609–1 to n)	
Prerequisite	In the Curr.inp 1 to n sim. parameter, the On option is selected.	
Description	Use this function to enter the current value for the simulation. In this way, users can verif the correct configuration of the current input and the correct function of upstream feed-in units.	y L
User entry	0 to 22.5 mA	

Curr.out. 1 to n sim.	â
Navigation	■ Expert → Diagnostics → Simulation → Curr.out. 1 to n sim. (0354–1 to n)
Description	Use this function to switch simulation of the current output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	OffOn
Factory setting	Off
Additional information	<i>Description</i> The desired simulation value is defined in the Value curr.out 1 to n parameter.
	 Selection Off Current simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. On Current simulation is active.

Value curr.out 1 to n		£
Navigation	Image: Barbon Simulation → Value curr.out 1 to n (0355–1 to n)	
Prerequisite	In the Curr.out. 1 to n sim. parameter, the On option is selected.	
Description	Use this function to enter a current value for the simulation. In this way, users can v the correct adjustment of the current output and the correct function of downstrean switching units.	rerify n
User entry	3.59 to 22.5 mA	

Additional information

Dependency

The input range is dependent on the option selected in the **Current span** parameter ($\Rightarrow \square 105$).

FreqOutputSim 1 to n	Â
Navigation	Image: Barbon Simulation → FreqOutputSim 1 to n (0472–1 to n)
Prerequisite	In the Operating mode parameter ($ ightarrow extsf{B}$ 119), the Frequency option is selected.
Description	Use this function to switch simulation of the frequency output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	OffOn
Factory setting	Off
Additional information	<i>Description</i> 1 The desired simulation value is defined in the Freq value 1 to n parameter.
	 Selection Off Frequency simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. On Frequency simulation is active.

Freq value 1 to n		
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Navigation	■ Expert → Diagnostics → Simulation → Freq value 1 to n (0473–1 to n)
Prerequisite	In the FreqOutputSim 1 to n parameter, the On option is selected.
Description	Use this function to enter a frequency value for the simulation. In this way, users can verify the correct adjustment of the frequency output and the correct function of downstream switching units.
User entry	0.0 to 12 500.0 Hz

Puls.outp.sim. 1 to n	Â
Navigation	■ Expert → Diagnostics → Simulation → Puls.outp.sim. 1 to n (0458–1 to n)
Prerequisite	In the Operating mode parameter ($\rightarrow \cong 119$), the Pulse option is selected.
Description	Use this function to switch simulation of the pulse output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	OffFixed valueDown-count. val.
Factory setting	Off
Additional information	<i>Description</i> The desired simulation value is defined in the Pulse value 1 to n parameter.
	Selection
	 Off Pulse simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. Fixed value Pulses are continuously output with the pulse width specified in the Pulse width parameter (→) 122)
	 Down-count. val. The pulses specified in the Pulse value parameter (→ ^(→) 204) are output.

Â
Image: Barbon Simulation → Pulse value 1 to n (0459–1 to n) Image: Barbon Simulation → Pulse value 1 to n (0459–1 to n)
In the Puls.outp.sim. 1 to n parameter, the Down-count. val. option is selected.
Use this function to enter a pulse value for the simulation. In this way, users can verify the correct adjustment of the pulse output and the correct function of downstream switching units.
0 to 65 535

Switch sim. 1 to n		A
Navigation	Image: Barbon Simulation → Switch sim. 1 to n (0462–1 to n) Image: Barbon Simulation → Switch sim. 1 to n (0462–1 to n)	
Prerequisite	In the Operating mode parameter ($\rightarrow \cong 119$), the Switch option is selected.	

Description	Use this function to switch simulation of the switch output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	OffOn
Factory setting	Off
Additional information	<i>Description</i> The desired simulation value is defined in the Switch status 1 to n parameter.
	Selection
	 Off Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. On

Switch simulation is active.

Switch status 1 to n	
Navigation	■ Expert → Diagnostics → Simulation → Switch status 1 to n (0463–1 to n)
Description	Use this function to select a switch value for the simulation. In this way, users can verify the correct adjustment of the switch output and the correct function of downstream switching units.
Selection	OpenClosed
Additional information	Selection
	 Open Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. Closed Switch simulation is active.

Relay out. 1 to n sim		æ
Navigation	Image: Boundary Structure <th></th>	
Description	Use this function to switch simulation of the relay output on and off. The display alternates between the measured value and a diagnostic message of the "Function check category (C) while simulation is in progress.	K"
Selection	OffOn	
Factory setting	Off	

Additional information

Description



Selection

Off

Relay simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.

• On

Relay simulation is active.

Switch status 1 to n	٨
Navigation	■ Expert → Diagnostics → Simulation → Switch status 1 to n (0803–1 to n)
Prerequisite	The On option is selected in the Switch sim. 1 to n parameter parameter.
Description	Use this function to select a relay value for the simulation. In this way, users can verify the correct adjustment of the relay output and the correct function of downstream switching units.
Selection	OpenClosed
Additional information	 Selection Open Relay simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. Closed Relay simulation is active.

Dev. alarm sim.		A
Navigation	■ Expert → Diagnostics → Simulation → Dev. alarm sim. (0654)	
Description	Use this function to switch the device alarm on and off.	
Selection	OffOn	
Factory setting	Off	
Additional information	<i>Description</i> The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.	

Event category	
Navigation	■ Expert → Diagnostics → Simulation → Event category (0738)
Description	Use this function to select the category of the diagnostic events that are displayed for the simulation in the Diag. event sim. parameter ($\rightarrow \square 207$).
Selection	 Sensor Electronics Configuration Process
Factory setting	Process
Diag. event sim.	۵
Navigation	Image: Barbon Simulation → Diag. event sim. (0737)
Description	Use this function to select a diagnostic event for the simulation process that is activated.
Selection	OffDiagnostic event picklist (depends on the category selected)
Factory setting	Off
Additional information	Description For the simulation, you can choose from the diagnostic events of the category selected in the Event category parameter ($\rightarrow \cong 207$).

4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

Volume flow	l/h
Volume	m ³
Conductivity	µS/cm
Temperature	°C
Mass flow	kg/h
Mass	kg
Density	kg/l
Corrected volume flow	Nl/h
Corrected volume	Nm ³

4.1.2 Full scale values

The factory settings applie to the following parameters:

- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

Nominal diameter [mm]	(v ~ 2.5 m/s) [dm³/min]
2	0.5
4	2
8	8
15	25
25	75
32	125
40	200
50	300
65	500
80	750
100	1200
125	1850
150	150 m ³ /h
200	300 m ³ /h
250	500 m ³ /h
300	750 m ³ /h
350	1000 m ³ /h
400	1200 m ³ /h
450	1500 m ³ /h
500	2 000 m ³ /h

Nominal diameter [mm]	(v ~ 2.5 m/s) [dm³/min]
600	2 500 m ³ /h
700	3 500 m ³ /h
750	4000 m ³ /h
800	4500 m ³ /h
900	6000 m ³ /h
1000	7000 m ³ /h
1200	10000 m ³ /h
1400	14000 m ³ /h
1600	18000 m ³ /h
1800	23000 m ³ /h
2 000	28500 m ³ /h

4.1.3 Output current span

Current output 1 to n	4 to 20 mA NAMUR
-----------------------	------------------

4.1.4 Pulse value

Nominal diameter [mm]	(~ 2 pulse/s) [dm ³]
2	0.005
4	0.025
8	0.1
15	0.2
25	0.5
32	1
40	1.5
50	2.5
65	5
80	5
100	10
125	15
150	0.03 m ³
200	0.05 m ³
250	0.05 m ³
300	0.1 m ³
350	0.1 m ³
400	0.15 m ³
450	0.25 m ³
500	0.25 m ³
600	0.3 m ³
700	0.5 m ³
750	0.5 m ³

Nominal diameter [mm]	(~ 2 pulse/s) [dm ³]
800	0.75 m ³
900	0.75 m ³
1000	1 m ³
1200	1.5 m ³
1400	2 m ³
1600	2.5 m ³
1800	3 m ³
2 000	3.5 m ³

4.1.5 On value low flow cut off

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

Nominal diameter [mm]	(v ~ 0.04 m/s) [m ³ /h]	
2	0.01	
4	0.05	
8	0.1	
15).5	
25	L	
32	2	
40	3	
50	5	
65	8	
80	12	
100	20	
125	30	
150	2.5	
200	5	
250	7.5	
300	10	
350	15	
400	20	
450	25	
500	30	
600	40	
700	50	
750	60	
800	75	
900	100	
1000	125	
1200	150	
1400	225	

Nominal diameter [mm]	(v ~ 0.04 m/s) [m ³ /h]
1600	300
1800	350
2 000	450

4.2 **US** units

Only valid for USA and Canada.

4.2.1 System units

Volume flow	gal/min (us)
Volume	gal (us)
Temperature	°F
Mass flow	lb/min
Mass	lb
Density	lb/ft ³
Corrected volume flow	Sft ³ /h
Corrected volume	Sft ³

4.2.2 Full scale values

The factory settings applie to the following parameters: • 20 mA value (full scale value of the current output)

- 100% bar graph value 1

Nominal diameter [in]	(v ~ 2.5 m/s) [gal/min]
¹ / ₁₂	0.1
¹ / ₈	0.5
³ / ₈	2
1/2	6
1	18
1½	50
2	75
3	200
4	300
5	450
6	600
8	1200
10	1500
12	2 400
14	3 6 0 0
15	4800
16	4800

Nominal diameter [in]	(v ~ 2.5 m/s) [gal/min]
18	6000
20	7500
24	10500
28	13 500
30	16500
32	19500
36	24000
40	30 000
42	33 000
48	42 000
54	75 Mgal/d
60	95 Mgal/d
66	120 Mgal/d
72	140 Mgal/d
78	175 Mgal/d

4.2.3 Output current span

Current output 1 to n 4 to 20 mA US

4.2.4 Pulse value

Nominal diameter [in]	(~ 2 pulse/s) [gal]
¹ / ₁₂	0.001
1/8	0.005
³ / ₈	0.02
1/2	0.1
1	0.2
11/2	0.5
2	0.5
3	2
4	2
5	5
6	5
8	10
10	15
12	25
14	30
15	50
16	50
18	50
20	75

Nominal diameter [in]	(~ 2 pulse/s) [gal]
24	100
28	125
30	150
32	200
36	225
40	250
42	250
48	400
54	0.0005 Mgal
60	0.0005 Mgal
66	0.0008 Mgal
72	0.0008 Mgal
78	0.001 Mgal

4.2.5 On value low flow cut off

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

Nominal diameter [in]	(v ~ 0.04 m/s) [gal/min]
1/12	0.002
1/8	0.008
³ / ₈	0.025
1/2	0.15
1	0.25
11/2	0.75
2	1.25
3	2.5
4	4
5	7
6	12
8	15
10	30
12	45
14	60
15	60
16	60
18	90
20	120
24	180
28	210
30	270
32	300

Nominal diameter [in]	(v ~ 0.04 m/s) [gal/min]
36	360
40	480
42	600
48	600
54	1.3 Mgal/d
60	1.3 Mgal/d
66	2.2 Mgal/d
72	2.6 Mgal/d
78	3.0 Mgal/d

5 Explanation of abbreviated units

5.1 SI units

Process variable	Units	Explanation
Density	g/cm³, g/m³	Gram/volume unit
	kg/dm³, kg/l, kg/m³	Kilogram/volume unit
	SD4°C, SD15°C, SD20°C	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).
	SG4°C, SG15°C, SG20°C	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).
Conductivity	μS/mm	Microsiemens/length unit
	nS/cm, µS/cm, mS/cm, S/cm	Nano-, Micro- , Milli- , Siemens/length unit
	µS/m, mS/m, S/m, kS/m, MS/m	Micro- , Milli- , Siemens, Kilo-, Megasiemens/length unit
Mass	g, kg, t	Gram, kilogram, metric ton
Mass flow	g/s, g/min, g/h, g/d	Gram/time unit
	kg/s, kg/min, kg/h, kg/d	Kilogram/time unit
	t/s, t/min, t/h, t/d	Metric ton/time unit
Temperature	°C, K	Celsius, Kelvin
Volume	cm ³ , dm ³ , m ³	Cubic centimeter, cubic decimeter, cubic meter
	ml, l, hl, Ml Mega	Milliliter, liter, hectoliter, megaliter
Time	s, m, h, d, y	Second, minute, hour, day, year

5.2 US units

Process variable	Units	Explanation
Density	lb/ft³, lb/gal (us)	Pound/cubic foot, pound/gallon
	lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank)	Pound/volume unit
Mass	oz, lb, STon	Ounce, pound, standard ton
Mass flow	oz/s, oz/min, oz/h, oz/d	Ounce/time unit
	lb/s, lb/min, lb/h, lb/d	Pound/time unit
	STon/s, STon/min, STon/h, STon/d	Standard ton/time unit
Corrected volume	Sft ³ , Sgal (us), Sbbl (us;liq.)	Standard cubic foot, standard gallon, standard barrel
Correct.vol.flow	Sft ³ /s, Sft ³ /min, Sft ³ /h, Sft ³ /d	Standard cubic foot/time unit
	Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)	Standard gallon/time unit
	Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.)	Barrel/time unit (normal liquids)
Temperature	°F, °R	Fahrenheit, Rankine
Volume	af	Acre foot
	ft ³	Cubic foot

Process variable	Units	Explanation
	fl oz (us), gal (us), kgal (us), Mgal (us)	Fluid ounce, gallon, kilogallon, million gallon
	bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)	Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)
Volume flow	af/s, af/min, af/h, af/d	Acre foot/time unit
	ft ³ /s, ft ³ /min, ft ³ /h, ft ³ /d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
Corrected volume	Sgal (imp)	Standard gallon
Correct.vol.flow	Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)	Standard gallon/time unit
Volume	gal (imp), Mgal (imp)	Gallon, mega gallon
	bbl (imp;beer), bbl (imp;oil)	Barrel (beer), barrel (petrochemicals)
Volume flow	gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp)	Gallon/time unit
	Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)	Mega gallon/time unit
	bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)	Barrel /time unit (beer) Beer: 36.0 gal/bbl
	bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 34.97 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)
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