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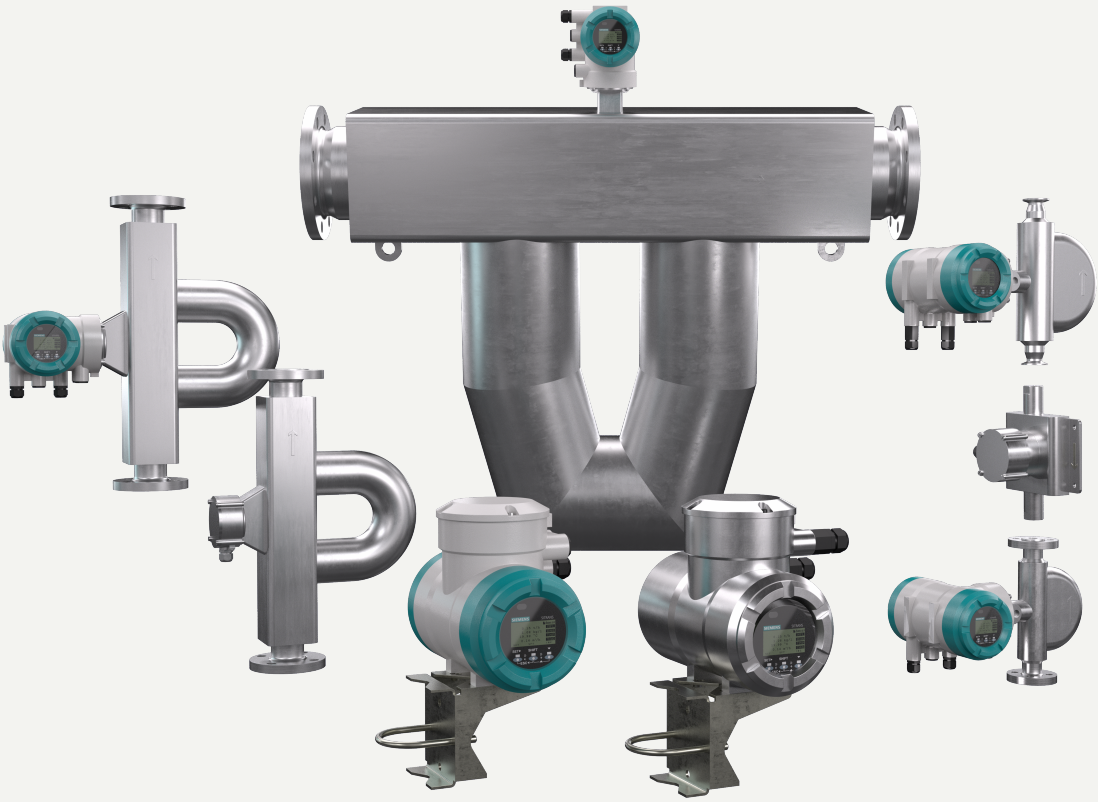

Edition 08/2023

FUNCTION MANUAL HART

SITRANS F

Coriolis flowmeters

SITRANS FC120/FC140/FC520/FC540/FC620/FC640/FC720/FC740

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Table of contents

1 Functions of transmitter and configuration example ... 9
1.1 Functions of transmitter ... 9
1.1.1 Measuring function ... 9
1.1.2 Display function ... 9
1.1.3 Signal IO function ... 9
1.1.4 Totalizer ... 9
1.1.5 Event management ... 10
1.1.6 Backup and restore ... 10
1.1.7 Diagnosis ... 10
1.1.8 SIL mode ... 10

2 Introduction ... 11
2.1 Scope of application ... 11
2.2 Starting conditions ... 11

3 Operating options ... 14
3.1 Display ... 14
3.2 HART communication ... 18
3.2.1 Connection of the HART configuration tool ... 18
3.2.2 HART protocol revision ... 19
Device description (DD) ... 19
Device Type Manager (DTM) ... 20
3.3 microSD card ... 20

4 System configuration and operation ... 22
4.1 Operation level ... 22
4.1.1 Select operation level ... 22
4.2 Measuring function ... 23
4.3 Current signal output ... 30
4.4 Pulse/Frequency signal output ... 32
4.5 Status input ... 35
4.6 Analog input ... 35
4.7 Totalizer ... 38
4.8 Easy setup wizard ... 39
4.8.1 Installation configuration ... 40
4.8.2 Standard device variables ... 43
Configure Standard device variables ... 43
4.8.3 Analog output ... 44
Configure Analog output ... 44
4.8.4 Pulse/Status outputs ... 45
Configure Pulse/Status outputs ... 45
Configure Single Pulse and Frequency output ... 46
Configure Double pulse output ... 49
4.8.5 Totalizer ... 50
Configure Totalizer ... 50
4.8.6 Display select ... 52
Configure Display select ... 52
4.8.7 Date/Time ... 52

Configure Date/Time ... 52
4.8.8 Batch ... 53
Configure Batch 1 configuration ... 54
Configure Batch 1 setting ... 54
4.9 SIL mode ... 56
4.9.1 Configuration of Analog output 1 ... 56
Call up menu analog outputs ... 57
4.9.2 Activate SIL mode ... 57
4.9.3 Confirmation of configuration ... 57
Mass flow ... 57
Density ... 58
Temperature ... 59
Other Settings ... 60
4.9.4 Set write lock ... 63
4.10 Event management ... 64
4.10.1 Event setting ... 64
4.10.2 Event acknowledge ... 65
Acknowledge an event and reset event status ... 66
4.10.3 Output signal behavior ... 67
Call up menu Alarm/Event behavior setting ... 69
4.10.4 Event history ... 70
Call up Event history menu ... 70
4.10.5 Monitoring history ... 70
4.10.6 Data logging ... 72
Set data logging functions ... 72
Enable Additional function menu ... 73
Show trend charts on main display ... 73
4.10.7 Possible events and related settings and behavior ... 73
System alarms ... 74
Process alarms ... 76
Setting alarms ... 79
Warnings ... 82
Information ... 84
4.10.8 Change log ... 84
4.11 Backup and restore ... 86
4.11.1 Backup ... 86
4.11.2 Restore ... 87
4.12 Concentration and petroleum measurement ... 88
4.12.1 Standard concentration calculation ... 89
4.12.2 Advanced concentration calculation ... 91
4.12.3 Net Oil Computing (NOC), Gas Void Fraction (GVF) ... 91
Calculation of oil density ... 94
Calculation of water density ... 94
Calculation of Net Oil ... 96
4.13 Diagnosis ... 99
4.13.1 Slug detection ... 99
4.13.2 Empty pipe detection ... 100
4.13.3 Corrosion detection ... 101
4.13.4 Tube health check ... 101

Principle of the function ... 101
Recommended conditions when performing this function ... 101
Before first use – Getting reference value ... 102
Performing a tube health check ... 102
4.14 Batch function ... 106
4.14.1 Overview ... 106
1 stage batch ... 106
2 stage batch ... 106
4.14.2 Settings ... 107
Basic setting parameters for 1 stage batch ... 107
Additional setting parameters for 1/2 stage batch ... 107
Display setting parameters for batch ... 109
Parameters to perform batch ... 109

5 Menu description ... 112
5.1 Events/Alarms acknowledge ... 114
5.2 Language ... 116
5.3 Process variables ... 117
5.3.1 Dynamic variables ... 117
5.3.2 Device variables ... 121
5.3.3 Additional function ... 122
5.3.4 Dynamic variables status ... 123
5.3.5 Device variables status ... 124
5.3.6 View outputs ... 128
5.3.7 View inputs ... 128
5.3.8 Sensor and transmitter ... 129
5.4 Diag/Service ... 130
5.4.1 Status/Self test ... 130
Alarm/Event device status ... 131
Condensed status map ... 136
Detailed device status ... 147
Event history ... 154
Device reset ... 160
Burn out ... 160
Reset more status available flag ... 160
Reset configuration changed flag ... 160
Self test ... 161
5.4.2 Time stamp ... 161
5.4.3 Output test ... 161
5.4.4 Display indication ... 165
5.4.5 Autozero ... 166
5.4.6 Analog output/input trim ... 168
Output trim ... 168
Input trim ... 169
Trim information ... 171
5.4.7 Total & Batch start/stop ... 172
5.4.8 High/Low alarm configuration ... 174
Mass flow alarm ... 175
Density alarm ... 176

Temperature alarm ... 178
Volume flow alarm ... 179
Pressure alarm ... 181
Reference density alarm ... 182
Relative density alarm ... 184
Corrected volume flow alarm ... 185
Concentration alarm ... 187
Net mass flow 1 – 2 alarm ... 189
Net volume flow 1 – 2 alarm ... 191
Net corrected volume flow alarm ... 192
Viscosity alarm ... 194
Alarm hysteresis ... 196
5.4.9 Simulation ... 197
Standard process variables ... 197
Optional process variables ... 200
Alarm/Event device status ... 203
5.4.10 Alarm/Event behavior settings ... 204
Alarm/Event additional parameters ... 204
System alarms ... 204
Process alarms ... 206
Standard diagnostics ... 206
Input/Total ... 211
High High/Low Low alarm ... 213
Autozero ... 215
Batch ... 215
Setting alarms ... 218
Warnings/Information ... 232
Event setting lock status ... 246
5.4.11 Standard diagnostics ... 248
Slug detection ... 248
Empty pipe detection ... 251
Corrosion detection ... 253
5.4.12 Total health check ... 254
Total health check ... 254
Tube health check ... 255
5.4.13 Data logging ... 271
Data logging display ... 275
5.4.14 Parameter backup/restore ... 277
5.4.15 Calibration date ... 280
5.4.16 Last calibration information ... 280
5.5 Easy setup wizard ... 281
5.5.1 Standard device variables ... 281
Mass flow ... 281
Density ... 284
Temperature ... 286
Volume flow ... 288
Installation configuration ... 290
5.5.2 Analog outputs ... 293
Analog output 1 – 2 ... 293

5.5.3 Pulse/Status outputs ... 298
Pulse/Status configuration ... 298
Pulse output 1 – 2 ... 299
Frequency output 1 – 2 ... 305
Status output 1 – 3 ... 308
Double pulse output ... 311
5.5.4 Totalizer ... 313
Totalizer 1 – 3 ... 313
5.5.5 Display select ... 318
5.5.6 Date/Time ... 321
5.5.7 Events/Alarms acknowledge ... 321
5.5.8 Batch 1 function ... 321
Batch 1 configuration ... 322
Batch 1 setting ... 324
5.6 Basic setup ... 334
5.6.1 Installation configuration ... 334
5.6.2 Mass flow ... 336
5.6.3 Density ... 339
5.6.4 Temperature ... 341
5.6.5 Volume flow ... 342
5.6.6 Analog outputs ... 345
Analog output 1 – 2 ... 345
5.6.7 Pulse/Status outputs ... 348
Pulse output 1 – 2 ... 349
Frequency output 1 – 2 ... 354
Status output 1 – 3 ... 358
Double pulse output ... 360
5.6.8 Totalizer ... 363
Totalizer 1 – 3 ... 363
5.6.9 Display select ... 366
5.6.10 Date/Time ... 369
5.6.11 Events/Alarms acknowledge ... 371
5.6.12 Batch function ... 375
Batch 1 ... 378
Batch status output ... 381
Batch display ... 386
5.7 Detailed setup ... 390
5.7.1 Installation configuration ... 390
5.7.2 Process variables ... 393
Mass flow ... 394
Additional function ... 396
Density ... 399
Additional function ... 402
Temperature ... 405
Additional function ... 407
Volume flow ... 410
Additional function ... 413
Pressure ... 415
Additional function ... 417

Reference density ... 420
Additional function ... 422
Relative density ... 425
Additional function ... 428
Corrected volume flow ... 429
Additional function ... 431
Calorific value ... 433
Additional function ... 435
Velocity ... 436
Concentration ... 436
Standard concentration set 1 – 4 ... 439
Additional function ... 443
Advanced concentration set 1 – 4 ... 444
NOC ... 454
NOC concentration set 1 – 4 ... 458
Net mass flow 1 – 2 ... 462
Additional function ... 464
Net volume flow 1 – 2 ... 467
Additional function ... 469
Net corrected volume flow ... 472
Additional function ... 474
Viscosity ... 477
Additional function ... 478
Drive current ... 480
5.7.3 Analog outputs ... 481
Analog output 1 – 2 HART ... 481
NAMUR NE 43 option ... 485
5.7.4 Pulse/Status outputs ... 485
Pulse output 1 – 2 ... 486
Frequency output 1 – 2 ... 495
Status output 1 – 3 ... 499
Double pulse output ... 502
5.7.5 HART output ... 510
5.7.6 Analog input ... 511
5.7.7 Status input ... 513
5.7.8 Totalizer ... 515
Totalizer 1 – 6 ... 515
Additional function ... 519
Total 1 – 3 24 hours ... 525
5.7.9 Display ... 527
Display select ... 529
Additional function ... 534
Display format ... 538
Additional function ... 545
Display operation configuration ... 551
Additional function ... 553
5.7.10 Date/Time ... 559
5.7.11 User access configuration ... 560
5.7.12 Batch function ... 562

Batch common ... 563
Batch No.1 – 5 ... 565
Additional function ... 568
Batch status input/output ... 573
Batch display ... 574
Batch information ... 578
5.7.13 SIL mode ... 580
SIL mode check ... 580
Mass flow ... 580
Density ... 581
Temperature ... 583
Other settings ... 584
5.7.14 Proving ... 591
5.7.15 Sensor constants ... 591
Mass flow ... 592
Density ... 594
5.7.16 Compensation ... 595
Gas ... 595
Reynolds number ... 597
5.7.17 Device information ... 599
Order information ... 599
Capability information ... 610
Version/Number information ... 611
HART specific information ... 613
5.7.18 Burst/Event notification ... 617
Easy Burst Setup ... 618
Detailed Burst Setup ... 619
Event Setup ... 620
5.7.19 Write protect ... 621
5.7.20 Others ... 622
5.8 microSD ... 624
5.8.1 microSD property ... 625
6 Troubleshooting ... 626
7 Appendix ... 637
7.1 Firmware change log ... 637
7.2 Parameter list ... 637
7.3 Units of the parameters ... 809
7.4 Units description ... 818
7.5 Parameter IDs ... 823
7.6 IDs stored instead of written parameters ... 845

1 Functions of transmitter and configuration example

1.1 Functions of transmitter

1.1.1 Measuring function

This device can measure mass flow, density and temperature of fluids. Also, volume flow, velocity, calorific value, concentration and net flow can be obtained by calculation. For details of the measuring function see *Measuring function [▸ 23]*.

1.1.2 Display function

Measured or calculated process variables, current or total values, are displayed on the LCD display of the Indicator. On the display, status information is also displayed. For more detailed information see *Display [▸ 14]*.

1.1.3 Signal IO function

To output the value of process variables, the device has an Analog output to output current signal (4 – 20 mA), a Pulse/Frequency output to output a pulse or frequency signal; the status output can be used to output a specific status or information, such as an alarm. The number of available Analog or Pulse/Frequency outputs depends on the each device configuration. Analog input and Status input may be enabled to input a process value or a certain status or information to the device. For details of available configuration of IOs, refer to in the Operating Instructions.

The following table shows the available output/input signals with their corresponding explanation and parameter.

Output/Input signal	Overview	Parameter
Analog output	Current signal output *[▸ 30]*	Analog output *[▸ 481]*
Pulse/Frequency/Status output	Pulse/Frequency signal output *[▸ 32]*	Pulse/Status output *[▸ 485]*
Status input	Status input *[▸ 35]*	Status input *[▸ 513]*
Analog input	Analog input *[▸ 35]*	Analog input *[▸ 511]*

1.1.4 Totalizer

A maximum of six totalizers can be used on the device to total flow process variables. For more detailed information see *Totalizer [▸ 515]*.

1.1.5 Event management

Event management is a function for managing how events, such as alarm, warning in terms of categorization, indication, status of output signal, action and behavior, are handled. The user can define the following actions and behavior of the device when an event occurs. For more detailed information see *Event management [▸ 64]*.

Do not use this function for critical or important events.

	Configurable options
Action and Behavior	▪ Ignore it ▪ Request that user acknowledge it ▪ Record it as an event ▪ Change status of output signal ▪ Start data logging
Status of output signal	▪ Continue ▪ Change to alarm status ▪ Burnout

1.1.6 Backup and restore

The user configuration can be stored in the device memory or on a microSD card on the Indicator. Stored user configuration can be restored to the same or another device by attaching the Indicator or microSD to the target device. For more detailed information see *Backup and restore [▸ 86]*.

1.1.7 Diagnosis

The device has the following diagnostic functions to perform diagnoses of the device. When any diagnosis detects an abnormal status, an alarm is activated. For more detailed information see *Diagnosis [▸ 99]*.

Detection	Description
Slug detection	Detection of bubble flow. If a bubble or slug occurs in the fluid, the accuracy or ability to measure process variables is negatively affected. When slug is detected by this function, alarm No.201 is generated. This function is not available for gas measurement.
Empty pipe detection	Detection of empty pipe. When an empty pipe is detected by this function, alarm No.202 is generated. This function is not available for gas measurement.
Corrosion detection	Detection of corrosion in pipe. When corrosion in the pipe is detected by this function, alarm No.203 is generated. This function is not available for gas measurement.
Tube health check	Health check of measuring tube by detecting a change in the spring constant of the measuring tubes. When the value reaches a user-defined criteria, alarm No.203 is generated.

1.1.8 SIL mode

This device can be used as a SIL-compliant device in a safety instrument system. For such usage it is recommended that the device configuration be set to the recommended configuration. This device supports SIL mode to help user configure the recommended configuration. For detailed information, see *SIL mode [▸ 56]*.

2 Introduction

2.1 Scope of application

These instructions apply to the following Siemens SITRANS FC products:

- SITRANS FC1x0
- SITRANS FC6x0
- SITRANS FC7x0
- SITRANS FC5x0
- Siemens SITRANS FC transmitter in combination with any Siemens SITRANS FC sensor.

2.2 Starting conditions

Installation

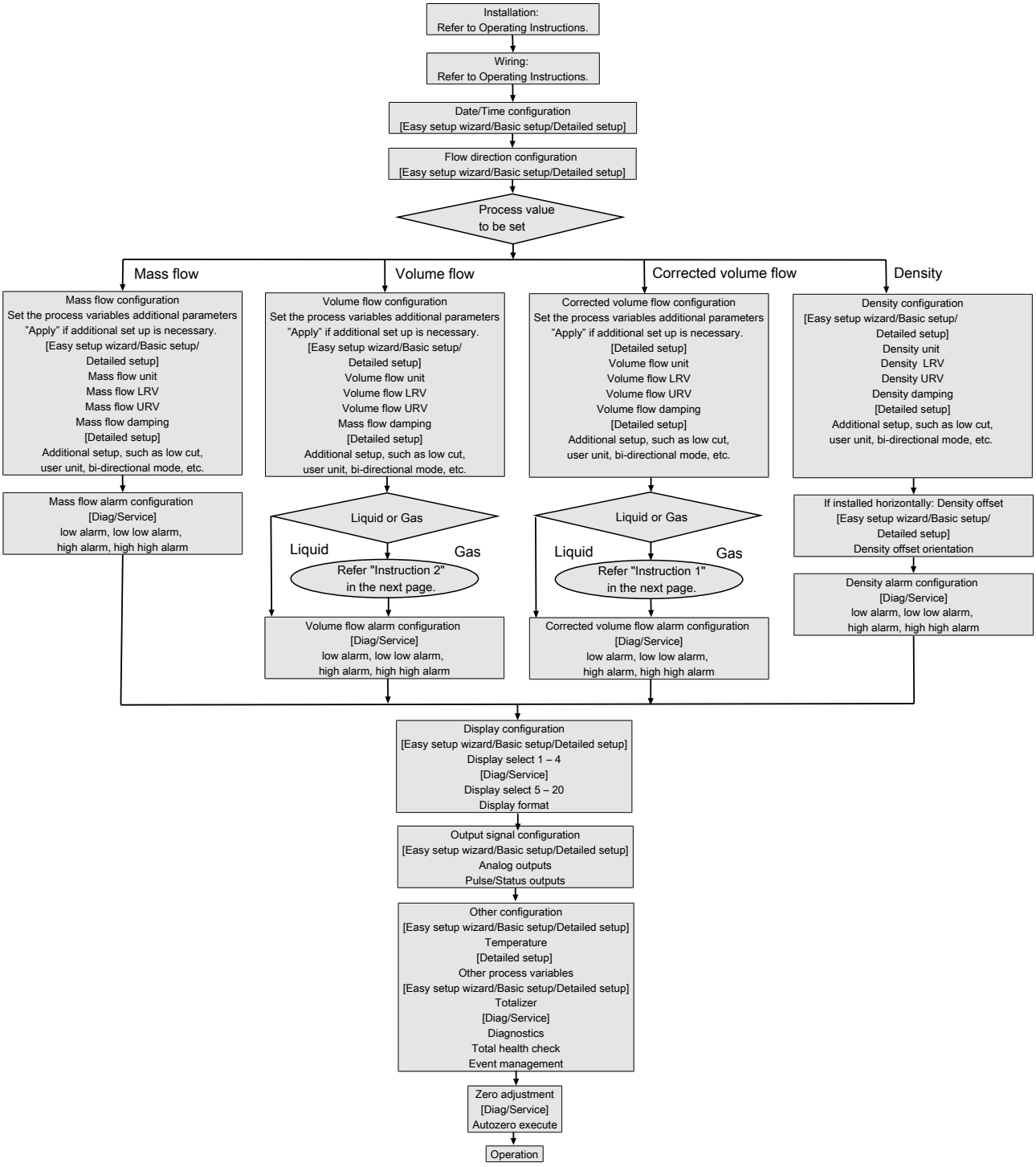
Before starting to use the device, it has to be installed appropriately and all other configurations, such as wiring, have to be configured appropriately.
For more information about general recommendations for installations and configurations refer to the Operating Instructions.

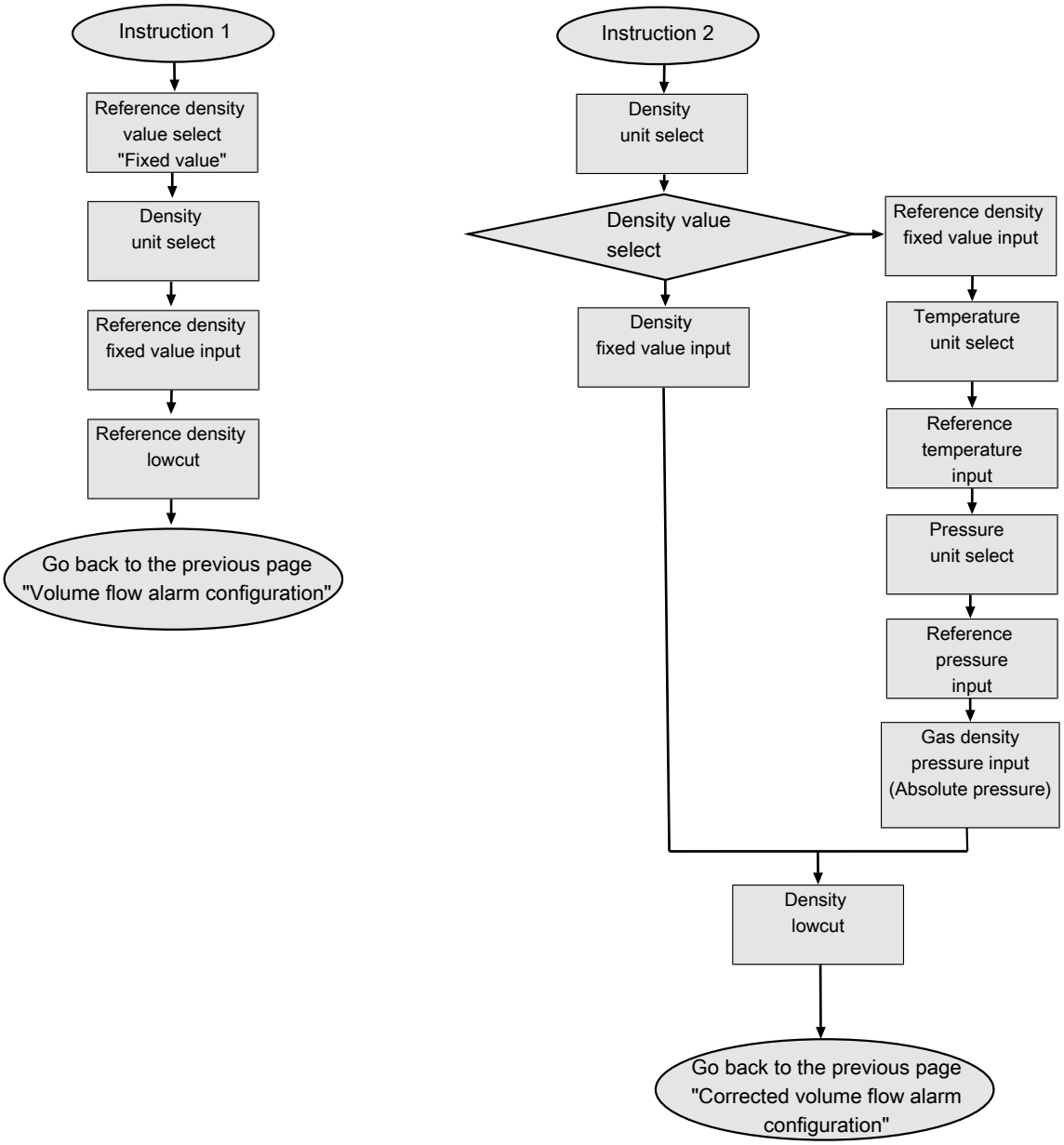
Operation level for operation and configuration

To operate or configure the device, the appropriate Operation level has to be set when the device is started. To configure the device or change the configuration, Maintenance or Specialist has to be selected and set as the Operation level. For more information on confirming the Operation level and possible operations see *Operation level [▸ 22]*.

Example of configuration procedure

The following flow chart is an example for configuring the device and starting to use it. For more detailed information refer to the description of each function and parameters. To configure or change parameter, the Operation level has to be set to Maintenance or Specialist.


Installation:
Refer to Operating Instructions.
Wiring:
Refer to Operating Instructions.
Date/Time configuration
[Easy setup wizard/Basic setup/Detailed setup]
Flow direction configuration
[Easy setup wizard/Basic setup/Detailed setup]
Process value
to be set
Mass flow
Volume flow
Corrected volume flow
Density
Mass flow configuration
Set the process variables additional parameters
"Apply" if additional set up is necessary.
[Easy setup wizard/Basic setup/
Detailed setup]
Mass flow unit
Mass flow LRV
Mass flow URV
Mass flow damping
[Detailed setup]
Additional setup, such as low cut,
user unit, bi-directional mode, etc.
Volume flow configuration
Set the process variables additional parameters
"Apply" if additional set up is necessary.
[Easy setup wizard/Basic setup/
Detailed setup]
Volume flow unit
Volume flow LRV
Volume flow URV
Mass flow damping
[Detailed setup]
Additional setup, such as low cut,
user unit, bi-directional mode, etc.
Corrected volume flow configuration
Set the process variables additional parameters
"Apply" if additional set up is necessary.
[Detailed setup]
Volume flow unit
Volume flow LRV
Volume flow URV
Volume flow damping
[Detailed setup]
Additional setup, such as low cut,
user unit, bi-directional mode, etc.
Density configuration
[Easy setup wizard/Basic setup/
Detailed setup]
Density unit
Density LRV
Density URV
Density damping
[Detailed setup]
Additional setup, such as low cut,
user unit, bi-directional mode, etc.
Mass flow alarm configuration
[Diag/Service]
low alarm, low low alarm,
high alarm, high high alarm
Liquid or Gas
Liquid
Gas
Refer "Instruction 2"
in the next page.
Volume flow alarm configuration
[Diag/Service]
low alarm, low low alarm,
high alarm, high high alarm
Liquid or Gas
Liquid
Gas
Refer "Instruction 1"
in the next page.
Corrected volume flow alarm configuration
[Diag/Service]
low alarm, low low alarm,
high alarm, high high alarm
If installed horizontally: Density offset
[Easy setup wizard/Basic setup/
Detailed setup]
Density offset orientation
Density alarm configuration
[Diag/Service]
low alarm, low low alarm,
high alarm, high high alarm
Display configuration
[Easy setup wizard/Basic setup/Detailed setup]
Display select 1 – 4
[Diag/Service]
Display select 5 – 20
Display format
Output signal configuration
[Easy setup wizard/Basic setup/Detailed setup]
Analog outputs
Pulse/Status outputs
Other configuration
[Easy setup wizard/Basic setup/Detailed setup]
Temperature
[Detailed setup]
Other process variables
[Easy setup wizard/Basic setup/Detailed setup]
Totalizer
[Diag/Service]
Diagnostics
Total health check
Event management
Zero adjustment
[Diag/Service]
Autozero execute
Operation


Instruction 1
Reference density value select "Fixed value"
Density unit select
Reference density fixed value input
Reference density lowcut
Go back to the previous page "Volume flow alarm configuration"
Instruction 2
Density unit select
Density value select
Reference density fixed value input
Density fixed value input
Temperature unit select
Reference temperature input
Pressure unit select
Reference pressure input
Gas density pressure input (Absolute pressure)
Density lowcut
Go back to the previous page "Corrected volume flow alarm configuration"

3 Operating options

The SITRANS FC can be operated in different ways:

- IR switches on the display
- Digital communication (e.g. HART)

The section below describes how to operate the system using the IR switches on the display.

The display is a device option and therefore not always available.

3.1 Display

All of the functions described here are also available via digital communication. Numeric values entered using the display are limited to six digits.

The controls on the display are IR switches. They respond as soon as an object, such as a finger, is in close proximity. It is not necessary to apply pressure to the display surface.

Observe the following instructions to ensure that the IR switches are functional:

- Keep the display glass clean.
- Avoid exposure to direct sunlight.
- To increase the reflectivity of fingers (e.g., if they are very dirty), place some white tape on the fingertip.
- If the IR switches do not work properly, remove the finger from the display and try to push the switch again.

IR switch functions

IR switch	Display	Function
[SET]	[SET]	▪ Apply setting ▪ Enter data ▪ Apply parameter
[SHIFT]	[SFT]	▪ Move cursor right or to the next position ▪ Change function and display of [SET] and [▼]
[▼]	[INC]	▪ Increment parameter or value ▪ Change position of decimal point ▪ Select next menu item

The IR switch function changes as follows when used with the [SHIFT] key:

Key combinations	Display	Function
[SHIFT] + [SET]	[ESC]	▪ Cancel and switch to previous menu
[SHIFT] + ▼	[DEC]	▪ Decrement parameter or number ▪ Select previous menu item

Status icons

Status icon	Description	Status icon	Description
	System alarm tripped		Process alarm tripped

Status icon	Description	Status icon	Description
	Settings alarm tripped		Warning tripped
	Write protection disabled		Write protection enabled
	Device error (no write access)		Device busy (no write access)
	microSD card ready		Access to microSD card
	Error accessing microSD card		Process variable has bad status
	Upload parameter enabled		Download parameter enabled
	Total health result: good (only indicated when display total health result is active)		Total health result: warning (only indicated when display total health result is active)
	Total health result: bad state (only indicated when display total health result is active)		Tube Health Check with result: OK
	Tube Health Check with result: warning		Tube Health Check with result: error
	Stop batch		Resume batch
	Batch running		SIL mode
	Total health result: good (only indicated when display total health result is active)		Total health result: warning (only indicated when display total health result is active)
	Total health result: bad state (only indicated when display total health result is active)		Tube Health Check with result: OK
	Tube Health Check with result: warning		Tube Health Check with result: error

Measured quantities and identifications

List of measured quantity abbreviations and identification on the display:

Tab. 1: Regular display

Abbreviation	Measured quantity
MFL	Mass flow
DNS	Density

Abbreviation	Measured quantity
TMP	Temperature
VFL	Volume flow
RFD	Reference density
RLD	Relative density
CVF	Corrected volume flow
PRS	Pressure
TT1 – TT6	Totalizer 1 – 6
TAG	Customer-specific identification
LTG	Customer-specific identification, long version
VEL	Velocity
CNC	Concentration
NM1 – NM2	Net mass flow rate 1 – 2
NV1 – NV2	Net volume flow rate 1 – 2
NCV	Corrected net volume flow rate
DRC	Driving current
HT1	24hours totalizer 1
HT2	24hours totalizer 2
HT3	24hours totalizer 3
GVF	Gas void fraction
VSC	Viscosity

Applies only to the trend display of logging data on the microSD card. Refer to *Data logging display [▸ 271]*.

Tab. 2: Trend display

Abbreviation	Measured quantity
MFL	Mass flow
DNS	Density
TMP	Temperature
VFL	Volume flow
PRS	Pressure
CNC	Concentration
NM1	Net mass flow rate 1
NV1	Net volume flow rate 1
PHS	Phase shift
FRQ	Resonant frequency
DRG	Drive gain
DRC	Driving current
MBT	Transmitter temperature

Applies only to the Batch control with option S13. Refer to *Display measurement mode [▸ 275]*.

Tab. 3: Batch control display

Abbreviation	Measured quantity
QTY	Batch quantity

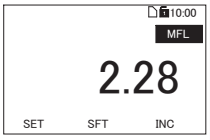
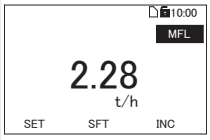
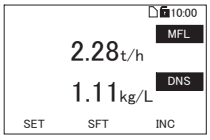
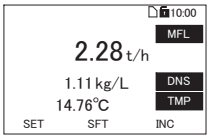
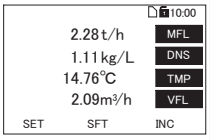
Abbreviation	Measured quantity
UPW	Batch upwards value
DNW	Batch downloads value
TTQ	Total batch quantity
CNT	Batch counter value
SET	Batch select
BPV	Batch variable sel
CMP	Compensation value
ICP	Internal close point
ICT	Internal close time
TIM	Batch time
MFL	Mass flow
DNS	Density
TMP	Temperature
VFL	Volume flow
RFD	Reference density
CVF	Corrected volume flow
PRS	Pressure
TAG	Tag
LTG	Long tag
NM1	Net mass flow 1
NM2	Net mass flow 2
NV1	Net volume flow 1
NV2	Net volume flow 2
NCV	Net corrected volume flow

Display format LCD

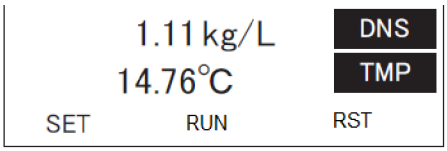
The display format on the LCD can be configured, such as the number of lines, contrast, process variables to be displayed, and display format of each process variable. For more detailed information see *Display [▸ 527]*.

Typical configuration parameter	Description
Display select n	Process variable to be displayed on line n
Display format process variable	Decimal point position for process variable
Display contrast	Contrast of LCD
Display line	Number of display lines on LCD

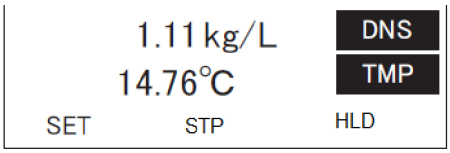
Example of display: configured by parameter *Display line* of *Display operation configuration [▸ 551]*.

1line (big)	1line	2line	3line	4line
1-line display with big fonts, without unit	1-line display of value with unit	2-line display of value with unit	3-line display of value with unit	4-line display of value with unit
				

When Batch control is active in Display measurement mode, the following buttons are shown on Indicator to operate batch function:



Batch is stopped



Batch is running

IR switch	Display	Function
[SET]	[SET]	▪ Apply setting ▪ Enter data ▪ Apply parameter
[SHIFT]	[RUN]	Batch is started
[SHIFT]	[STP]	Batch is stopped
[▼]	[RST]	Batch is resetted
[▼]	[HLD]	Batch hold

3.2 HART communication

The HART interface is available with an analog signal at the *Iout1* output. A load resistance of 230 – 600 Ω at *Iout1* is recommended for noise-free HART communication.

3.2.1 Connection of the HART configuration tool

The HART configuration tool can be connected to any terminal in the transmission loop or control room. To communicate, SITRANS FC and the HART communication modem must be connected in parallel. Polarity does not matter for the connection. Connect to HART setting tool 4 – 20 mA DC signal transmission line.

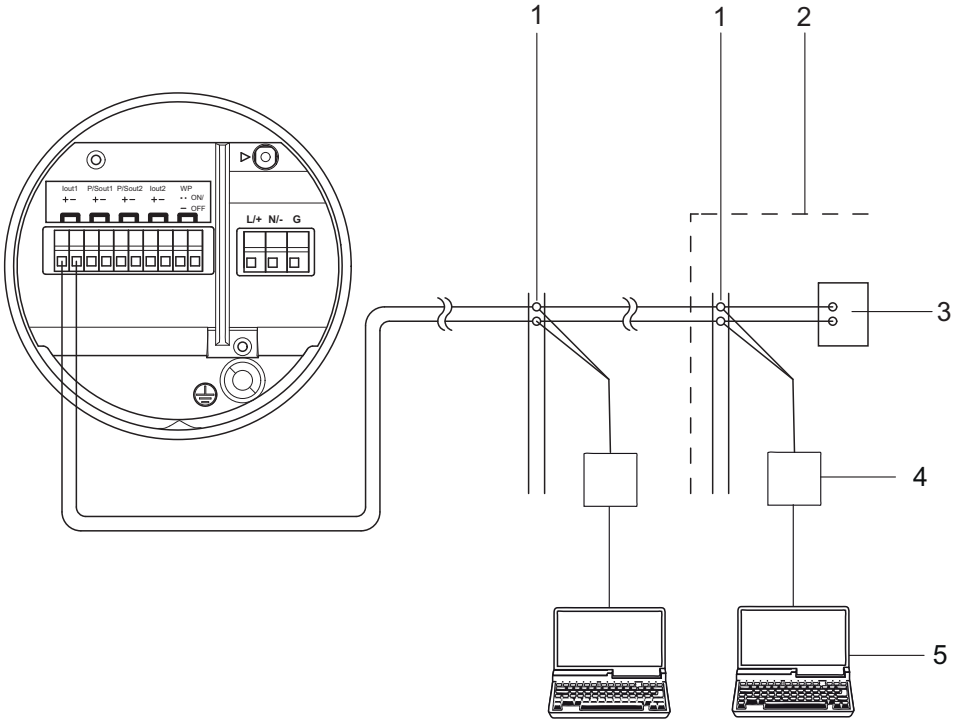


Fig. 1: Connection diagram HART communication modem

1 Terminal board
2 Control room
3 Receiving instrument
4 HART modem
5 Computer with SIMATIC PDM or similar configuration software

3.2.2 HART protocol revision

HART protocol revision for the device is 7. The protocol revision supported by the HART configuration tool must be the same or higher than that of the device. If not, a communication error may occur.

Detailed information about the HART operating options:

- *Device description (DD) [▸ 19]*
- *Device Type Manager (DTM) [▸ 20]*

Device revision can be verified via HART communication. For additional information, see menu *description [▸ 617]*.

Device description (DD)

Note the following rules to establish stable communication between the SIMATIC PDM and the device:

- Device description (DD) is installed on the SIMATIC PDM
- Device type is 0x3760
- Device revision is 1 or higher
- Device description (DD) revision is 1 or higher

It may be necessary to disconnect the HART communication modem from the device and check the DD installed according to the procedure.

The device type and device revision of the DD should match the corresponding information on the device. The DD number of the revision of the DD will increase each time it is updated. It is recommended that you install the latest DD revision on the SIMATIC PDM

Device Type Manager (DTM)

Use the following Device Type Manager to set parameters using Pactware:

- Type: SITRANS FC
- DTM name: SITRANS FC DTM
- Device type: SITRANS FC (0x3760)
- Device revision is 1 or higher

3.3 microSD card

A dedicated microSD card is inserted into the device. The following data can be saved on the transmitter and on the microSD card:

- Data from the *Event history* [▸ 70] and *Change log* [▸ 84]
- Data from the *Monitoring history* [▸ 70]
- *Data logging* [▸ 72]
- Parameter *Backup* [▸ 86]

The content of the microSD card can be read by removing it from the Indicator and reading the file on a computer equipped with a microSD card reader port. The locking screw may need to be loosened for this purpose.

⚠ **CAUTION** **Do not unmount the microSD card until the value of Execute in the parameter of Unmount has been selected. If the unmounting procedure is not executed correctly, the data might become corrupted. A warning will be displayed in this case.**

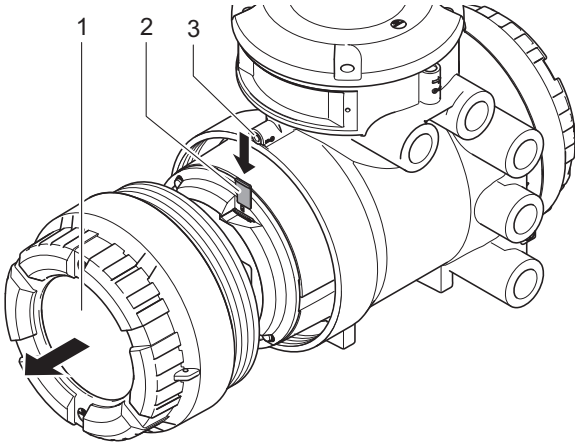


Fig. 2: microSD card on the device

1	Housing cover of display
2	microSD card
3	Locking screw

On the microSD card, the following files are stored:

File type	Extension
Event and parameter change history file	*.EVT (CSV file)
Monitoring history file	*.MON (CSV file)
Data logging file	*.TRD (CSV file)
Backup file	*.PAR (binary file, for SITRANS FC series only)

The file format of the microSD card is compatible to Windows (MS-DOS).

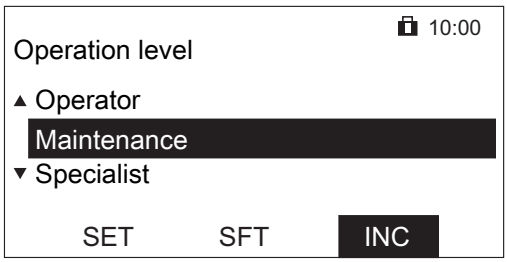
4 System configuration and operation

4.1 Operation level

To limit access to device setup and parameters for configuring the operation of the device, 3 operation levels can be defined. One of them has to be selected and set when a user enters the operation menu to configure the device:

Tab. 4: Operation levels and related user rights

Operation level	User rights	Description
Operator	All parameters can be displayed. The following parameter can be used: Language *[▸ 116]*.	No password is required.
Maintenance	All parameters can be displayed. The following parameters can be used: ▪ Language *[▸ 116]* ▪ Autozero *[▸ 166]* ▪ Basic setup *[▸ 334]*	▪ Password is required. Default value is 0000. ▪ Password can be changed, see Root menu *[▸ 562]*.
Specialist	All parameters can be displayed and all parameters can be used.	▪ Password is required. Default value is 0000. ▪ Password can be changed, see Root menu *[▸ 562]*.



4.1.1 Select operation level

1. Press and hold [SET] for 2 seconds.
2. Press [SET] + [INC] switches to enter [Setting].
   ⇨ Menu [No] is preselected.
3. Press [INC] switch and select [Yes], then press [SET].
4. [Yes] is blinking, then press [SET] switch to enter the menu [Operation level].
5. Press [INC] to select the desired operation level.
6. Press [SET] to confirm.
   ⇨ If the operation level [Operator] has been selected, the following steps are not necessary. Access to the operation menu will be granted.
   ⇨ If the operation levels [Maintenance] or [Specialist] have been selected, a numeric password must be entered, see steps 4 – 7.
7. Press [INC] to choose the first number of the numeric password.
8. Press [SFT] to switch to the remaining numbers of the numeric password.
9. Press [INC] to choose the remaining numbers of the numeric password.
10. Press [SET] to confirm the entered numeric password.
    ⇨ The entered password flashes.

11. Press [SET] to confirm.
    - ⇨ If the password is correct, access to the operation menu will be granted.
    - ⇨ If the password is incorrect, access to the operation menu will be denied and the menu [Operation level] opens again.

4.2 Measuring function

This device can measure mass flow, density and temperature of fluids. Also, volume flow, velocity, calorific value, concentration and net flow can be obtained by calculation. The following chart shows an outline of measuring function.

Process variable	Outline	Reference
Mass flow	The device measures the mass flow with the help of the "Coriolis force" when medium flows inside measuring tubes that are vibrating.	▪ Easy setup wizard [▸ 281] ▪ Basic setup [▸ 336] ▪ Detailed setup [▸ 394] ▪ Additional function [▸ 396]
Density	Density is measured from the resonance frequency of measuring tubes with fluid. Density values of liquids can be reliable if no gas is included in the fluid. Density of gas cannot be measured.	▪ Easy setup wizard [▸ 284] ▪ Basic setup [▸ 339] ▪ Detailed setup [▸ 399] ▪ Additional function [▸ 402]
Temperature	Temperature of medium is measured by a temperature sensor (RTD) attached to the measuring tube.	▪ Easy setup wizard [▸ 286] ▪ Basic setup [▸ 341] ▪ Detailed setup [▸ 405] ▪ Additional function [▸ 407]
Volume flow	Volume flow is calculated from mass flow and density. In a gas measurement, a fixed density value is used for the calculation.	▪ Easy setup wizard [▸ 288] ▪ Basic setup [▸ 342] ▪ Detailed setup [▸ 410] ▪ Additional function [▸ 413]

Process variable	Outline	Reference
Pressure	Pressure is obtained from a pressure sensor that is connected to the analog input, or a fixed value can be used. Analog input is necessary on the device and proper configuration is necessary to obtain the value from a pressure sensor. When an external pressure sensor is used, set the value of the parameter [**Func**] to Pressure. If it is not set to pressure related selections (Pressure compensation, Pressure compensation and NOC, or Pressure NOC), a fixed value that has been set in [**Fix val**] is used as the pressure value. When an external pressure sensor is used, the current measurement at the Analog input for measuring the signal from the pressure sensor should be set prior to the measurement appropriately. Parameters for configuring the input current signal on the Analog input for pressure sensor are as follows: ▪ Unit of pressure to be input at the Analog input: [**AI unit**] ▪ LRV of pressure current signal: [**AI LRV**] (pressure value at 4mA) ▪ URV of pressure current signal: [**AI URV**] (pressure value at 20mA) After these parameters have been configured, pressure measurement conditions, such as the unit for pressure value ([**Unit**]), LRV ([**LRV**]), URV ([**URV**]), should be configured.	▪ Detailed setup *[▸ 415]* ▪ Additional function *[▸ 417]*
Reference density	Density value at reference temperature, which is calculated by a quadratic polynomial with user-defined coefficients for the calculation. To use this function, reference temperature, 1st order and 2nd order temperature coefficients have to be set. Reference density is calculated by the following formula: Reference density = ρ / (1 + A (t - tref) + B $(t - tref)^2$) ρ: measured density value (or specified fixed density) t: measured temperature tref: reference temperature (parameter: [**Ref temp**]) A: 1st order coefficient (parameter: [**Temp coeff A**]) B: 2nd order coefficient (parameter: [**Temp coeff B**])	▪ Detailed setup *[▸ 420]* ▪ Additional function *[▸ 422]*

Process variable	Outline	Reference
Relative density	Relative density is relative to a specified density reference, such as specific gravity, Baume degree or API degree. Specific gravity compared to water is measured based on the measured density or Relative density. API degree, Baume degree or Sake degree is measured based on Reference density. Which density value - measured density or Relative density - is used, is specified by the parameter, Relative density reference select. When Reference density is selected, the Reference density measurement has to be appropriately configured.	▪ Detailed setup [▸ 425] ▪ Additional function [▸ 428]
Corrected volume flow	Volume flow based on mass flow and Reference density, instead of mass flow and measured density. The Reference density measurement has to be appropriately configured to use this function.	▪ Detailed setup [▸ 429] ▪ Additional function [▸ 431]
Calorific value	Calorific value (energy) is a value obtained from an Analog input or a fixed value. When calorific value is obtained from Analog input, set the value of the parameter [`Func`] to Calorific value. If it is not set to Calorific value, a fixed value, which is set in [`Fix val`], is used as the value. When the calorific value is obtained from an Analog input, the current measurement on the Analog input for measuring the current signal should be set prior to the measurement. Parameters to configure the input current signal on the Analog input for calorific value are as follows. ▪ Unit of calorific value: [`AI unit`] ▪ LRV of calorific value: [`AI LRV`] (calorific value at 4mA) ▪ URV of calorific value: [`AI URV`] (calorific value at 20mA) According to the configured calorific value and its unit, the value is multiplied by the mass flow or volume flow and totaled on Totalizer 1 – 6 [▸ 515] as Energy. When using Energy, the same unit as Calorific value has to be set on Energy.	▪ Detailed setup [▸ 433] ▪ Additional function [▸ 435]
Velocity	The Flow velocity of the medium is calculated from volume flow.	▪ Detailed setup [▸ 436]

Process variable	Outline	Reference
Net mass flow (option)	Net mass flow of solute or solvent of solution, or suspended and emulsified substances in fluid, based on mass flow measurement and concentration. It is available if concentration measurement option S16 or Gxx is enabled on the device. Net mass flow 1 is the net mass flow of the product/substance, Net mass flow 2 is the mass flow of the carrier. Net mass flow is only available if the optional Concentration function has been enabled on the device.	▪ Net mass flow 1 – 2 *[▸ 462]*
Net volume flow (option)	Net volume flow of solute or solvent of solution, or suspended and emulsified substances in fluid, based on mass flow measurement, density measurement and concentration. It is available if the Concentration measurement option S16 or Gxx has been enabled on the device. Net volume flow 1 is the volume flow of the product/substance, Net volume flow 2 is the volume flow of the carrier. Net volume flow is only available if the optional Concentration function has been enabled on the device.	▪ Net volume flow 1 – 2 *[▸ 467]*
Net corrected volume flow (option)	Net volume flow of solute or solvent of solution, or suspended and emulsified substances in fluid, at reference temperature, based on mass flow measurement, reference density and concentration. It is available if concentration measurement option S16 or Gxx is enabled on the device. If the Advanced concentration function is enabled and used instead of the Standard concentration, this process variable is available but it always becomes 0.0.	▪ Net corrected volume flow *[▸ 472]*
Batch (option)	Batching function is available to use 1 stage and 2 stage batch by controlling 1 or 2 valves. To use 2 stage batch, at least 2 Pulse/Status outputs have to be available by IO type of E06+F12...F15, E06+F20...F22, E07+F02. It is available if the Batching function option S13 has been enabled on the device.	▪ Easy setup wizard *[▸ 321]* ▪ Basic setup *[▸ 375]* ▪ Detailed setup *[▸ 562]* ▪ Additional function *[▸ 568]*
Viscosity (option)	Viscosity calculates the value from delta pressure. To calculate it, delta pressure has to be received via Analog input by IO type of E06+F14...F19. It is available if the Viscosity option S15 has been enabled on the device.	▪ Detailed setup *[▸ 477]* ▪ Additional function *[▸ 478]*

Flow Direction

For flow variables, which direction is forward is defined by the parameter Flow dir. If Forward is selected, the direction of the arrow marking on the sensor is set as the forward direction on the device. If Reverse is selected, the opposite direction is set as the forward direction on the device. The Parameter can be set in the following menus: Easy setup wizard, *Installation configuration [▸ 292]*, Basic setup, *Installation configuration [▸ 336]* or Detailed setup, *Installation configuration [▸ 392]*.

For each process variable, the following configurations can be defined by corresponding parameters.

User unit	If predefined units are not appropriate, a User unit can be defined and used for the process variable. A maximum of 8 characters can be used to define the unit. Effective when User unit is selected in the Unit parameter of each process variable.	[User unit]
User unit conversion factor	Conversion factor by which the process variable is multiplied to match the defined user unit. Effective when User unit is selected in the unit parameter of each process variable.	[Conv factor], [Unit]
Bi-directional mode	Configuration of analog or frequency output when the measurement range of the process variable is both reverse and forward. When this mode is set to Active, the LRV of the measurement range has to be set to zero. Refer to the following figures for the behaviors of the current output signal. To output flow direction, Status output can be used.	[Bi-dir mode]

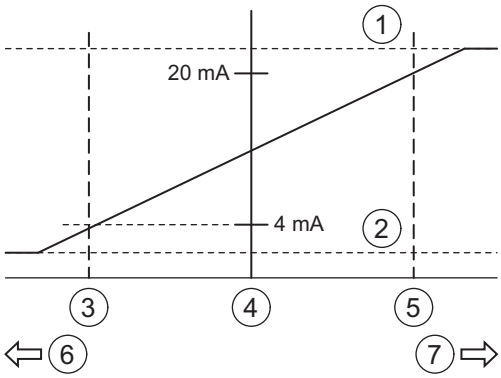


Fig. 3: Bi-directional mode: Not active

1	Analog High Limit	5	URV
2	Analog Low Limit	6	Reverse
3	LRV	7	Forward
4	Zero		

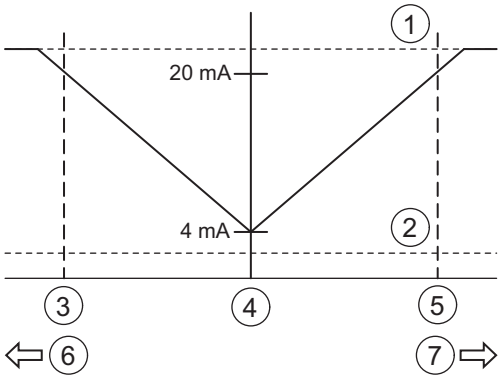


Fig. 4: Bi-directional mode: Active

1	Analog High Limit	5	URV
2	Analog Low Limit	6	Reverse
3	-URV	7	Forward
4	Zero (LRV)		

Configuration	Description	Example of parameter (Mass flow)
Damping pulse/total	Damping constant for the process variable in pulse output and total, which is the time for the value to become 63.2 % of the total amount of change.	[`Damp pls/ttl`]
Trim	Trim for a process variable, which is defined by gain and offset. Trimmed value is effective if Enable is set in the Trim select configuration. Formula is as follows: Trimmed value = gain * measured value + offset.	SITRANS FC1x0

Alarms can be defined for certain measured values of each process variable. There are 4 kinds of alarms: low low, low, high, high high. To prevent the alarms from activating/deactivating in rapid succession when the level is fluctuating around the alarm level, hysteresis can be defined for each alarm. For detailed information, see *High/Low alarm configuration [▸ 174]*.

Bi-directional mode and URV/LRV setting

When the bi-directional mode of a process variable is set to Active, its URV and LRV have to be the same sign (both of them are + or -). The configuration to set URV and LRV with different signs causes a configuration error. Also, note that the behavior of the output signal may not be appropriate when LRV is not set to zero. For the behavior of the output signal when the LRV is not set to zero and such a configuration is used, refer to the following figure.

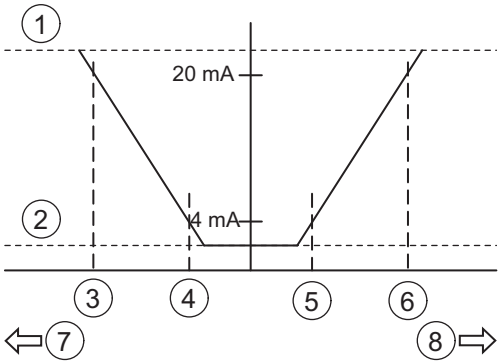


Fig. 5: Bi-directional mode: Active LRV > Zero flow

1	Analog High Limit	5	LRV
2	Analog Low Limit	6	URV
3	-URV	7	Reverse
4	-LRV	8	Forward

Configuration	Description	Example of parameter (Mass flow)
Unit	Unit for the process variable.	[Unit]
LRV	Lower range value, 0 % for the scaling of the analog and frequency output.	[LRV]
URV	Upper range value, 100 % for the scaling of the analog and frequency output.	[URV]
Ftime (damping)	Damping constant for the process variable, which is the time for the value to become 63.2 % of the total amount of change. It may be effective when the measurement value is fluctuating.	[Damp]
Low cut	The value of a process variable for setting the value to zero below the value itself. It may be effective when the measurement value is close to zero but it is fluctuating slightly.	[Lowcut]

4.3 Current signal output

The process variables in the following table can be assigned to an analog output for outputting a current signal, 4 – 20 mA. For the current signal of an analog output, the characteristics of the signal, such as low/high limit of the current, current signal at an alarm state, can be configured. When NE43 is selected as the setting of the NE43 opt option, the low limit has to be 3.8 mA and the high limit has to be 20.5 mA. The NE43 opt setting does not automatically change the limits, but generates a configuration alarm if the limits are not set to 3.8 mA and 20.5 mA. For the relationship of the LRV/URV configuration of the process variables to the low/high limit of the current, refer to the following figure.

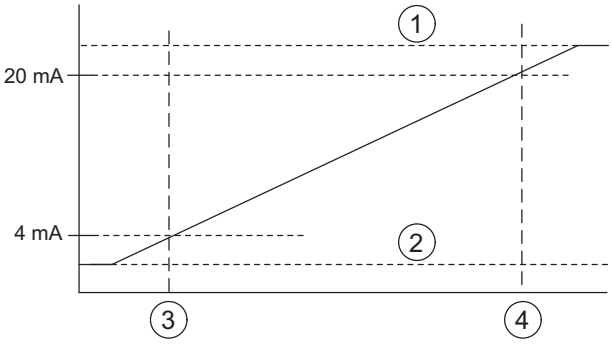


Fig. 6: Not Namur43

1	Analog High Limit	3	LRV
2	Analog Low Limit	4	URV

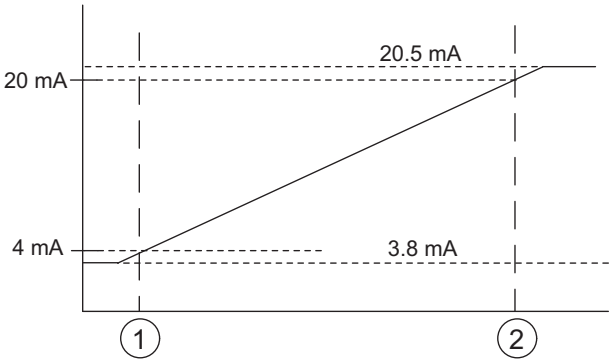


Fig. 7: Namur43

1	LRV	2	URV

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 293]*
- *Basic setup [▸ 345]*
- *Detailed setup [▸ 481]*

	Process variable that can output a current signal to the analog output
Standard	▪ Mass flow ▪ Density ▪ Temperature ▪ Volume flow ▪ Reference density ▪ Relative density ▪ Corrected volume flow ▪ Pressure: – Measured value if analog input is available and pressure sensor is connected and configured. – Fixed value if analog input is not available. ▪ Drive current
Option	The following parameters are available if the concentration measurement option S16, Gxx or S14 has been enabled. ▪ Concentration ▪ Net mass flow ▪ Net volume flow ▪ Net corrected volume flow The following parameter is available if the Batch option S13 has been enabled: ▪ Batch The following parameter is available if the Viscosity option S15 has been enabled: ▪ Viscosity

If adjustment or correction of the output currents is necessary, the Analog output trim function can be used to correct the currents. For details, see *Analog output/input trim* *[▸ 168]*. Analog outputs are trimmed at the factory; therefore an adjustment will usually not be necessary.

4.4 Pulse/Frequency signal output

The following process variables can be assigned to the Pulse/Frequency output to output a pulse/frequency signal.

	Process variable that can output a frequency signal to the Pulse/Frequency output
Standard	▪ Mass flow ▪ Density ▪ Temperature ▪ Volume flow ▪ Reference density ▪ Relative density ▪ Corrected volume flow ▪ Pressure: – Measured value if analog input is available and pressure sensor is connected and configured. – Fixed value if analog input is not available. ▪ Drive current
Option	The following parameters are available if the concentration measurement option S16, Gxx or S14 has been enabled: ▪ Concentration ▪ Net mass flow ▪ Net volume flow ▪ Net corrected volume flow The following parameter is available if the Viscosity S15 has been enabled: ▪ Viscosity

	Process variable that can output a pulse signal to the Pulse/Frequency output
Standard	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Energy
Option	The following parameters are available if the concentration measurement option S16, Gxx or S14 has been enabled: ▪ Net mass flow ▪ Net volume flow ▪ Net corrected volume flow

One of 4 output signal types - Fixed pulse output, Frequency output, Status output or Double pulse output - can be selected and used.

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 298]*
- *Basic setup [▸ 348]*
- *Detailed setup [▸ 485]*

Fixed Pulse

Pulse signal with fixed pulse width, duty ratio changes according to the value of the assigned process variable. Characteristics of pulse output, such as pulse width, pulse rate, signal at alarm status, flow direction to output pulse and active mode [`on`] or [`off act`] of the pulse, can be configured. The pulse signal range that can be set for LRV or URV is 0.0001 – 10000 pps (pulses per second). The following chart shows pulse width selections and corresponding maximum pulse rates.

Pulse width in ms	Max. pulse rate in pps
0.05	10000
0.1	5000
0.5	1000
1	500
5	100
10	50
20	25
33	15
50	10
100	5
200	2.5
330	1.5
500	1.0
1000	0.5
2000	0.25

Formula to calculate pulse rate from max flow rate (F) and flow per 1 pulse (P), or pulse per unit flow (N):

$$\text{PPS} = \frac{F}{T \times P}$$

$$\text{PPS} = \frac{F}{T} \times N$$

Tab. 5: Description of variables

Variable	Meaning	Description
F	Max flow rate	Larger one of absolute value of LRV or URV
T	Time in unit	Time in unit in seconds, e.g., 3600 for kg/h, 60 for kg/min
P	Flow par 1 pulse	Unit flow/pulse
N	Pulse par flow	Pulse/unit flow
PPS	Pulse Per Second	Calculated pulse rate

Example 1: Max flow rate is 2580 kg/h, 0.1 kg/pulse

$$7.1666 = \frac{2580}{3600 \times 0.1}$$

Example 2: Max flow rate is 2580 kg/h, 10 pulse/kg

$$7.1666 = \frac{2580}{3600} \times 10$$

When pulse width is set, the maximum pulse rate at the defined pulse width must be larger than the defined pulse rate PPS. In the example above, PPS = 7.1666, pulse width must be less than 50 ms, for which the corresponding pulse rate is 10 pps >7.1666. If the

pulse rate at the defined width is less than the calculated pulse rate PPS, the pulse signal is not output correctly. If the configuration exceeds the limits, a configuration error message appears.

Frequency

Pulse signal with fixed duty ratio of 50 %, pulse width changes according to the value of the assigned process variable and the specified output frequency range for the variable. Characteristics of the signal, such as maximum/minimum frequency, signal at alarm status, can be configured. The range of the frequency signal can be set for LRV or URV is 0 – 10000 Hz. The upper limit of the frequency signal is a frequency of URV + 25 % of the output span, but the maximum frequency that can be output is 12,500 Hz. The minimum frequency that can be output is 0.0001 Hz.

Please use frequency receiving device which is calculating average frequency during 5 second measuring (integration) time. When using frequency counter the parameter GATE TIME should be ≥ 5s. In this case the reading of the values will be within the specified accuracy for the variables. When using frequency receiver with short measuring time like oscilloscope or PLC frequency input module the reading will fluctuate depending on actual frequency and this fluctuation can be interpreted as inaccurate measurement.

Status

Binary signal, on or off, to transmit specific status of an assigned event or function. Alarm status of process variable, flow direction, status of NAMUR NE107, diagnosis alarm, can be assigned to Status output. On active or Off active can be selected for the output. When On active is selected, output by closed status On is active. When Off active is selected, output by open status Off is active.

Double pulse

Double pulse mode is a function for outputting a process variable by using 2 frequency signals on 2 Pulse/Status outputs with a phase shift of 0, 90 or 180 degrees between 2 frequency signals. When the measurement range of the process variable is both reverse and forward, the direction of phase shift can be changed by the flow direction. Available when Dbl pls is selected in the parameter Pls/Sts type.

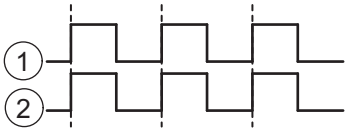


Fig. 8: Double pulse: 0 degrees

1	Pulse output 1
2	Pulse output 2

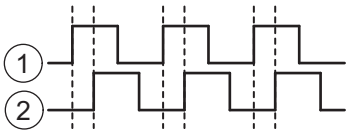


Fig. 9: Double pulse: +90 degrees

1	Pulse output 1
2	Pulse output 2

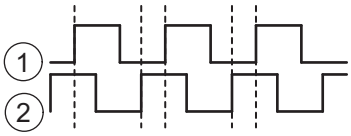


Fig. 10: Double pulse: -90 degrees

1	Pulse output 1
2	Pulse output 2

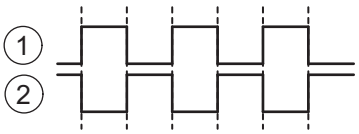


Fig. 11: Double pulse: 180 degrees

1	Pulse output 1
2	Pulse output 2

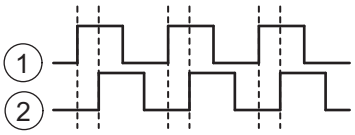


Fig. 12: Double pulse: Quadrature - Forward flow

1	Pulse output 1
2	Pulse output 2

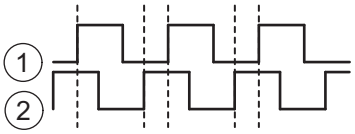


Fig. 13: Double pulse: Quadrature- Reverse flow

1	Pulse output 1
2	Pulse output 2

4.5 Status input

Some actions on the device can be initiated or controlled by a signal of the Status input. One of the following actions can be initiated: auto zero, starting totalizer, 0 % lock of current signal, synchronization of internal clock, confirmation of acknowledge for events, changing concentration configuration set. On act or Off act can be selected for the input. When On act is selected, active means that close status is on. When Off act is selected, active means that the open status is Off. For more detailed information, see *Detailed setup [▸ 513]*.

This function is not available unless the "Status input" (SI) specification was selected in order code, i.e. Order Code Position -Z E06+F13, E06+F18...F21, E06+F23.

4.6 Analog input

Analog input on this device can be used for several purposes. The following chart shows a list of functions that use analog input. For more detailed information, see *Detailed setup [▸ 511]*.

This function is not available unless the "Analog input" (AI) specification was selected in order code, i.e. Order Code Position -Z E06+F14...F19.

Function	Outline	Reference
Pressure compensation	Analog input is used to connect a pressure transmitter to obtain the pressure value of the fluid. The Measured pressure value is used to compensate Mass flow and Density values for higher accuracy. If this function is assigned to an analog input, Mass flow and Density are automatically compensated by the measured pressure value.	Detailed setup ▪ Pressure [▸ 415] ▪ Analog input [▸ 511]
Temperature compensation	Analog input is used to connect a temperature transmitter to obtain the temperature of the fluid. The temperature obtained is used instead of the measured temperature from the internal temperature sensor to compensate the Mass flow and Density values. Note that the internal temperature sensor is not used in this case.	Detailed setup ▪ Temperature [▸ 405] ▪ Analog input [▸ 511]
Sensor pressure alarm	If a pressure transmitter is installed on the sensor housing to detect leaking fluid, this function is used to detect leakage.	Diag/Service ▪ Std diagnosis [▸ 248] Detailed setup ▪ Pressure [▸ 415] ▪ Analog input [▸ 511]
Calorific value	Analog input is used to connect the output signal of the gas chromatograph to obtain the calorific value of the fluid per unit.	Detailed setup ▪ Calorific value [▸ 433] ▪ Analog input [▸ 511]
Viscosity delta pressure	If a pressure transmitter is installed to detect delta pressure before and after the device, this function is used to calculate the Viscosity of the fluid. It is available if Viscosity option S15 is enabled on the device.	Detailed setup ▪ Viscosity [▸ 477] ▪ Analog input [▸ 511]
Pressure compensation and NOC	Analog input is used to connect to pressure transmitter to obtain the pressure value of the fluid. The Measured pressure value is used to compensate Mass flow and Density values for higher accuracy and is used to calculate NOC. It is available if concentration measurement option S14 is enabled on the device.	Detailed setup ▪ Concentration [▸ 436] ▪ Additional function [▸ 443] ▪ Net Oil Computing (NOC) set 1 – 4 [▸ 458] ▪ Net Oil Computing (NOC) + GVF set 1 – 4 [▸ 454] ▪ Pressure [▸ 415] ▪ Analog input [▸ 511]

Function	Outline	Reference
Pressure NOC	Analog input is used to connect a pressure transmitter to obtain the pressure value of the fluid. The Measured pressure value is used to calculate NOC. It is available if concentration measurement option S14 is enabled on the device.	Detailed setup ▪ Concentration *[▸ 436]* ▪ Additional function *[▸ 443]* ▪ Net Oil Computing (NOC) set 1 – 4 *[▸ 458]* ▪ Net Oil Computing (NOC) + GVF set 1 – 4 *[▸ 454]* ▪ Pressure *[▸ 415]* ▪ Analog input *[▸ 511]*

If an adjustment or correction of the input current is necessary, the Analog input trim function can be used to correct the input current. For more detailed information, see Diag/ Service *Input trim [▸ 169]*. Analog input is trimmed at the factory; therefore an adjustment will usually not be necessary.

4.7 Totalizer

A maximum of six totalizers can be used on the device to total flow process variables. The following table shows applicable process variables for the totalizer.

	Applicable flow process variables for totalizers
Standard	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Energy
Option	The following parameters are available if the concentration measurement option S16, Gxx or S14 has been enabled: ▪ Net mass flow 1 ▪ Net mass flow 2 ▪ Net volume flow 1 ▪ Net volume flow 2 ▪ Net corrected volume flow

Each totalizers value can be displayed on the LCD of the Indicator and can be transmitted through HART communication. The totalizing mode assigned to a flow process variable can be selected from one of the following 5 modes. In addition, the density totalizer function can be used. For details, see *Detailed setup [▸ 515]*

Totalizer modes	Description
Balanced	Positive and negative incoming values. The differential between the positive and negative incoming values.
Absolute	Absolute value of positive and negative incoming values.
Positive only	Only positive incoming values. Default configuration for Totalizer 1 – 6.
Negative only	Only negative incoming values.
Hold	Value is held, not changed.

Specific values can be set for each totalizer to generate an alarm, if necessary. Start, stop, reset, preset or set predefined value can be operated by a parameter or Status input signal.

For details on configuring the basic functions of Totalizer 1 – 3, see *Easy setup wizard [▸ 313]* or *Basic setup [▸ 363]*.

To configure all functions of Totalizer 1 – 6, refer to *Detailed setup [▸ 515]*.
To configure the Status input for totalizers, see Status input, *Detailed setup [▸ 513]*.

4.8 Easy setup wizard

For the most important functions there is a wizard menu, to help with the setup of the device. The following settings can be performed by using the wizard:

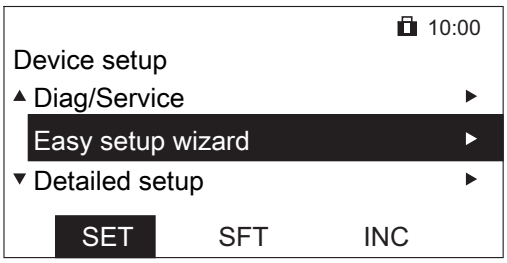
Wizard menu	Description
Installation configuration	Configuration of parameters for basic installation. ▪ Step-by-step instruction serving as an example, see chapter *Installation configuration* [▸ 40]. ▪ For more detailed information, see chapter *Installation configuration* in the menu description [▸ 290].
Standard device variables	Configuration for measurement of basic process variables, such as process variable, range, damping, etc. ▪ Step-by-step instruction serving as an example, see chapter *Configure Standard device variables* [▸ 43]. ▪ For more detailed information, see chapter *Standard device variables* in the menu description [▸ 281].
Analog outputs	Configuration for analog output, such as process variables, range, alarm, etc. ▪ Step-by-step instruction, see chapter *Configure Analog output* [▸ 44]. ▪ For more detailed information, see chapter *Analog outputs* in the menu description [▸ 293].
Pulse/Status outputs	Configuration for pulse/status output, such as process variables, unit, pulse width, pulse rate, etc. or status signal. ▪ Step-by-step instructions, see chapter *Pulse/Status outputs* [▸ 45]. ▪ For more detailed information, see chapter *Pulse/Status outputs* in the menu description [▸ 298].
Totalizer	Configuration for totalizer, such as process variables, unit, action at alarm, totalizing scheme, etc. ▪ Step-by-step instruction, see *Configure Totalizer* [▸ 50]. ▪ For more detailed information, see chapter *Totalizer* in the menu description [▸ 313].
Display select	Configuration to set process variables to be displayed on 1 to 4 lines on display. ▪ Step-by-step instruction, see *Configure Display select* [▸ 52] ▪ For more detailed information, see chapter Display select in the menu description [▸ 318].
Date/Time	Configuration of date and time. ▪ Step-by-step instruction, see *Configure Date/Time* [▸ 52] ▪ For more detailed information, see chapter Date/Time in the menu description [▸ 321].
Batch	Configuration of Batch function ▪ Step-by step instruction, see *Configure Batch* [▸ 54]. For more detailed information, see chapter *Batch* in the menu description [▸ 321].

4.8.1 Installation configuration

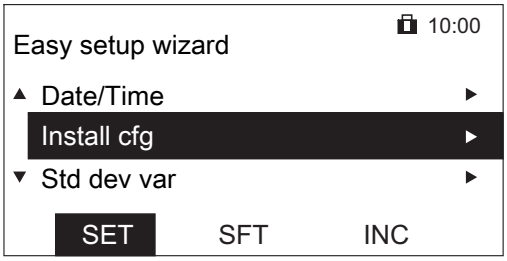
The settings must be downloaded to the device. If the wizard is canceled before this is completed and [`Setting download`] is performed, any changes to the settings will not be reflected on the device.

✓ [`Specialist`] is selected as the *Operation level* [▷ 22] .

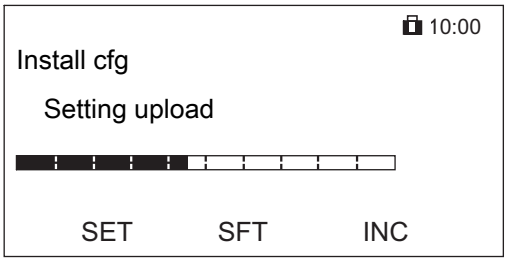
1. Press [`INC`] until [`Easy setup wizard`] is selected.



2. Press [`SET`] to enter the menu [`Easy setup wizard`].
   ⇨ Menu [`Install cfg`] is preselected.

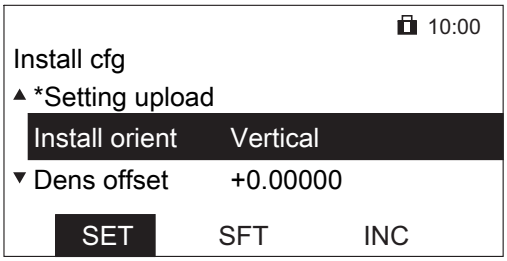


3. Press [`SET`] to enter the menu [`Install cfg`].
   ⇨ [`Setting upload`] runs automatically and will be marked with a * after completion.

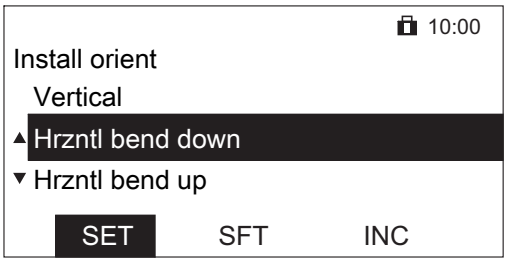


   ⇨ Parameter [`Install orient`] is preselected.

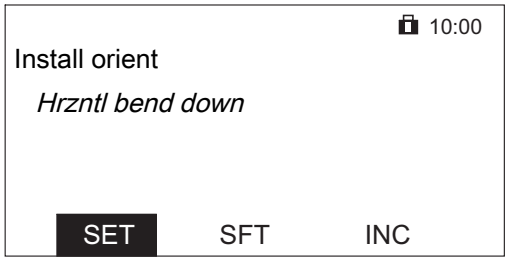
4. Press [`SET`] to enter the parameter settings of [`Install orient`].



5. Press [`INC`] until [`Hrzntl bend down`] is selected and press [`SET`] to choose the selection.

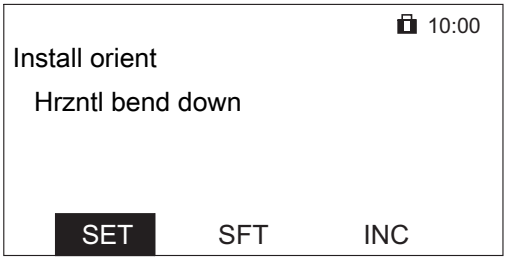


⇨ The chosen value flashes.

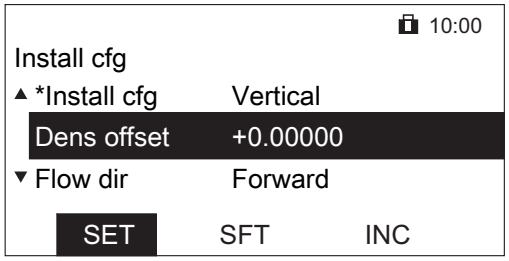


If the software revision of indicator is R1.01.01 or R2.01.01, and Japanese is selected as display language, please set the value as follows:
When the installation is horizontal bend down: 「水平(ﾁｭｰﾌﾞ上)」
When the installation is horizontal bend up: 「水平(ﾁｭｰﾌﾞ下)」

6. Press [SET] to confirm.

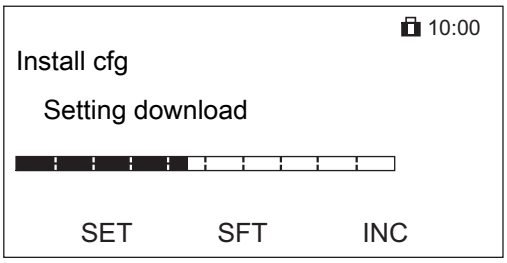


7. Press [SET] to go back to the menu [Install cfg].
   ⇨ Parameter [Install orient] is marked with a * after completion.
   ⇨ Parameter [Dens offset] is preselected.



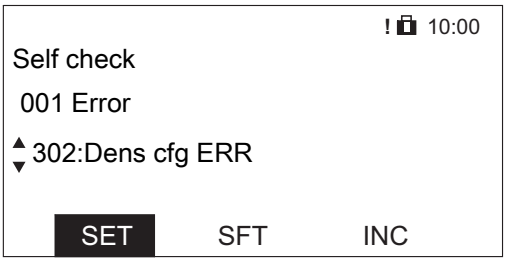
8. Press [SET] to enter the selection [Dens offset].
   ⇨ The adjustable digit flashes.
9. Press [INC] to increase the value.
10. Press [SFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
11. Press [INC] to increase the value.
12. Continue in the same way until the number is completed.
13. Press [SET] to confirm.
    ⇨ The configured [Dens offset] value flashes.
14. Press [SET] to set the value.
15. Press [SET] to go back to the menu [Install cfg].
16. Continue to configure the other parameters: [Flow dir] and [Fix val] can be configured in the same way.
17. After configuration, press [INC] until the parameter [Setting download] is selected.

18. Press [SET] to download the configuration to the device.



⇨ If the device does not have any alarm or warning, [Good] will be displayed.

⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown.



For additional information, see chapter *Troubleshooting [▶ 626]*.

19. Press and hold [SFT] and press [SET] to go back to the menu [Easy setup wizard].

4.8.2 Standard device variables

Wizard to configure the measurement of basic process variables, such as process variable, range, damping, etc. Wizards for Mass flow, Density, Temperature and Volume flow are provided.

Configure Standard device variables

Configuration of the standard device variables is shown below using the example of variable mass flow.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [**Setting download**] is performed, any changes to the settings will not be reflected on the device.

✓ [**Specialist**] is selected as the *Operation level [▸ 22]*.

1. Press [**INC**] until [**Easy setup wizard**] is selected.
2. Press [**SET**] to enter the menu [**Easy setup wizard**].
   ⇨ Menu [**Install cfg**] is preselected.
3. Press [**INC**] until [**Std dev var**] is selected.
4. Press [**SET**] to enter the menu [**Std dev var**].
   ⇨ Menu [**Mass**] is preselected.
5. Press [**SET**] to enter the menu [**Mass**].
   ⇨ [**Setting upload**] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [**Unit**] is preselected.
6. Press [**SET**] to enter the selection [**Unit**].
7. Press [**INC**] until the required unit is selected and press [**SET**] to choose the selection.
   ⇨ The chosen value flashes.
8. Press [**SET**] to confirm.
9. Press [**SET**] to go back to the menu [**Mass**].
   ⇨ Parameter [**Unit**] is marked with a * after completion.
   ⇨ Parameter [**LRV**] is preselected.
10. Press [**SET**] to enter the selection [**LRV**].
    ⇨ The adjustable digit flashes.
11. Press [**INC**] to increase the value.
12. Press [**SFT**] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
13. Press [**INC**] to increase the value.
14. Continue in the same way until the number is completed.
15. Press [**SET**] to confirm.
    ⇨ The configured [**LRV**] value flashes.
16. Press [**SET**] to set the value.
17. Press [**SET**] to go back to the menu [**Mass**].
    ⇨ Parameter [**LRV**] is marked with a * after completion.
    ⇨ Parameter [**URV**] is preselected.
18. Continue to configure the other parameters [**URV**] and [**Damp**] in the same way.
19. After configuration, press [**INC**] until the parameter [**Setting download**] is selected.
20. Press [**SET**] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [**Good**] will be displayed.

⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▶ 626]*.

21. Press and hold [SFT] and press [SET] to go back to the menu [Easy setup wizard].

The other standard device variables, such as Density, Temperature and Volume flow, can be configured in the same way.

4.8.3 Analog output

Wizard to configure Analog output, such as process variables, range, alarm, etc.

Configure Analog output

Configuration of Analog output is shown below.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▶ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [AO] is selected.
4. Press [SET] to enter the menu [AO1].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [Sel] is preselected.
5. Press [SET] to enter the selection [Sel].
6. Press [INC] until the process variable to be assigned to Analog output 1 is selected.
7. Press [SET] to choose the selection.
   ⇨ The chosen value flashes.
8. Press [SET] to confirm.
9. Press [SET] to go back to the menu [AO1].
   ⇨ Parameter [Sel] is marked with a * after completion.
   ⇨ Parameter [Lo lim] is preselected.
10. Press [SET] to enter the selection [Lo lim].
    ⇨ The adjustable digit flashes.
11. Press [INC] to increase the value.
12. Press [SHIFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
13. Press [INC] to increase the value.
14. Continue in the same way until the number is completed.
15. Press [SET] to confirm.
    ⇨ The configured [Lo lim] value flashes.
16. Press [SET] to set the value.
17. Press [SET] to go back to the menu [AO1].
    ⇨ Parameter [Lo lim] is marked with a * after completion.
    ⇨ Parameter [Hi lim] is preselected.
18. Continue to configure the other parameter [Hi lim] in the same way.
19. After configuration, press [INC] until the parameter [Setting download] is selected.

20. Press [SET] to download the configuration to the device.
    - ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    - ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
    - ⇨ Menu [Install cfg] is preselected.
21. Press [SET] to enter the menu [AO2].
    - ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
22. Continue to configure [AO2] in the same way as [AO1].
23. Press and hold [SHIFT] and press [SET] to go back to the menu [Easy setup wizard].

4.8.4 Pulse/Status outputs

Wizard to configure Pulse/Status output, such as process variables, unit, pulse width, pulse rate, etc. or status signal. According to IO configuration that device has, applicable wizards are provided.

Configure Pulse/Status outputs

Configuration of Pulse/Status outputs is shown below.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   - ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Pls/Sts out] is selected.
4. Press [SET] to enter the menu [Pls/Sts out].
   - ⇨ Menu [Pls/Sts cfg] is preselected.
5. Press [SET] to enter the menu [Pls/Sts cfg].
   - ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   - ⇨ Parameter [Pls/Sts type] is preselected.
6. Press [SET] to enter the selection [Pls/Sts type].
7. Press [INC] to select [Sngl pls] or [Dbl pls].
8. Press [SET] to choose the selection.
   - ⇨ The chosen value flashes.
9. Press [SET] to confirm.
10. Press [SET] to go back to the menu [Pls/Sts cfg].
    - ⇨ Parameter [Pls/Sts type] is marked with a * after completion.
    - ⇨ Parameter [Pls/Sts1 mode] is preselected.
11. Press [SET] to enter the selection [Pls/Sts1 mode].
12. Press [INC] to select [No func], [Fix pls out], [Freq out] or [Sts out]. For additional information, see *Pulse/Status configuration [▸ 299]*.
13. Press [INC] to select the output mode.
14. Press [SET] to choose the selection.
    - ⇨ The chosen value flashes.

15. Press [SET] to confirm.
    ⇨ The chosen [Pls/Sts1 mode] flashes.
16. Press [SET] to go back to the menu [Pls/Sts cfg].
    ⇨ Parameter [Pls/Sts1 mode] is marked with a * after completion.
    NOTICE! Pulse/Status output 2 mode is displayed only if Pulse/Status output 2 is available on the device.
    ⇨ Parameter [Pls/Sts2 mode] is preselected.
17. Continue to configure the other parameter [Pls/Sts2 mode] in the same way.
18. After configuration, press [INC] until the parameter [Setting download] is selected.
19. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Configure Single Pulse and Frequency output

If Pulse/Status output type is set to Single pulse, the following wizards are available.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *Operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
    ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Pls/Sts out] is selected.
4. Press [SET] to enter the menu [Pls/Sts out].
    ⇨ Menu [Pls/Sts cfg] is preselected.
    NOTICE! Pulse output 1 is displayed only if Pulse/Status output 1 mode is set to Fixed Pulse output.
5. Press [INC] until [Pls out1] is selected.
6. Press [SET] to enter the menu [Pls out1].
    ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
    ⇨ Parameter [Sel] is preselected.
7. Press [SET] to enter the selection [Sel].
8. Press [INC] until the desired variable is selected and press [SET] to choose the selection. For additional information, see *Pulse output 1 – 2 [▸ 300]*.
    ⇨ The chosen value flashes.
9. Press [SET] to confirm.
10. Press [SET] to go back to the menu [Pls out1].
    ⇨ Parameter [Sel] is marked with a * after completion.
    ⇨ Parameter [Unit] is preselected.
11. Press [SET] to enter the selection [Unit].
12. Press [INC] until the required unit is selected and press [SET] to choose the selection. For additional information, see *Pulse output 1 – 2 [▸ 301]*.
    ⇨ The chosen value flashes.
13. Press [SET] to confirm.
14. Press [SET] to go back to the menu [Pls out1].

⇨ Parameter [Unit] is marked with a * after completion.

⇨ Parameter [Width] is preselected.

15. Press [SET] to enter the selection [Width].
16. Press [INC] until the desired value is selected and press [SET] to choose the selection. For additional information, see *Pulse output 1 – 2 [▸ 303]*.

    ⇨ The chosen value flashes.
17. Press [SET] to confirm.
18. Press [SET] to go back to the menu [Pls out1].

    ⇨ Parameter [Width] is marked with a * after completion.

    ⇨ Parameter [Rate] is preselected.
19. Press [SET] to enter the selection [Rate].

    ⇨ The adjustable digit flashes.
20. Press [INC] to increase the value.
21. Press [SFT] to change the adjustable digit.

    ⇨ The adjustable digit flashes.
22. Press [INC] to increase the value.
23. Continue in the same way until the number is completed.
24. Press [SET] to confirm. For additional information, see *Pulse output 1 – 2 [▸ 305]*.

    ⇨ The configured [Rate] value flashes.
25. Press [SET] to set the value.
26. Press [SET] to go back to the menu [Pls out1].

    ⇨ Parameter [Rate] is marked with a * after completion.

    ⇨ Parameter [Setting download] is preselected. Press [SET] to download the configuration to the device.

    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.

    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
27. Press and hold [SFT] and press [SET] to go back to the menu [Pls/Sts out].
    NOTICE! Pulse output 2 is displayed only if Pulse/Status output 2 is available, and Pulse/Status output 2 mode is set to Fixed Pulse output.
28. Continue to configure [Pls out2] in the same way as [Pls out1].
    NOTICE! Frequency output 1 is displayed only if Pulse/Status output 1 mode is set to Frequency.
29. Press [INC] until [Freq out1] is selected.
30. Press [SET] to enter the menu [Freq out1].

    ⇨ [Setting upload] runs automatically and will be marked with a * after completion.

    ⇨ Parameter [Sel] is preselected.
31. Press [SET] to enter the selection [Sel].
32. Press [INC] until the desired variable is selected and press [SET] to choose the selection. For additional information, see *Frequency output 1 – 2 [▸ 305]*.

    ⇨ The chosen value flashes.
33. Press [SET] to confirm.
34. Press [SET] to go back to the menu [Freq out1].

    ⇨ Parameter [Sel] is marked with a * after completion.

    ⇨ Parameter [Max freq] is preselected.
35. Press [SET] to enter the selection [Max freq].

⇨ The adjustable digit flashes.

36. Press [INC] to increase the value.
37. Press [SFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
38. Press [INC] to increase the value.
39. Continue in the same way until the number is completed.
40. Press [SET] to confirm.
    ⇨ The configured [Max freq] value flashes.
41. Press [SET] to go back to the menu [Freq out1].
    ⇨ Parameter [Max freq] is marked with a * after completion.
    ⇨ Parameter [Min freq] is preselected.
42. Press [SET] to enter the selection [Min freq].
    ⇨ The adjustable digit flashes.
43. Press [INC] to increase the value.
44. Press [SFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
45. Press [INC] to increase the value.
46. Continue in the same way until the number is completed.
47. Press [SET] to confirm.
    ⇨ The configured [Min freq] value flashes.
48. Press [SET] to go back to the menu [Freq out1].
    ⇨ Parameter [Min freq] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
49. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
50. Press and hold [SFT] and press [SET] to go back to the menu [Pls/Sts out].
    NOTICE! Frequency output 2 is displayed only if Pulse/Status output 2 is available, and Pulse/Status output 2 mode is set to Frequency.
51. Continue to configure [Freq out2] in the same way as [Freq out1 – 2].
    NOTICE! Status output 1 is displayed only if Pulse/Status output 1 mode is set to Status output.
52. Press [INC] until [Sts out1] is selected.
53. Press [SET] to enter the menu [Sts out1].
    ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
    ⇨ Parameter [Func] is preselected.
54. Press [SET] to enter the selection [Func].
55. Press [INC] until the desired variable is selected and press [SET] to choose the selection. For additional information, see *Status output 1 – 3 function [▸ 308]*.
56. Press [SET] to choose the selection.
    ⇨ The chosen value flashes.
57. Press [SET] to confirm.
58. Press [SET] to go back to the menu [Sts out1].
    ⇨ Parameter [Func] is marked with a * after completion.

⇨ Parameter [Setting download] is preselected.

59. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
    NOTICE! Status output 2 is displayed only if Pulse/Status output 2 is available and Pulse/Status output 2 mode is set to Status output.
60. Continue to configure [Sts out2] in the same way as [Sts out1].
    NOTICE! Status output 3 is displayed only if Status output 3 is available and Pulse/Status output 3 mode is set to Status output.
61. Continue to configure [Sts out3] in the same way as [Sts out1].
62. Press and hold [SFT] and press [SET] to go back to the menu [Easy setup wizard].

Configure Double pulse output

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Pls/Sts out] is selected.
4. Press [SET] to enter the menu [Pls/Sts out].
   ⇨ Menu [Pls/Sts cfg] is preselected.
5. Press [INC] until [Dbl pls out] is selected.
6. Press [SET] to enter the menu [Dbl pls out].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [Sel] is preselected.
7. Press [SET] to enter the selection [Sel].
8. Press [INC] until the desired variable is selected and press [SET] to choose the selection. For additional information, see *Frequency output 1 select [▸ 311]*.
   ⇨ The chosen value flashes.
9. Press [SET] to confirm.
10. Press [SET] to go back to the menu [Dbl pls out].
    ⇨ Parameter [Sel] is marked with a * after completion.
    ⇨ Parameter [Phase shift mode] is preselected.
11. Press [SET] to enter the selection [Phase shift mode].
12. Press [INC] to select [0°], [180°], [-90°], [+90°] or [Quadrature]. For additional information, see *Double pulse phase shift mode [▸ 312]*.
13. Press [SET] to choose the selection.
    ⇨ The chosen value flashes.
14. Press [SET] to confirm.
15. Press [SET] to go back to the menu [Dbl pls out].
    ⇨ Parameter [Phase shift mode] is marked with a * after completion.
    ⇨ Parameter [Max freq] is preselected.
16. Press [SET] to enter the selection [Max freq].

⇨ The adjustable digit flashes.

17. Press [INC] to increase the value.
18. Press [SFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
19. Press [INC] to increase the value.
20. Continue in the same way until the number is completed.
21. Press [SET] to confirm.
    ⇨ The configured [Max freq] value flashes.
22. Press [SET] to go back to the menu [Dbl pls out].
    ⇨ Parameter [Max freq] is marked with a * after completion.
    ⇨ Parameter [Min freq] is preselected.
23. Press [SET] to enter the selection [Min freq].
    ⇨ The adjustable digit flashes.
24. Press [INC] to increase the value.
25. Press [SFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
26. Press [INC] to increase the value.
27. Continue in the same way until the number is completed.
28. Press [SET] to confirm.
    ⇨ The configured [Min freq] value flashes.
29. Press [SET] to go back to the menu [Dbl pls out].
    ⇨ Parameter [Min freq] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
30. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
31. Press and hold [SFT] and press [SET] to go back to the menu [Easy setup wizard].

4.8.5 Totalizer

Wizard to configure totalizer, such as process variables, unit, action at alarm, totalizing scheme, etc.

Configure Totalizer

Configuration of Totalizer 1 – 3 is shown below.

Totalizer 4 – 6 cannot be configured by Easy setup wizard. To configure Totalizer 4 – 6 , see *Detailed setup menu [▸ 390]*.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *Operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Ttl] is selected.
4. Press [SET] to enter the menu [Ttl].

⇨ Menu [Ttl1] is preselected.

5. Press [SET] to enter the menu [Ttl1].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [Channel] is preselected.
6. Press [SET] to enter the selection [Channel].
7. Press [INC] until the desired variable is selected and press [SET] to choose the selection. For additional information, see *Total 1 – 3 channel [▸ 314]*.
   ⇨ The chosen value flashes.
8. Press [SET] to confirm.
9. Press [SET] to go back to the menu [Ttl1].
   ⇨ Parameter [Channel] is marked with a * after completion.
   ⇨ Parameter [Unit] is preselected.
10. Press [SET] to enter the selection [Unit].
11. Press [INC] until the required unit is selected and press [SET] to choose the selection. For additional information, see *Total 1 – 3 unit [▸ 315]*.
    ⇨ The chosen value flashes.
12. Press [SET] to confirm.
13. Press [SET] to go back to the menu [Ttl1].
    ⇨ Parameter [Unit] is marked with a * after completion.
    ⇨ Parameter [Fail opt] is preselected.
14. Press [SET] to enter the selection [Fail opt].
15. Press [INC] to select [Run], [Hold] or [Last valid val]. For additional information, see *Total 1 – 3 failure option [▸ 316]*.
16. Press [SET] to choose the selection.
    ⇨ The chosen value flashes.
17. Press [SET] to confirm.
18. Press [SET] to go back to the menu [Ttl1].
    ⇨ Parameter [Fail opt] is marked with a * after completion.
    ⇨ Parameter [Start/Stop] is preselected.
19. Press [SET] to enter the selection [Start/Stop].
20. Press [INC] to select [Stop] or [Start]. For additional information, see *Total 1 – 3 start/stop [▸ 317]*.
21. Press [SET] to choose the selection.
    ⇨ The chosen value flashes.
22. Press [SET] to confirm.
23. Press [SET] to go back to the menu [Ttl1].
    ⇨ Parameter [Start/Stop] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
24. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
    ⇨ The parameter [Ttl2] and [Ttl3] can be configured in the same way.
25. Press and hold [SFT] and press [SET] twice to go back to the menu [Easy setup wizard].

4.8.6 Display select

Wizard to configure process variables to be displayed on 1 to 4 lines on display.

Configure Display select

Wizard to set process variables to be displayed on 1 to 4 lines on display.

Configuration of the Display select is shown below.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [**Setting download**] is performed, any changes to the settings will not be reflected on the device.

✓ [**Specialist**] is selected as the *operation level [▸ 22]*.

1. Press [**INC**] until [**Easy setup wizard**] is selected.
2. Press [**SET**] to enter the menu [**Easy setup wizard**].
   ⇨ Menu [**Install cfg**] is preselected.
3. Press [**INC**] until [**Disp sel**] is selected.
4. Press [**SET**] to enter the menu [**Disp sel**].
   ⇨ [**Setting upload**] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [**Set1**] is preselected.
5. Press [**SET**] to enter the selection [**Set1**].
6. Press [**INC**] until the variable to be assigned to display line 1 is selected and press [**SET**] to choose the selection. For additional information, see *Display select 1 – 4 [▸ 318]*.
   ⇨ The chosen value flashes.
7. Press [**SET**] to confirm.
8. Press [**SET**] to go back to the menu [**Disp sel**].
   ⇨ Parameter [**Set1**] is marked with a * after completion.
   ⇨ Parameter [**Set2**] is preselected.
9. Continue to configure the other parameters [**Set2**], [**Set3**] and [**Set4**] in the same way.
10. After configuration, press [**INC**] until the parameter [**Setting download**] is selected.
11. Press [**SET**] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [**Good**] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
12. Press and hold [**SFT**] and press [**SET**] to go back to the menu [**Easy setup wizard**].

4.8.7 Date/Time

Wizard to configure date and time.

Configure Date/Time

Configuration of the date and time is shown below.

“Current date” and “Current time” only display current date and time. To set date and time, write values on “Set current date” and “Set current time”.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [**Setting download**] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Date/Time] is selected.
4. Press [SET] to enter the menu [Date/Time].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Menu [Date] is preselected.
5. Press [INC] until [Set date] is selected.
6. Press [SET] to enter the menu [Set date].
7. Press [SET] to set the date.
   ⇨ Date on display is flashing.
8. Press [INC] until the desired year is displayed.
9. Press [SFT] to switch to the display of the month.
10. Press [INC] until the desired month is displayed.
11. Press [SFT] to switch to the display of the day.
12. Press [INC] until the desired day is displayed.
13. Press [SET] to select the date set.
    ⇨ The configured value flashes.
14. Press [SET] to set the value.
15. Press [SET] to go back to the menu [Date/Time].
    ⇨ Parameter [Set date] is marked with a * after completion.
    ⇨ Parameter [Set time] is preselected.
16. Press [SET] to enter the selection [Set time].
17. Press [SET] to change the current time.
    ⇨ Time on display is flashing.
18. Press [INC] until the desired number for the hour is displayed.
19. Press [SFT] to set the minutes.
20. Repeat the two previous steps for minutes and seconds.
21. Press [SET] to select the time set.
    ⇨ The configured value flashes.
    ⇨ Parameter [Set time] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
22. Press [SET] twice to set the value.
23. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.
24. Press and hold [SFT] and press [SET] to go back to the menu [Easy setup wizard].

4.8.8 Batch

Wizard to configure Batch function. Only the configuration of 1 stage batch and Batch 1 is available in the wizard for Batch function.

Configure Batch 1 configuration

Configuration of Batch 1 configuration is shown below.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Batch1] is selected.
4. Press [SET] to enter the menu [Batch1].
   ⇨ Menu [Install cfg] is preselected.
5. Press [SET] to enter the menu [Cfg].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [Mode] is preselected.
6. Press [SET] to enter the selection [Mode].
7. Press [INC] to select [Yes] or [No]
8. Press [SET] to choose the selection.
   ⇨ The chosen value flashes.
9. Press [SET] to confirm.
10. Press [SET] to go back to the menu [Cfg].
    ⇨ Parameter [Mode] is marked with a * after completion.
    ⇨ Parameter [Var sel] is preselected.
11. Press [SET] to enter the selection [Var sel].
12. Press [INC] to select the desired variable and press [SET] to choose the selection. For additional information, see *Batch variable select 1 [▸ 322]*.
    ⇨ The chosen variable flashes.
13. Press [SET] to confirm.
    ⇨ The chosen variable flashes.
14. Press [SET] to go back to the menu [Cfg].
    ⇨ Parameter [Var sel] is marked with a * after completion.
    ⇨ Parameter [Pls/Sts1 mode] is preselected.
15. Continue to configure the other parameter [Pls/Sts1 mode] in the same way.
16. After configuration, press [INC] until the parameter [Setting download] is selected.
17. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Configure Batch 1 setting

Configuration of Batch 1 setting is shown below.

The settings must be downloaded to the device. If the wizard is canceled before this is completed and [Setting download] is performed, any changes to the settings will not be reflected on the device.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until [Easy setup wizard] is selected.
2. Press [SET] to enter the menu [Easy setup wizard].
   ⇨ Menu [Install cfg] is preselected.
3. Press [INC] until [Batch1] is selected.
4. Press [SET] to enter the menu [Batch1].
   ⇨ Press [INC] to select [Setting].
5. Press [SET] to enter the menu [Setting].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ Parameter [Unit] is preselected.
6. Press [SET] to enter the selection [Unit].
7. Press the desired variable is selected and press [SET] to choose the selection. For additional information, see *Batch unit 1 [▸ 324]*.
8. Press [SET] to choose the selection.
   ⇨ The chosen value flashes.
9. Press [SET] to confirm.
10. Press [SET] to go back to the menu [Setting].
    ⇨ Parameter [Unit] is marked with a * after completion.
    ⇨ Parameter [Qty] is preselected.
11. Press [SET] to enter the selection [Qty].
12. Press the desired variable is entered and press [SET] to choose the selection. For additional information, see *Batch quantity 1 [▸ 325]*.
    ⇨ The chosen value flashes.
13. Press [SET] to confirm.
    ⇨ The chosen [Qty] flashes.
14. Press [SET] to go back to the menu [Setting].
    ⇨ Parameter [Qty] is marked with a * after completion.
    ⇨ Parameter [Fix comp val] is preselected.
15. Continue to configure the other parameter [Fix comp val] in the same way. For additional information, see *Fixed compensation value 1 [▸ 325]*.
16. Continue to configure the other parameter [End judge val] in the same way. For additional information, see *Batch end judgment value 1 [▸ 326]*.
17. Continue to configure the other parameter [Max qty] in the same way. For additional information, see *Max batch quantity [▸ 326]*
18. Continue to configure the other parameter [Func] in the same way. For additional information, see *Status output 1 function [▸ 326]*.
19. Continue to configure the other parameter [Sts out1] in the same way. For additional information, see *Batch status output 1 [▸ 329]*
20. After configuration, press [INC] until the parameter [Setting download] is selected.
21. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

4.9 SIL mode

SITRANS FC can be used in a SIL-compliant manner as a part of a safety instrument system. For this purpose, a number of parameter settings are recommended; their adjustment is described in this section.

Steps to prepare for SIL conformity:

- *Configure Analog output 1 [▸ 56]*
- *Activate SIL mode [▸ 57]*
- *Confirm the SIL configuration [▸ 57]*
- *Set write lock [▸ 63]*

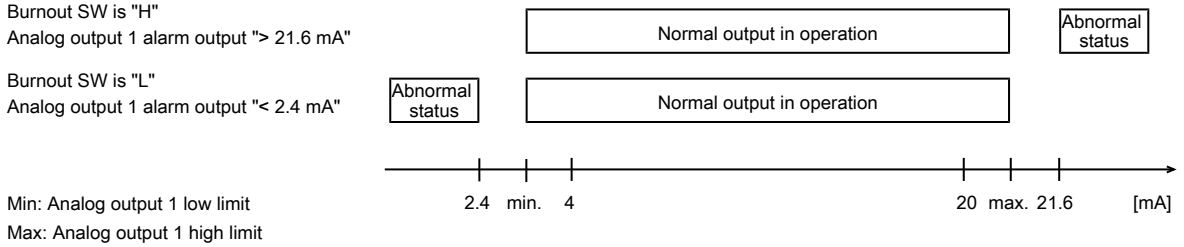
4.9.1 Configuration of Analog output 1

Analog output 1 has to be configured for SIL mode as described in the table below.

Tab. 6: SIL mode configuration of Analog output 1

Parameter to be set	Description
NAMUR NE 43 option	The following values are allowed: ▪ Namur43 ▪ Not Namur43 For additional information, see chapter *NAMUR NE 43 option* in the menu description *[▸ 485]*.
Analog output 1 select	The following values are allowed: ▪ Mass flow ▪ Density ▪ Temperature For additional information, see chapter *Analog output 1 – 2 select* in the menu description *[▸ 482]*.
Analog output 1 alarm output	The following values are allowed: ▪ If burnout switch is set to high, the value must be set to >21.6 mA ▪ If burnout switch is set to low, the value must be set to <2.4 mA For more detailed information about the setup of the burnout mode, see Operating Instructions. For additional information, see chapter *Analog output 1 alarm output* in the menu description *[▸ 484]*.
Analog output 1 low limit	If the low limit value is close to the minimum current value during operation, an abnormal status may be not detected by the host system. If the value Namur43 is selected in the parameter NAMUR NE 43 option, set this to 3.8 mA. Values other than 3.8 mA cause a configuration error. For additional information, see chapter *Analog output 1 low limit* in the menu description *[▸ 483]*.
Analog output 1 high limit	If the high limit value is close to the maximum current value during operation, an abnormal status may be not detected by the host system. If the value Namur43 is selected in the parameter NAMUR NE 43 option, set this to 20.5 mA. Values other than 20.5 mA cause a configuration error. For additional information, see chapter *Analog output 1 high limit* in the menu description *[▸ 484]*.

NOTICE **Default configuration at factory of *Analog output 1 low limit* is 2.4 mA, *Analog output 1 high limit* is 21.6 mA. If the low limit value is close to minimum current value during operation, or high limit value is close to maximum current value during operation, an abnormal status may be not detected by the host system. The low limit and the high limit have to be set appropriately.**



Call up menu analog outputs

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [AO] is selected.
4. Press [SET] to enter the menu [AO].
5. Continue to configure the parameters of the menu [AO] as described in the table above. For additional information, see *menu description [▸ 481]*.

4.9.2 Activate SIL mode

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [SIL mode] is selected.
4. Press [SET] to enter the menu [SIL mode].
   ⇨ Parameter [SIL mode] is preselected.
5. Press [SET] to enter the parameter settings of [SIL mode].
6. Enter the numerical value 5460. To do so, press [INC] to choose the first number of the numeric value.
7. Press [SFT] to switch to the remaining numbers of the numerical value.
8. Press [INC] to choose the remaining numbers of the numerical value.
9. Press [SET] to confirm the entered numerical value.
   ⇨ The entered numerical value 5460 flashes.
10. Press [SET] to confirm.

⇨ The values of related parameters are configured for SIL compliance.

4.9.3 Confirmation of configuration

Mass flow

✓ [Specialist] is selected as the *operation level [▸ 22]*.

✓ SIL mode has been *activated [▸ 57]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [SIL mode] is selected.
4. Press [SET] to enter the menu [SIL mode].
5. Press [INC] until the menu [SIL mode chk] is selected.
6. Press [SET] to enter the parameter settings of [SIL mode chk].
   ⇨ Variable [Mass] is preselected.
7. Press [SET] to enter the menu [Mass].
   ⇨ Parameter [Damp] is preselected.
8. Press [SET] to enter the menu [Damp].
   ⇨ The adjustable digit flashes.
9. Leave the recommended default value 0.0, or change the value, as follows.
10. Press [INC] until the required digit is selected.
11. Press [SHIFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
12. Press [INC] until the required digit is selected.
13. Continue in the same way until the number is completed.
14. Press [SET] to confirm.
    ⇨ The chosen [Damp] flashes.
15. Press [SET] to go back to the menu [Mass].
    ⇨ Parameter [Damp] is marked with a * after completion.
    ⇨ Parameter [Trim sel] is preselected.
16. Press [SET] to enter the menu [Trim sel].
17. Leave the recommended default value [Inhibit] or change the value to [Enable]. For additional information, see *Mass flow trim select [▸ 581]*.
18. Press [SET] to go back to the menu [Mass].
    ⇨ Parameter [Trim sel] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
19. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or a warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Density

✓ [Specialist] is selected as the *operation level [▸ 22]*.

✓ SIL mode has been *activated [▸ 57]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [SIL mode] is selected.
4. Press [SET] to enter the menu [SIL mode].
5. Press [INC] until the menu [SIL mode chk] is selected.
6. Press [SET] to enter the parameter settings of [SIL mode chk].
7. Press [INC] until the menu [Dens] is selected.
8. Press [SET] to enter the menu [Dens].

⇨ Parameter [Damp] is preselected.

9. Press [SET] to enter the menu [Damp].
   ⇨ The adjustable digit flashes.
10. Leave the recommended default value 0.0, or change the value, as follows.
11. Press [INC] until the required digit is selected.
12. Press [SHIFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
13. Press [INC] until the required digit is selected.
14. Continue in the same way until the number is completed.
15. Press [SET] to confirm.
    ⇨ The chosen [Damp] flashes.
16. Press [SET] to go back to the menu [Dens].
    ⇨ Parameter [Damp] is marked with a * after completion.
    ⇨ Parameter [Trim sel] is preselected.
17. Press [SET] to enter the menu [Trim sel].
18. Leave the recommended default value [Inhibit] or change the value to [Enable]. For additional information, see *Density trim select [▸ 582]*.
19. Press [SET] to go back to the menu [Dens].
    ⇨ Parameter [Trim sel] is marked with a * after completion.
    ⇨ Parameter [Val sel] is preselected.
20. Press [SET] to enter the menu [Val sel].
21. Leave the recommended default value [Meas val] or change the value to [Fix val] or [Calc val]. For additional information, see *Density value select [▸ 582]*.
22. Press [SET] to go back to the menu [Dens].
    ⇨ Parameter [Val sel] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
23. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or a warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Temperature

✓ [Specialist] is selected as the *operation level [▸ 22]*.
✓ SIL mode has been *activated [▸ 57]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [SIL mode] is selected.
4. Press [SET] to enter the menu [SIL mode].
5. Press [INC] until the menu [SIL mode chk] is selected.
6. Press [SET] to enter the parameter settings of [SIL mode chk].
7. Press [INC] until the menu [Temp] is selected.
8. Press [SET] to enter the menu [Temp].
   ⇨ Parameter [Damp] is preselected.
9. Press [SET] to enter the menu [Damp].
   ⇨ The adjustable digit flashes.
10. Leave the recommended default value 0.0, or change the value, as follows.

11. Press [INC] until the required digit is selected.
12. Press [SHIFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
13. Press [INC] until the required digit is selected.
14. Continue in the same way until the number is completed.
15. Press [SET] to confirm.
    ⇨ The chosen [Damp] flashes.
16. Press [SET] to go back to the menu [Temp].
    ⇨ Parameter [Damp] is marked with a * after completion.
    ⇨ Parameter [Trim sel] is preselected.
17. Press [SET] to enter the menu [Trim sel].
18. Leave the recommended default value [Inhibit] or change the value to [Enable]. For additional information, see *Temperature trim select [▸ 583]*.
19. Press [SET] to go back to the menu [Temp].
    ⇨ Parameter [Trim sel] is marked with a * after completion.
    ⇨ Parameter [Func sel] is preselected.
20. Press [SET] to enter the menu [Func sel].
21. Leave the recommended default value [Inter val] or change the value to [Fix val]. For additional information, see *Temperature function select [▸ 583]*.
22. Press [SET] to go back to the menu [Temp].
    ⇨ Parameter [Func sel] is marked with a * after completion.
    ⇨ Parameter [Setting download] is preselected.
23. Press [SET] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [Good] will be displayed.
    ⇨ If the device has an alarm or a warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Other Settings

✓ [Specialist] is selected as the *operation level [▸ 22]*.
✓ SIL mode has been *activated [▸ 57]*.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [SIL mode] is selected.
4. Press [SET] to enter the menu [SIL mode].
5. Press [INC] until the menu [SIL mode chk] is selected.
6. Press [SET] to enter the parameter settings of [SIL mode chk].
7. Press [INC] until the menu [Other settings] is selected.
8. Press [SET] to enter the menu [Other settings].
   NOTICE! Analog input function is displayed only if Analog In is available.
   ⇨ Parameter [Func] is preselected.
9. Press [SET] to enter the menu [Func].
10. Leave the recommended default [None], or change the value to [Pres comp], [Temp comp], [Snsr pres alm] or [Cal]. For additional information, see *Analog input function [▸ 584]*.
11. Press [SET] to go back to the menu [Other settings].
12. Parameter [Func] is marked with a * after completion.
    NOTICE! Status input function is displayed only if Status In is available.

⇨ Parameter [Sts in func] is preselected.

13. Press [SET] to enter the menu [Sts in func].
14. Leave the recommended default [No func], or change the value to [AZ], [Ttl func], [0% lock], [Clock sync], [Confirm ack] or [Conc set sel]. For additional information, see *Status input function [▸ 585]*.
15. Press [SET] to go back to the menu [Other settings].
16. Parameter [Sts in func] is marked with a * after completion.
    ⇨ Parameter [PV sim sel1] is preselected.
17. Press [SET] to enter the menu [PV sim sel1].
18. Select one of the recommended values [Mass], [Dens] or [Temp] or choose the value [Pres], [Cal], [Vol], [Ref dens], [Rel dens] or [Corr vol]. For additional information, see *Process variables simulation select 1 [▸ 586]*.
19. Press [SET] to go back to the menu [Other settings].
    ⇨ Parameter [PV sim sel1] is marked with a * after completion.
    ⇨ Parameter [Test mode] is preselected.
20. Press [SET] to enter the menu [Test mode].
21. Leave the recommended default [Off], or change the value to [On]. For additional information, see *Test mode [▸ 586]*.
22. Press [SET] to go back to the menu [Other settings].
    ⇨ Parameter [Test mode] is marked with a * after completion.
    ⇨ Parameter [Loop curr mode] is preselected.
23. Press [SET] to enter the menu [Loop curr mode].
24. Leave the recommended default [Enable], or change the value to [Disable]. For additional information, see *Loop current mode [▸ 587]*.
25. Press [SET] to go back to the menu [Other settings].
    ⇨ Parameter [Loop curr mode] is marked with a * after completion.
    ⇨ Parameter [AO1 test] is preselected.
26. Press [SET] to enter the menu [AO1 test].
27. Leave the recommended default value 0.0, or change the value, as follows.
28. Press [INC] until the required digit is selected.
29. Press [SHIFT] to change the adjustable digit.
    ⇨ The adjustable digit flashes.
30. Press [INC] until the required digit is selected.
31. Continue in the same way until the number is completed.
32. Press [SET] to confirm.
    ⇨ The chosen [AO1 test] flashes.
33. Press [SET] to go back to the menu [Other settings].
    ⇨ Parameter [AO1 test] is marked with a * after completion.
    ⇨ Parameter [Bhvr mainte mode] is preselected.
34. Press [SET] to enter the menu [Bhvr mainte mode].
35. Leave the recommended default value [Cont], or change the value to [Hold]. For additional information, see *Device behavior maintenance mode [▸ 587]*.
36. Press [SET] to go back to the menu [Other settings].
    ⇨ Parameter [Bhvr mainte mode] is marked with a * after completion.
    ⇨ Parameter [Bhvr temp] is preselected.
37. Press [SET] to enter the menu [Bhvr temp].

38. Leave the recommended default value [**Soft burn out**], or change the value to [**Alm out**] or [**Cont**]. For additional information, see *Device behavior temperature alarm [▸ 587]*.
39. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Bhvr temp**] is marked with a * after completion.

40. Leave the recommended default value [**Soft burn out**], or change the value to [**Alm out**] or [**Cont**].
41. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Bhvr tube lkg**] is marked with a * after completion.
    ⇨ Parameter [**Evt dens fix**] is preselected.
42. Press [**SET**] to enter the menu [**Evt dens fix**].
43. Leave the recommended default [**Generate**] or change the value to [**Ignore**], [**Hist only**], [**Ack**], [**Monitor**] or [**Monitor+ack**]. For additional information, see *Event setting density fixed [▸ 588]* .
44. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Evt dens fix**] is marked with a * after completion.
    ⇨ Parameter [**Evt temp fix**] is preselected.
45. Press [**SET**] to enter the menu [**Evt temp fix**].
46. Leave the recommended default [**Generate**] or change the value to [**Ignore**], [**Hist only**], [**Ack**], [**Monitor**] or [**Monitor+ack**]. For additional information, see *Event setting temperature fixed [▸ 589]*.
47. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Evt temp fix**] is marked with a * after completion.
    ⇨ Parameter [**Evt pro var trim**] is preselected.
48. Press [**SET**] to enter the menu [**Evt pro var trim**].
49. Leave the recommended default [**Generate**] or change the value to [**Ignore**], [**Hist only**], [**Ack**], [**Monitor**] or [**Monitor+ack**]. For additional information, see *Event setting process variables trim [▸ 589]*.
50. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Evt pro var trim**] is marked with a * after completion.
    ⇨ Parameter [**Evt AO1 sat**] is preselected.
51. Press [**SET**] to enter the menu [**Evt AO1 sat**].
52. Leave the recommended default [**Generate**] or change the value to [**Ignore**], [**Hist only**], [**Ack**], [**Monitor**] or [**Monitor+ack**]. For additional information, see *Event setting analog output 1 saturated [▸ 590]*.
53. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Evt AO1 sat**] is marked with a * after completion.
    ⇨ Parameter [**Write lock set**] is preselected.
54. Press [**SET**] to enter the menu [**Write lock set**].
55. Leave the recommended default [**All locked**] or change the value to [**Disp only**], [**AZ only**] or [**Disp+AZ**]. For additional information, see *Write lock setting [▸ 590]*.
56. Press [**SET**] to go back to the menu [**Other settings**].
    ⇨ Parameter [**Write lock set**] is marked with a * after completion.
    ⇨ Parameter [**Setting download**] is preselected.
57. Press [**SET**] to download the configuration to the device.
    ⇨ If the device does not have any alarm or warning, [**Good**] will be displayed.

⇨ If the device has an alarm or a warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

4.9.4 Set write lock

✓ [`Specialist`] is selected as the *operation level [▸ 22]*.

✓ SIL mode has been *activated [▸ 57]*.

1. Press [`INC`] until the menu [`Detailed setup`] is selected.
2. Press [`SET`] to enter the menu [`Detailed setup`].
3. Press [`INC`] until the menu [`SIL mode`] is selected.
4. Press [`SET`] to enter the menu [`SIL mode`].
   ⇨ Parameter [`SIL mode`] is preselected.
5. Press [`SET`] to enter the parameter settings of [`SIL mode`].
6. Enter the numerical value 1333. To do so, press [`INC`] to choose the first number of the numerical value.
7. Press [`SFT`] to switch to the remaining numbers of the numerical value.
8. Press [`INC`] to choose the remaining numbers of the numerical value.
9. Press [`SET`] to confirm the entered numerical value.
   ⇨ The entered numerical value 1333 flashes.
10. Press [`SET`] to confirm.
    ⇨ The values of related parameters are read only.
11. Enter numerical values other than 1333 to cancel the write protection status.

4.10 Event management

Event management is intended for the overall management of setting and handling events in terms of categorization, indication, registration, actions and behavior.

Definition

An event is defined as an occurrence that causes an unusual or an extraordinary condition in this instrument, such as a special operation, alarm or warning. It can occur periodically or once, and can be planned or unexpected.

Examples of typical events:

- Autozero, a planned event
- Sensor temperature failure, an unexpected event
- Mass Flow HH/LL Alarm, an unexpected event set up by the user

Configuration

Steps to configure an event management function:

- Set up a condition for the occurence of an event
- Set up an event setting behavior when the event occurs, see chapter *Event setting [▸ 64]*
- Set up an output signal behavior when the event occurs, see chapter *Output signal behavior [▸ 67]*
- Set up an output signal settings when the event occurs. For detailed information, see the corresponding chapters in the menu description:
  - *Analog outputs [▸ 481]*
  - *Pulse/Status outputs [▸ 485]*
  - *Totalizer [▸ 515]*
  - *Burn out [▸ 160]*

Data on the microSD card cannot be viewed on the display. The content of the microSD card can be read by removing it from the device and reading the file on a computer equipped with a microSD card reader port.

- To unmount the microSD card, refer to the parameter *microSD unmount [▸ 624]*.

4.10.1 Event setting

SITRANS FC includes the following six event setting behavior types when an event occurs. The preset behavior is executed when an event occurs.

Tab. 7: Description of event setting behavior types

Behavior type	Description
Ignore	No event notification; output is not changed.
History only	No event notification; output is not changed. Occurrence of the event is recorded.
Generate	Event notification; output is changed. Occurrence or reset of the event is recorded.
Acknowledge	Event notification; output is changed. Alarm persists until it is acknowledged. Generation, reset, and acknowledgement of the event are recorded.
Monitor	Event notification; output is changed. Occurrence and reset of the event and 3 samples of data before and after the event – 6 samples total – are recorded.
Monitor + acknowledge	Event notification; output is changed. Status to indicate occurrence of event is not reset until it is acknowledged. Occurrence, reset and acknowledgement of event and 3 samples of data before and after the event – 6 samples total – are recorded.

Configurable behavior

Configurable event behaviors can be defined by setting the value in the event setting parameters, see chapters *Alarm/Event behavior settings [▸ 204]* and *Other settings [▸ 584]* in the menu description.

The following table provides a description of behavior types that can be defined in the parameters when an event occurs.

Tab. 8: Event setting behavior when event occurs

Behavior type	Notification	Output signal	Record of history		Acknowledgement
			Event	Data	
Ignore	✗	✗	✗	✗	✗
History only	✗	✗	✓[3]	✗	✗
Generate	✓[1]	✓[2]	✓[4]	✗	✗
Acknowledge	✓[1]	✓[2]	✓[4]	✗	✓[6]
Monitor	✓[1]	✓[2]	✓[4]	✓[5]	✗
Monitor + acknowledge	✓[1]	✓[2]	✓[4]	✓[5]	✓[6]

[1] Notification of the event by display.

[2] Output signal is changed according to the setting for output when the event occurs. For detailed information, see chapter Output signal behavior *[▸ 67]*.

[3] Occurrence of the event is recorded along with time information in the event history. For detailed information, see chapter Event history *[▸ 70]*.

[4] Reset of the event is recorded along with time information in the event history. For detailed information, see chapter Event history *[▸ 70]*.

[5] Three samples of data before and after the event – six samples total – are recorded in monitoring. For detailed information, see chapter Monitoring history *[▸ 70]*.

[6] Occurrence of the event must be acknowledged to reset event. For detailed information, see chapter Event acknowledge *[▸ 65]*.

Non-configurable behavior

The event setting behavior for non-configurable events is fixed at the behavior type Generate. An overview of all events is available in the chapter *Possible events and related settings and behavior [▸ 73]*.

Behavior for critical events that affect the reliability of the device is fixed and cannot be changed. For examples of such critical events, see failures 101 – 108 in the *menu description [▸ 131]*.

4.10.2 Event acknowledge

If Acknowledge or Monitor + acknowledge is selected in the event setting parameters, it is necessary to acknowledge the event to reset the event status.

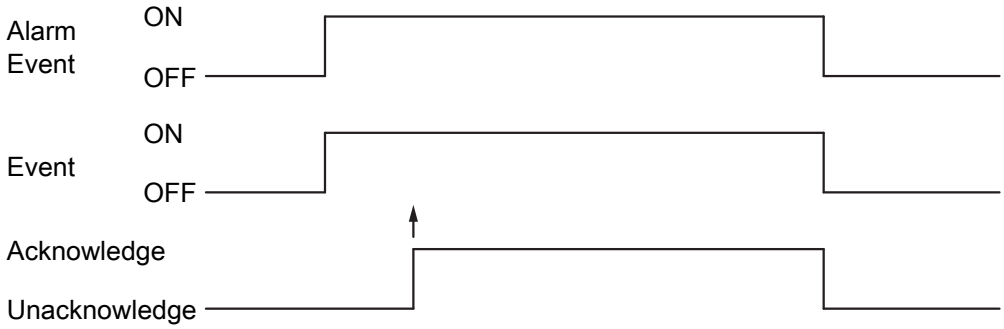
When event setting parameters are set to Acknowledge or Monitor + acknowledge, even if the cause of the event ends, the status of the event occurrence continues until Event acknowledge is set to acknowledged.

If Event acknowledge is set to Acknowledged, but the event continues, the value of Event acknowledge remains acknowledged; and it becomes unacknowledged when the event ends.

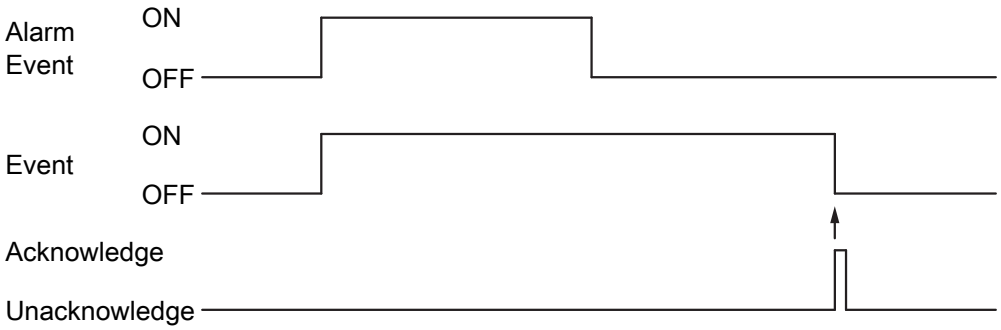
The relationships between the cause of an event, such as an alarm, the event status and the event acknowledge are shown in the following examples.

Example 1:

Event is generated. When the event is acknowledged (arrow marks user acknowledgement), it is not reset if the event is still happening. The event is reset after the event ends:



Example 2: Event is generated. When the event ends, if the event has not been acknowledged, it is not reset. The event is reset after the event has been acknowledged (arrow marks user acknowledgement):



Acknowledge an event and reset event status

✓ An event that has to be acknowledged was configured.

✓ Operation level is *selected [▸ 22]*.

1. Press [INC] until [Diag/Service] is selected.
2. Press [SET] to enter the menu [Diag/Service].
   ⇨ Menu [Sts/Self test] is preselected.
3. Press [SET] to enter the menu [Sts/Self test].
   ⇨ Parameter [Evt Ack] is preselected.
4. Press [SET] to enter the parameter settings of [Evt Ack].
5. Press [INC] until the value [Ack] is selected and press [SET] to choose the selection.
   ⇨ [Ack] flashes.
6. Press [SET] to confirm.

4.10.3 Output signal behavior

There are 2 types of output signal behavior:

- Device behavior: the behavior of the output signal during occurrence of an event after acknowledgement of the event
- Acknowledge behavior: the behavior of the output signal from occurrence of an event to acknowledgement of the event

Some behaviors are fixed for certain events, while others may not be available. For more detailed information, see chapter *Possible events and related settings and behavior* *[▸ 73]*.

If generate, acknowledge, Monitor or Monitor + acknowledge is defined as the behavior for an event, a predefined behavior of the output signal is executed when an event occurs.

Four types of output signal behaviors can be defined as shown in the table below.

Tab. 9: Description of the output signal behavior types

Output signal behavior type	Description	
Burnout	Predefined for critical events that affect the reliability of the device. For such events, output signal behavior cannot be changed and is fixed as burnout. The burnout condition will occur when the device is damaged in such a way that the firmware fails to function for hardware reasons.	When the event occurs, analog out is set to either high, 22 mA, or low, 0 mA, or 2.2 mA in case of software burnout. The direction of the switch is set by the hardware burnout switch. For more detailed information about the setup of the burnout mode, see the Operating Instructions.
Software burnout	A software burnout condition can be set up to show that the user deems the device to be in an unreliable state due to the occurrence of an event.	
Alarm out	The output of the analog out and pulse out when an event occurs depends on the value of the parameter. For example, the signal behavior of the analog out can be selected and set to the following. ▪ Fixed current: fixed output of 4 mA, 20 mA, etc. ▪ Measured value: continue to output measured value, same as continue ▪ Hold: fixed output value just before the event occurred Not all outputs react to all alarms even if they are configured to react to alarms. For details, see chapter Possible events and related setting and behavior *[▸ 73]*.	
Continue	Output signal does not change. Output signal of measured value continues in normal operation.	

If generate, acknowledge, Monitor or Monitor + acknowledge is defined as the corresponding behavior when an event occurs, the output signal is changed according to the setting of the acknowledge behavior and device behavior parameters.

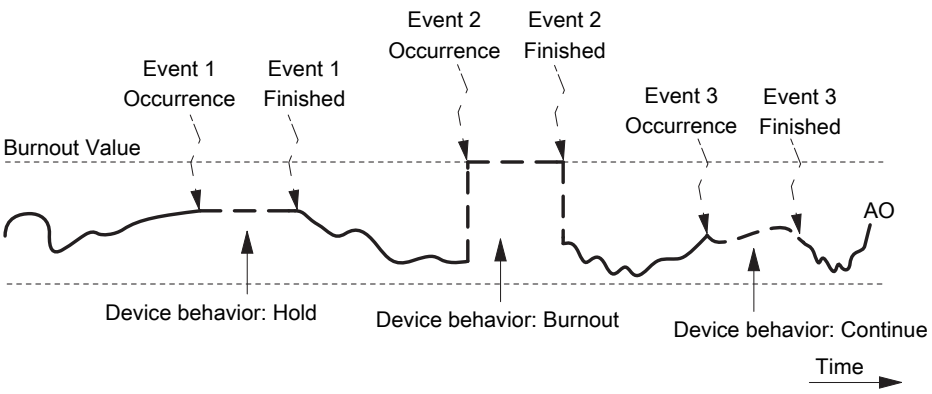
Tab. 10: Output signal behavior types and their effect on the output signals and totalizer functions

Output signal behavior type	Current output	Totaling	Pulse/Status outputs[1)]		
			Pulse	Freq.	Status
Burnout	Burnout, the direction set by burnout switch	Hold	Stop		Configurable [▸ 499]
Alarm out	Configurable [▸ 484]	Configurable [▸ 518]	Configurable [▸ 493] or [▸ 505]	Configurable [▸ 498]	
Continue	Output may become undefined depending on the content of the alarm, and is therefore not guaranteed.				

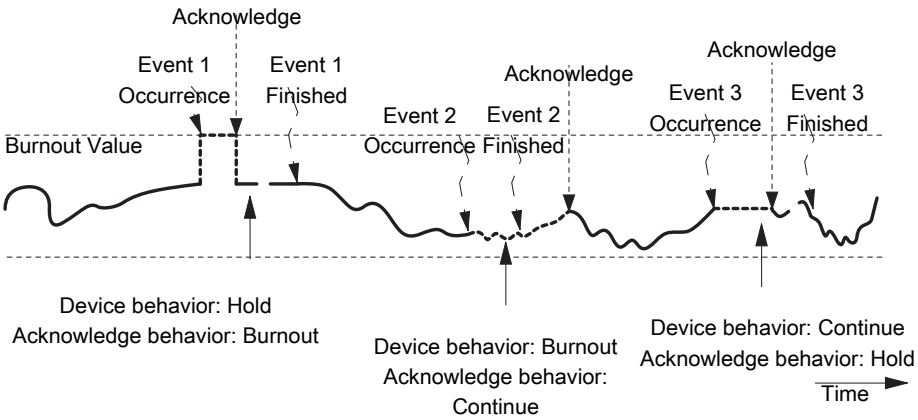
[1)] Only one of the three modes is available. Corresponding parameter must be set.

Examples of Device behavior, Acknowledge behavior and Analog output

Example 1: The following figure shows how the Analog output (current signal) changes when an Event occurs, if the configuration of the device behavior for the 1st event is Hold, for the 2nd Burn out, for the 3rd Continue.



Example 2: For 1st event, Device behavior is set to Hold and Acknowledge behavior is set to Burnout, for 2nd event, Device behavior is set to Burnout and Acknowledge behavior is set to Continue, for 3rd event, Device behavior is set to Continue and Acknowledge behavior is set to Hold. Example of Analog output behaviors (current signal) and Acknowledge operation when an event occurs.



Call up menu Alarm/Event behavior setting

✓ [`Specialist`] is selected as the *operation level [▸ 22]*.

1. Press [`INC`] until [`Diag/Service`] is selected.
2. Press [`SET`] to enter the menu [`Diag/Service`].
3. Press [`INC`] until [`Alm/Evt bhvr set`] is selected.
4. Press [`SET`] to enter the menu [`Alm/Evt bhvr set`].
   ⇨ Parameter [`Alm/Evt add`] is preselected.
5. Press [`SET`] to enter the parameter settings of [`Alm/Evt add`].
6. Press [`INC`] until the value [`Apply`] is selected and press [`SET`] to choose the selection.
   ⇨ [`Apply`] flashes.
7. Press [`SET`] to confirm.
8. Press [`SET`] to go back to the menu [`Alm/Evt bhvr set`].
9. Continue to configure the desired alarms as described in the table above. For additional information, see menu *description [▸ 204]*.

4.10.4 Event history

If History only, Generate, Monitor or Monitor + acknowledge is defined as behavior, the following information is saved as the event history when an event occurs:

- Event No. that identifies Event
- Event date and event time
- Event behavior when the event occurred

The transmitter can store up to 10 events in event history. If the number of saved the events exceeds 10, the oldest one is deleted to make room for each new event. If a dedicated microSD card is inserted into the device, the event history can be saved on the card as well as the transmitter.

The number of events that can be saved on the microSD card depends on the capacity of the card.

Call up Event history menu

✓ An event has occurred and [`Hist only`], [`Generate`], [`Monitor`] or [`Monitor+ack`] is defined as the event setting behavior of an event.

✓ Operation level has been *selected [▸ 22]*.

1. Press [`INC`] until [`Diag/Service`] is selected.
2. Press [`SET`] to enter the menu [`Diag/Service`].
   ⇨ Menu [`Sts/Self test`] is preselected.
3. Press [`SET`] to enter the menu [`Sts/Self test`].
4. Press [`INC`] until the menu [`Evt hist`] is selected.
5. Press [`SET`] to enter the menu [`Evt hist`].
6. Press [`INC`] until the menu [`Evt hist1 – 10`] is selected.
7. Press [`SET`] to enter the menu [`Evt hist1 – 10`].

⇨ The display parameters of the menu [`Evt hist1 – 10`] can be called up as described in the *menu description [▸ 154]*.

4.10.5 Monitoring history

If Monitor or Monitor + acknowledge is defined as behavior, three samples of data both before and after the event are saved with event information – 6 data samples total. The sampling interval is 1 second.

The transmitter stores up to 4 sets of monitoring data on the last 4 events. If the number of saved data sets exceeds 4, the oldest one is deleted to make room for new data. These parameters are supported only on HART - see Monitoring history 1 – 4 *Event history [▸ 155]*.

If a dedicated microSD card is inserted into the device, the monitoring data can be stored on the card as well as the transmitter. The number of data set that can be stored on the microSD card depends on the capacity of the card. The monitoring data in the file on the microSD card is displayed from left to right in the same order as in the table below.

Order	Parameter	Example of value
1	Event no 1	ID00703
2	Event 1 date	1900/00/00
3	Event 1 time	00:02:37
4	Event 1 mass flow last 3	0.00E+00
5	Event 1 mass flow last 2	0.00E+00
6	Event 1 mass flow last 1	0.00E+00
7	Event 1 mass flow after 1	0.00E+00
8	Event 1 mass flow after 2	0.00E+00

Order	Parameter	Example of value
9	Event 1 mass flow after 3	0.00E+00
10	Event 1 resonance frequency last 3	0.00E+00
11	Event 1 resonance frequency last 2	0.00E+00
12	Event 1 resonance frequency last 1	0.00E+00
13	Event 1 resonance frequency after 1	0.00E+00
14	Event 1 resonance frequency after 2	0.00E+00
15	Event 1 resonance frequency after 3	0.00E+00
16	Event 1 temperature last 3	3.20E+01
17	Event 1 temperature last 2	3.20E+01
16	Event 1 temperature last 1	3.20E+01
19	Event 1 temperature after 1	3.20E+01
20	Event 1 temperature after 2	3.20E+01
21	Event 1 temperature after 3	3.20E+01
22	Event 1 pressure last 3	0.00E+00
23	Event 1 pressure last 2	0.00E+00
24	Event 1 pressure last 1	0.00E+00
25	Event 1 pressure after 1	0.00E+00
26	Event 1 pressure after 2	0.00E+00
27	Event 1 pressure after 3	0.00E+00
28	Event 1 net mass flow 1 last 3	0.00E+00
29	Event 1 net mass flow 1 last 2	0.00E+00
30	Event 1 net mass flow 1 last 1	0.00E+00
31	Event 1 net mass flow 1 after 1	0.00E+00
32	Event 1 net mass flow 1 after 2	0.00E+00
33	Event 1 net mass flow 1 after 3	0.00E+00
34	Event 1 net volume flow 1 last 3	0.00E+00
35	Event 1 net volume flow 1 last 2	0.00E+00
36	Event 1 net volume flow 1 last 1	0.00E+00
37	Event 1 net volume flow 1 after 1	0.00E+00
38	Event 1 net volume flow 1 after 2	0.00E+00
39	Event 1 net volume flow 1 after 3	0.00E+00
40	Event 1 concentration last 3	0.00E+00
41	Event 1 concentration last 2	0.00E+00
42	Event 1 concentration last 1	0.00E+00
43	Event 1 concentration after 1	0.00E+00
44	Event 1 concentration after 2	0.00E+00
45	Event 1 concentration after 3	0.00E+00
46	Event 1 phase difference last 3	0.00E+00
47	Event 1 phase difference last 2	0.00E+00
48	Event 1 phase difference last 1	0.00E+00
49	Event 1 phase difference after 1	0.00E+00
50	Event 1 phase difference after 2	0.00E+00
51	Event 1 phase difference after 3	0.00E+00
52	Event 1 drive gain last 3	0.00E+00
53	Event 1 drive gain last 2	0.00E+00
54	Event 1 drive gain last 1	0.00E+00
55	Event 1 drive gain after 1	3.79E-03
56	Event 1 drive gain after 2	1.36E-03

Order	Parameter	Example of value
57	Event 1 drive gain after 3	0.00E+00
58	Event 1 drive current last 3	0.00E+00
59	Event 1 drive current last 2	0.00E+00
60	Event 1 drive current last 1	0.00E+00
61	Event 1 drive current after 1	0.00E+00
62	Event 1 drive current after 2	0.00E+00
63	Event 1 drive current after 3	0.00E+00
64	Event 1 density last 3	0.00E+00
65	Event 1 density last 2	0.00E+00
66	Event 1 density last 1	0.00E+00
67	Event 1 density after 1	8.35E+00
68	Event 1 density after 2	8.35E+00
69	Event 1 density after 3	8.35E+00
70	Event 1 transmitter temperature last 3	3.20E+01
71	Event 1 transmitter temperature last 2	3.20E+01
72	Event 1 transmitter temperature last 1	3.20E+01
73	Event 1 transmitter temperature after 1	-7.20E+01
74	Event 1 transmitter temperature after 2	-7.20E+01
75	Event 1 transmitter temperature after 3	-7.20E+01
76	Autozero value 1	0.00E+00
77	Autozero standard deviation 1	0.00E+00
78	Autozero density 1	0.00E+00
79	Autozero temperature 1	3.20E+01
80	Autozero drive current 1	0.00E+00
81	Autozero resonance frequency 1	0.00E+00
82	Autozero pressure 1	0.00E+00
83	Sensor max temperature 1	-7.20E+01
84	TuHC change ratio of inlet stiffness	0.00E+00
85	TuHC change ratio of outlet stiffness	0.00E+00

4.10.6 Data logging

Data logging is the function to save a maximum of 4 process and related variables on a microSD card for a defined logging interval and duration. Logging can be started by manual operation of a parameter or by an event that is defined as Monitor or *Monitor + acknowledge [▸ 72]*. As long as data logging is running, the status icon *Access to microSD card* blinks on the LCD display *Status icons [▸ 14]*, and the value of the parameter Logging execute is changed to "Execute". See also *Data logging [▸ 274]*.

Logged data on the microSD card cannot be read by the LCD display of Indicator, except for the trend display. The file format of the logged data is CSV; general-purpose software can therefore be used to read and analyze the data. To unmount the microSD card, refer to the parameter *microSD unmount [▸ 624]*.

If the additional functions for display are *enabled [▸ 73]*, trend charts of logged process variables can be shown on the main *display [▸ 73]*.

Trend charts of LRV and URV can also be shown on the main display. For additional information, see chapters *Trend Offline LRV [▸ 558]* and *Trend Offline URV [▸ 558]* in the menu description.

Set data logging functions

✓ [`Specialist`] is selected as the *operation level [▸ 22]*.

1. Press [`INC`] until [`Diag/Service`] is selected.

2. Press [SET] to enter the menu [Diag/Service].
3. Press [INC] until the menu [Data log] is selected.
4. Press [SET] to enter the menu [Data log].
5. Configure parameters: Choose interval time [Itrvl time], select logging type [Log sel1 – 4], choose end time [End time] and execute [Exe] the data logging manually as described in *Data logging [▸ 271]*.

Enable Additional function menu

✓ [Specialist] is selected as the *operation level [▸ 22]*.
✓ Corresponding data logging functions have been set.

1. Press [INC] until the menu [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until the menu [Disp] is selected.
4. Press [SET] to enter the menu [Disp].
   ⇨ Parameter [Disp add] is preselected.
5. Press [SET] to change the parameter settings of [Disp add].
6. Press [INC] until the value [Apply] is selected and press [SET] to choose the selection.
   ⇨ [Apply] flashes.
7. Press [SET] to confirm.

Show trend charts on main display

✓ [Specialist] is selected as the *operation level [▸ 22]*.
✓ Corresponding data logging functions are set.
✓ Menu [Add func] has been enabled.

1. Press [INC] until [Detailed setup] is selected.
2. Press [SET] to enter the menu [Detailed setup].
3. Press [INC] until [Disp] is selected.
4. Press [SET] to enter the menu [Disp].
5. Press [INC] until the menu [Disp op cfg] is selected.
6. Press [SET] to enter the menu [Disp op cfg].
7. Press [INC] until [Add func] is selected.
8. Press [SET] to enter the menu [Add func].
9. Press [INC] until [Meas mode] is selected.
10. Press [SET] to enter the parameter settings of [Meas mode].
11. Press [INC] until the value [Trend] is selected and press [SET] to choose the selection.
    ⇨ [Trend] flashes.
12. Press [SET] to confirm.

4.10.7 Possible events and related settings and behavior

The following tables show the name of the event and default category of NAMUR NE107, explanations or cross-references to the menu description chapters of related event setting parameters, device behavior parameters and acknowledge behavior parameters, current output when the event occurs, totaling, and pulse behavior:

- *System alarms [▸ 74]*
- *Process alarms [▸ 76]*
- *Setting alarms [▸ 79]*
- *Warnings [▸ 82]*

- *Information [▸ 84]*

There is not always a one-to-one correspondence between events and their corresponding event setting and behavior parameters. Depending on the type of event, a single event setting and behavior parameter may correspond to multiple events. Output signal behavior in the case of an event that does not have a corresponding event setting parameter and behavior parameter is fixed and cannot be modified.

Configuration of NAMUR NE107 classification for each status parameter. Event classification according to NAMUR NE107 can be changed by selecting the following statuses:

Tab. 11: Explanation of statuses

Status	Explanation
N	No effect
M	Maintenance required
F	Failure
S	Out of specification
C	Function check

For additional information about the configuration of the NAMUR NE107 classification, see chapter *Condensed status map [▸ 136]* in the menu description.

Some "Event/Alarm name" displays on the LCD display may differ from those in the HART configuration tools.

System alarms

Tab. 12: System alarms 101 – 108

NE 107	Alarm No.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.
F	101	Resonance frequency failure	Generate	Burnout	N/A	Hold	Burnout[2]	Stop	
F	102	Signal failure							
F	103	Pick off 1 failure							
F	104	Pick off 1 failure							
F	105	Pick off 2 failure							
F	106	Pick off 2 failure							
F	107	Temperature range failure		Configurable [▸ 205]		Depends[3]			
F	108	Temperature failure sensor							

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] Output value is set by burnout switch: either high (more than 21.6 mA) or low (less than 2.4 mA). For more detailed information about the setup of the burnout mode, see Operating Instructions.

[3] If alarm out is selected as output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page *[▸ 68]*.

Tab. 13: System alarms 121 – 129

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.

F	121	Main board CPU failure	Generate	Burnout	N/A	Not defined	Burnout[2)]	Not defined
F	122	Main board EEPROM failure				Hold		Stop
F	123	Parameter restore incomplete						
F	124	Sensor board failure						
F	125	Sensor board mismatch						
F	126	Sensor communication error						
F	127	Option board failure						
F	128	Option board EEPROM failure						
F	129	Option board mismatch						

1) The status of the Pulse/Status outputs is configurable for all alarms.

2) Output value is set by burnout switch: either high (more than 21.6 mA) or low (less than 2.4 mA). For more detailed information about the setup of the burnout mode, see Operating Instructions.

Tab. 14: System alarms 130 – 135

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1)]	
				Device	Ack.			Pulse	Freq.
F	130	Indicator board failure	Generate	Configurable [▶ 205]	N/A	Depends[2]			
F	131	Indicator board EEPROM failure							
F	132	LCD driver failure							
F	133	Indicator board mismatch							
F	134	Indicator communication error							
F	135	microSD card failure							

1) The status of the Pulse/Status outputs is configurable for all alarms.

2) Output value is set by burnout switch: either high (more than 21.6 mA) or low (less than 2.4 mA). For more detailed information about the setup of the burnout mode, see Operating Instructions.

Process alarms

Tab. 15: Process alarms 201 – 212

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.
M	201	Slug detection	Configurable [▸ 207]	Configurable [▸ 207]	Configurable [▸ 208]	Depends[2], [3]			
M	202	Empty pipe detection	Configurable [▸ 209]	Configurable [▸ 208]	Configurable [▸ 209]				
M	203	Corrosion detection	Configurable [▸ 210]	Configurable [▸ 210]	Configurable [▸ 211]				
M	204	Autozero judgement multiphase	Generate	Configurable [▸ 215]	N/A	Depends[3]			
M	205	Autozero judgement flow							
M	206	Autozero judgement temperature							
M	207	Batch time exceeded	Configurable [▸ 215]	Configurable [▸ 215]	Configurable [▸ 215]	Depends[3]			
M	208	Batch overrun/underrun							
M	209	Max flow while batching							
S	210	Oil density calculation failure	Generate	Continue	N/A	Continue			
S	211	Water density calculation failure							
S	212	NOC calculation failure							

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Generate, Acknowledge, Monitor or Monitor + acknowledge are defined as the event setting behavior, a selectable output signal behavior is executed when an event occurs.

[3] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page *[▸ 68]*.

Tab. 16: Process alarms 221 – 236

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.

N	221	Analog input failure	Generate	Configurable [▸ 212]	N/A	Continue	Depends[2]	Continue
N	222	Mass flow high high low low alarm		Configurable [▸ 213]				
N	223	Density high high low low alarm		Configurable [▸ 213]				
N	224	Temperature high high low low alarm		Configurable [▸ 214]				
N	225	Pressure high high low low alarm		Configurable [▸ 214]				
N	226	Volume flow high high low low alarm		Continue		Continue		
N	227	Corrected volume flow high high low low alarm						
N	228	Concentration high high low low alarm						
N	229	Net mass flow 1 high high low low alarm						
N	230	Net mass flow 2 high high low low alarm						
N	231	Net volume flow 1 high high low low alarm						
N	232	Net volume flow 2 high high low low alarm						
N	233	Corrected net volume flow high high low low alarm						
N	234	Relative density high high low low alarm						
N	235	Reference density high high low low alarm						
N	236	Viscosity high high low low alarm						

1) The status of the Pulse/Status outputs is configurable for all alarms.

2) If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page [▸ 68].

Tab. 17: Process alarms 241 – 246

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.
N	241	Totalizer 1 threshold exceeded	Generate	Configurable [212]	N/A	Continue	Depends [2]	Continue	
N	242	Totalizer 2 threshold exceeded		Continue			Continue		
N	243	Totalizer 3 threshold exceeded							
N	244	Totalizer 4 threshold exceeded							
N	245	Totalizer 5 threshold exceeded							
N	246	Totalizer 6 threshold exceeded							

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page *[68]*.

Setting alarms

Tab. 18: Setting alarms 301 – 320

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Current output	Totaling	Pulse/status outputs [1]	
				Device	Ack.			Pulse	Freq.
C	301	Mass flow configuration error	Generate	Configurable [▸ 219]	N/A	Depends [2]			
C	302	Density configuration error		Configurable [▸ 219]					
C	303	Temperature configuration error		Configurable [▸ 220]					
C	304	Analog input temperature configuration error							
C	305	Pressure configuration error		Configurable [▸ 221]					
C	306	Analog input pressure configuration error							
C	307	Volume flow configuration error		Configurable [▸ 220]					
C	308	Reference density configuration error		Configurable [▸ 221]					
C	309	Relative density configuration error		Configurable [▸ 222]					
C	310	Corrected volume flow configuration error		Configurable [▸ 222]					
C	311	Calorific value configuration error		Configurable [▸ 223]					
C	312	Analog input calorific value configuration error							
C	313	Concentration configuration error		Configurable [▸ 224]					
C	314	Net mass flow 1 configuration error		Configurable [▸ 225]					
C	315	Net mass flow 2 configuration error							
C	316	Net volume flow 1 configuration error		Configurable [▸ 225]					
C	317	Net volume flow 2 configuration error							
C	318	Net corrected volume flow configuration error		Configurable [▸ 226]					
C	319	Velocity configuration error		Continue		Continue			
C	320	Viscosity configuration error		Configurable [▸ 226]					

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page [▸ 68].

Tab. 19: Setting alarms 321 – 333

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Current output	Totaling	Pulse/status outputs [1]	
				Device	Ack.			Pulse	Freq.
C	321	Analog output 1 configuration error	Generate	Configurable [▸ 227]	N/A	Depends[2]	Continue	Continue	
C	322	Analog output 2 configuration error		Configurable [▸ 228]					
C	323	Pulse output 1 configuration error		Configurable [▸ 228]				Depends or Continue[2), 3)]	Continue
C	324	Frequency output 1 configuration error						Continue	Depends or Continue[2), 5)]
C	325	Status output 1 configuration error						Continue	
C	326	Pulse output 2 configuration error		Configurable [▸ 229]				Depends or Continue[2), 4)]	Continue
C	327	Frequency output 2 configuration error						Continue	Depends or Continue[2), 6)]
C	328	Status output 2 configuration error						Continue	
C	329	Pulse/Status output 2 mode configuration error						Stop	
C	330	Double pulse configuration error		Configurable [▸ 229]				Depends[2), 7)]	Continue
C	331	Status output 3 configuration error		Configurable [▸ 230]				Continue	Continue
C	332	Status input configuration error		Configurable [▸ 231]					
C	333	Analog input configuration error		Configurable [▸ 231]			Depends[2]		

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page [▸ 68].

[3] If Alarm out is selected as the output signal behavior for the Pulse output 1 configuration error, the output signal behavior for the Pulse output 2 configuration error will automatically change to Continue.

4) If Alarm out is selected as the output signal behavior for the Pulse output 2 configuration error, the output signal behavior for the Pulse output 1 configuration error will automatically change to Continue.

5) If Alarm out is selected as the output signal behavior for the Frequency output 2 configuration error, the output signal behavior for the Pulse output 1 configuration error will automatically change to Continue.

6) If Alarm out is selected as the output signal behavior for the Frequency output 2 configuration error, the output signal behavior for the Pulse output 1 configuration error will automatically change to Continue.

7) It relates to the Frequency output of double pulse.

Tab. 20: Setting alarms 335 – 343

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Current output	Totaling	Pulse/status outputs [1]	
				Device	Ack.			Pulse	Freq.
C	335	Totalizer 1 configuration error	Generate	Configurable [▸ 223]	N/A	Depends[2]		Continue	
C	336	Totalizer 2 configuration error							
C	337	Totalizer 3 configuration error							
C	338	Totalizer 4 configuration error							
C	339	Totalizer 5 configuration error							
C	340	Totalizer 6 configuration error							
C	341	Batch configuration error		Configurable [▸ 232]					
C	342	Data logging not started		Continue		Continue			
C	343	Option function mismatch							

1) The status of the Pulse/Status outputs is configurable for all alarms.

2) If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page [▸ 68].

Warnings

Tab. 21: Warnings 701 – 720

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.
C	701	Analog output 1 fixed	Generate	Continue	N/A	Continue	Continue		
C	702	Analog output 2 fixed							
C	703	Density fixed	Configurable [▸ 233]						
C	704	Temperature fixed	Configurable [▸ 233]						
C	705	Pressure fixed	Configurable [▸ 234]						
C	706	Reference density fixed	Configurable [▸ 235]						
C	707	Calorific value fixed	Configurable [▸ 235]						
C	708	Process variable simulation	Generate						
C	709	Analog output simulation							
C	710	Pulse output simulation							
C	711	Status output simulation							
C	715	Process variable trimming	Configurable [▸ 236]						
S	716	Analog output 1 saturated	Configurable [▸ 238]		Configurable [▸ 239]				
S	717	Analog output 2 saturated	Configurable [▸ 238]		Configurable [▸ 239]				
S	718	Pulse output 1 saturated	Configurable [▸ 240]		Configurable [▸ 241]				
S	719	Pulse output 2 saturated	Configurable [▸ 241]		Configurable [▸ 242]				
S	720	Double pulse output saturated	Configurable [▸ 242]		Configurable [▸ 243]				

[1] The status of the Pulse/Status outputs is configurable for all alarms.

Tab. 22: Warnings 721 – 735

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.

<table>
<tr><td>C</td><td>721</td><td>Autozero running</td><td rowspan="2">Generate</td><td rowspan="7">Continue</td><td rowspan="12">N/A</td><td rowspan="12">Continue</td><td colspan="2">Hold</td></tr>
<tr><td>N</td><td>722</td><td>Tube health check execution error</td><td colspan="2" rowspan="6">Continue</td></tr>
<tr><td>N</td><td>723</td><td>Date/Time not set</td><td>Configurable [▸ 244]</td></tr>
<tr><td>N</td><td>724</td><td>Display over warning</td><td rowspan="9">Generate</td></tr>
<tr><td>N</td><td>725</td><td>microSD card size warning</td></tr>
<tr><td>S</td><td>726</td><td>microSD card mismatch</td></tr>
<tr><td>M</td><td>728</td><td>microSD card removal procedure error</td></tr>
<tr><td>M</td><td>729</td><td>Parameter backup incomplete</td></tr>
<tr><td>C</td><td>730</td><td>Parameter restore running</td><td colspan="2">Hold</td></tr>
<tr><td>N</td><td>732</td><td>Batch progress indication</td><td>Configurable [▸ 244]</td><td>Depends[2]</td><td>Continue</td></tr>
<tr><td>M</td><td>733</td><td>Viscosity not calculated</td><td rowspan="3">Continue</td><td colspan="2" rowspan="3">Continue</td></tr>
<tr><td>M</td><td>734</td><td>Viscosity not reliable</td></tr>
<tr><td>M</td><td>735</td><td>Autozero warning</td></tr>
</table>

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page [▸ 68].

Information

Tab. 23: Information 901 – 929

NE 107	Alarm no.	Event/Alarm name	Event setting	Output signal behavior		Totaling	Current output	Pulse/Status outputs [1]	
				Device	Ack.			Pulse	Freq.
N	901	Device configuration locked	Configurable [▸ 246]	Continue	N/A	Continue	Continue		
N	902	Device configuration not locked	Configurable [▸ 247]						
N	903	Parameter backup running	Generate						
N	904	Data logging running							
N	905	Tube health check running							
N	906	Batch running							
N	907	Batch hold							
N	908	SIL mode active							
C	909	Maintenance mode running		Configurable [▸ 245]			Depends[1]		
N	921	Event history cleared	History only	Continue			Continue		
N	922	Data logging cleared							
N	923	microSD card inserted							
N	924	micro SD card removed							
N	925	Power on							
N	926	Watchdog reset executed							
N	927	Instant power fail							
N	929	Tube health check completed	Monitor						

[1] The status of the Pulse/Status outputs is configurable for all alarms.

[2] If Alarm out is selected as the output signal behavior, outputs and totalizer functions can be defined. For additional information, see table on page *[▸ 68]*.

4.10.8 Change log

When parameter is changed, the following information is saved as the change log history:

- Parameter identification No. that identifies Parameter
  - For parameter identification information, see Parameter ID *Parameter IDs [▸ 823]*
- Event date and event time
- "CHG" symbol

The number of change logs that can be saved on the microSD card depends on the capacity of the card.

Data on the microSD card cannot be viewed on the display. The content of the microSD card can be read by removing it from the device and reading the file on a computer equipped with a microSD card reader port.

- ▸ To unmount the microSD card, refer to the parameter *microSD unmount [▸ 624]*.

When parameter is written via HART, change log is worked based on the following restrictions.

- Change log is not stored when parameter is written from Universal/Common practice command (ex: PV is, SV is..., Burst mode, Condensed status)
- When 1 or more of the parameters are written from DD based configuration tool, only the 1 ID is stored instead of the written parameters.
  - For these parameters information, see ID which is stored instead of the written parameters *Parameter IDs [▸ 823]*

4.11 Backup and restore

The SITRANS FC has an embedded memory and the optional feature of using a microSD card in the Indicator module.

The measured data or device configurations can be stored there.
The saved data or configuration can be restored as a configuration to the same or another device.

The file name on the microSD card that is used for backup and restore (or duplication) is defined in the parameter *Backup File Name [▸ 277]*.

If a backup file with the file name defined in Backup File Name does not exist on the microSD card, restore (or duplication) is not performed.

If a file with the same name as the value of Backup File Name already exists on the microSD card, the file is overwritten when a backup to the microSD card is performed.

To confirm the contents of the microSD card, refer to the parameter microSD contents. To unmount the microSD card, refer to the parameter microSD unmount.

4.11.1 Backup

The configuration of the device can be stored in the embedded memory or on the microSD card in the Indicator module. A maximum of three configurations can be stored in the embedded memory.

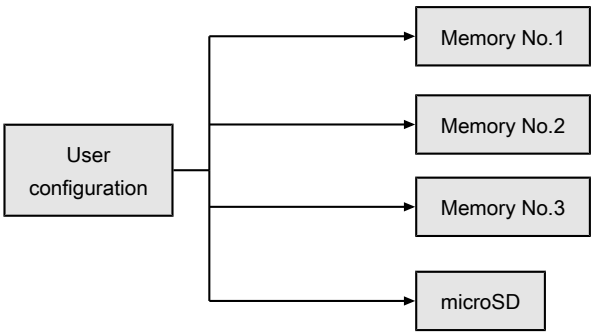
Note the chapter containing *Handling of microSD [▸ 87]*.

The configuration of the device can be backed up by using the parameter *User configuration backup [▸ 277]*.

The following operations can be performed. For details, see *Parameter backup/restore [▸ 277]*.

Backing up the user configuration

The user configuration, such as settings to measure process variables and alarm or other conditions, can be stored in the embedded memory or on the microSD card in the Indicator module. The file name to be stored on the microSD card is defined by a parameter, see *microSD file name backup [▸ 277]*.



4.11.2 Restore

The backup file in the embedded memory or on the microSD card in the Indicator module can be restored to the device. There are two functions to restore a backup to the device, Restore [`Restore`] and Duplicate [`Duplicate SD`]. Restore is used for the device that has the same hardware and firmware configurations/functions as the one from which the backup file was made. The Restore function restores device-specific data, such as sensor data, to the device along with user configurations. The Duplicate function restores user configurations to the device, but not device-specific data.

When Duplicate/Restore from Indicator to another device is performed, refer to the Operating Instructions, chapter "Rotating and replacing the display" to confirm the procedure for switching the Indicator module, and switch the Indicator accordingly.

Before performing a Restore, it is recommended that you backup the current configuration. When a Restore is performed, all configurations are changed to the configurations in the restored backup file.

Modified settings for each process variable, such as offset, adjusted gain or autozero value, will also be replaced by the data in the backup file. After the Restoration, confirm that each process variable shows the correct value. If necessary, perform necessary adjustments, such as autozero.

A backup can be restored to the device by using a parameter, Restoration. The following operations can be performed. For details, refer to *Parameter backup/restore [▸ 277]*.

Restoring a backup file

Restore a backup file in the embedded memory or on the microSD card in the Indicator module to the device. Backup data in the embedded memory or data in a file on the microSD card is restored to the device. The file name on the microSD card is defined by the parameter Backup file name, see *Parameter backup/restore [▸ 279]*.

All configurations, including device-specific data, such as sensor data, in the backup file are restored.

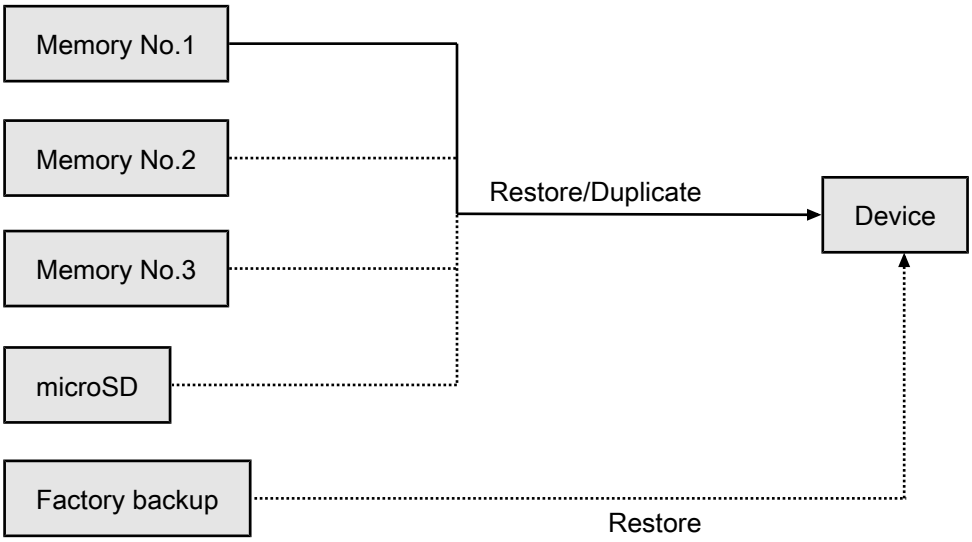
If the function cannot be used, e.g., the hardware configuration is different from that in the backup file, an error message appears and the backup is not restored.

Duplicating the user configuration in a backup file

Duplicate user configuration in a backup file in the embedded memory or on a microSD card on Indicator to the device. User configurations in backup data in the embedded memory, or data in a file on a microSD card is copied to the device. The file name on the microSD card is defined by the parameter Backup file name, see *Parameter backup/restore [▸ 279]*. Device-specific data is not restored. If the function is not fully applicable, e.g., the options in the firmware configuration differ from the backup file, only basic configurations that are common to all devices are restored.

Restoring the factory backup to the device

The configuration when the device is shipped from the factory is stored on the device. This initial configuration at the factory can be restored to the device.



Handling of microSD cards

Read the handling instructions carefully and use the microSD card safely.

- Only use the dedicated microSD card that is provided by Siemens. The transmitter functions cannot be guaranteed if a different card is used.
- Backing up the microSD card periodically is recommended. Siemens assumes no responsibility for the loss of any data on the microSD card.
- Data stored on the microSD card may be deleted when one of the following situations occurs:
  - Unmounting the microSD card from the device or turning off the device during formatting, reading or writing.
  - Using the microSD card in a location where it is affected by static electricity or electrical noise.
- The microSD card must be formatted in the device. If the formatting is performed on other instruments, the functions cannot be guaranteed.
- Be sure to insert the microSD card in the right direction when inserting it in to the device. Inserting it in the wrong direction may cause physical failure of the microSD card or transmitter.
- Any impact, bending, dropping, or water must be avoided for unmounted microSD cards. Do not touch its terminals. Do not store it in a location with high temperature or humidity, or where the atmosphere is dusty or includes corrosive gas. Such conditions may cause the microSD card to fail.

4.12 Concentration and petroleum measurement

The following types of concentration calculation functions are optionally available:

- **Standard concentration calculation**: used for a mixture of 2 liquids that do not dissolve in each other, such as water and oil.
- **Advanced concentration calculation**: used for a general mixture of 2 liquids, even if the liquids dissolve in each other, such as water and alcohol.
- **Net Oil Computing (NOC) calculation**: oil density and water density is calculated based on API and other calculation formula.
- **NOC with Gas Void Fraction (GVF)**

For each concentration calculation function, a maximum of 4 sets of calculation configurations, or parameter settings, can be set, and the configuration can be selected or switched via a parameter setting.

For more detailed information, see *Detailed setup [▸ 436]*.

4.12.1 Standard concentration calculation

Outline

The standard concentration measurement function of this device is capable of computing the concentrations of suspended and emulsified substances, based on measured density and calculated density of each component. Data on each component's density and its variation with temperature is required. The variations of most liquids' density with temperature may be described by a second-order polynomial. The values of three parameters must be provided for each component in order to uniquely define the second-order polynomials involved:

- Reference density, i.e., their density at the reference temperature, expressed in the density units to be employed.
- First-order density-temperature coefficient, which may be either taken from tables or determined by users.
- Second-order density-temperature coefficient, which may also be either taken from tables or determined by users.

Knowledge of the density of each component at the temperatures to be used then allows determination of their concentrations by weight.

Equations for the mass densities and concentrations involved in standard concentration measurements

The following section lists the equations employed for computing the densities of single components and their concentrations. The variables used are defined as follows:

Variable	Description
T_{ref}	Reference temperature, i.e., the temperature at which reference densities are measured
$\rho_{ref(carrier)}$	Reference density of the carrier liquid, i.e., its density at the reference temperature
$a_{carrier}$	First-order density-temperature coefficient of the carrier liquid
$b_{carrier}$	Second-order density-temperature coefficient of the carrier liquid
$\rho_{carrier}$	Density of the carrier liquid at the current temperature
$\rho_{ref(product)}$	Reference density of the product/substance, i.e., its density at the reference temperature
$a_{product}$	First-order density-temperature coefficient of the product/substance
$b_{product}$	Second-order density-temperature coefficient of the product/substance
ρ_{produc}	Density of the product/substance at the current temperature

Based on these definitions, the density of the carrier liquid at the current temperature T_{meas} is calculated as follows:

$$\rho_{carrier} = \rho_{ref(carrier)} [1 + a_{carrier} (T_{meas} - T_{ref}) + b_{carrier} (T_{meas} - T_{ref})^2]$$

and the density of the product or material at the current temperature T_{meas} is calculated as follows:

$$\rho_{product} = \rho_{ref(product)} [1 + a_{product} (T_{meas} - T_{ref}) + b_{product} (T_{meas} - T_{ref})^2]$$

Once the densities of both components have been computed, the resulting concentration of the product/substance, $conc_{product(meas)}$, may be computed from the following relation, assuming that ρ_{meas} is the measured density, total density, of the mixture:

$$conc_{product(meas)} = \frac{\rho_{product}\,(\rho_{meas} - \rho_{carrier})}{\rho_{meas}\,(\rho_{product} - \rho_{carrier})} \times 100\% = \frac{1 - \frac{\rho_{carrier}}{\rho_{meas}}}{1 - \frac{\rho_{carrier}}{\rho_{product}}} \times 100\%$$

For detailed information on parameters for configuring this function, see *Standard concentration set 1 – 4 [▸ 439]*.

Variable	Parameter on the device
T_{ref}	Concentration reference temperature set 1 – 4
$\rho_{ref(carrier)}$	Concentration reference density carrier set 1 – 4
$a_{carrier}$	Concentration temperature coeff A carrier set 1 – 4
$b_{carrier}$	Concentration temperature coeff B carrier set 1 – 4
$\rho_{ref(product)}$	Concentration reference density product set 1 – 4
$a_{product}$	Concentration temperature coeff A product set 1 – 4
$b_{product}$	Concentration temperature coeff B product set 1 – 4

To calculate, evaluate and define these coefficients for the Standard concentration, DTM provides a tool.

4.12.2 Advanced concentration calculation

Advanced concentration calculation uses concentration data on suspensions, emulsions, or solutions to interpolate or extrapolate the concentrations of individual components, rather than computing the concentrations of the individual components of mixtures from measured mass densities. The concentration data involved describes the changes in mixture density with both temperature and component concentrations. That data is computed by using the equation below.

Mass density and concentration equations

Since the equation below covers the relationship between concentration and measured mixture density for a single temperature only, at least two such data sets will have to be provided in order to also obtain the variation of mixture density with temperature. This device then both interpolates between points on such concentration-density-temperature curves and extrapolates them beyond their stated temperature ranges. Eight sets of parameters are the maximum that can be handled.

$$\text{conc} = A_n(T_n)\,\rho_{meas}^{\,2} + B_n(T_n)\,\rho_{meas} + \frac{C_n}{\rho_{meas}} + D_n(T_n)$$

Variable	Description
T_n	Reference temperature in the density/concentration relation for data set 1...8
A_n	Coefficient A in the density/concentration relation for data set 1...8
B_n	Coefficient B in the density/concentration relation for data set 1...8
C_n	Coefficient C in the density/concentration relation for data set 1...8
D_n	Coefficient D in the density/concentration relation for data set 1...8
ρ_{meas}	Measured density of the fluid

Advanced concentration measurements should be used whenever the behavior of density over the required range of temperatures and/or concentrations is highly nonlinear, which will normally be the case for highly concentrated salt, soda, or alcohol solutions.

For detailed information on parameters for configuring this function, see *Advanced concentration set 1...4* [▸ 444].

Variable	Parameter on the device
T_n	Concentration temperature 1...8 set 1...4
A_n	Concentration A 1...8 set 1...4
B_n	Concentration B 1...8 set 1...4
C_n	Concentration C 1...8 set 1...4
D_n	Concentration D 1...8 set 1...4

For typical concentration measurements, pre-defined parameter sets are provided. For more detailed information refer to the Operating Instructions of the device.

4.12.3 Net Oil Computing (NOC), Gas Void Fraction (GVF)

The Net Oil Computing function uses the same concentration calculation formula as the Standard Concentration function, with oil density and water density calculation as explained below.

One of the following **concentration values** can be displayed on the LCD display and HART:

- mass concentration of oil
- volume concentration of oil
- volume concentration of water (Watercut)

One of the following **net flow values** can be displayed on the LCD display and HART, depending on the selection of the flow unit:

- net mass flow of oil
- net volume flow of oil

Parameter Name	Variable	Explanation
NOC Conc Value Select	-	Selects the type of the concentration value: ▪ 0 = Concentration (mass) ▪ 1 = Concentration (volume) ▪ 2 = Water cut
NOC Conc Mass Flow Value	$conc_{oil,mass}$	Indicates the value of Concentration Mass Flow when "0 = Concentration (mass)" is selected under NOC Conc Value Select.
NOC Conc Volume Flow Value	$conc_{oil,volume}$	Indicates the value of Concentration Volume Flow when "1 = Concentration(volume)" is selected under NOC Conc Value Select.
NOC Conc Water Cut Value	water cut	Indicates the value of Water Cut when "2 = Water cut" is selected under NOC Conc Value Select.
NOC Oil Density	ρ_{oil}	Indicates the value of Oil Density. The unit set under Density unit applies.
NOC Water Density	ρ_{water}	Indicates the value of Water Density. The unit set under Density unit applies.
Net Mass Flow 1 Value	$MassFlow_{oil}$	Indicates the value of Mass Flow of Net oil when Net Oil Computing is available under Concentration measurement select. The unit set under Net mass flow 1 unit applies.
Net Volume Flow 1 Value	$VolFlow_{oil}$	Indicates the value of Volume Flow of Net oil when Net Oil Computing is available under Concentration measurement select. The unit set under Net volume flow 1 unit applies.
Net Mass Flow 2 Value	$MassFlow_{water}$	Indicates the value of Mass Flow of Net water when Net Oil Computing is available under Concentration measurement select. The unit set under Net mass flow 2 unit applies.
Net Volume Flow 2 Value	$VolFlow_{water}$	Indicates the value of Volume Flow of Net water when Net Oil Computing is available under Concentration measurement select. The unit set under Net volume flow 2 unit applies.
Net Corrected Volume Flow Value	$NetCorrVol_{oil}$	Indicates the value of Corrected volume Flow of Net oil when Net Oil Computing is available under Concentration measurement select. The unit set under Net corrected volume flow unit applies.
NOC GVF Value	GVF	Indicates the value of GVF (Gas Void Fraction).
NOC GVF Select	-	Selects the mode of "Inhibit" or "Enable" for the value of GVF (Gas Void Fraction). ▪ 0 = Disable ▪ 1 = Enable

Parameter Name	Variable	Explanation
NOC Pressure Value Fixed	P	Sets the value of Pressure for NOC calculation. The unit set under Pressure unit applies.
NOC Reference Oil Density	ρ60(oil)	Sets the value of reference oil density at 60°F and 0 psig for NOC operation. The unit set under Density unit applies.
NOC Reference Water Density	$\rho_{ref(water)}$	Sets the value of reference water density at reference temperature for NOC operation. The unit set under Density unit applies.
NOC Oil Calculator	-	Selects the calculation method for oil density: ▪ 0 = Off ▪ 1 = Crude oil ▪ 2 = Products ▪ 3 = Lubricating oil ▪ 4 = Fixed thermal exp factor ▪ 5 = Other
NOC Oil Thermal Expansion Factor	α60	Defines a linear temperature coefficient of the oil density.
NOC Oil K0	-	Defines a coefficient K0 for NOC calculation, when “5=Other” is selected in NOC Oil Calculator
NOC Oil K1	-	Defines a coefficient K1 for NOC calculation, when “5=Other” is selected under NOC Oil Calculator
NOC Oil K2	-	Defines a coefficient K2 for NOC calculation, when “5=Other” is selected under NOC Oil Calculator
NOC Water Calculator	-	Selects the calculation method for water density: ▪ 0 = SMOW ▪ 1 = UNESCO1980 ▪ 2 = Fresh water ▪ 3 = Produced water ▪ 4 = Brine water ▪ 5 = STD formula (Standard formula)
NOC Salinity ppt	S_{unesco}	Defines the value of salinity of the brine water, when “4=Brine water” is selected under NOC Water Calculator
NOC Salinity Value Fixed	S_{brine}	Defines the fixed value of salinity, when “3:Produced water” is selected and "NOC Reference Water Density" is set to 0.
NOC Water Density UNESCO1980	-	Selects the type of density for calculation: ▪ 0 = SMOW ▪ 1 = VSMOW This parameter is necessary in situations where "1 = UNESCO1980" has been selected under NOC Water Calculator.

Parameter Name	Variable	Explanation
NOC Water Density Reference Temperature	T_{ref}	Sets the value of base (reference) temperature to be used in the water density calculation, when “3:Produced water” is selected. The unit set under Temperature unit applies.
NOC Density Hysteresis	$\rho_{hys\ noc}$	Sets the value of hysteresis which is used in the NOC calculation, The unit set under Density unit applies.
GVF Density Hysteresis	$\rho_{hys\ gvf}$	Sets the value of hysteresis which is used in the GVF calculation, The unit set under Density unit applies.
Current K0 – K2 Coefficient	-	Indicates the current value which is used in oil density calculation.
Current Thermal Expansion Factor	-	Indicates the current value which is used in oil density calculation.

Calculation of oil density

To calculate the oil density, the oil commodity type as defined in the API MPMS Chapter 11 Section 1, chapter 11.1.6.1, has to be specified first (Crude Oil, Refined Products, or Lubricating Oil). Also, the values for P and ρ60(oil) have to be specified, based on the characteristics of the fluid and oil.

If α60, the thermal expansion factor of oil at 60 °F (°F-1), is known, it can be specified instead of selecting commodity type and specifying P and ρ60(oil).

The density of oil at operating conditions (kg/m^3) is calculated by the following formula with given parameters and measured temperature of fluid T_{meas}:

$$\rho_{oil} = f\ (\rho 60(oil)\ or\ \alpha 60,\ P,\ T_{meas})$$

P	Pressure of fluid (psig), fixed value
ρ60(oil)	Oil density at base conditions (60 °F and 0 psig) (kg/m^3)
f( )	Formula defined in API MPMS 11.1.6.1 (refer to the API MPMS Chapter 11 Section 1, chapter 11.1.6.1)

Calculation of water density

The density of the water, ρ_{water}, is calculated by using one of following 6 formulas. The user can select one of them depending on the actual status of the water portion in the target fluid. If Fahrenheit is used as temperature unit, the temperature process values will be converted to Celsius, and then the following calculations will be performed:

Density of Standard Mean Ocean Water (SMOW)

Density $\rho_{water(smow)}$ (kg/m^3) of Standard Mean Ocean Water at temperature t_C (°C) is calculated as follows:

$$\rho_{water(smow)} = 999.842594 + 6.793952 \times 10^{-2} \times t_C - 9.095290 \times 10^{-3} \times t_C^2 + 1.001685 \times 10^{-4} \times t_C^3 - 1.120083 \times 10^{-6} \times t_C^4 + 6.536332 \times 10^{-9} \times t_C^5$$

Water Density by UNESCO1980

According to "The one Atmosphere International Equation of State of Seawater, 1980", the density of seawater $\rho_{water(1980)}$ (kg/m^3) at temperature t_C (°C) is calculated by the following equation.

ρ_{ref}, the density (kg/m³) of produced water at 15 (°C) or 60 (°F), or S_{unesco}, the salinity of produced water, have to be specified by the user. The salinity of produced water S_{unesco}, is calculated by the following equation from ρ_{ref}, the density (kg/m³) of produced water at 15 (°C) or 60 (°F):

$$S_{unesco} = \frac{(\rho_{ref} - 999.0)}{7.2} \times 10$$

$\rho_{water(1980)}$ (kg/m³), water density according to UNESCO1980 at temperature t_C (°C) is calculated by the following equation. $\rho_{water(smow)}$ or $\rho_{water(vsmow)}$ can be used as base density of this calculation:

$$\begin{aligned}\rho_{water(1980)} &= \rho_{water(smow)} \\ &+ (8.24493 \times 10^{-1} - 4.0899 \times 10^{-3} \times t_C + 7.6438 \times 10^{-5} \times t_C^2 - 8.2467 \times 10^{-7} \times t_C^3 \\ &+ 5.3875 \times 10^{-9} \times t_C^4) \times S + (-5.72466 \times 10^{-3} + 1.0227 \times 10^{-4} \times t_C - 1.6546 \times 10^{-6} \times t_C^2) \times S_{unesco}^{1,5} \\ &+ 4.8314 \times 10^{-4} \times S_{unesco}^2\end{aligned}$$

or

$$\begin{aligned}\rho_{water(1980)} &= \rho_{water(vsmow)} \\ &+ (8.24493 \times 10^{-1} - 4.0899 \times 10^{-3} \times t_C + 7.6438 \times 10^{-5} \times t_C^2 - 8.2467 \times 10^{-7} \times t_C^3 \\ &+ 5.3875 \times 10^{-9} \times t_C^4) \times S + (-5.72466 \times 10^{-3} + 1.0227 \times 10^{-4} \times t_C - 1.6546 \times 10^{-6} \times t_C^2) \times S_{unesco}^{1,5} \\ &+ 4.8314 \times 10^{-4} \times S_{unesco}^2\end{aligned}$$

Fresh Water Density by API MPMS 11.4

This equation corresponds to the VSMOW equation (Vienna Mean Standard Ocean Water). According to API MPMS 11.4, the density of fresh water, $\rho_{water(fresh)}$ (kg/m³), at measured temperature t_C (°C) is calculated as follows:

$$\rho_{water(fresh)} = f(\rho 0, T0, t_C)$$

f( )	Formula defined in API MPMS 11.4 (refer to the API MPMS Chapter 11 Section 4 Part 1, formula (1))
ρ0	999.97358 (kg/m³), density of fresh water at t0
t0	3.9818 (°C)

Produced Water Density by API MPMS 20.1 Appendix A.2

ρ_{ref}, the density (kg/m³) of produced water at 15 (°C) or 60 (°F) has to be specified by the user. According to API MPMS 20.1 Appendix A.2, the density of produced water, $\rho_{water(mpms)}$ (kg/m³), at measured temperature t_C (°C) is calculated as follows:

$$\rho_{water(MPMS)} = f(\rho_{ref}, t_C)$$

f( )	Formula defined in API MPMS 20.1. Appendix A.2 (refer to the API MPMS Chapter 20 Section 1 Appendix A.2)

Brine water density by El-Dessouky, Ettouy (2002)

This formula is applicable for water in the following conditions:

- Salinity: 0 to 160ppt
- Temperature: 10 to 180°C
- Pressure: 1 atm

The salinity of produced water, S_{brine}(ppt), has to be specified by the user. $\rho_{water(brine)}$ (kg/m^3), water density by El-Dessouky, Ettouy (2002) at temperature t_C (°C) is calculated as follows:

$$\rho_{water(brine)} = (A_1 \times F_1 + A_2 \times F_2 + A_3 \times F_3 + A_4 \times F_4) \times 10^3$$

A	$(2 \times t_C - 200)/160$
B	$(2 \times S_{brine} - 150)/150$
F_1	0.5
F_2	A
F_3	$2 \times A^2 - 1$
F_4	$4 \times A^3 - 3 \times A$
G_1	0.5
G_2	B
G_3	$2 \times B^2 - 1$
A_1	$4.032219 \times G_1 + 0.115313 \times G_2 + 3.26 \times 10^{-4} \times G_3$
A_2	$-0.108199 \times G_1 + 1.571 \times 10^{-3} \times G_2 - 4.23 \times 10^{-4} \times G_3$
A_3	$-0.012247 \times G_1 + 1.74 \times 10^{-3} \times G_2 - 9.0 \times 10^{-6} \times G_3$
A_4	$6.92 \times 10^{-4} \times G_1 - 8.7 \times 10^{-5} \times G_2 - 5.3 \times 10^{-5} \times G_3$

Water density calculation by standard concentration formula

The density of water is calculated by using density equation that is used for Standard Concentration. Each parameter has to be specified by the user based on the actual water characteristics:

$$\rho_{water(std.conc)} = \rho_{ref(water)} [1 + a_{water} (T_{meas} - T_{ref}) + b_{water} (T_{meas} - T_{ref})^2]$$

T_{ref}	reference temperature
$T_{ref(water)}$	reference density of water at the reference temperature
a_{water}	first-order density-temperature coefficient of water
b_{water}	second-order density-temperature coefficient of water
ρ_{water}	density of water at the current temperature

Calculation of Net Oil

GVF (Gas Void Fraction) is a function to switch the calculation equation for Net Oil. When GVF is active, the calculation equation for Net Oil is switched based on the measured density value.

When GVF is not active

Mass concentration and volume concentration of oil can be calculated as follows:

$$conc_{oil.mass} = \frac{1 - \frac{\rho_{water}}{\rho_{meas}}}{1 - \frac{\rho_{water}}{\rho_{oil}}} \times 100\ \% = \frac{\rho_{oil} \times (\rho_{meas} - \rho_{water})}{\rho_{meas} \times (\rho_{oil} - \rho_{water})} \times 100\ \%$$

$$conc_{oil.volume} = \frac{conc_{oil.mass} \times \rho_{meas}}{\rho_{oil}}$$

$conc_{oil,mass}$	calculated mass concentration of the oil (Wt%)

$conc_{oil,volume}$	calculated volume concentration of the oil (Vol%)
ρ_{oil}	calculated density of the oil at the current temperature
ρ_{water}	calculated density of the water liquid at the current temperature
ρ_{meas}	actual measured density of the mixture at the current temperature

Net mass flow of oil and net volume flow of oil can be calculated as follows:

$$MassFlow_{oil} = MassFlow_{meas} \times \frac{conc_{oil.mass}}{100}$$

$$MassFlow_{water} = MassFlow_{meas} \times \frac{100 - conc_{oil.mass}}{100}$$

$$VolFlow_{oil} = \frac{MassFlow_{oil}}{\rho_{oil}}$$

$$VolFlow_{water} = \frac{MassFlow_{water}}{\rho_{water}}$$

$MassFlow_{meas}$	actual measured mass flow of the mixture
$MassFlow_{oil}$	net mass flow of oil
$MassFlow_{water}$	net mass flow of water
$VolFlow_{oil}$	net volume flow of oil
$VolFlow_{water}$	net volume flow of water
$conc_{oil,mass}$	calculated mass concentration of the oil (Wt%)
ρ_{oil}	calculated density of the oil at the current temperature

Net corrected volume flow of oil is calculated as follows:

$$NetCorrVol_{oil} = \frac{MassFlow_{oil}}{\rho_{refoil}}$$

$NetCorrVol_{oil}$	net corrected volume flow of oil
$MassFlow_{oil}$	net mass flow of oil
ρ_{refoil}	reference density of the oil

When GVF is active

Oil sometimes contains entrained gas, which is why the measured overall density might drop significantly. The density of the gas is very low in comparison to liquids and therefore may be neglected. The condition for the GVF function is as follows:

$$\text{if } \rho_{meas} < (\rho_{oil} - \rho_{hys\ gvf}) : GVF = active$$
$$\text{if } \rho_{meas} > (\rho_{oil} + \rho_{hys\ noc}) : GVF = NOT\ active$$

$$\text{if } (\rho_{oil} - \rho_{hys\ gvf}) < \rho_{meas} < \rho_{oil} \text{ , then } conc_{oil,mass} = 100\ Wt\%\ and\ conc_{oil,volume} = 100\ Vol\%$$
$$\text{if } (\rho_{oil} + \rho_{hys\ noc}) > \rho_{meas} > \rho_{oil} \text{ , then } conc_{oil,mass} = 100\ Wt\%\ and\ conc_{oil,volume} = 100\ Vol\%$$

$conc_{oil,mass}$	calculated mass concentration of the oil (Wt%)
$conc_{oil,volume}$	calculated volume concentration of the oil (Vol%)
ρ_{meas}	actual measured density
ρ_{oil}	calculated density of the oil at the measured temperature
$\rho_{hys\ gvf}$	GVF hysteresis value for threshold density
$\rho_{hys\ noc}$	NOC hysteresis value for threshold density

Since the concentration of 3 components can't be calculated, the assumption is that there is no water in the oil at this time. If there is a significant amount of water, this function will lead to deviation in the oil net volume flow.

Net Oil for GVF active

If GVF is active, the calculation is changed as follows:

$$conc_{oil.mass} = 100\ \%$$

$$conc_{oil.volume} = \frac{\rho_{meas}}{\rho_{oil}} \times 100\ \%$$

$$GVF = \left(1 - \frac{\rho_{meas}}{\rho_{oil}}\right) \times 100\ \%$$

$conc_{oil,mass}$	calculated mass concentration of the oil (Wt%)
$conc_{oil,volume}$	calculated volume concentration of the oil (Vol%)
ρ_{oil}	calculated density of the oil at the current temperature
ρ_{meas}	actual measured density of the mixture
GVF	gas void fraction (Vol %)

Net mass flow of oil and net volume flow of oil is calculated as follows:

$$MassFlow_{oil} = MassFlow_{meas}$$

$$VolFlow_{oil} = \frac{MassFlow_{oil}}{\rho_{oil}}$$

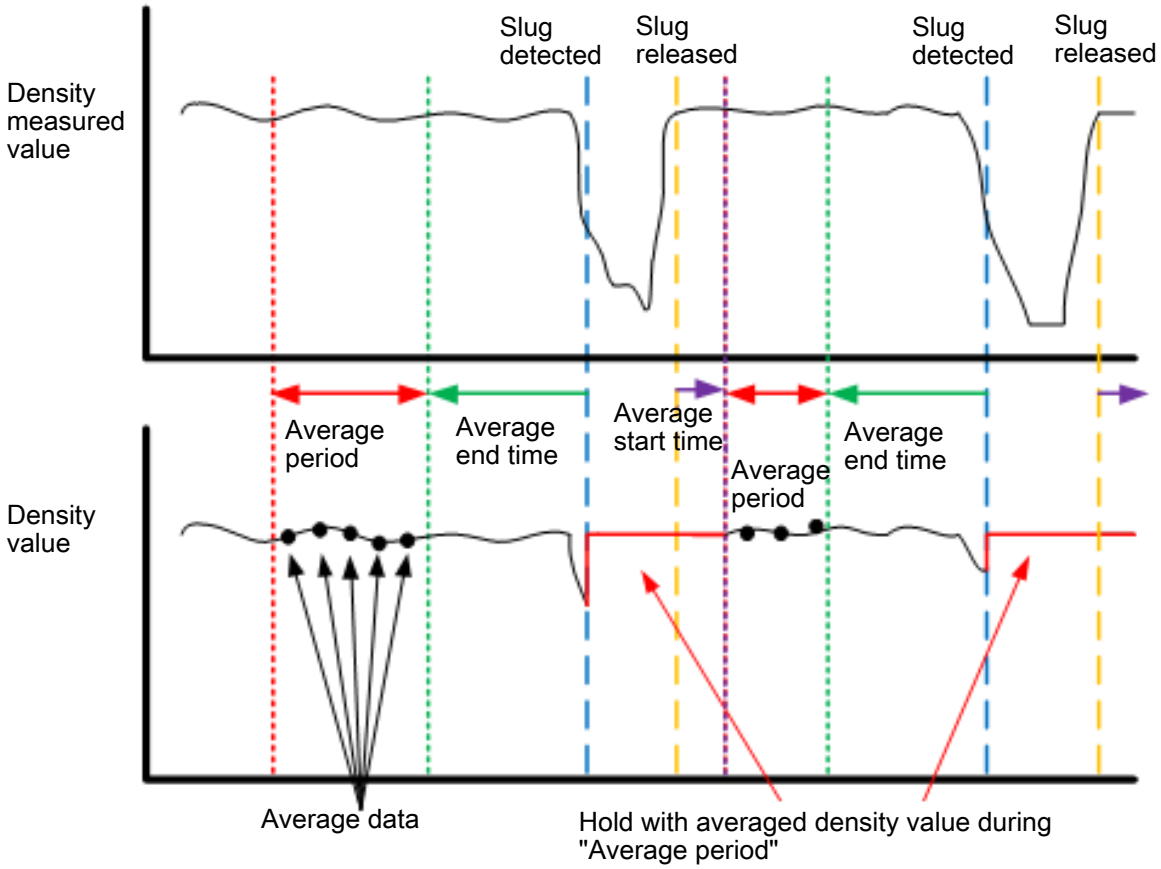
$MassFlow_{meas}$	actual measured mass flow of the mixture
$MassFlow_{oil}$	net mass flow of oil
$VolFlow_{oil}$	net volume flow of oil
ρ_{oil}	calculated density of the oil at the current temperature

4.13 Diagnosis

4.13.1 Slug detection

This function detects the bubble flow of fluid. The detection is based on an unusual level of drive current at the sensor which may be caused by slug inside the sensor. If the drive current exceeds a defined threshold level, this device assumes that slug appears in the fluid and alarm 201 appears. This function is not available for gas measurement.

Parameter	Setting
Slug detection level	Threshold level of drive current to activate slug alarm.
Slug hysteresis	Hysteresis value when slug alarm is deactivated, to avoid activating the alarm at very short intervals.
After slug mass flow	Mass flow value during slug alarm or when driving current exceeds Slug detection level. Measured value, hold and Fixed value can be selected.
After slug density	Density value during slug alarm or when driving current exceeds Slug detection level. Measured value, hold and Fixed value can be selected.
After slug mass flow fixed value	Sets fixed value of mass flow when slug is detected. This value is only available when Fixed value is selected in After slug mass flow.
After slug density fixed value	Sets fixed value of density when slug is detected. This value is only available when Fixed value is selected in After slug density.
Slug alarm delay	Delay time between slug detection and the occurrence of the alarm.
Drive current damping	Damping time for drive current, to average rapid change of drive current for the detection.
Average start time	Sets the time after Slug detection alarm is released. When “Hold” in After slug density is selected, averaged density value for “Hold” is calculated using sampling data during Average Period when Slug Detection Occurred as follows. Parameter of status of density value becomes Uncertain when Slug Detection occurred. Refer to the following figure.
Average end time	Sets the time which is finished for calculation of averaged density value before Slug Detection occurred. When “Hold” in After slug density is selected, averaged density value for “Hold” is calculated using sampling data during Average Period when Slug Detection Occurred as follows. Parameter of status of density value becomes Uncertain when Slug Detection occurred. Refer to the following figure.



Average Period	Shows the period which is used for calculation of averaged density value before Slug Detection occurred.
Average Start Time	Shows the time which is started for calculation of averaged density value after Slug Detection is released.
Average End Time	Shows the time which is finished for calculation of averaged density value before Slug Detection occurred.

For details of parameters to configure this function, see *Standard diagnostics [▸ 248]*.

4.13.2 Empty pipe detection

This function detects an empty state inside the sensor. The detection is based on an unusually low density value because of the empty state. If the defined density criterion is smaller than the URV of the density measurement (or LRV, whichever is higher), alarm 202 appears, if the measured density value is lower than the criteria. This function is not available for gas measurement.

Parameter	Setting
Empty Pipe Criteria	Threshold value for the density value to activate empty alarm.
After Empty Pipe	Mass flow value during empty pipe alarm. 0, measured value or hold can be selected.
Empty Pipe Alarm Delay	Delay time between empty pipe detection and the occurrence of the alarm.

For details on parameters for configuring this function, see *Standard diagnostics [▸ 251]*.

4.13.3 Corrosion detection

This function is based on measured density and is only good for liquids with relatively constant density. Its criteria are based on the density value. If that density level with defined damping time is reached permanently, alarm 203 appears. This function is not available for gas measurement.

Parameter	Setting
Corrosion criterion	Threshold value of density to activate corrosion alarm.
Corrosion damping	Damping time for density value that is used for corrosion detection.

For details on parameters for configuring this function, see *Standard diagnostics [▶ 253]*.

4.13.4 Tube health check

This function is an optional function to perform a health check of the sensor's measuring tube, by measuring changes in the stiffness of the measuring tubes. It is not for measuring the absolute stiffness value, but rather for measuring changes in stiffness from the time when reference data is acquired. This function measures changes in stiffness of measuring tubes without being affected by the fluid. When the wall thickness of the measuring tubes diminishes uniformly by corrosion, the stiffness varies almost proportionally to the change of wall thickness. If the change in stiffness measured exceeds the defined threshold value, corrosion is deemed to have occurred and alarm 203 appears.

Principle of the function

In normal operation the drive gain of the measuring tubes is automatically controlled and adjusted by the automatic gain control, AGC. When the function is performed, the device fixes the drive gain of the measuring tubes to a certain level and changes it to another specific fixed level; and it then measures vibration amplitudes on the measuring tubes at the fixed drive gains. This function calculates the stiffness of the measuring tubes from the slope and change par time of the vibration amplitude. In normal operation this does not affect flow and/or density measurements. The measuring status in normal operation before and after the fixed drive gain can determine the stability of the diagnostic conditions, and a warning is produced if these are unstable. It takes approximately 90 – 120 seconds for a single-shot diagnostic, but 120 – 180 seconds is necessary for reference data acquisition and initial diagnostics after the power is turned on. Not only single-shot diagnostics, but also consecutive diagnostics with a defined number of times and interval can be configured and performed.

Recommended conditions when performing this function

The result of diagnostics may be affected by the stability of the measuring environment. The recommended measuring conditions are as follows:

- Temperature: The difference in temperature between when reference data is obtained and when the test is conducted should be within 20 °C. A warning is produced in measurement results if fluid (sensor) temperature fluctuates radically. Stabilize temperature so fluctuation does not exceed 0.1 °C/min.
- Pressure: If pressure is not input from outside, set pressure value manually. A warning is produced in measurement results if the pressure fluctuates radically.
- Density: A compensation is performed, but reference data should be acquired using fluid when test is executed. Variation should not exceed ±0.1 kg/L when reference data is acquired and when test is conducted. An error is produced in measurement results if density fluctuates radically.
- Flow: "Flow noise" is produced by fluid flow, which in turn produces disparity in test values. If sufficient accuracy cannot be obtained, a warning is output to test results. Test should be conducted with low flow rate (max. 25 % of Q_{nom}). Q_{nom} is refer to Operating Instructions (OI) of each product.

- Flow: Foam/secondary flow could affect test results. A high flow rate should therefore be avoided.

Before first use – Getting reference value

Before starting to use this function, a reference value for stiffness has to be obtained.

Procedure to get the reference value:

1. Fill measuring tubes of the meter with fluid.
2. Turn the power on.
3. Wait for a moment to stabilize fluid conditions, such as temperature or pressure.
4. Select and set Take Reference in the parameter *TuHC Enable*. For more detailed information see *Total health check [▸ 254]*.
   ⇨ Procedure to take the reference is executed.
5. Wait for around 3 minutes to complete the process.
   ⇨ During this procedure, a bar chart showing the progress is displayed.

If no error or warning message appears:

6. Do nothing.
   ⇨ The procedure is finished, the bar chart disappears and the LCD display returns to the normal measurement status.

⇨ The reference has been successfully obtained.

If any error or warning appears:

7. Try to obtain the reference again.

Performing a tube health check

For applications with demanding chemical compatibility requirements, e.g., measuring strong acids, SITRANS FCS700 sensors with wetted parts made of Ni alloy C-22/2.4602 should be used. These parts may show some initial surface layer etching before the full chemical compatibility is implemented. To check for this, changes to the TuHC change ratio of inlet/outlet stiffness should be monitored. If significant changes are observed, the device may need a recalibration at the factory even before the TuHC Stiffness Change Limit is exceeded.

The following is the procedure for performing a tube health check.

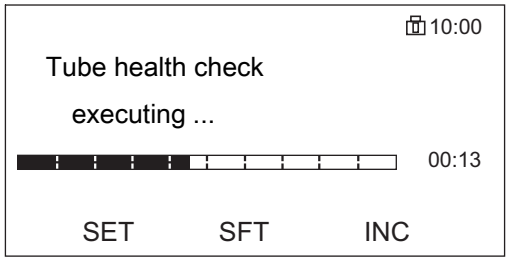
✓ Appropriate reference values for the tube health check must be obtained.

1. Fill measuring tubes of the meter with fluid.
2. Turn the power on.
3. Wait for a moment to stabilize fluid conditions, such as temperature or pressure.
4. Set the following parameters to configure the conditions of the function, such as number of checks, interval, threshold for detection and conditions to retry the check when an alarm is detected. For more detailed information, see *TuHC configuration [▸ 260]*.

Configuration	Parameter	Outline
Check interval	TuHC Continue Interval	Setting range: 0 – 65535 min. Default value is 60 min.
Number of checks	TuHC Continue Number	Setting range: 0 – 65535. Default value is 1. If 0 is set, the check continues until it is manually aborted.

Configuration	Parameter	Outline
Threshold for detection	TuHC Stiffness Change Limit	Threshold value for tube stiffness. Setting range: 0.5 – 100 %. Default value is 4.0 %.
Max. number of retries when an alarm is detected	TuHC Retry Number	Maximum number of retries for the check when an alarm is detected during the check. Setting range: 0 – 65535. Default value is 3.
Interval for retry when an alarm is detected	TuHC Retry Interval	Interval for retry of the check when an alarm is detected during the check. Setting range: 0 – 65535 mins. Default value is 2 min.
Condition for retry when an alarm is detected	TuHC Setting Retry	Parameter to configure whether a retry is performed, when an alarm is detected during the check.

5. Select and set Start tube health check in parameter *TuHC Enable* to start the check. For more detailed information, refer to *TuHC Enable [▸ 256]*.
   ⇨ The check is performed according to the configuration.
   ⇨ During the checking procedure, a bar chart to show the progress is displayed as shown below.



6. Wait for around 2 minutes, for a single a tube health check.
   ⇨ When the check is finished, the bar chart disappears and the LCD display returns to the normal measurement status.

⇨ If the check result exceeds the predefined threshold value, alarm 203 occurs and a message is displayed on the screen.

⇨ If the result does not exceed the threshold, the display returns to the normal measurement status.

⇨ If a retry of the check is defined, the check repeats according to the configuration.

⇨ The current result of the check is stored in the parameter *TuHC total health result*.

Values of *TuHC total health result* and their meanings:

Value	Description
Not executed	Test is not executed.

Value	Description
Warning	Warning or alarm was detected during the check. Detailed information about the warning or alarm can be confirmed by checking the value of the following parameters: ▪ TuHC Alarm ▪ TuHC Warning When this status occurs, the check is retried according to the configuration of the parameters, TuHC Setting Retry, TuHC Retry Number and TuHC Retry Interval.
Error	Change of tube stiffness exceeds the threshold value and alarm 203 occurs.
OK	Change of tube stiffness does not exceed the threshold value.

7. To abort the check while performing a single check or repeated check, set Not running in parameter *TuHC Enable*.

⇨ The check is aborted.

Configuration of the number of checks and retries

If the number of configured checks is not one and the value of *TuHC Continue Number* is not 1, the check is repeated according to the repeat interval that is defined in the parameter, *TuHC Continue Interval*. The following chart shows an example of repeating the check 5 times.

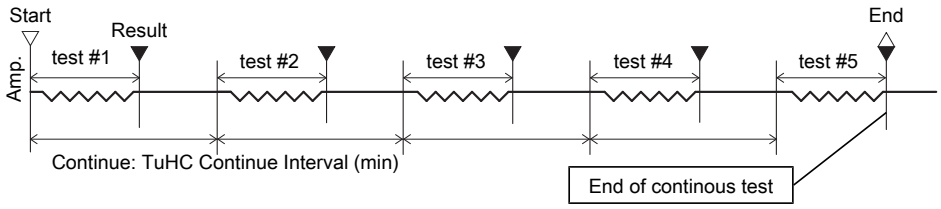


Fig. 14: Test with *TuHC continue number* = 5

If one check cannot be completed for some reason during the time interval that is defined in the *TuHC Continue Interval*, the check in that sequence is skipped.

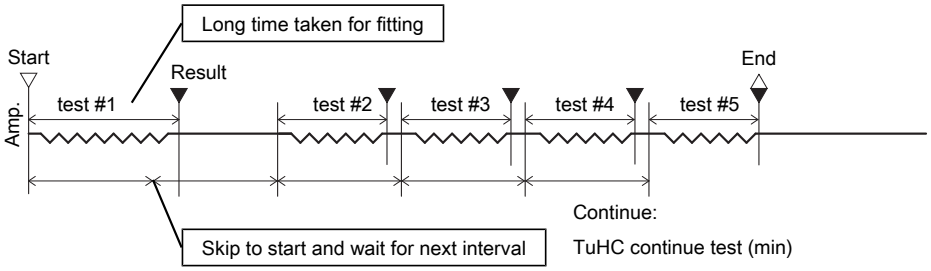


Fig. 15: Test with *TuHC continue number* = 5

If retry when a warning or an alarm occurs is configured (setting in parameter, *TuHC Setting Retry*), it is recommended that the interval between multiple checks be set for longer than the time necessary to perform the maximum number of retries (value of *TuHC Retry Interval** value of *TuHC Retry Number*). If the interval time for multiple checks is shorter than the time for the maximum number of retries, there may not be a severe problem, but the next check may be started before the maximum number of retries for the previous check have been finished. In this case, the check for which retries has not been completed is skipped and it is not counted as a check for the *TuHC Continue Number*.

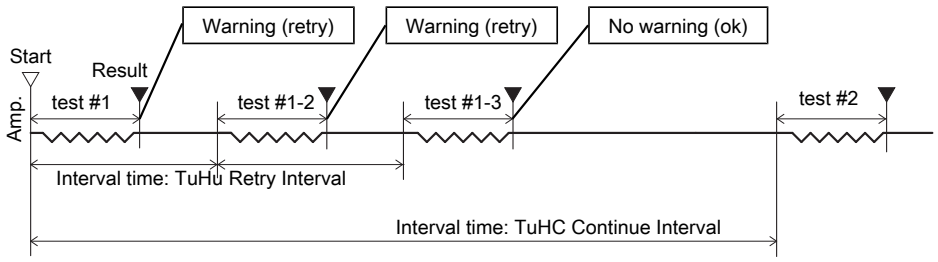


Fig. 16: Execute *Continue: number* times

In order to to perform Tube health check without count limitation, the TuHC retry interval needs to be set to more than 1440 minutes if TuHC retry number is 0.

4.14 Batch function

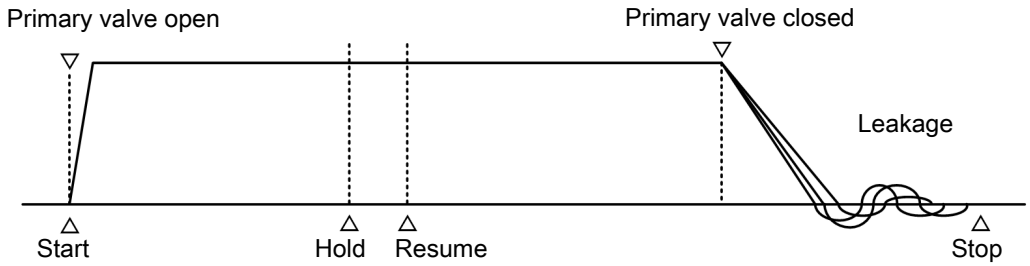
4.14.1 Overview

This function can control the flow for Batching application using Status output/input. There are 2 modes to control the flow of 1 stage and 2 stage batch. This function is available only for S13 option.

1 stage batch

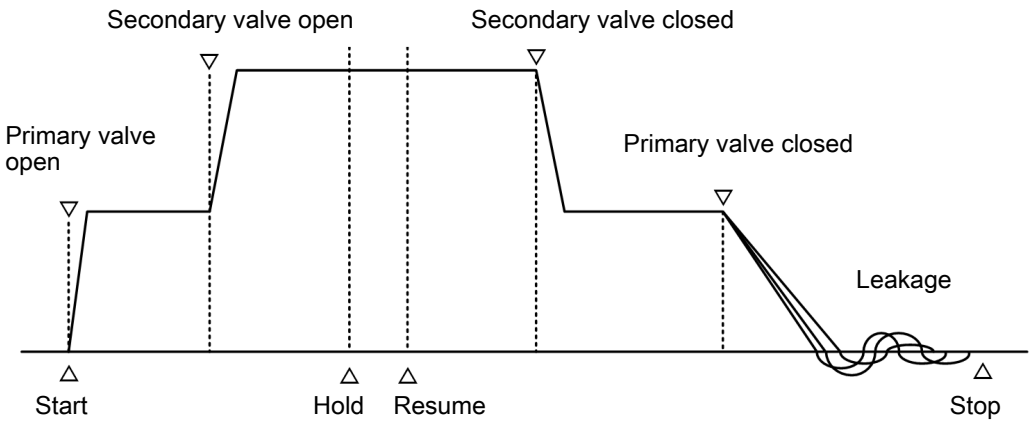
The mode controls one valve. A primary valve is Open(ed) by Start signal. A flow and totalizer is started at first. If a predetermined totalizer value is reached, it will become the primary valve close. The fluid by which after the primary valve close remains in piping is added as a leakage value. A Hold state closes all the valves. Internal coded data maintains the present state. Resume becomes a new start from an intermediate state.

- Start: Valve open
- Stop: The end of 1 batch
- Hold: The state which Close(d) the valve in the middle of the batch
- Resume: Release of a Hold state
- Leakage: A part for the leak behind the primary valve Close



2 stage batch

The mode controls two valves. In the case of one valve, if a flow is large, Leakage Value at the time of Valve Close will become large, and accuracy will become bad. On the other hand, if a flow is restricted in order to high accuracy, the time per one batch will become long. Shortening of time and the method of making accuracy high have use of two valves. Batch time becomes short by setting up the flow of the 2nd valve greatly. High precision is obtained by making the flow at the time of an end small.



Short time batching under 10 sec is not supported.

This function can be applied for more than 10 sec only.

4.14.2 Settings

Settings for Batch application can be held until 5 sets. To use Batch functionality, Batch mode parameter needs to be changed to Yes. Many relevant parameters are necessary to use this function. The following is the parameter for Batching.

If there is 1 or more inconsistency of the following parameter settings, 341:Batch configuration error occurs. Check the relevant parameters based on the following parameter descriptions if the alarm is shown after Batch parameter settings are finished.

Basic setting parameters for 1 stage batch

Parameter	Setting
Batch mode	When Yes is selected by this parameter, this device works as batch transmitter.
Batch select	Select used batch setting in Batch 1 – 5.
Batch variable select	Select the device variables in Batch. Mass Flow, Volume Flow, Corrected Volume Flow, Net Mass Flow 1, Net Mass Flow 2, Net Volume Flow 1, Net Volume Flow 2, Net Corrected Volume Flow
Pulse/Status output 1 mode	Status output needs to be selected when Batch functionality is used.
Batch unit 1 – 5	Select the unit for Batch. When this unit doesn't meet with Batch variable select, 341:Batch configuration error occurs.
Batch quantity 1 – 5	Set the batch quantity. Batch can assign to Analog output. Then, this value becomes URV and LRV is 0.
Fixed compensation value 1 – 5	Set the leakage compensation value. Valve is closed when quantity reaches (Batch quantity 1 – 5 - Fixed compensation value 1 – 5).
Batch end judgment value 1 – 5	Set the judgment value of leakage value. The unit is depend on Process variable which is selected by Batch variable select 1 – 5.
Max batch quantity 1 – 5	Set threshold value of maximum flow. When flow rate for batch operation is bigger than the parameter value, 208:Batch overrun/underrun alarm occurs. If this value is set to 0, this threshold is not active.
Status output 1 function	Batch function needs to be selected when Batch functionality is used.
Batch status output 1	Set the status output function for Batch.

Additional setting parameters for 1/2 stage batch

Parameter	Setting
Batch type select 1 – 5	Select the type of Batch in 1 stage batch or 2 stage batch.
Batch primary valve open 1 – 5	Set the quantity when the primary valve is opened. Setting of valve control function is set by Status output 1 – 3 function.
Batch secondary valve open 1 – 5	Set the quantity when the secondary valve is opened. This parameter is available when 2 stage batch is selected in Batch type select 1 – 5. Setting of valve control function is set by Status output 1 – 3 function.

Parameter	Setting
Batch secondary valve close 1 – 5	Set the quantity when the secondary valve is closed. This parameter is available when 2 stage batch is selected in Batch type select 1 – 5. Setting of valve control function is set by Status output 1 – 3 function.
Compensation mode select 1 – 5	Set the mode to calculate leakage value. Off, Mode 1, Mode 2 or Mode 3 Off: Fixed compensation mode Mode 1: A leakage value until crossing the first leakage judgment value after valve is closed. Mode 2: A leakage value that it becomes less than the leakage judgment value for leakage hysteresis time after valve is closed. Mode 3: A leakage value until it goes through mode 3 leakage time from the point which first-crosses leakage judgment value.
Calculation mode sel 1 – 5	Set the number of data which calculate a leakage value. The calculation data number is depend on Averaging data number 1 – 5. All: All values are used to calculate average value Select: Average value is caculated by the data except the maximum and the minimum.
Averaging data number 1 – 5	Set the number of data for average value calculation of a leakage value. This value is used when Calculation mode sel 1 – 5 is set to Select. If value of this parameter is 2 or less, then average value is calculated using All data.
Leakage hysteresis time 1 – 5	Set the hysteresis value for leakage when Mode 2 in Compensation mode select 1 – 5 is selected.
Max leakage time 1 – 5	Set the end judgment value when Mode 3 in Compensation mode select 1 – 5 is selected.
Auto compensation 1 – 5	Select whether Primary Valve Close Point is automatically corrected or not in internal algorithm. This setting is available when Mode 1 – 3 is selected in Compensation mode select 1 – 5
Max batch time 1 – 5	Set threshold value of maximum batch time. When batch operation time is larger than the parameter value, 207:Batch time exceeded alarm occurs. If this value is set to 0, this threshold is not active.
Min batch quantity 1 – 5	Set threshold value of minimum batch quantity. When quantity is smaller than the parameter value, 208:Batch overrun/underrun alarm occurs. If this value is set to 0, this threshold is not active.
Max batch flow 1 – 5	Set threshold value of maximum flow rate for batch. When flow rate is larger than the parameter value, 209:Max flow while batching alarm occurs. If this value is set to 0, this threshold is not active
Progress indication 1 – 5	Set threshold value to inform the current quantity of batch. When quantity is larger than the parameter value, 732:Batch progress indication alarm occurs. If this value is set to 0, this threshold is not active

Parameter	Setting
Batch up down select	Set the quantity mode whether quantity value is started from 0 by upward or from Batch quantity 1 – 5 by downward. Batch upwards value Batch downwards value
Pulse/Status output 2 mode	Status output needs to be selected when Batch functionality is used with 2 stage batch.
Status output 2 – 3 function	Batch function needs to be selected when Batch functionality is used with 2 stage batch.
Batch status input	Set batch operation using Status input in Start/Stop, Hold/Resume or Reset.

Display setting parameters for batch

Parameter	Setting
Display measurement mode	Set Batch control if batch function is operated on Indicator
Batch display select 1 – 4	Set Display select for batch if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode
Display format batch	Set Display format for batch if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode

Parameters to perform batch

Parameter	Setting
Batch start/stop	Selects batch operation in Start, Stop, Hold or Resume.
Batch reset	Resets batch quantity.

The following figure shows the image of leakage compensation mode:

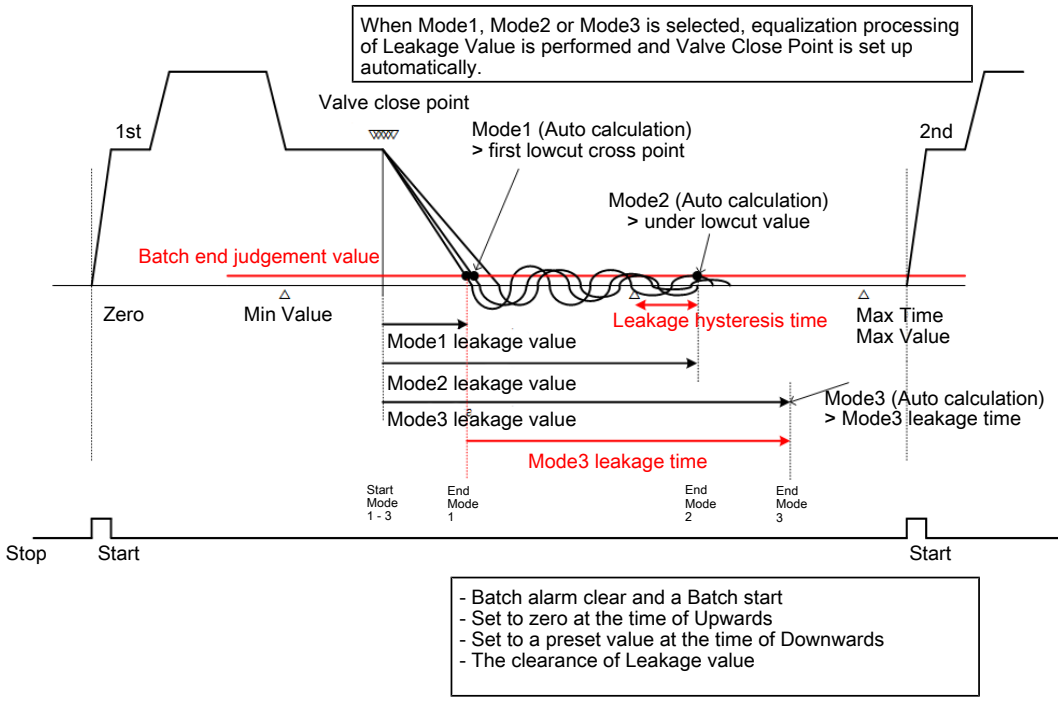


Fig. 17: Leakage compensation mode

Additional setting parameters for 1/2 stage batch

Parameter	Setting
Batch type select 1 – 5	Select the type of Batch in 1 stage batch or 2 stage batch.
Batch primary valve open 1 – 5	Set the quantity when the primary valve is opened. Setting of valve control function is set by Status output 1 – 3 function.
Batch secondary valve open 1 – 5	Set the quantity when the secondary valve is opened. This parameter is available when 2 stage batch is selected in Batch type select 1 – 5. Setting of valve control function is set by Status output 1 – 3 function.
Batch secondary valve close 1 – 5	Set the quantity when the secondary valve is closed. This parameter is available when 2 stage batch is selected in Batch type select 1 – 5. Setting of valve control function is set by Status output 1 – 3 function.
Compensation mode select 1 – 5	Set the mode to calculate leakage value. Off, Mode 1, Mode 2 or Mode 3 Off: Fixed compensation mode Mode 1: A leakage value until crossing the first leakage judgment value after valve is closed. Mode 2: A leakage value that it becomes less than the leakage judgment value for leakage hysteresis time after valve is closed. Mode 3: A leakage value until it goes through mode 3 leakage time from the point which first-crosses leakage judgment value.
Calculation mode sel 1 – 5	Set the number of data which calculate a leakage value. The calculation data number is depend on Averaging data number 1 – 5. All: All values are used to calculate average value Select: Average value is caculated by the data except the maximum and the minimum.
Averaging data number 1 – 5	Set the number of data for average value calculation of a leakage value. This value is used when Calculation mode sel 1 – 5 is set to Select. If value of this parameter is 2 or less, then average value is calculated using All data.
Leakage hysteresis time 1 – 5	Set the hysteresis value for leakage when Mode 2 in Compensation mode select 1 – 5 is selected.
Max leakage time 1 – 5	Set the end judgment value when Mode 3 in Compensation mode select 1 – 5 is selected.
Auto compensation 1 – 5	Select whether Primary Valve Close Point is automatically corrected or not in internal algorithm. This setting is available when Mode 1 – 3 is selected in Compensation mode select 1 – 5
Max batch time 1 – 5	Set threshold value of maximum batch time. When batch operation time is larger than the parameter value, 207:Batch time exceeded alarm occurs. If this value is set to 0, this threshold is not active.

Parameter	Setting
Min batch quantity 1 – 5	Set threshold value of minimum batch quantity. When quantity is smaller than the parameter value, 208:Batch overrun/underrun alarm occurs. If this value is set to 0, this threshold is not active.
Max batch flow 1 – 5	Set threshold value of maximum flow rate for batch. When flow rate is larger than the parameter value, 209:Max flow while batching alarm occurs. If this value is set to 0, this threshold is not active
Progress indication 1 – 5	Set threshold value to inform the current quantity of batch. When quantity is larger than the parameter value, 732:Batch progress indication alarm occurs. If this value is set to 0, this threshold is not active
Batch up down select	Set the quantity mode whether quantity value is started from 0 by upward or from Batch quantity 1 – 5 by downward. Batch upwards value Batch downwards value
Pulse/Status output 2 mode	Status output needs to be selected when Batch functionality is used with 2 stage batch.
Status output 2 – 3 function	Batch function needs to be selected when Batch functionality is used with 2 stage batch.
Batch status input	Set batch operation using Status input in Start/Stop, Hold/Resume or Reset.

5 Menu description

An appropriate operation level must be selected under *Operation level [▶ 22]* to enter the device setup. The following descriptions show the menu path without a user role selected.

First 3 levels of the HART menu structure

- Process variables root menu
  - Dynamic variables
  - Device variables
  - Dynamic variables status
  - Device variables status
  - View outputs
  - View inputs
  - Sensor and transmitter
- Diagnostics root menu
  - Status/Self test
- Maintenance root menu
  - Time stamp
  - Output test
  - Display indication
  - Autozero
  - Analog output/input trim
  - Total & Batch start/stop
  - High/Low alarm configuration
  - Simulation
  - Alarm/Event behaviour settings
  - Standard diagnostics
  - Total health check
  - Data logging
  - Parameter backup/restore
  - Calibration date
  - Last calibration information
- Device root menu
  - Easy setup wizard
    - Installation configuration
    - Standard device variables
    - Analog outputs
    - Pulse/Status outputs
    - Totalizer
    - Display select
    - Date/Time
    - Events/Alarms acknowledge
    - Batch 1 function
  - Basic setup
    - Installation configuration
    - Mass flow
    - Density
    - Temperature
    - Volume flow
    - Analog outputs
    - Pulse/Status output
    - Totalizer
    - Display select
    - Date/Time
    - Events/Alarms acknowledge
    - Batch function
  - Detailed setup
    - Installation configuration
    - Process variables
    - Analog output
    - Pulse/Status outputs
    - HART outputs
    - Analog input
    - Status input
    - Totalizer
    - Display
    - Date/Time
    - User access configuration
    - Batch function
    - SIL mode
    - Proving
    - Sensor constants
    - Compensation
    - Device information
    - Burst/Event notification
    - Write protect
    - Others
    - Service

Explanation of menu symbols

The menu description provides an overview of all menu items for SITRANS FCT040 and SITRANS FCT020, that are available via the display and via the HART configuration tool (Device Type Manager using Pactware, SIMATIC PDM, etc.).

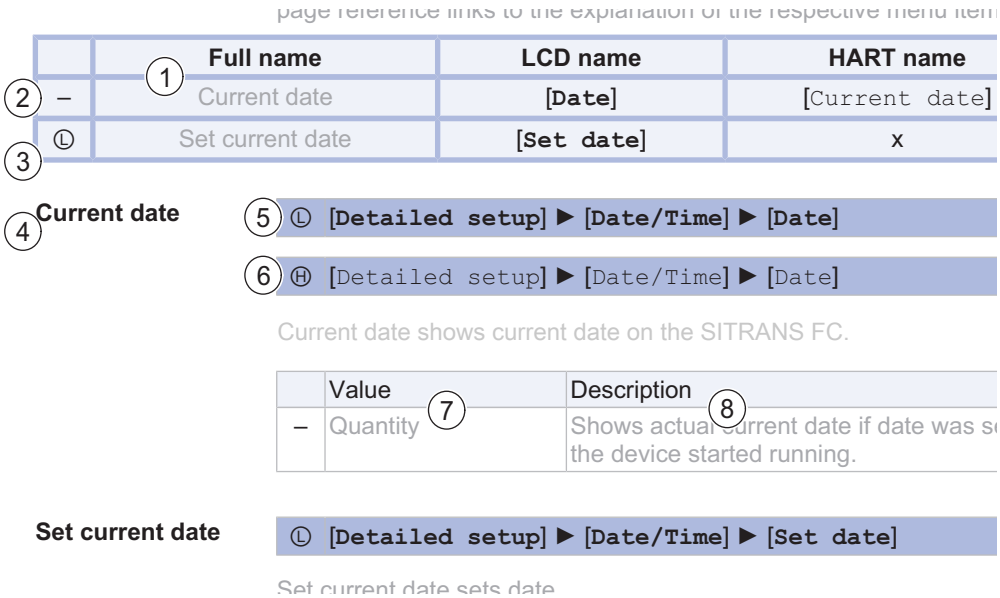


Fig. 18: Explanation of the menu description

① Menu overview
② No restrictions
③ Availability for display
④ Full name of the menu item
⑤ Display menu path
⑥ [HART] menu path
⑦ Values or parameters of the menu item
⑧ Description of the corresponding value or display parameter

Tab. 24: Explanation of font styles used in the menu description

Font style	Description
Mass flow	Full name of a menu item.
[Mass]	Menu item on display.
[Mass Flow]	Menu item for the [HART] configuration tool. The name strings of some items related to the protocol standard are changed via a reference dictionary, if the tool is multilingual. Each name changes depending on the dictionary string in the specific configuration tool (DTM using Pactware, SIMATIC PDM, etc.).

Basically, the menu items are available for all devices. Exceptions are marked with corresponding symbols. Factory default values for parameters that are not listed in this document can be found in a [.csv] file on the CD and the microSD card accompanying the device.

Tab. 25: Explanation of symbols used in the menu description

Symbols	Description
Ⓛ	Menu item or menu path is available via display.
Ⓗ	Menu item or menu path is available via the [HART] configuration tool.
Ⓕ	Menu item is optional. It is available only if a transmitter with the corresponding function is used.

Symbols	Description
–	No restrictions.

The following overview shows the selectable menu items within the main menu. Except for the Basic setup menu, all menus are available for all devices. Basic setup is available via HART communication only.

Some menu items differ in the menu on the display because of special items that are only available via the HART communication tool. These are called Method and, depending on the purpose of each item, are used to set some items via a text-based interactive user interface.

	Full name	Display name	[HART] name	Page
Ⓛ	Events/Alarms acknowledge	[Evt/Alm ack]	–	[▸ 114]
Ⓛ	Language	[Lang]	–	[▸ 116]
–	Process variables	[Process variables]	[Process variables]	[▸ 117]
Ⓛ	Diag/Service	[Diag/Service]	–	[▸ 130]
–	Easy setup wizard	[Easy setup wizard]	[Easy setup wizard]	[▸ 281]
Ⓗ	Basic setup	–	[Basic setup]	[▸ 334]
–	Detailed setup	[Detailed setup]	[Detailed setup]	[▸ 390]

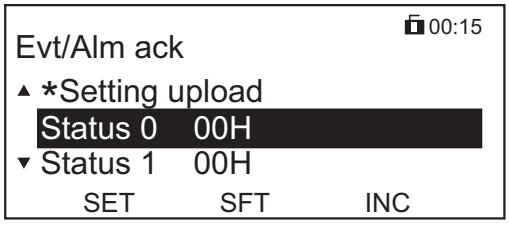
5.1 Events/Alarms acknowledge

For Event/Alarms acknowledge, there is a wizard menu for confirming the status of events and for acknowledging the events. The procedure for confirming and acknowledging follows.

The settings must be downloaded to the device. If the wizard is canceled before this is completed, any changes to the settings will not be saved.

✓ [Specialist] is selected as the *operation level [▸ 22]*.

1. Press [INC] until the menu [Evt/Alm ack] is selected.
2. Press [SET] to enter the menu [Evt/Alm ack].
   ⇨ [Setting upload] runs automatically and will be marked with a * after completion.
   ⇨ A list of status groups appears.



The list of status groups and the status are displayed. The hexadecimal value shows the consolidated status of events/alarms in each group. 00H means there are no events/alarms, any other value means that at least one event/alarm has been activated in that group.

3. Press [INC] to confirm the status of each status group.
   ⇨ Status groups 0 – 5, 14 – 23 are displayed and can be selected.
4. Press [SET] to choose the status to be confirmed in detail.
   ⇨ Statuses of events/alarms in the corresponding status group are displayed.

```
Status 0                    00:29
▲ □101:Freq FAIL
  □102:Signal FAIL
▼ □103,4:Pckoff 1 FAIL
     SET        SFT        INC
```

Activated events are displayed with a filled square (■) and others are with an empty square (□). For detailed information on the assignment of events to a parameter, see chapter Alarm/Event device status *Alarm/Event device status [▸ 131]*.

5. After confirmation of events/alarms, press [ESC] to return to the previous screen.
6. Press [INC] until [Evt Ack] is selected.
7. Press [SET] to choose [Evt Ack].
8. Press [INC] to select [Ack].
9. Press [SET] to acknowledge the events.
10. Press [SET] to confirm the selection.
    ⇨ Parameter [Setting download] is preselected.
11. Press [SET] to download and validate the acknowledgement of events.

⇨ If the device does not have any alarm or warning, [No err] will be displayed.

⇨ If the device has an alarm or warning, the number of errors and the corresponding fault number will be shown. For additional information, see chapter *Troubleshooting [▸ 626]*.

Status group 0 – 5, 14 – 23

Ⓛ [Evt/Alm ack] ▶ [Status 0 – 5, 14 – 23]

The status information of events that can be displayed is selected in the menus *Status group 0 – 5, 14 – 23*. For detailed information on the assignment of events to a parameter, see chapter *Alarm/Event device status [▸ 131]*.

	Display parameter	Description
Ⓛ	Status 0 – 5, 14 – 23 [Status 0 – 5, 14 – 23]	Status group 6 – 13 is not used.

Event acknowledge

Ⓛ [Evt/Alm ack] ▶ [Evt Ack]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 131]*
- *Basic setup [▸ 375]*

If *Acknowledge* or *Monitor + acknowledge* is selected in the event setting parameters, it is necessary to acknowledge the event to reset the event status. For additional information, see chapter *Event setting [▸ 64]*.

	Value	Description
–	Acknowledged [Ack]	Status when the generated event has been acknowledged. After the event is acknowledged, its status automatically reverts to *Unacknowledged*.
–	Unacknowledged [Unack]	An event was not generated, or if it was, it was not acknowledged.

5.2 Language

Language

Ⓛ [Lang]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 556]*

Only available if the device is equipped with a display.

Sets the language to be used on the LCD display.

	Value	Description
–	English [English]	The desired display language can be selected. Available languages depend on country specific delivery: *Delivery to EAEU*: ▪ English ▪ German ▪ Russian ▪ Kazakh ▪ Polish *All others*: ▪ English ▪ French ▪ German ▪ Italian ▪ Spanish ▪ Portuguese ▪ Chinese
–	French [French]	
–	German [German]	
–	Italian [Italian]	
–	Spanish [Spanish]	
–	Portuguese [Portuguese]	
–	Russian [Russian]	
–	Kazakh [Kazakh]	
–	Chinese [Chinese]	
–	Polish [Polish]	

5.3 Process variables

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Dynamic variables	–	[Dynamic variables]	[▸ 117]
–	Device variables	[Dev var]	[Device variables]	[▸ 121]
Ⓕ	Additional function	[Add func]	[Additional function]	[▸ 122]
Ⓗ	Dynamic variables status	–	[Dynamic variables status]	[▸ 123]
Ⓗ	Device variables status	–	[Device variables status]	[▸ 124]
–	View outputs	[AO]	[View outputs]	[▸ 128]
–	View inputs	[AI]	[View inputs]	[▸ 128]
–	Sensor and transmitter	[Snsr/Trsmtr]	[Sensor and transmitter]	[▸ 129]

5.3.1 Dynamic variables

The following overview shows the selectable menu items within the submenu *Dynamic variables*.

	Full name	Display name	[HART] name	Page
Ⓗ	PV	–	[PV]	[▸ 117]
Ⓗ	PV % rnge	–	[PV % rnge]	[▸ 117]
Ⓗ	SV	–	[SV]	[▸ 117]
Ⓗ	TV	–	[TV]	[▸ 118]
Ⓗ	QV	–	[QV]	[▸ 118]
Ⓗ	PV is – QV is	–	[PV is - QV is]	[▸ 118]

PV

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [PV]

This parameter shows the process value of the assigned variable.

This parameter can be set in the following menu/menus:

- *HART output [▸ 510]*

	Value	Description
Ⓗ	Quantity	Process value that is assigned as the primary variable *PV*. It is linked to Analog output 1. Changing PV will also change the assignment of Analog output 1 and related configurations.

PV % rnge

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [PV % range]

This parameter shows the percentage range of the process value of the assigned variable.

	Value	Description
Ⓗ	Quantity	Percentage range of PV.

SV

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [SV]

This parameter shows the process value of the assigned variable.

This parameter can be set in the following menu/menus:

- *HART output [▸ 510]*

	Value	Description
Ⓗ	Quantity	Process value that is assigned as secondary variable *SV*.

TV

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [TV]

This parameter shows the process value of the assigned variable.

This parameter can be set in the following menu/menus:

- *HART output [▸ 510]*

	Value	Description
Ⓗ	Quantity	Process value that is assigned as tertiary variable *TV*.

QV

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [QV]

This parameter shows the process value of the assigned variable.

This parameter can be set in the following menu/menus:

- *HART output [▸ 510]*

	Value	Description
Ⓗ	Quantity	Process value that is assigned as quaternary variable *QV*.

PV is – QV is

Ⓗ [Process variables root menu] ▶ [Dynamic variables] ▶ [PV is – QV is]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 510]*

The value Relative density is available for liquid models only.

The values Concentration, Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected, if the concentration function is available on the device.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Measured mass flow value.
Ⓗ	Density [Density]	Measured density value.
Ⓗ	Temperature [Temperature]	Measured temperature value.
Ⓗ	Pressure [Pressure]	Measured pressure value.
Ⓗ	Volume flow [Volume flow]	Measured volume flow value.
Ⓗ	Reference density [Reference density]	Calculated reference density value at reference temperature.
Ⓗ	Relative density [Relative density]	Relative density value, which is calculated from the measured density and the selected unit using the equation.

	Value	Description
Ⓗ	Corrected volume flow [Corrected volume flow]	Corrected volume flow, which is calculated from the measured mass flow and the reference density.
Ⓗ	Calorific value [Calorific value]	Calorific fixed value or variable value, if equipped with a function for analog input and Calorific value has been set to Analog input select. Calorific value is not available for PV.
Ⓗ Ⓕ	Concentration [Concentration]	Concentration of process medium as determined by the standard/advanced concentration function.
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	Net flow as determined from the concentration percentage and total mass flow.
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	Net flow as determined from the concentration percentage and total mass flow.
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	Net flow as determined from the concentration percentage and total volume flow.
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	Net flow as determined from the concentration percentage and total volume flow.
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	Net volume flow at the reference temperature as determined from the concentration percentage, temperature, reference density of product and Net mass flow 1 or Net volume flow 1.
Ⓗ Ⓕ	Viscosity [Visc]	Viscosity value, which is calculated from the delta pressure which is received from external differential pressure instrument via Analog input.
Ⓗ	Velocity [Velocity]	Calculated velocity of fluid inside the measuring tube. Velocity is not available for PV is.
Ⓗ	Totalizer 1 [Totalizer 1]	Calculated totalizer 1. Totalizer 1 is not available for PV is.
Ⓗ	Totalizer 2 [Totalizer 2]	Calculated totalizer 2. Totalizer 2 is not available for PV is.
Ⓗ	Totalizer 3 [Totalizer 3]	Calculated totalizer 3. Totalizer 3 is not available for PV is.
Ⓗ	Totalizer 4 [Totalizer 4]	Calculated totalizer 4. Totalizer 4 is not available for PV is.
Ⓗ	Totalizer 5 [Totalizer 5]	Calculated totalizer 5. Totalizer 5 is not available for PV is.
Ⓗ	Totalizer 6 [Totalizer 6]	Calculated totalizer 6. Totalizer 6 is not available for PV is.
Ⓗ Ⓕ	Batch [Batch]	Calculated batch quantity.
Ⓗ	Drive current [Drv curr]	Measured drive current.
Ⓗ Ⓕ	TuHC change ratio of inlet stiffness [Inlet stiff chg]	Calculated TuHC change ratio of inlet stiffness. This is not available for PV is.

	Value	Description
Ⓗ Ⓕ	TuHC change ratio of outlet stiffness `[Outlet stiff chg]`	Calculated TuHC change ratio of outlet stiffness. This is not available for PV is.

5.3.2 Device variables

Device variables

Ⓛ [Process variables] ▶ [Dev var]

Ⓗ [Process variables root menu] ▶ [Device variables]

The menu item *Device variables* displays the process variables.

	Display parameter	Description
–	Mass flow [Mass] [Mass flow]	Measured mass flow value. For configuration of mass flow measurement, see Mass flow settings *[▸ 394]*.
–	Density [Dens] [Density]	Measured density value. For configuration of density measurement, see Density settings *[▸ 399]*.
–	Temperature [Temp] [Temperature]	Measured temperature value. For configuration of temperature measurement, see Temperature settings *[▸ 405]*.
–	Volume flow [Vol] [Volume flow]	Measured volume flow value. For configuration of volume flow measurement, see Volume flow settings *[▸ 410]*.
–	Pressure [Pres] [Pressure]	Measured pressure value, if pressure sensor is connected to the analog current input. For configuration of pressure measurement, see Pressure settings *[▸ 415]*.
–	Reference density [Ref dens] [Reference density]	Calculated reference density value at reference temperature. For configuration of reference density measurement, see Reference density settings *[▸ 420]*.
–	Relative density [Rel dens] [Relative density]	Relative density value, which is calculated from the measured density, the selected unit and the equation. For configuration of relative density measurement, see Relative density settings *[▸ 425]*.
–	Corrected volume flow [Corr vol] [Corrected volume flow]	Volume flow, which is calculated from the measured mass flow and the reference density. For more detailed Information, see Corrected volume flow settings *[▸ 429]*.
Ⓗ	Calorific value [Calorific value]	Calculated calorific value. For configuration of calorific value measurement, see Calorific value settings *[▸ 433]*.
–	Velocity [Vel] [Velocity]	Calculated velocity of fluid inside the measuring tube. For configuration of velocity measurement, see Velocity settings *[▸ 436]*.
–	Totalizer 1 – 6 [Ttl1 – 6] [Totalizer 1 – 6]	Values of the Totalizer 1 – 6. For configuration of totalizer functions, see Totalizer settings *[▸ 515]*.

5.3.3 Additional function

Additional function

Ⓛ [Process variables] ▶ [Dev var]

Ⓗ [Process variables root menu] ▶ [Device variables] ▶ [Additional function]

The menu item *Additional function* displays the concentration and the net flow.

	Display parameter	Description
Ⓕ	Concentration [Conc] [Concentration]	Measured concentration.
Ⓕ	Net mass flow 1 – 2 [Net mass1 – 2] [Net mass flow 1 – 2]	Net mass flow of a component, product or carrier of mixed fluid.
Ⓕ	Net volume flow 1 – 2 [Net vol1 – 2] [Net volume flow 1 – 2]	Net volume flow of a component, product or carrier of mixed fluid.
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	Net corrected volume flow of a component or product of mixed fluid.
Ⓕ	Batch [Batch] [Batch]	Calculated batch quantity.
Ⓕ	Viscosity [Visc] [Viscosity]	Viscosity value, which is calculated from the delta pressure which is received from external differential pressure instrument via Analog input.

5.3.4 Dynamic variables status

Dynamic variables status

Ⓗ [Process variables root menu] ▶ [Dynamic variables status]

The menu item *Dynamic variables status* displays the status of the dynamic variables. The display parameters *Pressure data quality* and *Pressure limit status* are only available, if a pressure sensor is connected to the analog current input.

Tab. 26: Description of data quality statuses

Status	Description
Good	The value may be used in control.
Poor accuracy	The quality of the value is lower than standard, but the value may still be useful.
Manual/Fixed	The value has been manually adjusted.
Bad	The value is not useful.

Tab. 27: Description of limit statuses

Status	Description
Constant	The value cannot be changed, no matter what the process does.
Low limited	The value is below the low limit.
High limited	The value is above the high limit.
Not limited	The value is free to change.

	Display parameter	Description
Ⓗ	PV data quality [PV data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	PV limit status [PV limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	SV data quality [SV data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	SV limit status [SV limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	TV data quality [TV data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	TV limit status [TV limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	QV data quality [QV data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	QV limit status [QV limit status]	Possible statuses: constant, low limited, high limited, not limited.

5.3.5 Device variables status

The following overview shows the selectable menu items within the submenu Dynamic variables.

	Full name	Display name	[HART] name	Page
Ⓗ	Standard device variables status	–	[Standard device variables status]	[▸ 124]
Ⓗ	Totalizer status	–	[Totalizer status]	[▸ 126]
Ⓗ Ⓕ	Menu additional function	–	[Menu additional function]	[▸ 126]

Standard device variables status

Ⓗ [Process variables root menu] ▶ [Device variables status] ▶ [Standard device variables status]

The menu item *Standard device variables status* shows the status of the standard device variables.

Tab. 28: Description of data quality statuses

Status	Description
Good	The value may be used in control.
Poor accuracy	The quality of the value is lower than standard, but the value may still be useful.
Manual/Fixed	The value has been manually adjusted.
Bad	The value is not useful.

Tab. 29: Description of limit statuses

Status	Description
Constant	The value cannot be changed, no matter what the process does.
Low limited	The value is below the low limit.
High limited	The value is above the high limit.
Not limited	The value is free to change.

	Display parameter	Description
Ⓗ	Mass flow data quality [Mass flow data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Mass flow limit status [Mass flow limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Density data quality [Density data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Density limit status [Density limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Temperature data quality [Temperature data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.

	Display parameter	Description
Ⓗ	Temperature limit status [Temperature limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Volume flow data quality [Volume flow data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Volume flow limit status [Volume flow limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Pressure data quality [Pressure data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Pressure limit status [Pressure limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Reference density data quality [Reference density data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Reference density limit status [Reference density limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Relative density data quality [Relative density data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Relative density limit status [Relative density limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Corrected volume flow data quality [Corrected volume flow data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Corrected volume flow limit status [Corrected volume flow limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ	Calorific data quality [Calorific data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Calorific limit status [Calorific limit status]	Possible statuses: constant, low limited, high limited, not limited.

Totalizer status

Ⓗ [Process variables root menu] ▶ [Device variables status] ▶ [Totalizer status]

The menu item *Totalizer status* displays status of Totalizer 1 – 6.

	Display parameter	Description
Ⓗ	Totalizer 1 – 6 data quality [Totalizer 1 - 6 data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ	Totalizer 1 – 6 limit status [Totalizer 1 - 6 limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ Ⓕ	Batch data quality [Batch data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ Ⓕ	Batch limit status [Batch limit status]	Possible statuses: constant, low limited, high limited, not limited.

Menu additional function

Ⓗ [Process variables root menu] ▶ [Device variables status] ▶ [Menu additional function]

The menu item *Menu additional function* displays the statuses of the concentration and related values.

	Display parameter	Description
Ⓗ Ⓕ	Concentration data quality [Concentration data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ Ⓕ	Concentration limit status [Concentration limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ Ⓕ	Net mass flow 1 – 2 data quality [Net mass flow 1 - 2 data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ Ⓕ	Net mass flow 1 – 2 limit status [Net mass flow 1 - 2 limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ Ⓕ	Net volume flow 1 – 2 data quality [Net volume flow 1 - 2 data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.

	Display parameter	Description
Ⓗ Ⓕ	Net volume flow 1 – 2 limit status [Net volume flow 1 - 2 limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ Ⓕ	Net corrected volume flow data quality [Net corrected volume flow data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ Ⓕ	Net corrected volume flow limit status [Net corrected volume flow limit status]	Possible statuses: constant, low limited, high limited, not limited.
Ⓗ Ⓕ	Viscosity data quality [Viscosity data quality]	Possible statuses: good, poor accuracy, manual/fixed, bad.
Ⓗ Ⓕ	Viscosity limit status [Viscosity limit status]	Possible statuses: constant, low limited, high limited, not limited.

5.3.6 View outputs

View outputs

Ⓛ [Process variables] ▶ [AO]

Ⓗ [Process variables root menu] ▶ [View outputs]

The menu item *View outputs* displays the status of the output signal.

	Display parameter	Description
–	Analog output percent 1 – 2 [AO1 – 2 %] [Analog output percent 1 – 2]	Percentage value of output signal at Analog output 1 – 2.
–	Analog output 1 – 2 current [AO1 – 2 curr] [Analog output 1 – 2 current]	Current value of output signal at Analog output 1 – 2 in mA.

5.3.7 View inputs

View inputs

Ⓛ [Process variables] ▶ [AI]

Ⓗ [Process variables root menu] ▶ [View inputs]

The menu item *View inputs* displays the status of the input signal.

	Display parameter	Description
–	Status input state [Status input state]	State at status input: *Short* or *Open*.
–	Analog input percent [AI %] [Analog input percent]	Percentage value of input signal at analog input.
–	Analog input current [AI curr] [Analog input current]	Current value of input signal at analog input.

Ⓛ [Process variables] ▶ [Sts in]

	Display parameter	Description
–	Status input state [Sts in state]	State at status input: *Short* or *Open*.

5.3.8 Sensor and transmitter

Sensor and transmitter

Ⓛ [Process variables] ▶ [Snsr/Trsmtr]

Ⓗ [Process variables root menu] ▶ [Sensor and transmitter]

The menu item *Sensor and transmitter* displays the status of the sensor or transmitter.

	Display parameter	Description
–	Resonance frequency [Freq] [Resonance frequency]	Measured resonance frequency of the sensor in Hz.
–	Phase difference [Phase diff] [Phase difference]	Measured phase difference of the sensor signals in mrad.
–	Drive gain [Drv gain] [Drive gain]	Gain from pick-off signal to drive current. Range of values is 0.0 to 10.0.
–	Drive current [Drv curr] [Drive current]	Drive current of sensor in mA.
–	Transmitter temperature [Trsmtr temp] [Transmitter temperature]	Measured temperature of transmitter (temperature of main circuit board).
–	Max transmitter temperature [Trsmtr max temp] [Max transmitter temperature]	Maximum measured transmitter temperature since the last reset.
–	Sensor max temperature [Snsr max temp] [Sensor max temperature]	Maximum measured fluid temperature since the last reset.

5.4 Diag/Service

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Status/Self test	[Sts/Self test]	[Status/Self test]	[▸ 130]
–	Time stamp	[Time stamp]	[Time stamp]	[▸ 161]
–	Output test	[Out test]	[Output test]	[▸ 161]
–	Display indication	[Display ind]	[Display indication]	[▸ 165]
–	Autozero	[AZ]	[Autozero]	[▸ 166]
–	Analog output/input trim	[AO/AI trim]	[Analog output/input trim]	[▸ 168]
Ⓗ	Total & Batch start/stop	–	[Total & Batch start/stop]	[▸ 172]
–	High/Low alarm configuration	[H/L alm cfg]	[High/Low alarm configuration]	[▸ 174]
–	Simulation	[Sim]	[Simulation]	[▸ 197]
–	Alarm/Event behavior settings	[Alm/Evt bhvr set]	[Alarm/Event behavior settings]	[▸ 204]
–	Standard diagnostics	[Std diag]	[Standard diagnostics]	[▸ 248]
Ⓕ	Total health check	[Ttl health chk]	[Total health check]	[▸ 254]
–	Data logging	[Data log]	[Data logging]	[▸ 271]
Ⓛ	Parameter backup/restore	[Param bkup/restore]	[Parameter backup/restore]	[▸ 277]
Ⓗ	Calibration date	–	[Calibration date]	[▸ 280]
–	Last calibration information	[Last calib info]	[Last calibration information]	[▸ 280]

5.4.1 Status/Self test

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Event acknowledge	[Evt Ack]	[Events/Alarms acknowledge]	[▸ 131]
–	Alarm/Event device status	[Alm/Evt dev sts]	[Alarm/Event device status]	[▸ 131]
Ⓗ	Condensed status map	–	[Condensed status map]	[▸ 136]
–	Detailed device status	[Detail dev sts]	[Detailed device status]	[▸ 147]
–	Event history	[Evt hist]	[Event history]	[▸ 154]
Ⓗ	Device reset	–	[Device reset]	[▸ 160]
–	Burnout	[Burn out]	[Burnout]	[▸ 160]
Ⓗ	Reset more status available flag	–	[Reset More Sts Flag]	[▸ 160]
Ⓗ	Clear Cfg Chgd Flg	–	[clear Cfg Chgd Flag]	[▸ 160]
Ⓗ	Self test	–	[Self test]	[▸ 161]

Event acknowledge

Ⓛ **[Diag/Service] ▶ [Sts/Self test] ▶ [Evt Ack]**

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Events/Alarms acknowledge]

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

This parameter can be set in the following menu/menus:

- *Parameter description [▸ 115]*
- *Basic setup [▸ 375]*

If *Acknowledge* or *Monitor + acknowledge* is selected in the event setting parameters, it is necessary to acknowledge the event to reset the event status. For additional information, see chapter *Event setting [▸ 64]*.

	Value	Description
–	Acknowledged **[Ack]** [Acknowledged]	Status when the generated event has been acknowledged. After the event is acknowledged, its status automatically reverts to *Unacknowledged*.
–	Unacknowledged **[Unack]** [Unacknowledged]	An event was not generated, or if it was, it was not acknowledged.

Alarm/Event device status

Alarm/Event device status

Ⓛ **[Diag/Service] ▶ [Sts/Self test] ▶ [Alm/Evt dev sts]**

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Alarm/Event device status]

This parameter can be set in the following menu/menus:

Basic setup [▸ 371]

The menu item *Alarm/Event device status* displays device statuses. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▸ 73]*
- *Troubleshooting [▸ 626]*

Some "Event/Alarm name" displays on the LCD display may differ from those in the HART configuration tools.

An Alarm or Warning for the Batch function might be displayed in the product, but the Batch function cannot be used.

	Display parameter	Description
Ⓗ	Device status [Dev sts] [Device status]	Status of the following events: ▪ Process applied to the primary variable is outside the operating limits of the field device ▪ Process applied to the non-primary variable is outside the operating limits of the field device ▪ PV Analog Channel Saturated ▪ PV Analog Channel Fixed ▪ Field device has more statuses available ▪ A reset or self test of the field device has occurred, or power has been disconnected and reconnected ▪ The configuration of the field device has been modified ▪ Field device has malfunctioned due to a hardware error or failure
–	Status group 0 [Status0] [Status group 0]	Status of the following events: ▪ 101: Resonance frequency failure ▪ 102: Signal failure ▪ 103 – 104: Pick off 1 failure ▪ 105 – 106: Pick off 2 failure ▪ 107 – 108: Temperature failure
–	Status group 1 [Status1] [Status group 1]	Status of the following events: ▪ 121 – 122: Main board failure
–	Status group 2 [Status2] [Status group 2]	Status of the following events: ▪ 123: Parameter restore incomplete ▪ 124 – 125: Sensor board failure ▪ 126: Sensor communication error ▪ 127 – 129: Option board failure ▪ 130 – 132: Indicator board failure ▪ 133: Indicator board mismatch ▪ 134: Indicator communication error ▪ 135: microSD failure
–	Status group 3 [Status3] [Status group 3]	Status of the following events: ▪ 201: Slug detection ▪ 202: Empty pipe detection ▪ 203: Corrosion detection ▪ 204 – 206: Autozero failure ▪ 207 – 209: Batch failure ▪ 210 – 212: NOC failure

	Display parameter	Description
–	Status group 4 [**Status4**] [Status group 4]	Status of the following events: ▪ 221: Analog input failure ▪ 222: Mass flow high high low low alarm ▪ 223: Density high high low low alarm ▪ 224: Temperature high high low low alarm ▪ 225: Pressure high high low low alarm ▪ 226: Volume flow high high low low alarm ▪ 227: Corrected volume flow high high low low alarm ▪ 228: Concentration high high low low alarm
–	Status group 5 [**Status5**] [Status group 5]	Status of the following events: ▪ 229: Net mass flow 1 high high low low alarm ▪ 230: Net mass flow 2 high high low low alarm ▪ 231: Net volume flow 1 high high low low alarm ▪ 232: Net volume flow 2 high high low low alarm ▪ 233: Corrected Net Volume Flow high high low low Alarm. ▪ 234: Relative density high high low low alarm ▪ 235: Reference density high high low low alarm ▪ 236: Viscosity high high low low alarm
Ⓗ	Extended device status [Ext dev status]	For configuration of the NE107 classification, see the following chapter: ▪ Condensed status map Condensed status map Extended device status that is defined in the HART specifications. ▪ Maintenance required ▪ Device variable alert ▪ Critical power failure ▪ Failure ▪ Out of specification ▪ Function check
Ⓗ	Standardized device status 0 [Device Diagnostic Status 0]	Standardized device status that is defined in the HART specifications. ▪ Device variable simulation active ▪ Non-volatile memory defect ▪ Volatile memory defect ▪ Watchdog reset executed ▪ Power supply conditions out of range ▪ Environmental conditions out of range ▪ Electronic defect ▪ Device configuration locked

	Display parameter	Description
Ⓗ	Standardized device status 1 [Device Diagnostic]	Standardized device status that is defined in the HART specifications. ▪ Status simulation active ▪ Discrete variable simulation active ▪ Event notification overflow
Ⓗ	Analog channel saturated [AO saturated]	Status of saturated analog channel that is defined in the HART specifications. ▪ Analog channel 1 ▪ Analog channel 2 ▪ Analog channel 3 ▪ Analog channel 4
Ⓗ	Standardized device status 2 [I/O and Subdevice Status]	Standardized device status that is defined in the HART specifications. Not applicable on this device. ▪ Sub-device list changed ▪ Duplicate master detected ▪ Sub-device mismatch ▪ Sub-devices with duplicate IDs found ▪ Stale data notice
Ⓗ	Standardized device status 3 [WirelessHART Status]	Standardized device status that is defined in the HART specifications. Not applicable on this device. ▪ Capacity denied ▪ Bandwidth allocation pending ▪ Block transfer pending ▪ Radio failure
Ⓗ	Analog channel fixed [AO fixed]	Status of fixed analog channel that is defined in the HART specifications. ▪ Analog channel 1 ▪ Analog channel 2 ▪ Analog channel 3 ▪ Analog channel 4
–	Status group 14 [**Status14**] [Status group 14]	Status of the following events: ▪ 241: Totalizer 1 threshold exceeded ▪ 242: Totalizer 2 threshold exceeded ▪ 243: Totalizer 3 threshold exceeded ▪ 244: Totalizer 4 threshold exceeded ▪ 245: Totalizer 5 threshold exceeded ▪ 246: Totalizer 6 threshold exceeded

	Display parameter	Description
–	Status group 15 [**Status15**] [Status group 15]	Status of the following events: ▪ 301 – 320: Process variables configuration error ▪ 321: Analog output 1 configuration error ▪ 322: Analog output 2 configuration error ▪ 323 – 325: Pulse/Status output 1 configuration error ▪ 326 – 329: Pulse/Status output 2 configuration error ▪ 330: Double pulse output configuration error ▪ 331: Status output 3 configuration error ▪ 332: Status input configuration error
–	Status group 16 [**Status16**] [Status group 16]	Status of the following events: ▪ 333: Analog input configuration error ▪ 335 – 340: Totalizer configuration error ▪ 341: Batch configuration error ▪ 342: Data logging not started ▪ 343: Option function mismatch
–	Status group 17 [**Status17**] [Status group 17]	Status of the following events: ▪ 701: Analog output 1 fixed ▪ 702: Analog output 2 fixed ▪ 703: Density fixed ▪ 704: Temperature fixed ▪ 705: Pressure fixed ▪ 706: Reference density fixed ▪ 707: Calorific value fixed ▪ 708: Process variable simulation
–	Status group 18 [**Status18**] [Status group 18]	Status of the following events: ▪ 709: Analog output simulation ▪ 710: Pulse output simulation ▪ 711: Status output simulation ▪ 715: Process variable trimming ▪ 716: Analog output 1 saturated
–	Status group 19 [**Status19**] [Status group 19]	Status of the following events: ▪ 717: Analog output 2 saturated ▪ 718: Pulse output 1 saturated ▪ 719: Pulse output 2 saturated ▪ 720: Double pulse output saturated ▪ 721: Autozero running ▪ 722: Tube health check execution error ▪ 723: Date/Time not set ▪ 724: Display over warning

	Display parameter	Description
–	Status group 20 [Status20] [Status group 20]	Status of the following events: ▪ 725: microSD card size warning ▪ 726: microSD card mismatch ▪ 728: microSD card removal procedure error ▪ 729: Parameter backup incomplete ▪ 730: Parameter restore running ▪ 732: Batch progress indication
–	Status group 21 [Status21] [Status group 21]	Status of the following event: ▪ 733,734: Viscosity warning ▪ 735: Autozero warning
–	Status group 22 [Status22] [Status group 22]	Status of the following events: ▪ 901: Device configuration locked ▪ 902: Device configuration not locked ▪ 903: Parameter backup running ▪ 904: Data logging running ▪ 905: Tube health check running ▪ 906: Batch running ▪ 907: Batch hold ▪ 908: SIL mode active
–	Status group 23 [Status23] [Status group 23]	Status of the following event: ▪ 909: Maintenance mode running

Condensed status map

The following overview shows the selectable settings within the submenu *Condensed status map*.

An Alarm or Warning for the Batch function might be displayed in the product, but the Batch function cannot be used.

	Full name	Display name	[HART] name	Page
Ⓗ	Device status	–	[Device status]	[137]
Ⓗ	Status group 0	–	[Status group 0]	[138]
Ⓗ	Status group 1	–	[Status group 1]	[138]
Ⓗ	Status group 2	–	[Status group 2]	[138]
Ⓗ	Status group 3	–	[Status group 3]	[139]
Ⓗ	Status group 4	–	[Status group 4]	[139]
Ⓗ	Status group 5	–	[Status group 5]	[139]
Ⓗ	Extended device status	–	[Ext dev status]	[140]
Ⓗ	Standardized device status 0	–	[Device Diagnostic Status 0]	[140]
Ⓗ	Standardized device status 1	–	[Device Diagnostic Status 1]	[141]
Ⓗ	Analog channel saturated	–	[AO saturated]	[141]

Ⓗ	Standardized device status 2	–	[I/O and Subdevice Status]	[▷ 141]
Ⓗ	Standardized device status 3	–	[WirelessHART Status]	[▷ 142]
Ⓗ	Analog channel fixed	–	[AO fixed]	[▷ 142]
Ⓗ	Status group 14	–	[Status group 14]	[▷ 142]
Ⓗ	Status group 15	–	[Status group 15]	[▷ 143]
Ⓗ	Status group 16	–	[Status group 16]	[▷ 143]
Ⓗ	Status group 17	–	[Status group 17]	[▷ 143]
Ⓗ	Status group 18	–	[Status group 18]	[▷ 144]
Ⓗ	Status group 19	–	[Status group 19]	[▷ 144]
Ⓗ	Status group 20	–	[Status group 20]	[▷ 145]
Ⓗ	Status group 21	–	[Status group 21]	[▷ 145]
Ⓗ	Status group 22	–	[Status group 22]	[▷ 145]
Ⓗ	Status group 23	–	[Status group 23]	[▷ 146]
Ⓗ	Reset condensed status map	–	[Reset condensed status map]	[▷ 146]

Configuration of NAMUR NE107 classification for each status parameter. Event classification according to NAMUR NE107 can be changed by selecting the following statuses:

Tab. 30: Explanation of statuses

Status	Explanation
N	No effect
M	Maintenance required
F	Failure
S	Out of specification
C	Function check

Device status

Ⓗ	[Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Device status]

Configuration of NE107 classification in the menu *Device status*.

	Parameter	Default status
Ⓗ	Process applied to the primary variable is beyond the operating limits of the field device	S
Ⓗ	Process applied to the non-primary variable is beyond the operating limits of the field device	S
Ⓗ	PV Analog Channel Saturated	S
Ⓗ	PV Analog Channel Fixed	N
Ⓗ	Field device has more statuses available	N
Ⓗ	A reset or self test of the field device has occurred, or power has been disconnected and reconnected	N
Ⓗ	A modification has been made to the configuration of the field device	N
Ⓗ	Field device has malfunctioned due to a hardware error or failure	N

Status group 0

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 0]

Configuration of NE 107 classification in the menu *Status group 0*.

	Parameter	Default status
Ⓗ	101:Resonance frequency failure [101:Resonance frequency failure]	F
Ⓗ	102:Signal failure [102:Signal failure]	F
Ⓗ	103 – 104:Pick off 1 failure [103 – 104:Pick off 1 failure]	F
Ⓗ	105 – 106:Pick off 2 failure [105 – 106:Pick off 2 failure]	F
Ⓗ	107 – 108:Temperature failure [107 – 108:Temperature failure]	F

Status group 1

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 1]

Configuration of NE 107 classification in the menu *Status group 1*.

	Parameter	Default status
Ⓗ	121 – 122:Main board failure [121 – 122:Main board failure]	F

Status group 2

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 2]

Configuration of NE 107 classification in the menu *Status group 2*.

	Parameter	Default status
Ⓗ	123:Parameter restore incomplete [123:Parameter restore incomplete]	F
Ⓗ	124 – 125:Sensor board failure [124 – 125:Sensor board failure]	F
Ⓗ	126:Sensor communication error [126:Sensor communication error]	F
Ⓗ	127 – 129:Option board failure [127 – 129:Option board failure]	F
Ⓗ	130 – 132:Indicator board failure [130 – 132:Indicator board failure]	F
Ⓗ	133:Indicator board mismatch [133:Indicator board mismatch]	F
Ⓗ	134:Indicator communication error [134:Indicator communication error]	F
Ⓗ	135:microSD failure [135:microSD failure]	F

Status group 3

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 3]

Configuration of NE 107 classification in the menu *Status group 3*.

	Parameter	Default status
Ⓗ	201:Slug detection [201:Slug detection]	M
Ⓗ	202:Empty pipe detection [202:Empty pipe detection]	M
Ⓗ	203:Corrosion detection [203:Corrosion detection]	M
Ⓗ	204 – 206:Autozero failure [204 - 206:Autozero failure]	M
Ⓗ Ⓕ	207 – 209:Batch failure [207 - 209:Batch failure]	M
Ⓗ Ⓕ	210 – 212:NOC failure [210 - 212:NOC failure]	S

Status group 4

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 4]

Configuration of NE 107 classification in the menu *Status group 4*.

	Parameter	Default status
Ⓗ	221:Analog input failure [221:Analog input failure]	N
Ⓗ	222:Mass flow high high low low alarm [222:Mass flow high high low low alarm]	N
Ⓗ	223:Density high high low low alarm [223:Density high high low low alarm]	N
Ⓗ	224:Temperature high high low low alarm [224:Temperature high high low low alarm]	N
Ⓗ	225:Pressure high high low low alarm [225:Pressure high high low low alarm]	N
Ⓗ	226:Volume flow high high low low alarm [226:Volume flow high high low low alarm]	N
Ⓗ	227:Corrected volume flow high high low low alarm [227:Corrected volume flow high high low low alarm]	N
Ⓗ Ⓕ	228:Concentration high high low low alarm [228:Concentration high high low low alarm]	N

Status group 5

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 5]

Configuration of NE 107 classification in the menu *Status group 5*.

	Parameter	Default status
Ⓗ Ⓕ	229:Net mass flow 1 high high low low alarm [229:Net mass flow 1 high high low low alarm]	N
Ⓗ Ⓕ	230:Net mass flow 2 high high low low alarm [230:Net mass flow 2 high high low low alarm]	N
Ⓗ Ⓕ	231:Net volume flow 1 high high low low alarm [231:Net volume flow 1 high high low low alarm]	N
Ⓗ Ⓕ	232:Net volume flow 2 high high low low alarm [232:Net volume flow 2 high high low low alarm]	N
Ⓗ Ⓕ	233:Net Corrected volume flow high high low low alarm [233:Corrected net volume flow high high low low alarm]	N
Ⓗ	234:Relative density high high low low alarm [234:Relative density high high low low alarm]	N
Ⓗ	235:Reference density high high low low alarm [235:Reference density high high low low alarm]	N
Ⓗ Ⓕ	236:Viscosity high high low low alarm [236:Viscosity high high low low alarm]	N

Extended device status

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Ext dev status]

This parameter is also available in an additional menu. The values can also be set in the following menu:

Alarm/Event device status [▷ 132]

Configuration of NE107 classification in the menu *Extended device status*.

	Parameter	Default status
Ⓗ	Maintenance required [Maintenance required]	N
Ⓗ	Device variable alert [Device variable alert]	S
Ⓗ	Critical power failure [Critical Power Failure]	F
Ⓗ	Failure [Failure]	N
Ⓗ	Out of specification [Out of Specification]	N
Ⓗ	Function check [Function Check]	N

Device diagnostic status 0

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Device Diagnostic Status 0]

Configuration of NE 107 classification in the menu *Standardized device status 0*.

	Parameter	Default status
Ⓗ	Device variable simulation active [Device Variable Simulation Active]	C

	Parameter	Default status
Ⓗ	Non-volatile memory defect [Non-Volatile Memory Defect]	F
Ⓗ	Volatile memory defect [Volatile Memory Defect]	F
Ⓗ	Watchdog reset executed [Watchdog Reset Executed]	F
Ⓗ	Power supply conditions out of range [Power Supply Conditions Out of Range]	S
Ⓗ	Environmental conditions out of range [Environmental Conditions Out of Range]	S
Ⓗ	Electronic defect [Electronic Defect]	F
Ⓗ	Device configuration locked [Device Configuration Locked]	N

Device diagnostic status 1

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Device Diagnostic Status 1]

Configuration of NE 07 classification in the menu *Standardized device status 1*.

	Parameter	Default status
Ⓗ	Status simulation active [Status Simulation Active]	N
Ⓗ	Discrete variable simulation active [Discrete Variable Simulation Active]	C
Ⓗ	Event notification overflow [Event Notification Overflow]	N

AO saturated

Ⓗ [Diag/Service] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [AO saturated]

Configuration of NE107 classification in the menu *Analog channel saturated*.

	Parameter	Default status
Ⓗ	Analog channel 1 – 4 [Analog Channel 1 - 4]	S

I/O and sub-device status

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [I/O and Subdevice Status]

Configuration of NE107 classification in the menu *I/O and sub-device status*.

	Parameter	Default status
Ⓗ	Sub-device list changed [Sub-Device List Changed]	N
Ⓗ	Duplicate master detected [Duplicate Master Detected]	M
Ⓗ	Sub-device mismatch [Sub-Device Mismatch]	M

	Parameter	Default status
Ⓗ	Sub-devices with duplicate IDs found [Sub-Devices with Duplicate IDs Found]	N
Ⓗ	Stale data notice [Stale Data Notice]	S

Wireless HART status

Ⓗ [Diag/Service] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [WirelessHART Status]

Configuration of NE107 classification in the menu *Wireless HART status*.

	Parameter	Default status
Ⓗ	Capacity denied [Capacity Denied]	M
Ⓗ	Bandwidth allocation pending [Bandwidth allocation pending]	N
Ⓗ	Block transfer pending [Block transfer pending]	N
Ⓗ	Radio failure [Radio failure]	F

AO fixed

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [AO fixed]

Configuration of NE107 classification in the menu *Analog channel fixed*.

	Parameter	Default status
Ⓗ	Analog Channel 1 – 4 [Analog Channel 1 - 4]	C

Status group 14

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 14]

Configuration of NE 107 classification in the menu *Status group 14*.

	Parameter	Default staus
Ⓗ	241:Totalizer 1 threshold exceeded [241:Totalizer 1 threshold exceeded]	N
Ⓗ	242:Totalizer 2 threshold exceeded [242:Totalizer 2 threshold exceeded]	N
Ⓗ	243:Totalizer 3 threshold exceeded [243:Totalizer 3 threshold exceeded]	N
Ⓗ	244:Totalizer 4 threshold exceeded [244:Totalizer 4 threshold exceeded]	N
Ⓗ	245:Totalizer 5 threshold exceeded [245:Totalizer 5 threshold exceeded]	N
Ⓗ	246:Totalizer 6 threshold exceeded [246:Totalizer 6 threshold exceeded]	N

Status group 15

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 15]

Configuration of NE 107 classification in the menu *Status group 15*.

	Parameter	Default status
Ⓗ	301 – 320:Process variable configuration error [301 – 320:Process variable configuration error]	C
Ⓗ	321:Analog output 1 configuration error [321:Analog output 1 configuration error]	C
Ⓗ	322:Analog output 2 configuration error [322:Analog output 2 configuration error]	C
Ⓗ	323 – 325:Pulse/Status output 1 configuration error [323 – 325:Pulse/Status output 1 configuration error]	C
Ⓗ	326 – 329:Pulse/Status output 2 configuration error [326 – 329:Pulse/Status output 2 configuration error]	C
Ⓗ	330:Double pulse output configuration error [330:Double pulse output configuration error]	C
Ⓗ	331:Status output 3 configuration error [331:Status output 3 configuration error]	C
Ⓗ	332:Status input configuration error [332:Status input configuration error]	C

Status group 16

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 16]

Configuration of NE 107 classification in the menu *Status group 16*.

	Parameter	Default value
Ⓗ	333:Analog input configuration error [333:Analog input configuration error]	C
Ⓗ	335 – 340:Totalizer configuration error [335 – 340:Totalizer configuration error]	C
Ⓗ Ⓕ	341:Batch configuration error [341:Batch configuration error]	C
Ⓗ	342:Data logging not started [342:Data logging not started]	C
Ⓗ	343:Option function mismatch [343:Option function mismatch]	C

Status group 17

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 17]

Configuration of NE 107 classification in the menu *Status group 17*.

	Parameter	Default status
Ⓗ	701:Analog output 1 fixed [701:Analog output 1 fixed]	C

	Parameter	Default status
Ⓗ	702:Analog output 2 fixed [702:Analog output 2 fixed]	C
Ⓗ	703:Density fixed [703:Density fixed]	C
Ⓗ	704:Temperature fixed [704:Temperature fixed]	C
Ⓗ	705:Pressure fixed [705:Pressure fixed]	C
Ⓗ	706:Reference density fixed [706:Reference density fixed]	C
Ⓗ	707:Calorific value fixed [707:Calorific value fixed]	C
Ⓗ	708:Process variable simulation [708:Process variable simulation]	C

Status group 18

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 18]

Configuration of NE 107 classification in the menu *Status group 18*.

	Parameter	Default status
Ⓗ	709:Analog output simulation [709:Analog output simulation]	C
Ⓗ	710:Pulse output simulation [710:Pulse output simulation]	C
Ⓗ	711:Status output simulation [711:Status output simulation]	C
Ⓗ	715:Process variable trimming [715:Process variable trimming]	C
Ⓗ	716:Analog output 1 saturated [716:Analog output 1 saturated]	S

Status group 19

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 19]

Configuration of NE 107 classification in the menu *Status group 19*.

	Parameter	Default status
Ⓗ	717:Analog output 2 saturated [717:Analog output 2 saturated]	S
Ⓗ	718:Pulse output 1 saturated [718:Pulse output 1 saturated]	S
Ⓗ	719:Pulse output 2 saturated [719:Pulse output 2 saturated]	S
Ⓗ	720:Double pulse output saturated [720:Double pulse output saturated]	S
Ⓗ	721:Autozero running [721:Autozero running]	C

	Parameter	Default status
Ⓗ Ⓕ	722:Tube health check execution error [722:Tube Health Check execution error]	N
Ⓗ	723:Date/Time not set [723:Date/Time not set]	N
Ⓗ	724:Display over warning [724:Display over warning]	N

Status group 20

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 20]

Configuration of NE 107 classification in the menu *Status group 20*.

	Parameter	Default status
Ⓗ	725:microSD card size warning [725:microSD card size warning]	N
Ⓗ	726:microSD card mismatch [726:microSD card mismatch]	S
Ⓗ	728:microSD card removal procedure error [728:microSD card removal procedure error]	M
Ⓗ	729:Parameter backup incomplete [729:Parameter backup incomplete]	M
Ⓗ	730:Parameter restore running [730:Parameter restore running]	C
Ⓗ Ⓕ	732:Batch progress indication [732:Batch progress indication]	N

Status group 21

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 21]

Configuration of NE 107 classification in the menu *Status group 21*.

	Parameter	Default status
Ⓗ Ⓕ	733 – 734:Viscosity warning [733,734:Viscosity warning]	M
Ⓗ	735:Autozero warning [735:Autozero warning]	M

Status group 22

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 22]

Configuration of NE 107 classification in the menu *Status group 22*.

	Parameter	Default status
Ⓗ	901:Device configuration locked [901:Device configuration locked]	N
Ⓗ	902:Device configuration not locked [902:Device configuration not locked]	N
Ⓗ	903:Parameter backup running [903:Parameter backup running]	N

	Parameter	Default status
Ⓗ	904:Data logging running [904:Data logging running]	N
Ⓗ Ⓕ	905:Tube health check running [905:Tube Health Check running]	N
Ⓗ Ⓕ	906:Batch running [906:Batch running]	N
Ⓗ Ⓕ	907:Batch hold [907:Batch hold]	N
Ⓗ	908:SIL mode active [908:SIL mode active]	N

Status group 23

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Status group 23]

Configuration of NE 107 classification in the menu *Status group 23*.

	Parameter	Default status
Ⓗ	909:Maintenance mode running [909:Maintenance mode running]	C

Reset condensed status map

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Condensed status map] ▶ [Reset condensed status map]

A executable command, that resets the configuration of condensed status map parameters.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Detailed device status

The following menus/settings are available:

Some "Event/Alarm name" displays on the LCD display may differ from those in the HART configuration tools.

An Alarm or Warning for the Batch function might be displayed in the product, but the Batch function cannot be used.

	Full name	Display name	[HART] name	Page
Ⓗ	Alarm/Event additional parameters	–	[Alarm/Event additional parameters]	[▷ 148]
–	System alarm status	[Sys alm sts]	[System alarm status]	[▷ 147]
–	Process alarm status	[Pro alm sts]	[Process alarm status]	[▷ 148]
–	Setting alarm status	[Set alm sts]	[Setting alarm status]	[▷ 150]
–	Warning status	[Warn sts]	[Warning status]	[▷ 151]
–	Information status	[Info sts]	[Information status]	[▷ 152]

System alarm status

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Detail dev sts] ▶ [Sys alm sts]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [System alarm status]

The menu item *System alarm status* displays the status of system alarms. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▷ 73]*
- *Troubleshooting [▷ 626]*

	Display parameter	Description
–	System alarm status 0 [Sys alm0] [System alarm status 0]	Alarm statuses: ▪ 101:Frequency failure ▪ 102:Signal failure ▪ 103:Pick off 1 failure ▪ 104:Pick off 1 failure ▪ 105:Pick off 2 failure ▪ 106:Pick off 2 failure ▪ 107:Temperature range violation ▪ 108:Temperature sensor failure
–	System alarm status 1 [Sys alm1] [System alarm status 1]	Alarm status:

	Display parameter	Description
–	System alarm status 2 [Sys alm2] [System alarm status 2]	Alarm statuses: ▪ 121:Main board CPU failure ▪ 122:Main board EEPROM failure ▪ 123:Parameter restore incomplete ▪ 124:Sensor board failure ▪ 125:Sensor board mismatch ▪ 126:Sensor communication error ▪ 127:Option board failure ▪ 128:Option board EEPROM failure
–	System alarm status 3 [Sys alm3] [System alarm status 3]	Alarm statuses: ▪ 129:Option board mismatch ▪ 130:Indicator board failure ▪ 131:Indicator board EEPROM failure ▪ 132:LCD driver failure ▪ 133:Indicator board mismatch ▪ 134:Indicator communication error ▪ 135:microSD card failure

Alarm/Event additional parameters

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Detail dev sts] ▶ [Alm/Evt add]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [Alarm/Event additional parameters]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▸ 204]

The parameter *Alarm/Event additional parameters* enables or disables menu items in the submenu *Alarm/Event behavior settings*.

	Value	Description
–	Not apply [Not apply] [Not apply]	Menu items in the submenu *Alarm/Event behavior settings* are disabled. Default value.
–	Apply [Apply] [Apply]	Menu items in the submenu *Alarm/Event behavior settings* are enabled.

Process alarm status

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Detail dev sts] ▶ [Pro alm sts]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [Process alarm status]

The menu item *Process alarm status* displays the status of process alarms. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▸ 73]*
- *Troubleshooting [▸ 626]*

	Display parameter	Description
–	Process alarm status 0 [Pro alm0] [Process alarm status 0]	Alarm statuses: ▪ 201:Slug detection ▪ 202:Empty pipe detection ▪ 203:Corrosion detection ▪ 204:Autozero judgment multiphase ▪ 205:Autozero judgment flow ▪ 206:Autozero judgment temperature ▪ 207:Batch time exceeded ▪ 208:Batch overrun/underrun ▪ 209:Max flow while batching ▪ 210:Oil density calculation failure ▪ 211:Water density calculation failure ▪ 212:NOC calculation failure
–	Process alarm status 2 [Pro alm2] [Process alarm status 2]	Alarm statuses: ▪ 221:Analog input failure ▪ 222:Mass flow HH/LL alarm ▪ 223:Density HH/LL alarm ▪ 224:Temperature HH/LL alarm ▪ 225:Pressure HH/LL alarm ▪ 226:Volume flow HH/LL alarm ▪ 227:Corrected volume flow HH/LL alarm ▪ 228:Concentration HH/LL alarm
–	Process alarm status 3 [Pro alm3] [Process alarm status 3]	Alarm statuses: ▪ 229:Net mass flow 1 HH/LL alarm ▪ 230:Net mass flow 2 HH/LL alarm ▪ 231:Net volume flow 1 HH/LL alarm ▪ 232:Net volume flow 2 HH/LL alarm ▪ 233:Net corrected volume flow HH/LL alarm ▪ 234:Relative density HH/LL alarm ▪ 235:Reference density HH/LL alarm ▪ 236:Viscosity HH/LL alarm
–	Process alarm status 4 [Pro alm4] [Process alarm status 4]	Alarm statuses: ▪ 241:Totalizer 1 threshold exceeded ▪ 242:Totalizer 2 threshold exceeded ▪ 243:Totalizer 3 threshold exceeded ▪ 244:Totalizer 4 threshold exceeded ▪ 245:Totalizer 5 threshold exceeded ▪ 246:Totalizer 6 threshold exceeded

Setting alarm status

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Detail dev sts] ▶ [Set alm sts]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [Setting alarm status]

The menu item *Setting alarm status* displays the status when setting alarms. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▸ 73]*
- *Troubleshooting [▸ 626]*

	Display parameter	Description
–	Setting alarm status 0 [Set alm0] [Setting alarm status 0]	Alarm statuses: ▪ 301:Mass flow configuration error ▪ 302:Density configuration error ▪ 303:Temperature configuration error ▪ 304:Analog input temperature configuration error ▪ 305:Pressure configuration error ▪ 306:Analog input pressure configuration error ▪ 307:Volume flow configuration error ▪ 308:Reference density configuration error
–	Setting alarm status 1 [Set alm1] [Setting alarm status 1]	Alarm statuses: ▪ 309:Relative density configuration error ▪ 310:Corrected volume flow configuration error ▪ 311:Calorific value configuration error ▪ 312:Analog input calorific value configuration error ▪ 313:Concentration configuration error ▪ 314:Net mass flow 1 configuration error ▪ 315:Net mass flow 2 configuration error ▪ 316:Net volume flow 1 configuration error
–	Setting alarm status 2 [Set alm2] [Setting alarm status 2]	Alarm statuses: ▪ 317:Net volume flow 2 configuration error ▪ 318:Net corrected volume flow configuration error ▪ 319:Velocity configuration error ▪ 320:Viscosity configuration error
–	Setting alarm status 3 [Set alm3] [Setting alarm status 3]	Alarm statuses: ▪ 321:Analog output 1 configuration error ▪ 322:Analog output 2 configuration error ▪ 323:Pulse output 1 configuration error ▪ 324:Frequency output 1 configuration error ▪ 325:Status output 1 configuration error ▪ 326:Pulse output 2 configuration error ▪ 327:Frequency output 2 configuration error ▪ 328:Status output 2 configuration error

	Display parameter	Description
–	Setting alarm status 4 [Set alm4] [Setting alarm status 4]	Alarm statuses: ▪ 329:Pulse/Status output 2 mode configuration error ▪ 330:Double pulse output configuration error ▪ 331:Status output 3 configuration error ▪ 332:Status input configuration error ▪ 333:Analog input configuration error
–	Setting alarm status 5 [Set alm5] [Setting alarm status 5]	Alarm statuses: ▪ 335:Totalizer 1 configuration error ▪ 336:Totalizer 2 configuration error ▪ 337:Totalizer 3 configuration error ▪ 338:Totalizer 4 configuration error ▪ 339:Totalizer 5 configuration error ▪ 340:Totalizer 6 configuration error ▪ 341:Batch configuration error ▪ 342:Data logging not started
–	Setting alarm status 6 [Set alm6] [Setting alarm status 6]	Alarm status: 343:Option function mismatch

Warning status

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Detail dev sts] ▶ [Warn sts]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [Warning status]

The menu item *Warning status* displays the status of warnings. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▸ 73]*
- *Troubleshooting [▸ 626]*

	Display parameter	Description
–	Warning status 0 [Warn sts0] [Warning status 0]	Warning statuses: ▪ 701:Analog output 1 fixed ▪ 702:Analog output 2 fixed ▪ 703:Density fixed ▪ 704:Temperature fixed ▪ 705:Pressure fixed ▪ 706:Reference density fixed ▪ 707:Calorific value fixed ▪ 708:Process variable simulation

	Display parameter	Description
–	Warning status 1 [**Warn sts1**] [Warning status 1]	Warning statuses: ▪ 709:Analog output simulation ▪ 710:Pulse output simulation ▪ 711:Status output simulation ▪ 715:Process variable trimming ▪ 716:Analog output 1 saturated
–	Warning status 2 [**Warn sts2**] [Warning status 2]	Warning statuses: ▪ 717:Analog output 2 saturated ▪ 718:Pulse output 1 saturated ▪ 719:Pulse output 2 saturated ▪ 720:Double pulse output saturated ▪ 721:Autozero running ▪ 722:Tube health check execution error ▪ 723:Date/Time not set ▪ 724:Display over warning
–	Warning status 3 [**Warn sts3**] [Warning status 3]	Warning statuses: ▪ 725:microSD card size warning ▪ 726:microSD card mismatch ▪ 728:microSD card removal procedure error ▪ 729:Parameter backup incomplete ▪ 730:Parameter restore running ▪ 732:Batch progress indication
–	Warning status 4 [**Warn sts4**] [Warning status 4]	Warning statuses: ▪ 733:Viscosity not calculated ▪ 734:Viscosity not reliable ▪ 735:Autozero warning

Information status

Ⓛ [**Diag/Service**] ▶ [**Sts/Self test**] ▶ [**Detail dev sts**] ▶ [**Info sts**]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Detailed device status] ▶ [Information status]

The menu item *Information status* displays the status of information. For additional information, see the following chapters:

- *Possible events and related settings and behavior [▸ 73]*
- *Troubleshooting [▸ 626]*

	Display parameter	Description
–	Information status 0 [**Info sts0**] [Information status 0]	Information statuses: ▪ 901:Device configuration locked ▪ 902:Device configuration not locked ▪ 903:Parameter backup running ▪ 904:Data logging running ▪ 905:Tube health check running ▪ 906:Batch running ▪ 907:Batch hold ▪ 908:SIL mode active
–	Information status 1 [**Info sts1**] [Information status 1]	Information status: 909:Maintenance mode running

Event history

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Event file name	[Evt file]	[Event file name]	[▸ 154]
–	Monitor file name	[Mon file]	[Monitor file name]	[▸ 154]
Ⓗ	Alarm/Event history additional parameters	–	[Alarm/Event history additional parameters]	[▸ 154]
–	Event history 1 – 10	[Evt hist1 - 10]	[Event history 1 - 10]	[▸ 155]
Ⓗ	Monitoring history 1 – 4	–	[Monitoring history 1 - 4]	[▸ 155]
–	Clear Event history	[Clr Evt hist]	[Clear Event history]	[▸ 159]

Event file name

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Evt hist] ▶ [Evt file]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Event file name]

Shows the file name of the file on the microSD card that contains the event history.

	Value	Description
–	ASCII characters	File name of the file on the microSD card that contains the event history. Maximum length is 8 characters. The following are invalid characters: space, ", *, +, ,, ., /, :, ;, <, =, >, ?, [, \,]

Monitor file name

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Evt hist] ▶ [Mon file]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Monitor file name]

Shows the file name of the file on the microSD card that contains monitoring data.

	Value	Description
–	ASCII characters	File name of the file on the microSD card that contains monitoring data. Maximum length is 8 characters. The following are invalid characters: space, ", *, +, ,, ., /, :, ;, <, =, >, ?, [, \,]

Alarm/Event history additional parameters

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Alarm/Event history additional parameters]

Enables or disables access to additional parameters in *Event history 1 – 10* for the event history.

	Value	Description
–	Not apply [Not apply] [Not apply]	Disables access to additional parameters in *Event history 1 – 10* for the event history. Default value.

	Value	Description
–	Apply [Apply] [Apply]	Enables access to additional parameters in *Event history 1 – 10* for the event history.

Event history 1 – 10

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Evt hist] ▶ [Evt hist1 - 10]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Event history 1 - 10]

The menu *Event history 1 – 10* show the corresponding parameters of each logged event.

	Display parameter	Description
–	Event No 1 – 10 [Evt No1 - 10] [Event no 1 - 10]	Shows event ID number of event 1 – 10.
–	Event contents 1 – 10 [Contents1 - 10] [Event contents 1 - 10]	Shows event name of event 1 – 10. (Event set, Event clear or Acknowledge as event name)
–	Event 1 – 10 date [Date1 - 10] [Event 1 - 10 date]	Shows date of occurrence of event 1 – 10. It shows the actual date of the event, if date was set correctly when the device started running.
–	Event 1 – 10 time [Time1 - 10] [Event 1 - 10 time]	Shows time of occurrence of event 1 – 10. It shows the actual time of the event, if the time was set correctly when the device started running.
–	Event 1 – 10 operation time [Op time1 - 10] [Event 1 - 10 operation time]	Shows operating time of occurrence of event 1 – 10. It shows cumulative operating time since the device started running until the event occured.

Monitoring history 1 – 4

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Event history 1 - 10] ▶ [Monitoring history 1 - 4]

The menu item *Monitoring history 1 – 4* shows parameters for monitoring values in the menu *Event history 1 – 10* when *Monitor* or *Acknowledge + monitor* is specified in the event setting parameter. Monitoring values are available on the last 4 of 10 event histories. There are 3 samples of monitoring variables before and after the event, a total of 6 values are stored. The sampling interval is 1 second.

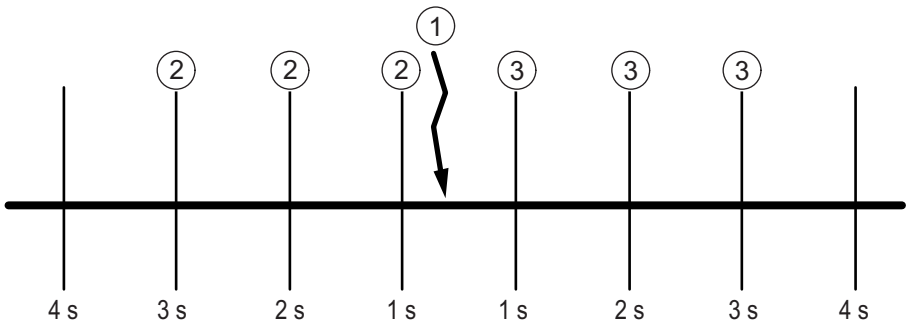


Fig. 19: Monitoring variables before and after an event

1	Event occurrence
2	Stored values before the occurrence of the event
3	Stored values after the occurrence of the event

	Display parameter	Description
Ⓗ	Event 1 – 4 mass flow last 3 – 1 [Event 1 - 4 mass flow last 3 - 1]	Shows mass flow values before the Event 1 – 4. Event 1 – 4 mass flow last 1 is the mass flow value that is closest to the event. Event 1 – 4 mass flow last 2 is the mass flow value 1 second before Event 1 – 4 mass flow last 1. Event 1 – 4 mass flow last 3 is the mass flow value 2 seconds before Event 1 – 4 mass flow last 1.
Ⓗ	Event 1 – 4 mass flow after 1 – 3 [Event 1 - 4 mass flow after 1 - 3]	Shows mass flow values after the Event 1 – 4. Event 1 – 4 mass flow after 1 is the mass flow value that is closest to the event. Event 1 – 4 mass flow after 2 is the mass flow value 1 second after Event 1 – 4 mass flow after 1. Event 1 – 4 mass flow after 3 is the mass flow value 2 seconds after Event 1 – 4 mass flow after 1.
Ⓗ	Event 1 – 4 resonance frequency last 3 – 1 [Event 1 - 4 resonance frequency last 3 - 1]	Shows resonance frequency of sensor before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ	Event 1 – 4 resonance frequency after 1 – 3 [Event 1 - 4 resonance frequency after 1 - 3]	Shows resonance frequency of sensor after the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 temperature last 3 – 1 [Event 1 - 4 temperature last 3 - 1]	Shows temperature of medium before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.

	Display parameter	Description
Ⓗ	Event 1 – 4 temperature after 1 – 3 [Event 1 - 4 temperature after 1 - 3]	Shows temperature of medium after the Event 1 – 4 For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 pressure last 3 – 1 [Event 1 - 4 pressure last 3 - 1]	Shows pressure value before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1. The pressure value can be obtained from the pressure sensor which is connected to the Analog-in, or be a fixed value.
Ⓗ	Event 1 – 4 pressure after 1 – 3 [Event 1 - 4 pressure after 1 - 3]	Shows pressure value after the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3. The pressure value can be obtained from the pressure sensor which is connected to the Analog-in, or be a fixed value.
Ⓗ Ⓕ	Event 1 – 4 net mass flow 1 last 3 – 1 [Event 1 - 4 net mass flow 1 last 3 - 1]	Shows net mass flow 1 values before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ Ⓕ	Event 1 – 4 net mass flow 1 after 1 – 3 [Event 1 - 4 net mass flow 1 after 1 - 3]	Shows net mass flow 1 values after the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ Ⓕ	Event 1 – 4 net volume flow 1 last 3 – 1 [Event 1 - 4 net volume flow 1 last 3 - 1]	Shows net volume flow 1 values before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ Ⓕ	Event 1 – 4 net volume flow 1 after 1 – 3 [Event 1 - 4 net volume flow 1 after 1 - 3]	Shows net volume flow 1 values after the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ Ⓕ	Event 1 – 4 concentration last 3 – 1 [Event 1 - 4 concentration last 3 - 1]	Shows concentration values before the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ Ⓕ	Event 1 – 4 concentration after 1 – 3 [Event 1 - 4 concentration after 1 - 3]	Shows concentration values after the Event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.

	Display parameter	Description
Ⓗ	Event 1 – 4 phase difference last 3 – 1 [Event 1 - 4 phase difference last 3 - 1]	Shows phase difference of signals between 2 pick-offs of measuring tubes before the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ	Event 1 – 4 phase difference after 1 – 3 [Event 1 - 4 phase difference after 1 - 3]	Shows phase difference of signals between 2 pick-offs of measuring tubes after the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 drive gain last 3 – 1 [Event 1 - 4 drive gain last 3 - 1]	Shows drive gain of sensor driver before the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ	Event 1 – 4 drive gain after 1 – 3 [Event 1 - 4 drive gain after 1 - 3]	Shows drive gain of sensor driver after the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 drive current last 3 – 1 [Event 1 - 4 drive current last 3 - 1]	Shows drive current of sensor driver before the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.
Ⓗ	Event 1 – 4 drive current after 1 – 3 [Event 1 - 4 drive current after 1 - 3]	Shows drive current of sensor driver after the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 density last 3 – 1 [Event 1 - 4 density last 3 - 1]	Shows density values before the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 0 mass flow last 3 – 1.
Ⓗ	Event 1 – 4 density after 1 – 3 [Event 1 - 4 density after 1 - 3]	Shows density values after the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Event 1 – 4 transmitter temperature last 3 – 1 [Event 1 - 4 transmitter temperature last 3 - 1]	Shows temperature on main circuit board inside transmitter before the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow last 3 – 1.

	Display parameter	Description
Ⓗ	Event 1 – 4 transmitter temperature after 1 – 3 [Event 1 - 4 transmitter temperature after 1 - 3]	Shows temperature on main circuit board inside transmitter after the event 1 – 4. For temporal relationships of the 3 values, see Event 1 – 4 mass flow after 1 – 3.
Ⓗ	Autozero value 1 – 10 [Autozero value 1 - 10]	Shows autozero value during the event 1 – 4.
Ⓗ	Autozero standard deviation 1 – 10 [Autozero standard deviation 1 - 10]	Shows standard deviation of autozero value during the event 1 – 4.
Ⓗ	Autozero density 1 – 10 [Autozero density 1 - 10]	Shows density value at last autozero execution during the event 1 – 4.
Ⓗ	Autozero temperature 1 – 10 [Autozero temperature 1 - 10]	Shows temperature at last autozero execution during the event 1 – 4.
Ⓗ	Autozero drive current 1 – 10 [Autozero drive current 1 - 10]	Shows drive current value at last autozero execution during the event 1 – 4.
Ⓗ	Autozero resonance frequency 1 – 10 [Autozero resonance frequency 1 - 10]	Shows resonance frequency of sensor at last autozero execution during the event 1 – 4.
Ⓗ	Autozero pressure 1 – 10 [Autozero pressure 1 - 10]	Shows pressure value at last autozero execution during the event 1 – 4. The pressure value can be obtained from the pressure pick-off which is connected to the Analog-in, or be a fixed value.
Ⓗ	Sensor max temperature 1 – 10 [Sensor max temperature 1 - 10]	Shows sensor maximum temperature at last autozero execution during the event 1 – 4.

Clear event history

Ⓛ **[Diag/Service] ▶ [Sts/Self test] ▶ [Evt hist] ▶ [Clr Evt hist]**

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Event history] ▶ [Clear event history]

Clears the entire event history.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Default value.
–	Execute [Exe] [Execute]	*Execute* has to be selected and set to clear the event history. After the event history has been cleared, the value returns to *Not execute*.

Device reset

Device reset

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Device reset]

Resets the device. Additional information is defined in the HART communication specification.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Burn out

Burn out

Ⓛ [Diag/Service] ▶ [Sts/Self test] ▶ [Burn out]

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Burn out]

Shows the status of burn out when a fatal error occurs.

	Value	Description
–	High [Hi] [Hi]	Output moves to the maximum current state when a fatal error occurs and the transmitter moves into the burn out state.
–	Low [Lo] [Lo]	Output moves to the minimum current state when fatal error occurs and transmitter moves into the burn out state.

Reset more status available flag

Reset more status available flag

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [clear More Sts Flg]

Clears the more status available flag.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Additional information is defined in the HART communication specification.

Reset configuration changed flag

Clear configuration changed flag

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [clear Cfg Chng Flg]

Clears the configuration changed flag.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Additional information is defined in the HART communication specification.

Self test

Self test

Ⓗ [Diagnostic root menu] ▶ [Status/Self test] ▶ [Self test]

Self test shows active alarms, which are defined in the HART communication specification.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Additional information is defined in the HART communication specification.

5.4.2 Time stamp

Time stamp

Ⓛ [Diag/Service] ▶ [Time stamp]

Ⓗ [Maintenance root menu] ▶ [Time stamp]

Shows parameters for time information.

	Display parameter	Description
–	Current Date [Date] [Current Date]	Shows actual current date, if the date was set correctly when the device started running. This parameter is also available in additional menus. The values can be shown in each of these menus: ▪ Basic setup *[▸ 369]* ▪ Detailed setup *[▸ 559]*
–	Current Time [Time] [Current Time]	Shows actual current time, if the time was set correctly when the device started running. This parameter is also available in additional menus. The values can be shown in each of these menus: ▪ Basic setup *[▸ 370]* ▪ Detailed setup *[▸ 559]*
–	Operation time [Op time] [Operation time]	Shows accumulated operating time of the device since it started running.

5.4.3 Output test

The output test sets output levels to fixed values for outputs IO1 to IO4. This can be done to test the reaction of connected equipment, or to check the functionality of the output itself with a multimeter, for example. The test mode can be started by setting the parameter test mode to on; and it lasts for the duration specified in *Auto rel time [▸ 164]*, after which normal operation is resumed automatically. Similar functionality is provided by the simulation menu, which provides for the simulation of measured parameters; this can affect the output as well, albeit indirectly.

The following menus/settings are available:

	Full name	Display name	HART name	Page
–	Test mode	[Test mode]	[Test mode]	*[▸ 162]*
Ⓗ	Loop test	–	[Loop test]	*[▸ 162]*
Ⓗ	Analog output 2 test	–	[Analog output 2 test]	*[▸ 162]*
Ⓛ	Analog output 1 – 2 test	[AO1 - 2 test]	–	*[▸ 162]*
–	Frequency output 1 – 2 test	[Freq1 - 2 test]	[Frequency output 1 - 2 test]	*[▸ 162]*

–	Double pulse output test	[Dbl pls test]	[Double pulse output test]	[▶ 163]
–	Status output 1 – 3 test	[Sts1 - 3 test]	[Status output 1 - 3 test]	[▶ 163]
Ⓗ	Test mode all clear	–	[Test mode all clear]	[▶ 163]
–	Test auto release time	[Auto rel time]	[Test auto release time]	[▶ 164]

Test mode

Ⓛ [Diag/Service] ▶ [Out test] ▶ [Test mode]

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Test mode]

Enables or disables output testing of IO signals, loop test.

	Value	Description
–	On [On] [On]	Enables output test mode. For the duration of the test mode, output signals are output from IO terminals of the device according to the parameter value to Analog output 1 – 2 test. The measured value is not output during test mode.
–	Off [Off] [Off]	Default value. Disables output test mode. If the time specified in Test auto release time has elapsed, test mode is disabled automatically and the parameter value returns to off.

Loop test

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Loop test]

Can be used to output a fixed current for loop checks.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
Ⓗ	Numeric digits	Sets value from 2.4 to 21.6 mA for Analog output 1. This method is independent of the Test mode setting.

Analog output 1 – 2 test

Ⓛ [Diag/Service] ▶ [Out test] ▶ [AO1 - 2 test]

This parameter can be set in the following menu/menus:

Sets the test output value of analog outputs 1 and 2.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0, 2.4 – 21.6 mA. Default value is 0. This test can be cancelled by setting the value to 0.

Frequency output 1 – 2 test

Ⓛ [Diag/Service] ▶ [Out test] ▶ [Freq1 - 2 test]

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Frequency output 1 - 2 test]

Sets the test output value of Frequency outputs 1 and 2.

	Value	Description
–	Numeric digits	Setting range: 0, 0.001 – 15,000 Hz. Default value is 0. This test can be cancelled by setting the value to 0.

Double pulse output test

Ⓛ [Diag/Service] ▶ [Out test] ▶ [Dbl pls test]

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Double pulse output test]

Sets the test output value of the double pulse output.

	Value	Description
–	Numeric digits	Setting range: 0, 0.001 – 15,000 Hz. Default value is 0. This test can be cancelled by setting the value to 0.

Status output 1 – 3 test

Ⓛ [Diag/Service] ▶ [Out test] ▶ [Sts1 - 3 test]

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Status output 1 - 3 test]

Sets the test status of Status output 1 – 3.

	Value	Description
–	On [On] [Closed(On)]	Output switch is electrically closed.
–	Off [Off] [Open(Off)]	Output switch is electrically open.
–	Test exit [Test exit] [Test exit]	Default value. Single test not active.

Test mode all clear

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Test mode all clear]

Clears all configurations for the output test mode.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
Ⓗ	Execute [Execute]	Execute has to be selected and set to clear all configurations for the test mode. After all configurations have been cleared, the value returns to Not execute.
Ⓗ	Not execute [Not execute]	Adjusted configuration values remain. Default value.

Test auto release time

Ⓛ [Diag/Service] ▶ [Out test] ▶ [Auto rel time]

Ⓗ [Maintenance root menu] ▶ [Output test] ▶ [Test auto release time]

Sets a time period for ending the test mode automatically.

	Value	Description
–	10 min [10min] [10min]	Adjustable time periods. Default value is 10 min.
–	30 min [30min] [30min]	
–	60 min [60min] [60min]	
–	3 hours [3h] [3hour]	
–	6 hours [6h] [6hour]	
–	12 hours [12h] [12hour]	

5.4.4 Display indication

LCD Test

Ⓛ [Diag/Service] ▶ [Display ind] ▶ [LCD test]

Ⓗ [Maintenance root menu] ▶ [Display indication] ▶ [LCD test]

Executes display tests.

The test is continued unless "Not Execute" is set in this parameter. Set "Not Execute" in this parameter to abort the test.

	Value	Description
–	Not Execute [Not exe] [Not execute]	The test is not executed or cancelled. If selected and set during testing, the test is immediately terminated. Default value.
–	Execute all [Exe] [Execute]	Shows all test patterns from 1 to 4.
–	Show pattern 1 [Pattern1] [Show pattern 1]	All pixels turned on.
–	Show pattern 2 [Pattern2] [Show pattern 2]	All dots turned off.
–	Show pattern 3 [Pattern3] [Show pattern 3]	Small hound's tooth check.
–	Show pattern 4 [Pattern4] [Show pattern 4]	Big hound's tooth check.

Squawk

Ⓛ [Diag/Service] ▶ [Display ind] ▶ [Squawk]

Ⓗ [Maintenance root menu] ▶ [Display indication] ▶ [Squawk]

Sets a flashing back light on the display.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Off [Off] [Off]	No flashing back light. Default value.
–	On [On] [On]	Permanent flashing back light.
–	Squawk once [Squawk once] [Squawk Once]	One-time flashing back light.

5.4.5 Autozero

Allows the zeroing of the device to remove the zero missetting. It should usually be performed immediately after the device is installed.

For more detailed information about the autozero setup, see the Operating Instructions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Autozero execute	[Exe]	[Autozero execute]	[166]
–	Autozero time	[Time]	[Autozero time]	[166]
–	Autozero value	[Val]	[Autozero value]	[166]
–	Autozero standard deviation	[Std devi]	[Autozero standard deviation]	[167]
–	Clear autozero failure	[Clr AZ fail]	[Clear autozero failure]	[167]
–	Clear autozero	[Clr AZ]	[Clear autozero]	[167]
–	Autozero failure detection	[AZalm]	[Autozero failure detection]	[168]

Autozero execute

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Exe]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Autozero execute]

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Autozero will not be executed. This value will be displayed, if the zero point alignment does not run.
–	Execute [Exe] [Execute]	Autozero will be executed. This value will be displayed, if the zero point alignment runs.

Autozero Time

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Time]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Autozero time]

Sets the execution time for autozero.

	Value	Description
–	Numeric digits	Default value is 180 s (Recommended). Setting range: 10 – 400 s. The input value is rounded to 10.

Autozero Value

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Val]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Autozero value]

Shows the autozero value as a result of autozero.

	Value	Description
–	Numeric digits	Autozero value as a result of autozero.

Autozero Standard Deviation

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Std devi]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Autozero standard deviation]

Shows the standard deviation of the mass flow value during autozero execution.

	Value	Description
–	Numeric digits	Standard deviation of mass flow value during autozero execution.

Clear Autozero Failure

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Clr AZ fail]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Clear autozero failure]

If *Clear autozero failure* is performed with *Execute* , the value automatically returns to *Not execute*.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Default value.
–	Execute [Exe] [Execute]	Clears autozero failure alarm.

Clear autozero

Ⓛ [Diag/Service] ▶ [AZ] ▶ [Clr AZ]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Clear autozero]

If *Clear autozero* is performed with *Execute* , the value automatically returns to *Not execute*.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Default value.
–	Execute [Exe] [Execute]	Clears autozero value and resets autozero value to factory default.

Autozero failure detection

Ⓛ [Diag/Service] ▶ [AZ] ▶ [AZalm]

Ⓗ [Maintenance root menu] ▶ [Autozero] ▶ [Autozero failure]

If *Autozero failure detection* is set to *Off*, autozero can be performed without checking process condition. Basically this function should be set to *On* to avoid to perform Autozero with bad process condition, but it can be performed by setting to *Off* if bad process condition can be allowed by customer.

	Value	Description
–	Off [Off] [Off]	Process condition is not checked when Autozero is performed.
–	On [On] [On]	Process condition is checked when Autozero is performed Default value.

5.4.6 Analog output/input trim

Allows the correction of the input and output currents of the SITRANS FC transmitter. These are trimmed at the factory. Therefore an adjustment usually is not necessary.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Output trim	[AO1 – 2]	[Output trim]	[▸ 168]
–	Input trim	[AI]	[Input trim]	[▸ 169]
–	Trim information	[Trim info]	[Trim information]	[▸ 171]

Output trim

The following overview shows the selectable menu items within the submenu *Analog output trim*.

	Full name	Display name	HART name	Page
Ⓛ	AO 1 – 2 trim 4 mA	[AO1 – 2 trim 4mA]	–	[▸ 168]
Ⓛ	AO 1 – 2 trim 20 mA	[AO1 – 2 trim 20mA]	–	[▸ 168]
Ⓗ	AO 1 – 2 trim	–	[AO1 – 2 Trim]	[▸ 169]
–	Clear D/A trim 1 – 2	[Clr D/A trim1 – 2]	[Clear D/A trim 1 – 2]	[▸ 169]

AO 1 – 2 trim 4 mA

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AO1 – 2] ▶ [AO1 – 2 trim 4mA]

Enter the value of the connected reference meter to trim the 4 mA point.

	Value	Description
Ⓛ	Numeric digits	Setting range: 2.4 – 21.6 mA.

AO 1 – 2 trim 20 mA

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AO1 – 2] ▶ [AO1 – 2 trim 20mA]

Enter the value of the connected reference meter to trim the 20 mA point.

	Value	Description
Ⓛ	Numeric digits	Setting range: 2.4 – 21.6 mA.

AO 1 – 2 trim

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Analog output trim] ▶ [AO 1 – 2 Trim]

AO 1 – 2 Trim sets the output trim of analog outputs 1 and 2.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
Ⓛ	Numeric digits	Setting range: 2.4 – 21.6 mA.

Clear D/A trim 1 – 2

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AO1 – 2] ▶ [Clr D/A trim1 – 2]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Output trim] ▶ [Clear D/A trim 1 – 2]

Clear D/A trim 1 – 2 clears the output trim of analog outputs 1 and 2.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Default value.
–	Execute [Exe] [Execute]	Clears output trim of analog outputs 1 and 2.

Input trim

The following overview shows the selectable menu items within the submenu *Analog input trim*.

	Full name	Display name	[HART] name	Page
Ⓛ	AI trim 4 mA	[AI trim 4mA]	–	*[▸ 170]*
Ⓛ	AI trim 20 mA	[AI trim 20mA]	–	*[▸ 170]*
Ⓗ	AI trim	–	[AI trim]	*[▸ 170]*
–	Clear AI trim	[Clr AI trim]	[Clear AI trim]	*[▸ 170]*

It is recommended that the input trim be configured through HART communication (by using Method), but it can also be configured by operating display keys.

Here is an example of the procedure for configuring the input trim by operating display keys.

1. Output 4 mA from the other device that is connected to Analog input.
2. Display AI curr *View inputs [▸ 128]* on the LCD display.
3. Wait until the value becomes stable.
4. Record the value.
5. Display AI trim 4mA.
6. Set it to the recorded value.
7. Output 20 mA from the other device that is connected to Analog input.
8. Display AI curr *View inputs [▸ 128]* on the LCD display.
9. Wait until the value becomes stable.

10. Record the value.
11. Display AI trim 20mA.
12. Set it to the recorded value.
13. Display AI curr *View inputs [▶ 128]* on the LCD display.
14. Change the output current of the connected device, for example, 4 mA (0%), 12 mA (50%) and 20 mA (100%).
15. Confirm that the displayed value is correct at each current.
16. If necessary, repeat these steps.

AI trim 4 mA

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AI] ▶ [AI trim 4mA]

AI trim 4 mA sets the input trim of analog input.

	Value	Description
Ⓛ	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 4 mA.

AI trim 20 mA

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AI] ▶ [AI trim 20mA]

AI trim 20 mA sets the input trim of analog input.

	Value	Description
Ⓛ	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 20 mA.

AI trim

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Input trim] ▶ [AI trim]

AI trim sets the input trim of the analog input.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
Ⓗ	Numeric digits	Setting range: 2.4 – 21.6 mA.

Clear AI trim

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [AI] ▶ [Restore AI trim]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Input trim] ▶ [Clear AI trim]

Clear AI trim clears the input trim of the analog input.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not execute [Not exe] [Not execute]	Default value.
–	Execute [Exe] [Execute]	Clears input trim of the analog input.

Trim information

Since setting an incorrect trim on the SITRANS FC transmitter can seriously degrade the performance of the device, we recommend that the service person in charge records his changes using the parameters provided in this menu to allow for traceability.

The following overview shows the selectable settings within the submenu *trim information*.

	Full name	Display name	[HART] name	Page
–	Trim who	[Trim who]	[Trim who]	[▷ 171]
–	Trim date	[Trim date]	[Trim date]	[▷ 171]
–	Trim location	[Trim locate]	[Trim location]	[▷ 171]
–	Trim description	[Trim desc]	[Trim description]	[▷ 172]

Trim who

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [Trim info] ▶ [Trim who]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Trim information] ▶ [Trim who]

Trim who sets the name of the person who set the trim for the analog output.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is space.

Trim date

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [Trim info] ▶ [Trim date]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Trim information] ▶ [Trim date]

Trim date sets the date when the trim was set for the analog output.

	Value	Description
–	Numeric digits.	Date format is DD/MM/YYYY. Default value is 01/01/2015.

Trim location

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [Trim info] ▶ [Trim locate]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Trim information] ▶ [Trim location]

Trim location sets the location where the trim was set for the analog output.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is space.

Trim description

Ⓛ [Diag/Service] ▶ [AO/AI trim] ▶ [Trim info] ▶ [Trim desc]

Ⓗ [Maintenance root menu] ▶ [Analog output/input trim] ▶ [Trim information] ▶ [Trim description]

Trim description sets a note for the trim set for the analog output.

	Value	Description
–	ASCII characters	Maximum length is 16 characters. Default value is space.

5.4.7 Total & Batch start/stop

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Total 1 – 6 start/stop	–	[Total 1 - 6 start/stop]	[▸ 172]
Ⓗ	Total 1 – 6 reset/preset	–	[Total 1 - 6 reset/preset]	[▸ 172]
Ⓗ	Total 1 – 6 preset value	–	[Total 1 - 6 preset value]	[▸ 173]
Ⓗ Ⓕ	Batch start/stop	–	[Batch start/stop]	[▸ 173]
Ⓗ	Batch reset	–	[Batch reset]	[▸ 173]

Total 1 – 6 start/stop

Ⓗ [Maintenance root menu] ▶ [Total & Batch start/stop] ▶ [Total 1 - 6 start/stop] ▶ [Total 1 - 6 start/stop]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 519]*

Total 1 – 6 start/stop starts or stops Totalizer 1 – 6.

	Value	Description
Ⓗ	Stop [Stop]	Stops totalizer. Last value when totalizer stopped is retained. Default value.
Ⓗ	Start [Start]	Starts totalizer. Count starts from the current value, which is the value when the totalizer stopped.

Total 1 – 6 reset/preset

Ⓗ [Maintenance root menu] ▶ [Total & Batch start/stop] ▶ [Total 1 - 6 start/stop] ▶ [Total 1 - 6 reset/preset]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 520]*

Resets or presets Totalizer.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
Ⓗ	Not execute [Not execute]	Default value.

	Value	Description
Ⓗ	Reset [Reset]	Resets the value of the totalizer to 0. The value returns automatically to *Not execute* after each operation.
Ⓗ	Preset [Preset]	Sets the value of the totalizer to the value defined in the parameter *Total 1 – 6 preset value* [▷ 520]. The value returns automatically to *Not execute* after each operation.

Total 1 – 6 preset value

Ⓗ [Maintenance root menu] ▶ [Total & Batch start/stop] ▶ [Total 1 – 6 start/stop] ▶ [Total 1 – 6 preset value]

This parameter can be set in the following menu/menus:

- *Detailed setup [▷ 520]*

Sets the value of the totalizer when preset has been selected and set in Total 1 – 6 reset/preset.

	Value	Description
Ⓗ	Numeric digits	Default value is 0.0.

Batch start/stop

Ⓗ [Maintenance root menu] ▶ [Total & Batch start/stop] ▶ [Batch start/stop] ▶ [Batch start/stop]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 377]*
- *Detailed setup [▷ 519]*

Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
Ⓗ Ⓕ	Start [Start]	Starts batch. Count starts from the current value, which is the value when the batch stopped. Valve is opened.
Ⓗ Ⓕ	Stop [Stop]	Stops batch. Last value when batch stopped is retained. Default value. Valve is closed.
Ⓗ Ⓕ	Hold [Hold]	Hold batch. Last value when batch stopped is retained. Default value. Valve is closed.
Ⓗ Ⓕ	Resume [Resume]	Resumes batch. Valve is opened.

Batch reset

Ⓗ [Maintenance root menu] ▶ [Total & Batch start/stop] ▶ [Batch start/stop] ▶ [Batch reset]

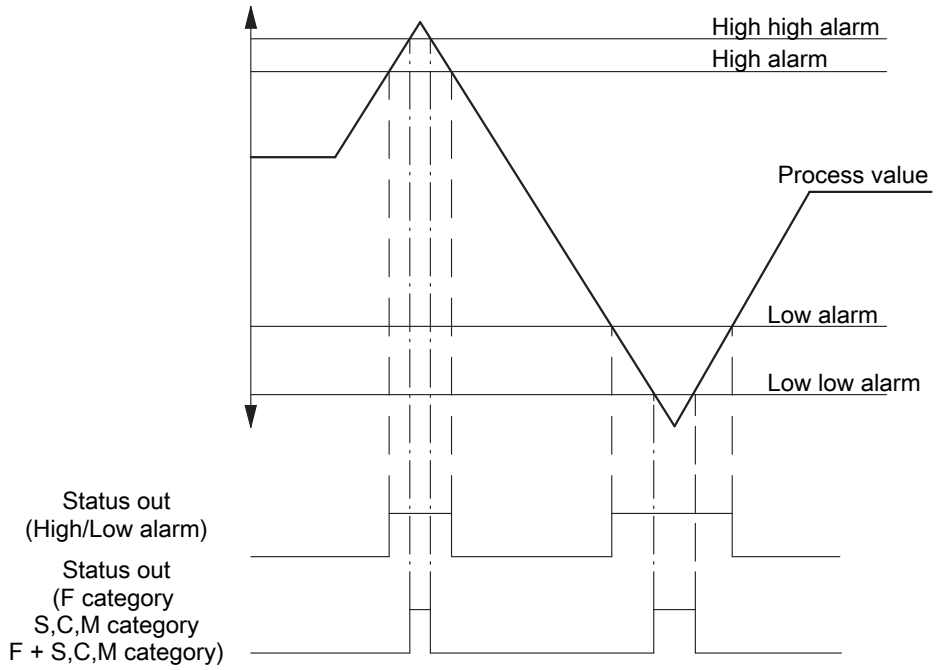
Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
–	No [No]	The default value is No.
–	Reset [Reset]	

5.4.8 High/Low alarm configuration

The SITRANS FC transmitter provides for limit alarms on all measured quantities. This is generally in the form of a high-limit intended to be used as a warning level and a high-high-limit intended to be used when a safety-related level is exceeded so that an alarm can be sounded or an equipment shutdown can be initiated. The same applies conversely for the low and low-low alarms.

The high/low alarm can be assigned to output to the Status output. Refer to the Status output 1 – 3 functions in the *easy [▸ 308]*, *basic [▸ 358]* and *detailed setup [▸ 499]*. There is no further indication on LCD display or other effect of a high/low alarm. The high high low low alarm cannot be directly assigned to Status output, but can be assigned as an event by categorizing it as one of the NE 107 categories (S, C, F, M). For the NE 107 categorization of high high low low alarms, refer to the Status group 4 – 5 *Condensed status map [▸ 139]*, *Condensed status map [▸ 139]*, and Status output 1 – 3 functions in the *easy [▸ 308]*, *basic [▸ 358]* and *detailed setup [▸ 499]*. There is an indication on LCD display of a high high /low low alarm.



The following overview shows the selectable menu items within the submenu *High/Low alarm configuration*.

	Full name	Display name	[HART] name	Page
–	Mass flow alarm	[Mass]	[Mass flow alarm]	*[▸ 175]*
–	Density alarm	[Dens]	[Density alarm]	*[▸ 176]*
–	Temperature alarm	[Temp]	[Temperature alarm]	*[▸ 178]*
–	Volume flow alarm	[Vol]	[Volume flow alarm]	*[▸ 179]*
–	Pressure alarm	[Pres]	[Pressure alarm]	*[▸ 181]*
–	Reference density alarm	[Ref dens]	[Reference density alarm]	*[▸ 182]*
–	Relative density alarm	[Rel dens]	[Relative density alarm]	*[▸ 184]*
–	Corrected volume flow alarm	[Corr vol]	[Corrected volume flow alarm]	*[▸ 185]*
–	Concentration alarm	[Conc]	[Concentration alarm]	*[▸ 187]*
–	Net mass flow 1 – 2 alarm	[Net mass1 – 2]	[Net mass flow 1 – 2 alarm]	*[▸ 189]*

–	Net volume flow 1 – 2 alarm	[Net vol1 – 2]	[Net volume flow 1 – 2 alarm]	[▸ 191]
–	Net corrected volume flow alarm	[Net corr vol]	[Net corrected volume flow alarm]	[▸ 192]
Ⓕ	Viscosity alarm	[Visc]	[Viscosity alarm]	[▸ 194]
–	Alarm hysteresis	[Alam hys]	[Alarm hysteresis]	[▸ 196]

Mass flow alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Mass flow low alarm	[L alm]	[Mass flow low alarm]	[▸ 175]
–	Mass flow low low alarm	[LL alm]	[Mass flow low low alarm]	[▸ 175]
–	Mass flow high alarm	[H alm]	[Mass flow high alarm]	[▸ 176]
–	Mass flow high high alarm	[HH alm]	[Mass flow high high alarm]	[▸ 176]

Mass flow low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Mass] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Mass flow alarm] ▶ [Mass flow low alarm]

Mass flow low alarm sets the mass flow low limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a mass flow low alarm.

	Value	Description
–	Numeric digits	Value in the selected mass flow unit. Can be set in the range of mass flow LRV to mass flow URV. Settings must satisfy the following condition: (Mass flow high alarm - Mass flow low alarm) / |Mass flow URV - Mass flow LRV| * 100 > Alarm hysteresis

Mass flow low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Mass] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Mass flow alarm] ▶ [Mass flow low low alarm]

Mass flow low low alarm sets the mass flow low low limit alarm value. When this limit is crossed, a Mass flow high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected mass flow unit. Can be set in the range of mass flow LRV to mass flow URV. Settings must satisfy the following condition: (Mass flow high high alarm - Mass flow low low alarm) / |Mass flow URV - Mass flow LRV| * 100 > Alarm hysteresis

Mass flow high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Mass] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Mass flow alarm] ▶ [Mass flow high alarm]

Mass flow high alarm sets the mass flow high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Mass flow high alarm.

	Value	Description
–	Numeric digits	Value in the selected mass flow unit. Can be set in the range of mass flow LRV to mass flow URV. Value must be greater than mass flow low alarm. Settings must satisfy the following conditions: (Mass flow high alarm - Mass flow low alarm) / |Mass flow URV - Mass flow LRV| * 100 > Alarm hysteresis

Mass flow high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Mass] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Mass flow alarm] ▶ [Mass flow high high alarm]

Mass flow high high alarm sets the mass flow high high limit alarm value. When this limit is crossed, a Mass flow high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected mass flow unit. Can be set in the range of mass flow LRV to mass flow URV. Value must be greater than mass flow low low alarm. Settings must satisfy the following conditions: (Mass flow high high alarm - Mass flow low low alarm) / |Mass flow URV - Mass flow LRV| * 100 > Alarm hysteresis

Density alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Density low alarm	[L alm]	[Density low alarm]	[▸ 176]
–	Density low low alarm	[LL alm]	[Density low low alarm]	[▸ 177]
–	Density high alarm	[H alm]	[Density high alarm]	[▸ 177]
–	Density high high alarm	[HH alm]	[Density high high alarm]	[▸ 177]

Density low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Dens] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Density alarm] ▶ [Density low alarm]

Density low alarm sets the density low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected density unit. Can be set in the range of density LRV to density URV. Settings must satisfy the following condition: (Density high alarm - Density low alarm) / |Density URV - Density LRV| * 100 > Alarm hysteresis

Density low low alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Dens] ▶ [LL alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Density alarm] ▶ [Density low low alarm]

Density low low alarm sets the density low low limit alarm value. When this limit is crossed, a Density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected density unit. Can be set in the range of density LRV to density URV. Settings must satisfy the following condition: (Density high high alarm - Density low low alarm) / |Density URV - Density LRV| * 100 > Alarm hysteresis

Density high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Dens] ▶ [H alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Density alarm] ▶ [Density high alarm]

Density high alarm sets the density high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Density high alarm.

	Value	Description
–	Numeric digits	Value in the selected density unit. Can be set in the range of density LRV to density URV. Value must be greater than density low alarm. Settings must satisfy the following condition: (Density high alarm - Density low alarm) / |Density URV - Density LRV| * 100 > Alarm hysteresis

Density high high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Dens] ▶ [HH alm]**

Ⓗ [Maintenance root menu] ▶[High/Low alarm configuration] ▶ [Density alarm] ▶ [Density high high alarm]

Density high high alarm sets the density high high limit alarm value. When this limit is crossed, a Density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected density unit. Can be set in the range of density LRV to density URV. Value must be greater than density low alarm. Settings must satisfy the following condition: (Density high high alarm - Density low low alarm) / |Density URV - Density LRV| * 100 > Alarm hysteresis

Temperature alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Temperature low alarm	[L alm]	[Temperature low alarm]	[▸ 178]
–	Temperature low low alarm	[LL alm]	[Temperature low low alarm]	[▸ 178]
–	Temperature high alarm	[H alm]	[Temperature high alarm]	[▸ 179]
–	Temperature high high alarm	[HH alm]	[Temperature high high alarm]	[▸ 179]

Temperature low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Temp] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Temperature alarm] ▶ [Temperature low alarm]

Temperature low alarm sets the temperature low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected temperature unit. Can be set in the range of temperature LRV to temperature URV. Settings must satisfy the following condition: (Temperature high alarm - Temperature low alarm) / |Temperature URV - Temperature LRV| * 100 > Alarm hysteresis

Temperature low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Temp] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Temperature alarm] ▶ [Temperature low low alarm]

Temperature low low alarm sets the temperature low low limit alarm value. When this limit is crossed, a Temperature high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected temperature unit. Can be set in the range of temperature LRV to temperature URV. Settings must satisfy the following condition: (Temperature high high alarm - Temperature low low alarm) / |Temperature URV - Temperature LRV| * 100 > Alarm hysteresis

Temperature high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Temp] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Temperature alarm] ▶ [Temperature high alarm]

Temperature high alarm sets the temperature high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Temperature high alarm.

	Value	Description
–	Numeric digits	Value in the selected temperature unit. Can be set in the range of temperature LRV to temperature URV. Value must be greater than the temperature low low alarm. Settings must satisfy the following condition: (Temperature high alarm - Temperature low alarm) / |Temperature URV - Temperature LRV| * 100 > Alarm hysteresis

Temperature high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Temp] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Temperature alarm] ▶ [Temperature high high alarm]

Temperature high high alarm sets the temperature high high limit alarm value. When this limit is crossed, a Temperature high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected temperature unit. Can be set in the range of temperature LRV to temperature URV. Value must be greater than temperature low low alarm. Settings must satisfy the following condition: (Temperature high high alarm - Temperature low low alarm) / |Temperature URV - Temperature LRV| * 100 > Alarm hysteresis

Volume flow alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Volume flow low alarm	[L alm]	[Volume flow low alarm]	[▷ 179]
–	Volume flow low low alarm	[LL alm]	[Volume flow low low alarm]	[▷ 180]
–	Volume flow high alarm	[H alm]	[Volume flow high alarm]	[▷ 180]
–	Volume flow high high alarm	[HH alm]	[Volume flow high high alarm]	[▷ 180]

Volume flow low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Vol] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Volume flow alarm] ▶ [Volume flow low alarm]

Volume flow low alarm sets the volume flow low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected volume flow unit. Can be set in the range of volume flow LRV to volume flow URV. Settings must satisfy the following condition: (Volume flow high alarm - Volume flow low alarm) / |Volume flow URV - Volume flow LRV| * 100 > Alarm hysteresis

Volume flow low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Vol] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Volume flow alarm] ▶ [Volume flow low low alarm]

Volume flow low low alarm sets the volume flow low low limit alarm value. When this limit is crossed, a Volume flow high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected volume flow unit. Can be set in the range of volume flow LRV to Volume flow URV. Settings must satisfy the following condition: (Volume flow high high alarm - Volume flow low low alarm) / |Volume flow URV - Volume flow LRV| * 100 > Alarm hysteresis

Volume flow high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Vol] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Volume flow alarm] ▶ [Volume flow high alarm]

Volume flow high alarm sets the volume flow high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Volume flow high alarm.

	Value	Description
–	Numeric digits	Value in the selected volume flow unit. Can be set in the range of volume flow LRV to volume flow URV. Value must be greater than volume flow low alarm. Settings must satisfy the following condition: (Volume flow high alarm - Volume flow low alarm) / |Volume flow URV - Volume flow LRV| * 100 > Alarm hysteresis

Volume flow high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Vol] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Volume flow alarm] ▶ [Volume flow high high alarm]

Volume flow high high alarm sets volume flow high high limit alarm value. When this limit is crossed, a Volume flow high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected volume flow unit. Can be set in the range of volume flow LRV to volume flow URV. Value must be greater than volume flow low low alarm. Settings must satisfy the following condition: (Volume flow high high alarm - Volume flow low low alarm) / |Volume flow URV - Volume flow LRV| * 100 > Alarm hysteresis

Pressure alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Pressure low alarm	[L alm]	[Pressure low alarm]	[▶ 181]
–	Pressure low low alarm	[LL alm]	[Pressure low low alarm]	[▶ 181]
–	Pressure high alarm	[H alm]	[Pressure high alarm]	[▶ 182]
–	Pressure high high alarm	[HH alm]	[Pressure high high alarm]	[▶ 182]

Pressure low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Pres] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Pressure alarm] ▶ [Pressure low alarm]

Pressure low alarm sets the pressure low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected pressure unit. Can be set in the range of pressure LRV to pressure URV. Settings must satisfy the following condition: (Pressure high alarm - Pressure low alarm) / |Pressure URV - Pressure LRV| * 100 > Alarm hysteresis

Pressure low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Pres] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Pressure alarm] ▶ [Pressure low low alarm]

Pressure low low alarm sets the pressure low low limit alarm value. When this limit is crossed, a Pressure high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected pressure unit. Can be set in the range of pressure LRV to pressure URV. Settings must satisfy the following condition: (Pressure high high alarm – Pressure low low alarm) / |Pressure URV - Pressure LRV| * 100 > Alarm hysteresis

Pressure high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Pres] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Pressure alarm] ▶ [Pressure high alarm]

Pressure high alarm sets the pressure high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Pressure high alarm.

	Value	Description
–	Numeric digits	Value in the selected pressure unit. Can be set in the range of pressure LRV to pressure URV. Value must be greater than pressure low alarm. Settings must satisfy the following condition: (Pressure high alarm - Pressure low alarm) / |Pressure URV - Pressure LRV| * 100 > Alarm hysteresis

Pressure high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Pres] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Pressure alarm] ▶ [Pressure high high alarm]

Pressure high high alarm sets the pressure high high limit alarm value. When this limit is crossed, a Pressure high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected pressure unit. Can be set in the range of pressure LRV to pressure URV. Value must be greater than pressure low low alarm. Settings must satisfy the following condition: (Pressure high high alarm – Pressure low low alarm) / |Pressure URV - Pressure LRV| * 100 > Alarm hysteresis

Reference density alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Reference density low alarm	[L alm]	[Reference density low alarm]	[▸ 182]
–	Reference density low low alarm	[LL alm]	[Reference density low low alarm]	[▸ 183]
–	Reference density high alarm	[H alm]	[Reference density high alarm]	[▸ 183]
–	Reference density high high alarm	[HH alm]	[Reference density high high alarm]	[▸ 183]

Reference density low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Ref dens] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Reference density alarm] ▶ [Reference density low alarm]

Reference density low alarm sets the reference density low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected reference density unit. Can be set in the range of reference density LRV to reference density URV. Settings must satisfy the following condition: (Reference density high alarm - Reference density low alarm) / | Reference density URV - Reference density LRV| * 100 > Alarm hysteresis

Reference density low low alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Ref dens] ▶ [LL alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Reference density alarm] ▶ [Reference density low low alarm]

Reference density low low alarm sets the reference density low low limit alarm value. When this limit is crossed, a Reference density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected reference density unit. Can be set in the range of reference density LRV to reference density URV. Settings must satisfy the following condition: (Reference density high high alarm - Reference density low low alarm) / | Reference density URV - Reference density LRV| * 100 > Alarm hysteresis

Reference density high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Ref dens] ▶ [H alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Reference density alarm] ▶ [Reference density high alarm]

Reference density high alarm sets the reference density high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Reference density high alarm.

	Value	Description
–	Numeric digits	Value in the selected reference density unit. Can be set in the range of reference density LRV to reference density URV. Value must be greater than reference density low alarm. Settings must satisfy the following condition: (Reference density high alarm - Reference density low alarm) / | Reference density URV - Reference density LRV| * 100 > Alarm hysteresis

Reference density high high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Ref dens] ▶ [HH alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Reference density alarm] ▶ [Reference density high high alarm]

Reference density high high alarm sets the reference density high high limit alarm value. When this limit is crossed, a Reference density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected reference density unit. Can be set in the range of reference density LRV to reference density URV. Value must be greater than reference density low low alarm. Settings must satisfy the following condition: (Reference density high high alarm - Reference density low low alarm) / | Reference density URV - Reference density LRV| * 100 > Alarm hysteresis

Relative density alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Relative density low alarm	[L alm]	[Relative density low alarm]	[▸ 184]
–	Relative density low low alarm	[LL alm]	[Relative density low low alarm]	[▸ 184]
–	Relative density high alarm	[H alm]	[Relative density high alarm]	[▸ 185]
–	Relative density high high alarm	[HH alm]	[Relative density high high alarm]	[▸ 185]

Relative density low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Rel dens] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Relative density alarm] ▶ [Relative density low alarm]

Relative density low alarm sets the relative density low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected relative density unit. Can be set in the range of relative density LRV to relative density URV. Value must be lower than relative density high alarm. Settings must satisfy the following condition: (Relative density high alarm - Relative density low alarm) / |Relative density URV - Relative density LRV| * 100 > Alarm hysteresis

Relative density low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Rel dens] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Relative density alarm] ▶ [Relative density low low alarm]

Relative density low low alarm sets the relative density low low limit alarm value. When this limit is crossed, a Relative density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected relative density unit. Can be set in the range of relative density LRV to relative density URV. Settings must satisfy the following condition: (Relative density high high alarm - Relative density low low alarm) / | Relative density URV - Relative density LRV| * 100 > Alarm hysteresis

Relative density high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Rel dens] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Relative density alarm] ▶ [Relative density high alarm]

Relative density high alarm sets the relative density high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Relative density high alarm.

	Value	Description
–	Numeric digits	Value in the selected relative density unit. Can be set in the range of relative density LRV to relative density URV. Value must be greater than relative density low alarm. Settings must satisfy the following condition: (Relative density high alarm - Relative density low alarm) / |Relative density URV - Relative density LRV| * 100 > Alarm hysteresis

Relative density high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Rel dens] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Relative density alarm] ▶ [Relative density high high alarm]

Relative density high high alarm sets the relative density high high limit alarm value. When this limit is crossed, a Relative density high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected relative density unit. Can be set in the range of relative density LRV to relative density URV. Value must be greater than relative density low low alarm. Settings must satisfy the following condition: (Relative density high high alarm - Relative density low low alarm) / | Relative density URV - Relative density LRV| * 100 > Alarm hysteresis

Corrected volume flow alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Corrected volume flow low alarm	[L alm]	[Corrected volume flow low alarm]	[▷ 186]
–	Corrected volume flow low low alarm	[LL alm]	[Corrected volume flow low low alarm]	[▷ 186]

–	Corrected volume flow high alarm	[H alm]	[Corrected volume flow high alarm]	[▶ 186]
–	Corrected volume flow high high alarm	[HH alm]	[Corrected volume flow high high alarm]	[▶ 187]

Corrected volume flow low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Corr vol] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Corrected volume flow alarm] ▶ [Corrected volume flow low alarm]

Corrected volume flow low alarm sets the corrected volume flow low limit alarm value.

	Value	Description
–	Numeric digits	Value in the selected corrected volume flow unit. Can be set in the range of corrected volume flow LRV to corrected volume flow URV. Settings must satisfy the following condition: (Corrected volume flow high alarm - Corrected volume flow low alarm) / | Corrected volume flow URV - Corrected volume flow LRV| * 100 > Alarm hysteresis

Corrected volume flow low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Corr vol] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Corrected volume flow alarm] ▶ [Corrected volume flow low low alarm]

Corrected volume flow low low alarm sets the corrected volume flow low low limit alarm value. When this limit is crossed, a Corrected volume high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected corrected volume flow unit. Can be set in the range of corrected volume flow LRV to corrected volume flow URV. Settings must satisfy the following condition: (Corrected volume flow high high alarm - Corrected volume flow low low alarm) / |Corrected volume flow URV - Corrected volume flow LRV| * 100 > Alarm hysteresis

Corrected volume flow high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Corr vol] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Corrected volume flow alarm] ▶ [Corrected volume flow high alarm]

Corrected volume flow high alarm sets the corrected volume flow high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Corrected volume flow high alarm.

	Value	Description
–	Numeric digits	Value in the selected corrected volume flow unit. Can be set in the range of corrected volume flow LRV to corrected volume flow URV. Value must be greater than corrected volume flow low alarm. Settings must satisfy the following conditions: (Corrected volume flow high alarm - Corrected volume flow low alarm) / | Corrected volume flow URV - Corrected volume flow LRV| * 100 > Alarm hysteresis

Corrected volume flow high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Corr vol] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Corrected volume flow alarm] ▶ [Corrected volume flow high high alarm]

Corrected volume flow high high alarm sets the corrected volume flow high high limit alarm value. When this limit is crossed, a Corrected volume flow high high / low low alarm event is generated.

	Value	Description
–	Numeric digits	Value in the selected corrected volume flow unit. Can be set in the range of corrected volume flow LRV to corrected volume flow URV. Value must be greater than corrected volume flow low low alarm. Settings must satisfy the following condition: (Corrected volume flow high high alarm - Corrected volume flow low low alarm) / |Corrected volume flow URV - Corrected volume flow LRV| * 100 > Alarm hysteresis

Concentration alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Concentration measurement low alarm set 1 – 4	[L alm]	[Concentration measurement low alarm set 1 – 4]	[▷ 188]
Ⓕ	Concentration measurement low low alarm set 1 – 4	[LL alm]	[Concentration measurement low low alarm set 1 – 4]	[▷ 188]
Ⓕ	Concentration measurement high alarm set 1 – 4	[H alm]	[Concentration measurement high alarm set 1 – 4]	[▷ 188]
Ⓕ	Concentration measurement high high alarm set 1 – 4	[HH alm]	[Concentration measurement high high alarm set 1 – 4]	[▷ 189]

Concentration measurement low alarm set 1 – 4

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Conc] ▶ [Set1 – 4] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Concentration alarm] ▶ [Concentration measurement low alarm set 1 – 4]

Concentration measurement low alarm 1 – 4 sets the concentration measurement low limit alarm values.

	Value	Description
Ⓕ	Numeric digits	Value in the selected concentration measurement unit. Can be set in the range of concentration measurement LRV to concentration measurement URV. Settings must satisfy the following condition: (Concentration measurement high alarm set 1 – 4 - Concentration measurement low alarm set 1 – 4) / | Concentration measurement URV set 1 – 4 - Concentration measurement LRV set 1 – 4| * 100 > Alarm hysteresis

Concentration measurement low low alarm set 1 – 4

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Conc] ▶ [Set1 – 4] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Concentration alarm] ▶ [Concentration measurement low low alarm set 1 – 4]

Concentration measurement low low alarm 1 – 4 sets the concentration measurement low low limit alarm values. When this limit is crossed, a Concentration measurement high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected concentration measurement unit. Can be set in the range of concentration measurement LRV to concentration measurement URV. Settings must satisfy the following condition: (Concentration measurement high high alarm set 1 – 4 - Concentration measurement low low alarm set 1 – 4) / | Concentration measurement URV set 1 – 4 - Concentration measurement LRV set 1 – 4| * 100 > Alarm hysteresis

Concentration measurement high alarm set 1 – 4

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Conc] ▶ [Set1 – 4] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Concentration alarm] ▶ [Concentration measurement high alarm set 1 – 4]

Concentration measurement high alarm set 1 – 4 sets the concentration measurement high limit alarm values. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Concentration measurement flow high alarm.

	Value	Description
Ⓕ	Numeric digits	Value in the selected concentration measurement unit. Can be set in the range of concentration measurement LRV to concentration measurement URV. Value must be greater than concentration measurement low alarm. Settings must satisfy the following condition: (Concentration measurement high alarm set 1 – 4 - Concentration measurement low alarm set 1 – 4) / | Concentration measurement URV set 1 – 4 - Concentration measurement LRV set 1 – 4| * 100 > Alarm hysteresis

Concentration measurement high high alarm set 1 – 4

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Conc] ▶ [Set1 – 4] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Concentration alarm] ▶ [Concentration measurement high high alarm set 1 – 4]

Concentration measurement high high alarm 1 – 4 sets the concentration measurement high high limit alarm values. When this limit is crossed, a Concentration measurement high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected concentration measurement unit. Can be set in the range of concentration measurement LRV to Concentration measurement URV. Value must be greater than concentration measurement low low alarm. Settings must satisfy the following condition: (Concentration measurement high high alarm set 1 – 4 - Concentration measurement low low alarm set 1 – 4) / | Concentration measurement URV set 1 – 4 - Concentration measurement LRV set 1 – 4| * 100 > Alarm hysteresis

Net mass flow 1 – 2 alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net mass flow 1 – 2 low alarm	[L alm]	[Net mass flow 1 – 2 low alarm]	*[▷ 189]*
Ⓕ	Net mass flow 1 – 2 low low alarm	[LL alm]	[Net mass flow 1 – 2 low low alarm]	*[▷ 190]*
Ⓕ	Net mass flow 1 – 2 high alarm	[H alm]	[Net mass flow 1 – 2 high alarm]	*[▷ 190]*
Ⓕ	Net mass flow 1 – 2 high high alarm	[HH alm]	[Net mass flow 1 – 2 high high alarm]	*[▷ 190]*

Net mass flow 1 – 2 low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net mass1 – 2] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net mass flow1 – 2 alarm] ▶ [Net mass flow1 – 2 low alarm]

Net mass flow low alarm sets the net mass flow low limit alarm values.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net mass flow unit. Can be set in the range of net mass flow LRV to net mass flow URV. Settings must satisfy the following condition: (Net mass flow 1 – 2 high alarm – Net mass flow 1 – 2 low alarm) / |Net mass flow 1 – 2 URV - Net mass flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net mass flow 1 – 2 low low alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Net mass1 – 2] ▶ [LL alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net mass flow1 – 2 alarm] ▶ [Net mass flow 1 – 2 low low alarm]

Net mass flow low low alarm sets the net mass flow low low limit alarm values. When this limit is crossed, a Net mass flow high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net mass flow unit. Can be set in the range of net mass flow LRV to net mass flow URV. Settings must satisfy the following condition: (Net mass flow 1 – 2 high high alarm – Net mass flow 1 – 2 low low alarm) / | Net mass flow 1 – 2 URV - Net mass flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net mass flow 1 – 2 high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Net mass1 – 2] ▶ [H alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net mass flow1 – 2 alarm] ▶ [Net mass flow 1 – 2 high alarm]

Net mass flow high alarm sets the net mass flow high limit alarm values. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Concentration measurement flow high alarm.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net mass flow unit. Can be set in the range of net mass flow LRV to net mass flow URV. Value must be greater than net mass flow low alarm. Settings must satisfy the following condition: (Net mass flow 1 – 2 high alarm – Net mass flow 1 – 2 low alarm) / |Net mass flow 1 – 2 URV - Net mass flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net mass flow 1 – 2 high high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Net mass1 – 2] ▶ [HH alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net mass flow1 – 2 alarm] ▶ [Net mass flow 1 – 2 high high alarm]

Net mass flow high high alarm sets net mass flow high high limit alarm values. When this limit is crossed, a Net mass flow high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net mass flow unit. Can be set in the range of net mass flow LRV to net mass flow URV. Value must be greater than net mass flow low low alarm. Settings must satisfy the following condition: (Net mass flow 1 – 2 high high alarm – Net mass flow 1 – 2 low low alarm) / | Net mass flow 1 – 2 URV - Net mass flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net volume flow 1 – 2 alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net volume flow 1 – 2 low alarm	[L alm]	[Net volume flow 1 - 2 low alarm]	[▷ 191]
Ⓕ	Net volume flow 1 – 2 low low alarm	[LL alm]	[Net volume flow 1 - 2 low low alarm]	[▷ 191]
Ⓕ	Net volume flow 1 – 2 high alarm	[H alm]	[Net volume flow 1 - 2 high alarm]	[▷ 192]
Ⓕ	Net volume flow 1 – 2 high high alarm	[HH alm]	[Net volume flow 1 - 2 high high alarm]	[▷ 192]

Net volume flow 1 – 2 low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net vol1 - 2] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net volume flow 1 - 2 alarm] ▶ [Net volume flow 1 - 2 low alarm]

Net volume flow low alarm sets the net volume flow low limit alarm values.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net volume flow unit. Can be set in the range of net corrected volume flow LRV to net volume flow URV. Settings must satisfy the following condition: (Net volume flow 1 – 2 high alarm – Net volume flow 1 – 2 low alarm) / |Net volume flow 1 – 2 URV - Net volume flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net volume flow 1 – 2 low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net vol1 - 2] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net volume flow 1 - 2 alarm] ▶ [Net volume flow 1 - 2 low low alarm]

Net volume flow low low alarm sets the net volume flow low low limit alarm values. When this limit is crossed, a Net volume flow high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net volume flow unit. Can be set in the range of net volume flow LRV to net volume flow URV. Settings must satisfy the following condition: (Net volume flow 1 – 2 high high alarm – Net volume flow 1 – 2 low low alarm) / |Net volume flow 1 – 2 URV - Net volume flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net volume flow 1 – 2 high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net vol1 – 2] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net volume flow 1 – 2 alarm] ▶ [Net volume flow 1 – 2 high alarm]

Net volume flow high alarm sets the net volume flow high limit alarm values. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Net volume flow high alarm.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net volume flow unit. Can be set in the range of net volume flow LRV to net volume flow URV. Value must be greater than net volume flow low alarm. Settings must satisfy the following condition: (Net volume flow 1 – 2 high alarm – Net volume flow 1 – 2 low alarm) / |Net volume flow 1 – 2 URV - Net volume flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net volume flow 1 – 2 high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net vol1 – 2] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net volume flow 1 – 2 alarm] ▶ [Net volume flow 1 – 2 high high alarm]

Net volume flow high high alarm sets net volume flow high high limit alarm values. When this limit is crossed, a Net volume flow high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net volume flow unit. Can be set in the range of net volume flow LRV to net volume flow URV. Value must be greater than net volume flow low low alarm. Settings must satisfy the following condition: (Net volume flow 1 – 2 high high alarm – Net volume flow 1 – 2 low low alarm) / |Net volume flow 1 – 2 URV - Net volume flow 1 – 2 LRV| * 100 > Alarm hysteresis

Net corrected volume flow alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net corrected volume flow low alarm	[L alm]	[Net corrected volume flow low alarm]	[▸ 193]

Ⓕ	Net corrected volume flow low low alarm	[LL alm]	[Net corrected volume flow low low alarm]	[193]
Ⓕ	Net corrected volume flow high alarm	[H alm]	[Net corrected volume flow high alarm]	[193]
Ⓕ	Net corrected volume flow high high alarm	[HH alm]	[Net corrected volume flow high high alarm]	[194]

Net corrected volume flow low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net corr vol] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net corrected volume flow alarm] ▶ [Net corrected volume flow low alarm]

Net corrected volume flow low alarm sets the net corrected volume flow low limit alarm value.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net corrected volume flow unit. Can be set in the range of net corrected volume flow LRV to net corrected volume flow URV. Settings must satisfy the following condition: (Net corrected volume flow high alarm – Net corrected volume flow low alarm) / |Net corrected volume flow URV - Net corrected volume flow LRV| * 100 > Alarm hysteresis

Net corrected volume flow low low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net corr vol] ▶ [LL alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net corrected volume flow alarm] ▶ [Net corrected volume flow low low alarm]

Net corrected volume flow low low alarm sets the net corrected volume flow low low limit alarm value. When this limit is crossed, a Net corrected volume flow high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net corrected volume flow unit. Can be set in the range of net corrected volume flow LRV to net corrected volume flow URV. Settings must satisfy the following condition: (Net corrected volume flow high high alarm – Net corrected volume flow low low alarm) / | Net corrected volume flow URV - Net corrected volume flow LRV| * 100 > Alarm hysteresis

Net corrected volume flow high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net corr vol] ▶ [H alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net corrected volume flow alarm] ▶ [Net corrected volume flow high alarm]

Net corrected volume flow high alarm sets the net corrected volume flow high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Net corrected volume high alarm.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net corrected volume flow unit. Can be set in the range of net corrected volume flow LRV to net corrected volume flow URV. Value must be smaller than net corrected volume flow low alarm. Settings must satisfy the following condition: (Net corrected volume flow high alarm – Net corrected volume flow low alarm) / |Net corrected volume flow URV - Net corrected volume flow LRV| * 100 > Alarm hysteresis

Net corrected volume flow high high alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Net corr vol] ▶ [HH alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Net corrected volume flow alarm] ▶ [Net corrected volume flow high high alarm]

Net corrected volume flow high high alarm sets the net corrected volume flow high high limit alarm value. When this limit is crossed, a Net corrected volume flow high / high low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected net corrected volume flow unit. Can be set in the range of net corrected volume flow LRV to net corrected volume flow URV. Value must be smaller than net corrected volume flow low alarm. Settings must satisfy the following condition: (Net corrected volume flow high high alarm – Net corrected volume flow low low alarm) / | Net corrected volume flow URV - Net corrected volume flow LRV| * 100 > Alarm hysteresis

Viscosity alarm

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Viscosity low alarm	[L alm]	[Viscosity low alarm]	[▷ 194]
Ⓕ	Viscosity low low alarm	[LL alm]	[Viscosity low low alarm]	[▷ 195]
Ⓕ	Viscosity high alarm	[H alm]	[Viscosity high alarm]	[▷ 195]
Ⓕ	Viscosity high high alarm	[HH alm]	[Viscosity high high alarm]	[▷ 195]

Viscosity low alarm

Ⓛ [Diag/Service] ▶ [H/L alm cfg] ▶ [Visc] ▶ [L alm]

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Viscosity alarm] ▶ [Viscosity low alarm]

Viscosity low alarm sets the net corrected volume flow low limit alarm value.

	Value	Description
Ⓕ	Numeric digits	Value in the selected Viscosity unit. Can be set in the range of Viscosity LRV to Viscosity URV. Settings must satisfy the following condition: (Viscosity high alarm – Viscosity low alarm) / |Viscosity URV - Viscosity LRV| * 100 > Alarm hysteresis

Viscosity low low alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Visc] ▶ [LL alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Viscosity alarm] ▶ [Viscosity low low alarm]

Viscosity low low alarm sets the Viscosity low low limit alarm value. When this limit is crossed, a Viscosity high high / low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected Viscosity unit. Can be set in the range of Viscosity LRV to Viscosity URV. Settings must satisfy the following condition: (Viscosity high high alarm – Viscosity low low alarm) / | Viscosity URV - Viscosity LRV| * 100 > Alarm hysteresis

Viscosity high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Visc] ▶ [H alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Viscosity alarm] ▶ [Viscosity high alarm]

Viscosity high alarm sets the Viscosity high limit alarm value. The optional status output can be set to react when this threshold is crossed. There is no further indication or other effect of a Viscosity high alarm.

	Value	Description
Ⓕ	Numeric digits	Value in the selected Viscosity unit. Can be set in the range of Viscosity LRV to Viscosity URV. Value must be smaller than Viscosity low alarm. Settings must satisfy the following condition: (Viscosity high alarm – Viscosity low alarm) / |Viscosity URV - Viscosity LRV| * 100 > Alarm hysteresis

Viscosity high high alarm

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Visc] ▶ [HH alm]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Viscosity alarm] ▶ [Viscosity high high alarm]

Viscosity high high alarm sets the Viscosity high high limit alarm value. When this limit is crossed, a Viscosity high / high low low alarm event is generated.

	Value	Description
Ⓕ	Numeric digits	Value in the selected Viscosity unit. Can be set in the range of Viscosity LRV to Viscosity URV. Value must be smaller than Viscosity low alarm. Settings must satisfy the following condition: (Viscosity high high alarm – Viscosity low low alarm) / | Viscosity URV - Viscosity LRV| * 100 > Alarm hysteresis

Alarm hysteresis

It prevents the alarms from activating/deactivating in rapid succession when the level is fluctuating around the alarm level.

Alarm hysteresis

Ⓛ **[Diag/Service] ▶ [H/L alm cfg] ▶ [Alam hys]**

Ⓗ [Maintenance root menu] ▶ [High/Low alarm configuration] ▶ [Alarm hysteresis]

Alarm hysteresis sets the hysteresis of alarm levels on process variables.

	Value	Description
–	Alarm hysteresis **[Alam hys]** [Alarm hysteresis]	The hysteresis value is applied to high and low alarms for all process variables. The value is set in % of |URV – LRV|. The default value is 3.0 %. The range of the value is 0.0 – 10.0 %.

5.4.9 Simulation

Allows the simulation of fixed values for quantities measured by the SITRANS FC system. This can be done to test the reaction of connected equipment. The test mode can be started by setting the process variable simulation select value to True for the given process variable. The simulation lasts for the duration set in *Auto rel time [▸ 164]*, after which normal operation is resumed automatically. Similar functionality is provided by the *output test menu [▸ 161]*, which provides for the direct testing of outputs IO1 to IO4.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Standard process variables	[Std pro var]	[Standard process variables]	[▸ 197]
Ⓕ	Optional process variables	[Opt pro var]	[Optional process variables]	[▸ 200]
Ⓗ	Alarm/Event device status	–	[Alarm/Event device status]	[▸ 203]

Standard process variables

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Process variables simulation select 1	[PV sim sel1]	[Process variables simulation select 1]	[▸ 197]
–	Mass flow simulation value	[Mass]	[Mass flow simulation value]	[▸ 198]
–	Density simulation value	[Dens]	[Density simulation value]	[▸ 199]
–	Temperature simulation value	[Temp]	[Temperature simulation value]	[▸ 199]
–	Volume flow simulation value	[Vol]	[Volume flow simulation value]	[▸ 199]
–	Pressure simulation value	[Pres]	[Pressure simulation value]	[▸ 199]
–	Reference density simulation value	[Ref dens]	[Reference density simulation value]	[▸ 199]
–	Relative density simulation value	[Rel dens]	[Relative density simulation value]	[▸ 200]
–	Corrected volume flow simulation value	[Corr vol]	[Corrected volume flow simulation value]	[▸ 200]
–	Calorific simulation value	[Cal]	[Calorific simulation value]	[▸ 200]

Process variables simulation select 1

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [PV sim sel1]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Process variables simulation select 1]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▸ 586]

Enables simulation mode for standard process variables.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Via [HART] communication, simulation is enabled by setting the bit in the appropriate process variable. Via LCD display, the corresponding variables must be selected. Simulation is disabled by setting bits to off. Simulation is automatically disabled after the time defined in the parameter *Test auto release time* [▸ 164] elapses.
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	
–	Pressure [Pres] [Pressure]	
–	Calorific value [Cal] [Calorific Value]	
–	Volume flow [Vol] [Volume flow]	
–	Reference density [Ref dens] [Reference density]	
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	

Mass flow simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Mass]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Mass flow simulation value]

Mass flow simulation value sets the simulated value for mass flow functions.

	Value	Description
–	Numeric digits	The value becomes the mass flow value when simulation is enabled. The mass flow value returns to the actual measured value when simulation is disabled.

Density simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Dens]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Density simulation value]

Density simulation value sets the simulated value for density.

	Value	Description
–	Numeric digits	The value becomes the density value when simulation is enabled. The density value returns to the actual measured value when simulation is disabled.

Temperature simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Temp]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Temperature simulation value]

Temperature simulation value sets the simulated value for temperature.

	Value	Description
–	Numeric digits	The value becomes the temperature value when simulation is enabled. The temperature value returns to the actual measured value when simulation is disabled.

Volume flow simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Vol]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Volume flow simulation value]

Volume flow simulation value sets the simulated value for volume flow.

	Value	Description
–	Numeric digits	The value becomes the volume flow value when simulation is enabled. The volume flow value returns to the actual measured value when simulation is disabled.

Pressure simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Pres]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Pressure simulation value]

Pressure simulation value sets the simulated value for pressure.

	Value	Description
–	Numeric digits	The value becomes the pressure value when simulation is enabled. The pressure value returns to the actual measured value when simulation is disabled.

Reference density simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Ref dens]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Reference density simulation value]

Reference density simulation value sets the simulated value for reference density.

	Value	Description
–	Numeric digits	The value becomes the reference density value when simulation is enabled. The reference density value returns to the actual measured value when simulation is disabled.

Relative density simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Rel dens]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Relative density simulation value]

Relative density simulation value sets the simulated value for relative density.

	Value	Description
–	Numeric digits	The value becomes the relative density value when simulation is enabled. The relative density value returns to the actual measured value when simulation is disabled.

Corrected volume flow simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Corr vol]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Corrected volume flow simulation value]

Corrected volume flow simulation value sets the simulated value for corrected volume flow.

	Value	Description
–	Numeric digits	The value becomes the corrected volume flow value when simulation is enabled. The corrected volume flow value returns to the actual measured value when simulation is disabled.

Calorific simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Std pro var] ▶ [Cal]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Standard process variables] ▶ [Calorific simulation value]

Calorific simulation value sets the simulated value for calorific value.

	Value	Description
–	Numeric digits	The value becomes the calorific value when simulation is enabled. The calorific value returns to the actual measured value when simulation is disabled.

Optional process variables

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Process variables simulation select 2	[PV sim sel2]	[Process variables simulation select 2]	[▸ 201]
Ⓕ	Concentration simulation value	[Conc]	[Concentration simulation value]	[▸ 201]
Ⓕ	Net mass flow 1 – 2 simulation value	[Net mass1 – 2]	[Net mass flow 1 – 2 simulation value]	[▸ 202]

Ⓕ	Net volume flow 1 – 2 simulation value	[Net vol1 - 2]	[Net volume flow 1 - 2 simulation value]	[▸ 202]
Ⓕ	Net corrected volume flow simulation value	[Net corr vol]	[Net corrected volume flow simulation value]	[▸ 202]
Ⓕ	Viscosity simulation value	[Visc]	[Viscosity simulation value]	[▸ 202]

Process variables simulation select 2

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [PV sim sel2]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Process variables simulation select 2]

Process variables simulation select 2 enables simulation mode for optional process variables.

	Value	Description
Ⓕ	Concentration [Conc] [Concentration]	Via [HART] communication, simulation is enabled by setting the bit in the appropriate process variable. Via LCD display, the corresponding variables must be selected. Simulation is disabled by setting bits to off. Simulation is automatically disabled after the time defined in the parameter *Test auto release time* [▸ 164] elapses.
Ⓕ	Net mass flow 1 [Net mass1] [Net Mass Flow 1]	
Ⓕ	Net mass flow 2 [Net mass2] [Net Mass Flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net Volume Flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net Volume Flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected Volume Flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	

Concentration simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [Conc]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Concentration simulation value]

Concentration simulation value sets the simulated value for concentration.

	Value	Description
Ⓕ	Numeric digits	The value becomes the concentration value when simulation is enabled. The concentration value returns to the actual value when simulation is disabled.

Net mass flow 1 – 2 simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [Net mass1 – 2]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Net mass flow 1 – 2 simulation value]

Net mass flow 1 – 2 simulation value sets the simulated value for net mass flow.

	Value	Description
Ⓕ	Numeric digits	The value becomes the net mass flow value 1 – 2 when simulation is enabled. The net mass flow value 1 – 2 returns to the actual value when simulation is disabled.

Net volume flow 1 – 2 simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [Net vol1 – 2]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Net volume flow 1 – 2 simulation value]

Net volume flow 1 – 2 simulation value sets the simulated value for net volume flow.

	Value	Description
Ⓕ	Numeric digits	The value becomes the net volume flow value 1 – 2 when simulation is enabled. The net volume flow value 1 – 2 returns to the actual value when simulation is disabled.

Net corrected volume flow simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [Net corr vol]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Net corrected volume flow simulation value]

Net corrected volume flow simulation value sets the simulated value for net corrected volume flow.

	Value	Description
Ⓕ	Numeric digits	The value becomes the net corrected volume flow value when simulation is enabled. The net corrected volume flow value returns to the actual value when simulation is disabled.

Viscosity simulation value

Ⓛ [Diag/Service] ▶ [Sim] ▶ [Opt pro var] ▶ [Visc]

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Optional process variables] ▶ [Viscosity simulation value]

Viscosity simulation value sets the simulated value for Viscosity.

	Value	Description
Ⓕ	Numeric digits	The value becomes the Viscosity value when simulation is enabled. The Viscosity value returns to the actual value when simulation is disabled.

Alarm/Event device status

Alarm/Event device status

Ⓗ [Maintenance root menu] ▶ [Simulation] ▶ [Alarm/Event device status]

Alarm/Event device status changes the value of status parameters for an alarm or event when simulation is enabled.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Simulation of these parameters in enabled/disabled by the parameter Status simulation mode. When simulation is enabled, values can be specified and changed from the actual value. When simulation is disabled, values return to the actual value.

	Value	Description
Ⓗ	Status simulation mode	Enables/Disables simulation of Alarm/Event device status parameters. Default value is Disabled.
Ⓗ	Device status	Sets simulation value of the device status that is defined in the HART specifications.
Ⓗ	Status group 0 – 5	Sets simulation value of the status group 0 – 5.
Ⓗ	Ext dev status	Sets simulation value of the Ext dev status that is defined in the HART specifications.
Ⓗ	Operate mode	Reserved and always 0.
Ⓗ	Device Diagnostic status 0 – 1	Sets the simulation value of the Device Diagnostic status 0 – 1 that is defined in the HART specifications.
Ⓗ	AO saturated	Sets the simulation value of the AO saturated that is defined in the HART specifications.
Ⓗ	I/O and subdevice Status	Sets the simulation value of the I/O and subdevice Status that is defined in the HART specifications. I/O and subdevice Status can be simulated but is ordinarily not used by the device.
Ⓗ	WirelessHART Status	Sets the simulation value of the WirelessHART Status that is defined in the HART specifications. WirelessHART Status can be simulated but is ordinarily not used by the device.
Ⓗ	AO fixed	Sets the simulation value of the AO fixed that is defined in the HART specifications.
Ⓗ	Status group 14 – 24	Sets the simulation value of the Status group 14 – 24.

5.4.10 Alarm/Event behavior settings

The alarm behaviour setting is usually the second step in the three steps to set up an alarm. It selects the consequences that the occurrence of an event has. These range from ignoring the event, through the activation of an alarm/monitoring/logging, to going into the burnout state of the device. Some conditions may be so serious that the corresponding alarm behavior cannot be set to ignore.

For more detailed information, see *Event management [▸ 64]*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Alarm/Event additional parameters	[Alm/Evt add]	[Alarm/Event additional parameters]	[▸ 204]
–	System alarms	[Sys alm]	[System alarms]	[▸ 204]
–	Process alarms	[Pro alm]	[Process alarms]	[▸ 206]
–	Setting alarms	[Set alm]	[Setting alarms]	[▸ 218]
–	Warnings/Information	[Warn]	[Warnings/Information]	[▸ 232]
–	Event setting lock status	[Evt set lock]	[Event setting lock status]	[▸ 246]

Alarm/Event additional parameters

Alarm/Event additional parameters

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Alm/Evt add]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Alarm/Event additional parameters]

This parameter can be set in the following menu/menus:

- *Status/Self test [▸ 148]*

The parameter *Alarm/Event additional parameters* enables or disables menu items in the submenu *Alarm/Event behavior settings*.

	Value	Description
–	Not apply [Not apply] [Not apply]	Menu items in the submenu *Alarm/Event behavior settings* are disabled. Default value.
–	Apply [Apply] [Apply]	Menu items in the submenu *Alarm/Event behavior settings* are enabled.

System alarms

System alarms defines the action when an event occurs, as well as device and acknowledge behaviors.

The following overview shows the selectable menu items within the submenu System alarms.

	Full name	Display name	[HART] name	Page
–	Device behavior temperature alarm	[Bhvr temp]	[Device behavior temperature alarm]	[▸ 205]
–	Device behavior indicator alarm	[Bhvr ind]	[Device behavior indicator alarm]	[▸ 205]

Device behavior temperature alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Sys alm] ▶ [Bhvr temp]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [System alarms] ▶ [Device behavior temperature alarm]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▸ 587]

Defines the device behavior when one or more of the following alarms occur:

- 107: Temperature range violation
  107:Temp range FAIL
- 108: Temperature sensor failure
  108:Temp snsr FAIL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states. Default value.
–	Alarm output [Alm out] [Alm out]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued.

Device behavior indicator alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Sys alm] ▶ [Bhvr ind]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [System alarms] ▶ [Device behavior indicator alarm]

Device behavior indicator alarm defines the device behavior when one or more of the following alarms occur:

- 130: Indicator board failure
  130:Ind bd FAIL
- 131: Indicator board EEPROM failure
  131:Ind bd EEP FAIL
- 132: LCD driver failure
  132:LCD drv FAIL
- 133: Indicator board mismatch
  133:Ind bd mismatch
- 134: Indicator communication error
  134:Ind comm ERR
- 135: microSD card failure
  135:microSD FAIL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states. Default value.

	Value	Description
–	Alarm output [Alm out] [Alm out]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued.

Process alarms

Sets parameters that define the device behavior when a standard diagnosis alarm or an alarm about a process value occurs.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Standard diagnostics	[Std diag]	[Standard diagnostics]	[206]
–	Input/Total	[AI]	[Input/Total]	[211]
–	High High/Low Low alarm	[Var]	[High High/Low Low alarm]	[213]
–	Autozero	[AZ]	[Autozero]	[215]
Ⓕ	Batch	[Batch]	[Batch]	[215]

Standard diagnostics

Sets parameters that define the device behavior when a standard diagnostic alarm occurs.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Device behavior slug detection	[Bhvr slug]	[Device behavior slug detection]	[207]
–	Event setting slug detection	[Evt slug]	[Event setting slug detection]	[207]
–	Acknowledge behavior slug detection	[Ack slug]	[Acknowledge behavior slug detection]	[208]
–	Device behavior empty pipe detection	[Bhvr empty]	[Device behavior empty pipe detection]	[208]
–	Event setting empty pipe detection	[Evt empty]	[Event setting empty pipe detection]	[209]
–	Acknowledge behavior empty pipe detection	[Ack empty]	[Acknowledge behavior empty pipe detection]	[209]
–	Device behavior corrosion detection	[Bhvr crrsn]	[Device behavior corrosion detection]	[210]
–	Event setting corrosion detection	[Evt crrsn]	[Event setting corrosion detection]	[210]
–	Acknowledge behavior corrosion detection	[Ack crrsn]	[Acknowledge behavior corrosion detection]	[211]

Device behavior slug detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Bhvr slug]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Device behavior slug detection]

Device behavior slug detection defines the device behavior when the following alarm occurs:

201: Slug detection
201:Slug detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alm out]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

For more detailed information, see *Output signal behavior [▷ 67]*.

Event Setting Slug Detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Evt slug]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Event setting slug detection]

Event setting slug detection defines the event action when the following alarm occurs:

201: Slug detection
[201:Slug detect]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.

	Value	Description
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior slug detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Ack slug]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Acknowledge behavior slug detection]

Acknowledge behavior slug detection defines the acknowledge behavior when the following alarm occurs:

201: Slug detection
201:Slug detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs device, outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior empty pipe detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Bhvr empty]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Device behavior empty pipe detection]

Device behavior empty pipe detection defines the device behavior when the following alarm occurs:

202: Empty pipe detection
202:Empty detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	The alarm event causes the alarm to be displayed.

	Value	Description
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Event Setting Empty Pipe Detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Evt empty]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Event setting empty pipe detection]

Event setting empty pipe detection defines the event action when the following alarm occurs:

202: Empty pipe detection
[202:Empty detect]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior empty pipe detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Ack empty]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Acknowledge behavior empty pipe detection]

Acknowledge behavior empty pipe detection defines the acknowledge behavior when the following alarm occurs:

202: Empty pipe detection
202:Empty detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior corrosion detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Bhvr crrsn]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Device behavior corrosion detection]

Device behavior corrosion detection defines the device behavior when the following alarm occurs:

203: Corrosion detection
203:Crrsn detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Event Setting Corrosion Detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Evt crrsn]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Event setting corrosion detection]

Event setting corrosion detection defines the event action when the following alarm occurs:

203: Corrosion detection
[203:Crrsn detect]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.

	Value	Description
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior corrosion detection

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Std diag] ▶ [Ack crrsn]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Standard diagnostics] ▶ [Acknowledge behavior corrosion detection]

Acknowledge behavior corrosion detection defines the acknowledge behavior when the following alarm occurs:

203: Corrosion detection
203:Crrsn detect

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Input/Total

Input/Total sets parameters that define the device behavior when an analog input alarm or a Totalizer 1 threshold alarm occur.

The following overview shows the selectable menu items within the submenu *Input/Total*.

	Full name	Display name	[HART] name	Page

–	Device behavior analog input alarm	[Bhvr AI]	[Device behavior analog input alarm]	[▶ 212]
–	Device behavior total 1 threshold exceeded	[Bhvr ttl1 thrshld]	[Device behavior total 1 threshold exceed]	[▶ 212]

Device behavior analog input alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [AI] ▶ [Bhvr AI]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Input/Total] ▶ [Device behavior analog input alarm]

Device behavior analog input alarm defines the device behavior when the following alarm occurs:

221: Analog input failure
221:AI FAIL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior total 1 threshold exceeded

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [AI] ▶ [Bhvr ttl1 thrshld]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Input/Total] ▶ [Device behavior total 1 threshold exceed]

Device behavior total 1 threshold exceeded defines the device behavior when the following alarm occurs:

241: Totalizer 1 threshold exceeded
241:Ttl1 exceed

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

High High/Low Low alarm

High High/Low Low alarm sets parameters that define the device behavior when a high or low alarm occurs.

The following overview shows the selectable menu items within the submenu *High High/Low Low alarm*.

	Full name	Display name	[HART] name	Page
–	Device behavior mass flow high high low low alarm	[Bhvr mass HH LL]	[Device behavior mass flow high high low low alarm]	[213]
–	Device behavior density high high low low alarm	[Bhvr dens HH LL]	[Device behavior density high high low low alarm]	[213]
–	Device behavior temperature high high low low alarm	[Bhvr temp HH LL]	[Device behavior temperature high high low low alarm]	[214]
–	Device behavior pressure high high low low alarm	[Bhvr pres HH LL]	[Device behavior pressure high high low low alarm]	[214]

Device behavior mass flow high high low low alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Var] ▶ [Bhvr mass HH LL]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [High High/Low Low alarm] ▶ [Device behavior mass flow high high low low alarm]

Device behavior mass flow high high low low alarm defines the device behavior when the following alarm occurs:

222: Mass flow HH/LL alarm
222:Mass HH/LL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior density high high low low alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Var] ▶ [Bhvr dens HH LL]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [High High/Low Low alarm] ▶ [Device behavior density high high low low alarm]

Device behavior density high high low low alarm defines the device behavior when the following alarm occurs:

223: Density HH/LL Alarm
223:Dens HH/LL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior temperature high high low low alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Var] ▶ [Bhvr temp HH LL]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [High High/Low Low alarm] ▶ [Device behavior temperature high high low low alarm]

Device behavior temperature high high low low alarm defines the device behavior when the following alarm occurs:

224: Temperature HH/LL alarm
224:Temp HH/LL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior pressure high high low low alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Var] ▶ [Bhvr pres HH LL]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [High High/Low Low alarm] ▶ [Device behavior pressure high high low low alarm]

Device behavior pressure high high low low alarm defines the device behavior when the following alarm occurs:

225: Pressure HH/LL alarm
225:Pres HH/LL

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Autozero

Autozero sets parameters that define the device behavior when an autozero alarm occurs.

Device behavior autozero alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [AZ] ▶ [Bhvr AZ]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Autozero] ▶ [Device behavior autozero alarm]

Device behavior autozero alarm defines the device behavior when one or more of the following alarms occur:

- 204: Autozero judgement multiphase
  204:AZ multiphase
- 205: Autozero judgement flow
  205:AZ flow
- 206: Autozero judgement temperature
  206:AZ temp

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Batch

Batch sets parameters that define the device behavior, when a Batch relevant alarm occurs.

Device behavior batch alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Batch] ▶ [Bhvr batch]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Batch] ▶ [Device behavior batch alarm]

Device behavior batch alarm defines the device behavior when one or more of the following alarms occur:

- 207: Batch Time Exceeded
  207:Batch time over
- 208: Batch Overrun/Underrun
  208:Batch overrun
- 209: Max Flow While Batching
  209:Max flow batch

	Value	Value description
–	Soft burnout [Soft burn out] [Sorft burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Acknowledge behavior batch alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Batch] ▶ [Ack batch]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Batch] ▶ [Acknowledge behavior batch alarm]

Acknowledge behavior batch alarm defines the acknowledge behavior when one or more of the following alarms occur:

- 207: Batch Time Exceeded
  207:Batch time over
- 208: Batch Overrun/Underrun
  208:Batch overrun
- 209: Max Flow While Batching
  209:Max flow batch

	Value	Value description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Event setting batch alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Batch] ▶ [Evt batch]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Batch] ▶ [Event setting batch alarm]

Event setting batch alarm defines the event action when one or more of the following alarms occur:

- 207: Batch Time Exceeded
  207:Batch time over
- 208: Batch Overrun/Underrun
  208:Batch overrun
- 209: Max Flow While Batching
  209:Max flow batch

	Value	Value description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Predefined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by event. Default value.
–	Acknowledge [Ack] [Acknowledget]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Setting alarms

Setting alarms sets parameters that define the device behavior when an alarm is set.

The following overview shows the selectable menu items within the submenu *Setting alarms*.

	Full name	Display name	[HART] name	Page
–	Standard variables	[Var]	[Standard variables]	[218]
–	Optional variables	[Var]	[Optional variables]	[224]
–	Output	[AO], [Pls/Sts out]	[Output]	[227]
–	Input	[AI], [Sts in]	[Input]	[230]
Ⓕ	Batch	[Batch]	[Batch]	[231]

Standard variables

Standard variables sets parameters that define the device behavior when an alarm is set for standard process variables.

The following overview shows the selectable menu items within the submenu *Standard variables*.

	Full name	Display name	[HART] name	Page
–	Device behavior mass flow configuration error	[Bhvr mass cfg]	[Device behavior mass flow configuration error]	[219]
–	Device behavior density configuration error	[Bhvr dens cfg]	[Device behavior density configuration error]	[219]
–	Device behavior temperature configuration error	[Bhvr temp cfg]	[Device behavior temperature configuration error]	[220]
–	Device behavior volume flow configuration error	[Bhvr vol cfg]	[Device behavior volume flow configuration error]	[220]
–	Device behavior pressure configuration error	[Bhvr pres cfg]	[Device behavior pressure configuration error]	[221]
–	Device behavior reference density configuration error	[Bhvr ref dens cfg]	[Device behavior reference density configuration error]	[221]
–	Device behavior relative density configuration error	[Bhvr rel dens cfg]	[Device behavior relative density configuration error]	[222]
–	Device behavior corrected volume flow configuration error	[Bhvr corr vol cfg]	[Device behavior corrected volume flow configuration error]	[222]
–	Device behavior calorific value configuration error	[Bhvr cal cfg]	[Device behavior calorific value configuration error]	[223]
–	Device behavior total configuration error	[Bhvr ttl alm]	[Device behavior total configuration error]	[223]

Device behavior mass flow configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr mass cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior mass flow configuration error]

Device behavior mass flow configuration error defines the device behavior when the following alarm occurs:

301: Mass flow configuration error
301:Mass cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior density configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr dens cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior density configuration error]

Device behavior density configuration error defines the device behavior when the following alarm occurs:

302: Density configuration error
302:Dens cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior temperature configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr temp cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior temperature configuration error]

Device behavior temperature configuration error defines the device behavior when the following alarm occurs:

303: Temperature configuration error
303:Temp cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior volume flow configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr vol cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior volume flow configuration error]

Device behavior volume flow configuration error defines the device behavior when the following alarm occurs:

307: Volume flow configuration error
307:Vol cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior pressure configuration error

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr pres cfg]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior pressure configuration error]

Device behavior pressure configuration error defines the device behavior when the following alarm occurs:

305: Pressure configuration error
305:Pres cfg ERR

	Value	Description
–	Software burnout **[Soft burn out]** [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output **[Alm out]** [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue **[Cont]** [Continue]	Operation is continued. Default value.

Device behavior reference density configuration error

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr ref dens cfg]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior reference density configuration error]

Device behavior reference density configuration error defines the device behavior when the following alarm occurs:

308: Reference density configuration error
308:Ref dens ERR

	Value	Description
–	Software burnout **[Soft burn out]** [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output **[Alm out]** [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue **[Cont]** [Continue]	Operation is continued. Default value.

Device behavior relative density configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr rel dens cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior relative density configuration error]

Device behavior relative density configuration error defines the device behavior when the following alarm occurs:

309: Relative density configuration error
309:Rel dens ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior corrected volume flow configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr corr vol cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior corrected volume flow configuration error]

Device behavior corrected volume flow configuration error defines the device behavior when the following alarm occurs:

310: Corrected volume flow configuration error
310:Corr vol ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior calorific value configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr cal cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior calorific value configuration error]

Device behavior calorific value configuration error defines the device behavior when the following alarm occurs:

311: Calorific value configuration error
311:Cal cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	The alarm event causes the alarm to be displayed.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior total configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr ttl alm]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Standard variables] ▶ [Device behavior total configuration error]

Device behavior total configuration error defines the device behavior when one or more of the following alarms occur:

- 335: Totalizer 1 configuration error
  335:Ttl1 cfg ERR
- 336: Totalizer 2 configuration error
  336:Ttl2 cfg ERR
- 337: Totalizer 3 configuration error
  337:Ttl3 cfg ERR
- 338: Totalizer 4 configuration error
  338:Ttl4 cfg ERR
- 339: Totalizer 5 configuration error
  339:Ttl5 cfg ERR
- 340: Totalizer 6 configuration error
  340:Ttl6 cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.

	Value	Description
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Optional variables

Optional variables sets parameters that define the device behavior when an alarm for optional process variables is set.

The following overview shows the selectable menu items within the submenu *Optional variables*.

	Full name	Display name	[HART] name	Page
Ⓕ	Device behavior concentration configuration error	[Bhvr conc cfg]	[Device behavior concentration configuration error]	[224]
Ⓕ	Device behavior net mass flow configuration error	[Bhvr net mass cfg]	[Device behavior net mass flow configuration error]	[225]
Ⓕ	Device behavior net volume flow configuration error	[Bhvr net vol cfg]	[Device behavior net volume flow configuration error]	[225]
Ⓕ	Device behavior net corrected volume flow configuration error	[Bhvr net corr vol cfg]	[Device behavior net corrected volume flow configuration error]	[226]
Ⓕ	Device behavior Viscosity configuration error	[Bhvr visc]	[Device behavior Viscosity configuration error]	[226]

Device behavior concentration configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr conc cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Optional variables] ▶ [Device behavior concentration configuration error]

Device behavior concentration configuration error defines the device behavior when the following alarm occurs:

313: Concentration configuration error
313:Conc cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.

	Value	Description
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior net mass flow configuration error

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr net mass cfg]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Optional variables] ▶ [Device behavior net mass flow configuration error]

Device behavior net mass flow configuration error defines the device behavior when one or more of the following alarms occur:

- 314: Net mass flow 1 configuration error
  314:Net mass1 ERR
- 315: Net mass flow 2 configuration error
  315:Net mass2 ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior net volume flow configuration error

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr net vol cfg]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Optional variables] ▶ [Device behavior net volume flow configuration error]

Device behavior net volume flow configuration error defines the device behavior when one or more of the following alarms occur:

- 316: Net volume flow 1 configuration error
  316:Net vol1 ERR
- 317: Net volume flow 2 configuration error
  317:Net vol2 ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.

	Value	Description
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior net corrected volume flow configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr net corr vol cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Optional variables] ▶ [Device behavior net corrected volume flow configuration error]

Device behavior net corrected volume flow configuration error defines the device behavior when the following alarm occurs:

318: Net corrected volume flow configuration error
318:Net corr vol ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior viscosity configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Var] ▶ [Bhvr visc]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Optional variables] ▶ [Device behavior viscosity configuration error]

Defines the device behavior when one or more of the following alarms occur:

- 320: Viscosity configuration error
  320:Visc cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.

	Value	Description
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Output

Output sets parameters that define the device behavior when an alarm is set for output signals.

The following overview shows the selectable menu items within the submenu *Output*.

	Full name	Display name	[HART] name	Page
–	Device behavior analog output 1 configuration error	[Bhvr AO1 cfg]	[Device behavior analog output 1 configuration error]	[227]
–	Device behavior analog output 2 configuration error	[Bhvr AO2 cfg]	[Device behavior analog output 2 configuration error]	[228]
–	Device behavior pulse/status output 1 configuration error	[Bhvr pls/sts1 cfg]	[Device behavior pulse/status output 1 configuration error]	[228]
–	Device behavior pulse/status output 2 configuration error	[Bhvr pls/sts2 cfg]	[Device behavior pulse/status output 2 configuration error]	[229]
–	Device behavior double pulse configuration error	[Bhvr dbl pls cfg]	[Device behavior double pulse configuration error]	[229]
–	Device behavior status output 3 configuration error	[Bhvr sts3 cfg]	[Device behavior status output 3 configuration error]	[230]

Device behavior analog output 1 configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [AO] ▶ [Bhvr AO1 cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior analog output 1 configuration error]

Device behavior analog output 1 configuration error defines the device behavior when the following alarm occurs:

321: Analog output 1 configuration error
321:AO1 cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.

	Value	Description
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior analog output 2 configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [AO] ▶ [Bhvr AO2 cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior analog output 2 configuration error]

Device behavior analog output 2 configuration error defines the device behavior when the following alarm occurs:

322: Analog output 2 configuration error
322:AO2 cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior pulse/status output 1 configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Pls/Sts out] ▶ [Bhvr pls/sts1 cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior pulse/status output 1 configuration error]

Device behavior pulse/status output 1 configuration error defines the device behavior when one or more of the following alarms occur:

- 323: Pulse output 1 configuration error
  323:Pls1 cfg ERR
- 324: Frequency output 1 configuration error
  324:Freq1 cfg ERR
- 325: Status output 1 configuration error
  325:Sts1 cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.

	Value	Description
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior pulse/status output 2 configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Pls/Sts out] ▶ [Bhvr pls/sts2 cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior pulse/status output 2 configuration error]

Device behavior pulse/status output 2 configuration error defines the device behavior when one or more of the following alarms occur:

- 326: Pulse output 2 configuration error
  326:Pls2 cfg ERR
- 327: Frequency output 2 configuration error
  327:Freq2 cfg ERR
- 328: Status output 2 configuration error
  328:Sts2 cfg ERR
- 329: Pulse/Status output 2 mode configuration error
  329:Pls/Sts2 ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior double pulse configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Pls/Sts out] ▶ [Bhvr dbl pls cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior double pulse configuration error]

Device behavior double pulse configuration error defines the device behavior when the following alarm occurs:

330: Double pulse configuration error
330:Dbl pls cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior status output 3 configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Pls/Sts out] ▶ [Bhvr sts3 cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Output] ▶ [Device behavior status output 3 configuration error]

Device behavior status output 3 configuration error defines the device behavior when the following alarm occurs:

331: Status output 3 configuration error
331:Sts3 cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Input

Input sets parameters that define the device behavior when an alarm is set for input signals.

The following overview shows the selectable menu items within the submenu *Input*.

	Full name	Display name	[HART] name	Page
–	Device behavior status input configuration error	[Bhvr sts in cfg]	[Device behavior status input configuration error]	[▸ 231]
–	Device behavior analog input configuration error	[Bhvr AI cfg]	[Device behavior analog input configuration error]	[▸ 231]

Device behavior status input configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Sts in] ▶ [Bhvr sts in cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Input] ▶ [Device behavior status input configuration error]

Device behavior status input configuration error defines the device behavior when the following alarm occurs:

332: Status input configuration error
332:Sts in cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Device behavior analog input configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [AI] ▶ [Bhvr AI cfg]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Input] ▶ [Device behavior analog input configuration error]

Device behavior analog input configuration error defines the device behavior when the following alarms occurs:

333: Analog input configuration error
333:AI cfg ERR

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Batch

Batch sets parameters that define the device behavior when an alarm is set for input signals.

The following overview shows the selectable menu items within the submenu *Input*.

	Full name	Display name	[HART] name	Page
–	Device behavior batch configuration error	[Bhvr batch cfg alm]	[Device behavior batch configuration error]	[▸ 232]

Device behavior batch configuration error

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Set alm] ▶ [Batch] ▶ [Bhvr batch cfg alm]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Setting alarms] ▶ [Batch] ▶ [Device behavior batch configuration error]

Device behavior batch configuration error defines the device behavior when the following alarm occurs:

341: Batch Configuration Error
341:Batch cfg ERR

	Value	Value description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Warnings/Information

Sets parameters that define the device behavior when a warning occurs.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Variables	[Var]	[Variables]	[▸ 232]
–	Output	[AO], [Pls/Sts out]	[Output]	[▸ 237]
Ⓕ	Batch	[Batch]	[Batch]	[▸ 243]
–	Others	[Others]	[Others]	[▸ 244]

Variables

Sets parameters that define the device behavior when a warning for process variables occurs.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Event setting density fixed	[Evt dens fix]	[Event setting density fixed]	[▸ 233]
–	Event setting temperature fixed	[Evt temp fix]	[Event setting temperature fixed]	[▸ 233]
–	Event setting pressure fixed	[Evt pres fix]	[Event setting pressure fixed]	[▸ 234]

–	Event setting reference density fixed	[Evt ref dens fix]	[Event setting reference density fixed]	[▶ 235]
–	Event setting calorific value fixed	[Evt cal fix]	[Event setting calorific value fixed]	[▶ 235]
–	Event setting process variables trim	[Evt pro var trim]	[Event setting process variables trim]	[▶ 236]

Event setting density fixed

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt dens fix]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting density fixed]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL Mode [▶ 588]

Defines the device behavior when the following warning occurs:

703: Density fixed
[703:Dens fix]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting temperature fixed

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt temp fix]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting temperature fixed]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▶ 589]

Defines the device behavior when the following warning occurs:

704:Temperature Fixed
[704:Temp fix]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting pressure fixed

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt pres fix]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting pressure fixed]

Defines the device behavior when the following warning occurs:

705: Pressure fixed
[705:Pres fix]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.

	Value	Description
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting reference density fixed

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt ref dens fix]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting reference density fixed]

Defines the device behavior when the following warning occurs:

706: Reference density fixed
[706:Ref dens fix]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event Setting Calorific Value Fixed

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt cal fix]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting calorific value fixed]

Defines the device behavior when the following warning occurs:

707: Calorific value fixed
[707:Cal fix]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting process variables trim

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Var] ▶ [Evt pro var trim]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Variables] ▶ [Event setting process variables trim]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▶ 589]

Defines the device behavior when the following warning occurs:

715: Process variable trimming
[715:Pro var trim]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.

	Value	Description
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Output

Output sets parameters that define the event action and acknowledge behaviour when a warning about output signals occurs.

The following overview shows the selectable menu items within the submenu *Output*.

	Full name	Display name	[HART] name	Page
–	Event setting analog output 1 saturated	[Evt AO1 sat]	[Event setting analog output 1 saturated]	[238]
–	Event setting analog output 2 saturated	[Evt AO2 sat]	[Event setting analog output 2 saturated]	[238]
–	Acknowledge behavior analog output 1 saturated	[Ack AO1]	[Acknowledge behavior analog output 1 saturated]	[239]
–	Acknowledge behavior analog output 2 saturated	[Ack AO2]	[Acknowledge behavior analog output 2 saturated]	[239]
–	Event setting pulse status output 1 saturated	[Evt pls/sts1 sat]	[Event setting pulse status output 1 saturated]	[240]
–	Event setting pulse status output 2 saturated	[Evt pls/sts2 sat]	[Event setting pulse status output 2 saturated]	[241]
–	Acknowledge behavior pulse status output 1 saturated	[Ack pls/sts1]	[Acknowledge behavior pulse status output 1 saturated]	[241]
–	Acknowledge behavior pulse status output 2 saturated	[Ack pls/sts2]	[Acknowledge behavior pulse status output 2 saturated]	[242]
–	Event setting double pulse output saturated	[Evt dbl pls sat]	[Event setting double pulse output saturated]	[242]
–	Acknowledge behavior double pulse output saturated	[Ack dbl pls]	[Acknowledge behavior double pulse output saturated]	[243]

Event setting analog output 1 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [AO] ▶ [Evt AO1 sat]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Event setting analog output 1 saturated]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▶ 590]

Defines the device behavior when the following warning occurs:

716: Analog output 1 saturated
716:AO1 saturte

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting analog output 2 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [AO] ▶ [Evt AO2 sat]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Event setting analog output 2 saturated]

Event setting analog output 2 saturated defines the device behavior when the following warning occurs:

717: Analog output 2 saturated
717:AO2 saturte

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.

	Value	Description
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior analog output 1 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [AO] ▶ [Ack AO1]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Acknowledge behavior analog output 1 saturated]

Acknowledge behavior analog output 1 saturated defines the device behavior when the following warning occurs:

716: Analog output 1 saturated
716:AO1 saturte

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Acknowledge behavior analog output 2 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [AO] ▶ [Ack AO2]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Acknowledge behavior analog output 2 saturated]

Defines the device behavior when the following warning occurs:

717: Analog output 2 saturated

717:AO2 saturte

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Event setting pulse status output 1 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Pls/Sts out] ▶ [Evt pls/sts1 sat]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Event setting pulse status output 1 saturated]

Event setting pulse status output 1 saturated defines the device behavior when the following warning occurs:

718: Pulse output 1 saturated
718:Pls1 saturte

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting pulse status output 2 saturated

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Pls/Sts out] ▶ [Evt pls/sts2 sat]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Event setting pulse status output 2 saturated]

Event setting pulse status output 2 saturated defines the device behavior when the following warning occurs:

719: Pulse output 2 saturated
719:Pls2 saturte

	Value	Description
–	Ignore **[Ignore]** [Ignore]	Event does not have any effect.
–	History only **[Hist only]** [History only]	Pre-defined Event is recorded in the device history.
–	Generate **[Generate]** [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge **[Ack]** [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor **[Monitor]** [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge **[Monitor+ack]** [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior pulse status output 1 saturated

Ⓛ **[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Pls/Sts out] ▶ [Ack pls/sts1]**

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Acknowledge behavior pulse status output 1 saturated]

Acknowledge behavior pulse status output 1 saturated defines the device behavior when the following warning occurs:

718: Pulse output 1 saturated
718:Pls1 saturte

	Value	Description
–	Software burnout **[Soft burn out]** [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.

	Value	Description
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Acknowledge behavior pulse status output 2 saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Pls/Sts out] ▶ [Ack pls/sts2]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Acknowledge behavior pulse status output 2 saturated]

Acknowledge behavior pulse status output 2 saturated defines the device behavior when the following warning occurs:

719: Pulse output 2 saturated
719:Pls2 saturte

	Value	Description
–	Software burnout [Soft burn out] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [Alm out] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [Cont] [Continue]	Operation is continued. Default value.

Event setting double pulse output saturated

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Pls/Sts out] ▶ [Evt dbl pls sat]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Event setting double pulse output saturated]

Event setting double pulse output saturated defines the device behavior when the following warning occurs:

720: Double pulse output saturated
720:Dbl pls saturte

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.

	Value	Description
–	Generate [**Generate**] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [**Ack**] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [**Monitor**] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [**Monitor+ack**] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Acknowledge behavior double pulse out saturated

Ⓛ	[**Diag/Service**] ▶ [**Alm/Evt bhvr set**] ▶ [**Warn**] ▶ [**Pls/Sts out**] ▶ [**Ack dbl pls**]
Ⓗ	[Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Output] ▶ [Acknowledge behavior double pulse out saturated]

Acknowledge behavior double pulse out saturated defines the device behavior when the following warning occurs:

720: Double pulse output saturated
720:Dbl pls saturte

	Value	Description
–	Software burnout [**Soft burn out**] [Software burnout]	When this alarm event occurs, device outputs go into predefined error states.
–	Alarm output [**Alm out**] [Alarm output]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.
–	Continue [**Cont**] [Continue]	Operation is continued. Default value.

Batch

Sets parameters that define the event action when a warning about output signals occurs.

The following menus/settings are available:

	Full name	Display name	[**HART**] name	Page
–	Device behavior batch warning	[**Bhvr batch warn**]	[Device behavior batch warning]	*[▶ 244]*

Device behavior batch warning

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Batch] ▶ [Bhvr batch warn]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Batch] ▶ [Device behavior batch warning]

Event setting batch warning defines the device behavior when the following warning occurs:

732: Batch progress indication
732:Batch progress

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Others

Sets the parameters that define the device behavior when other warnings occur.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Event setting date/time not set	[Evt not date/time]	[Event setting date/time not set]	[▶ 244]
–	Device behavior maintenance mode	[Bhvr mainte mode]	[Device behavior maintenance mode]	[▶ 245]

Event Setting Date/Time Not Set

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Others] ▶ [Evt not date/time]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Others] ▶ [Event setting date/time not set]

Defines the device behavior when the following warning occurs:

723: Date/Time not set
[723:Date/Time WARN]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Device behavior maintenance mode

Ⓛ	[Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Warn] ▶ [Others] ▶ [Bhvr mainte mode]

Ⓗ	[Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Warnings/Information] ▶ [Others] ▶ [Device behavior maintenance mode]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL Mode [▶ 587]

Defines the device behavior when the following warning occurs:

909:Maintenance Mode Running
[909:Mainte mode]

	Value	Description
–	Continue [Cont] [Continue]	Operation is continued. Default value.
–	Hold [Hold] [Hold]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.

Event setting lock status

Sets the parameters that define the event setting when the device configuration is locked or unlocked.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Event setting device configuration locked	[Evt dev lock]	[Event setting device configuration locked]	[▸ 246]
–	Event setting device configuration not locked	[Evt dev not lock]	[Event setting device configuration not locked]	[▸ 247]

Event Setting Device Configuration Locked

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Evt set lock] ▶ [Evt dev lock]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Event setting lock status] ▶ [Event setting device configuration locked]

Defines the device behavior when the configuration of the device is locked (write-protected) and the corresponding information icon appears.

For more detailed information about the protection symbols, see *Status icons [▸ 14]*.

For more detailed information about the write protection function, see *Write protect [▸ 621]* .

901: Device configuration locked
[901:Dev cfg lock]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event. Default value.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event Setting Device Configuration Not Locked

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Evt set lock] ▶ [Evt dev not lock]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Event setting lock status] ▶ [Event setting device configuration not locked]

Defines the device behavior when the configuration of the device is unlocked and the corresponding information icon appears.

For more detailed information about the protection symbols, see *Status icons [▸ 14]*.

For more detailed information about the read-write function, see *Write protect [▸ 621]* .

902: Device configuration not locked
[902:No dev cfg lock]

	Value	Description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Pre-defined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by the event.
–	Acknowledge [Ack] [Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

5.4.11 Standard diagnostics

Sets the parameters for configuring standard diagnostic functions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Standard diagnostics: additional parameters	[Std diag add]	[Standard diagnostics additional parameters]	[▸ 248]
–	Slug detection	[Slug]	[Slug detection]	[▸ 248]
–	Empty pipe detection	[Empty]	[Empty pipe detection]	[▸ 251]
–	Corrosion detection	[Crrsn]	[Corrosion detection]	[▸ 253]

Standard diagnostics: additional parameters

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Std diag add]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Standard diagnostics additional parameters]

Sets the parameters for enabling or disabling access to the menu for standard diagnostic parameters.

	Value	Description
–	Not apply [Not apply] [Not apply]	Menu for standard diagnostic parameters is disabled. Default value.
–	Apply [Apply] [Apply]	Menu for standard diagnostic parameters is enabled.

Slug detection

Sets the parameters for configuring the slug detection function.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Slug detection level	[Slug lvl]	[Slug detection level]	[▸ 249]
–	Slug hysteresis	[Slug hys]	[Slug hysteresis]	[▸ 249]
–	After slug mass flow	[After slug mass]	[After slug mass flow]	[▸ 249]
–	After slug density	[After slug dens]	[After slug density]	[▸ 250]
–	Average start time	[Start time]	[Average start time]	[▸ 250]
–	Average end time	[End time]	[Average end time]	[▸ 250]
–	After slug mass flow fixed value	[Fix mass]	[After slug mass flow fixed value]	[▸ 251]
–	After slug density fixed value	[Fix dens]	[After slug density fixed value]	[▸ 251]
–	Slug alarm delay	[Slug alm delay]	[Slug alarm delay]	[▸ 251]
Ⓗ	Drive current damping	–	[Drive current damping]	[▸ 251]

Slug Detection Level

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Slug lvl]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Slug detection level]

Sets a threshold level for activating the slug alarm. This level is set by using the drive current. If the actual drive current with the damping defined by the drive current damping parameter exceeds this level, the slug alarm is activated. The threshold value is set to a conservative value at the factory. It may need to be adjusted for customer-specific applications, if false slug detection alarms occur or if the alarm is not sensitive enough to detect the of slug flow.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 500.0 mApp. Default value is 350 mApp.

Slug Hysteresis

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Slug hys]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Slug hysteresis]

Sets a hysteresis value for deactivating the slug alarm. The value is set as a percentage of the slug detection level.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 100.0 %. Default value is 10.0 %.

After slug mass flow

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [After slug mass]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [After slug mass flow]

Sets the mass flow value during a slug alarm or when the drive current exceeds the slug detection level.

	Value	Description
–	Measured value [Meas val] [Measured value]	Actual measured mass flow values during the slug alarm. If a fixed value has been selected and set for these process variables, the specified fixed value is output. Default value.
–	Hold [Hold] [Hold]	Measured mass flow values before the slug alarm are held and output. If a fixed value has been selected and set for these process variables, the specified fixed value is output.
–	Fixed value [Fix val] [Fixed value]	After slug mass flow fixed value is used during slug alarm output.

After slug density

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [After slug dens]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [After slug density]

Sets the Density value during slug alarm or when the driving current exceeds Slug detection level.

	Value	Description
–	Measured value [Meas val] [Measured value]	Actual measured density value during slug alarm output. If fixed value is selected and set for these process variables, specified fixed value is output. Default value.
–	Hold [Hold] [Hold]	Measured density value before slug alarm are held and output. If fixed value is selected and set for these process variables, specified fixed value is output.
–	Fixed value [Fix val] [Fixed value]	After slug density fixed value is used during slug alarm output.

Average Start Time

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Start time]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Avg start time]

This parameter is available to set when calculation of average value is started after Slug Detection is released. During this period:

- Average value is not calculated /updated
- Slug Detection judgment handling is not done
- Density value keeps *Hold*

In addition, when parameter of status of value for Density is changed from *Bad* to *Not Bad*, Average value is also not calculated /updated during this period.

	Value	Description
–	Numeric digits	Setting range: 0 – 30 [sec]. Default value is 5 [sec].

Average End Time

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [End time]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Avg end time]

This parameter can be set when calculation of the average value is started after Slug Detection is released.

If *0sec* is set in this parameter, last valid value is used for Hold when Slug Density occurred. Otherwise, the average value is used.

	Value	Description
–	Numeric digits	Setting range: 0 – 30 [sec]. Default value is 5 [sec].

After slug mass flow fixed value

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Fix mass]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [After slug mass flow fixed value]

Sets the fixed value for Mass flow during Slug alarm output. This value is only available when Fixed value is selected in After slug mass flow.

	Value	Description
–	Numeric digits	Default value is 0 [t/h].

After slug density fixed value

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Fix dens]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [After slug density fixed value]

Sets the fixed value for Density during Slug alarm output. This value is only available when Fixed value is selected in After slug density.

	Value	Description
–	Numeric digits	Default value is 0 [t/h].

Slug Alarm Delay

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Slug] ▶ [Slug alm delay]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Slug alarm delay]

Sets the delay time between slug detection and the occurrence of the alarm.

Slug detection occurs when the drive current exceeds the threshold slug detection level.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 120.0 s. Default value is 0.0 s.

Drive current damping

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Slug detection] ▶ [Drive current damping]

This parameter can be set in the following menu/menus:

- *Detailed setup [▷ 480]*

Sets the damping constant for the Drive current.

The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Empty pipe detection

Sets the parameters for configuring the empty pipe detection function.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page

–	Empty pipe criteria	[Empty crit]	[Empty pipe criteria]	[▸ 252]
–	After empty pipe	[After empty]	[After empty pipe]	[▸ 252]
–	Empty pipe alarm delay	[Empty alm delay]	[Empty pipe alarm delay]	[▸ 252]

Empty Pipe Criteria

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Empty] ▶ [Empty crit]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Empty pipe detection] ▶ [Empty pipe criteria]

Sets the threshold density value for activating the empty alarm. If the measured density is lower than this value, the empty pipe alarm is activated.

	Value	Description
–	Numeric digits	Setting range: 0.0 – Maximum density value. Default value is 0.0. Unit correspondent to the customer configuration for density measurement.

After Empty Pipe

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Empty] ▶ [After empty]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Empty pipe detection] ▶ [After empty pipe]

Sets the mass flow value during an empty pipe alarm or when the density value falls below the value of the empty pipe criterion.

	Value	Description
–	Mass flow=Zero [0%] [0%]	Mass flow value is set to 0. Default value.
–	Measured value [Meas val] [Measured value]	Actual measured mass flow and density values during the slug alarm are output. If a fixed value has been selected and set for these process variables, the specified fixed value is output.
–	Hold [Hold] [Hold]	Measured mass flow and density values before the slug alarm are held and output. If a fixed value has been selected and set for these process variables, the specified fixed value is output.

Empty Pipe Alarm Delay

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Empty] ▶ [Empty alm delay]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Empty pipe detection] ▶ [Empty pipe alarm delay]

Sets the delay time between the empty pipe detection and the occurrence of the alarm. Empty pipe detection occurs when the measured density falls below the value of the empty pipe criterion.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 120.0 min. Default value is 5.0 min.

Corrosion detection

Sets parameters for configuring the corrosion detection function.

The corrosion detection function works on the principle that corroded pipes show a lower resonance frequency. This causes the measured density to increase. An upper limit for the measured density can thus be used for the detection of pipe corrosion, if the process medium's density is sufficiently well known.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Corrosion criteria	[Crrsn crit]	[Corrosion criteria]	[253]
–	Corrosion damping	[Crrsn damp]	[Corrosion damping]	[253]

Corrosion Criteria

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Crrsn] ▶ [Crrsn crit]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Corrosion detection] ▶ [Corrosion criteria]

Sets threshold density value for activating the corrosion alarm. If the measured density with the damping that has been defined by the corrosion damping parameter is larger than this value, the corrosion alarm is activated.

	Value	Description
–	Numeric digits	Setting range: 0.0 – Maximum density value. Default value is 1.5. Unit corresponds to the customer definition for density measurement.

Corrosion damping

Ⓛ [Diag/Service] ▶ [Std diag] ▶ [Crrsn] ▶ [Crrsn damp]

Ⓗ [Maintenance root menu] ▶ [Standard diagnostics] ▶ [Corrosion detection] ▶ [Corrosion damping]

Sets the damping time for the density value that is used for corrosion detection.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10.0 h. Default value is 10 h.

5.4.12 Total health check

Shows the device integrity from the result of Events/Alarms related to measurement and Tube health check (if the option S12 is active).

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Total health result	[Ttl health result]	[Total health result]	[▸ 254]
Ⓕ	Tube health check	[Tube health chk]	[Tube health check]	[▸ 255]

Total health check

Total Health Result

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Ttl health result]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Total health result]

This parameter shows the current device integrity.

	Display parameter	Description
-	Good (with TuHC and No critical failure) [Good(with TuHC)] [Good (with TuHC and No critical failure)]	The following conditions are applied: ▪ Result of TuHC(TuHC health result) is OK ▪ System alarm status 0,1,2,3 and Process alarm status 0 are not set Icon can be displayed on Indicator by setting *On* in Display total health result. Despite this status, this icon is not displayed when configuration error or warning etc. occurs and then the alarm icon is displayed on indicator.
-	Good (No critical failure) [Good] [Good (No critical failure)]	The following conditions are applied: ▪ Result of TuHC(TuHC health result) is OK over 24hours or TuHC is not done (Not execute) ▪ System alarm status 0,1,2,3 and Process alarm status 0 are not set Icon can be displayed on Indicator by setting “On” in Display total health result. Even if this status, this icon is not displayed when configuration error or warning etc occurs and then alarm icon is displayed on indicator.
-	Warning [Warning] [Warning]	The following conditions are applied: ▪ Result of TuHC(TuHC health result) is Warning ▪ System alarm status 0,1,2,3 and Process alarm status 0 are not set
-	Error [Error] [Error]	The following 1 or more conditions are applied: ▪ Result of TuHC(TuHC health result) is Bad ▪ 1 or more alarms of System alarm status 0,1,2,3 or Process alarm status 0 are set
-	Start [Start] [Start]	Start status and parameter update is not started yet.

Tube health check

Sets the parameters for configuring the tube health check function (TuHC).

The tube health check function detects corrosion and erosion in the tubes by measuring the tube stiffness. Flow meter functions, such as flow and density measurement, are not interrupted while this function is run. The stiffness of the detection tubes decreases when the wall of the tubes becomes thinner due to corrosion and erosion. If the wall thickness of the detection tubes decreases uniformly, the stiffness varies almost in proportion to the difference in wall thickness. The proportion is determined by the inner diameter and the wall thickness of the tube. A change in stiffness produces a measuring error for flow and density.

The tube health check function does not guarantee the accuracy of flow and density measurements, but diagnoses the safety of the Coriolis flow meters. The tube health check function is not intended to measure the absolute stiffness value; rather, it is intended to measure changes in stiffness from the time reference data is acquired.

When the tube health check function is enabled by setting it to Enable, the function runs the check during specified times and intervals. If the measured change in stiffness exceeds the threshold value (*TuHC stiffness change limit TuHC configuration* [▸ 261]), the function raises an alarm 203. If the test stops before it has been completed, the function raises an alarm 722. In addition to the alarm, test results are output via a special parameter dedicated to the function. Test results include the determination of corrosion, the alarm flag and the change in stiffness.

It takes approximately 90 – 120 seconds for a single test. It takes approximately 120 – 180 seconds for reference data acquisition and the initial test after turning the power on.

Reference data is obtained during production of the device, but it is recommended that the reference data be acquired with customer fluid and an installed flow meter. Test values are affected by the stability of the measuring environment. The recommended measuring conditions are as follows:

- Temperature: The difference in temperature between when reference data is obtained and when the test is conducted should be within 20 °C. A warning is produced in measurement results if fluid (sensor) temperature fluctuates radically. Stabilize temperature so fluctuation does not exceed 0.1 °C/min.
- Pressure: If pressure is not input from outside, set pressure value manually. A warning is produced in measurement results if the pressure fluctuates radically.
- Density: A compensation is performed, but reference data should be acquired using fluid when test is executed. Variation should not exceed ±0.1 kg/L when reference data is acquired and when test is conducted. An error is produced in measurement results if density fluctuates radically.
- Flow: "Flow noise" is produced by fluid flow, which in turn produces disparity in test values. If sufficient accuracy cannot be obtained, a warning is output to test results. Test should be conducted with low flow rate (max. 25 % of Q_{nom}). Q_{nom} is refer to Operating Instructions (OI) of each product.
- Flow: Foam/secondary flow could affect test results. A high flow rate should therefore be avoided.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	TuHC enable	[Enable]	[TuHC enable]	[▸ 256]
Ⓕ	Tube health check additional parameters	[Tube health chk add]	[Tube health check additional parameters]	[▸ 257]
Ⓕ	TuHC result	[Result]	[TuHC result]	[▸ 257]
Ⓕ	TuHC configuration	[Cfg]	[TuHC configuration]	[▸ 260]
Ⓕ	TuHC execution/status	[Exe/Sts]	[TuHC execution/status]	[▸ 264]
Ⓕ	TuHC reference data	[Ref data]	[TuHC reference data]	[▸ 269]

TuHC enable

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Exe/Sts] ▶ [Enable]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC enable]

This parameter can be set in the following menu/menus:

- *TuHC execution/status [▸ 265]*

	Value	Description
Ⓕ	Not running [Not run] [Not running]	Indicates that the tube health check has not been executed. If it is set, the test is interrupted before completion.
Ⓕ	Start tube health check [Start TuHC] [Start Tube Health Check]	Executes the tube health check. If multiple tests are to be executed consecutively, leave Start tube health check unchanged until the test has been executed the specified number of times.
Ⓕ	Take reference [Take ref] [Take Reference]	Acquires reference data.
Ⓕ	AGC test [AGC test] [AGC Test]	Function that self-checks the stability test. Executes the stability test in automatic gain control mode. Stiffness is not measured.
Ⓕ	Copy current result to reference [Copy result to ref] [Copy current result to reference]	Copies the test results to the reference data. This function is not effective, if the next diagnostic has started.
Ⓕ	Copy reference from shipment to test [Copy ref to test] [Copy reference from shipment to test]	Copies the shipment reference to the reference data.
Ⓕ	Initialize result and flags [Init result flag] [Initialize result and flags]	Resets the internal TuHC alarm and TuHC warning.
Ⓕ	Initialize counter [Init cnt] [Initialize counter]	Resets the test counter.
Ⓕ	Initialize coeff for FDG [Init coeff FDG] [Initialize coeff for FDG]	Resets the drive gain control coefficient. The next test starts following adjustment of the coefficient. This is a maintenance function.

	Value	Description
Ⓕ	Clear reference [Clr ref] [Clear reference]	Clears the reference data for the test.
Ⓕ	Clear all history [Clr all hist] [Clear all history]	Sets all histories and current history number to 0. This is a maintenance function.
Ⓕ	Start one TuHC as interrupt [Start one TuHC] [Start one TuHC as interrupt]	Starts one tube health check immediately.

Tube health check additional parameters

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Tube health chk add]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [Tube health check additional parameters]

Sets parameters for enabling or disabling the menu to access the tube health check parameters. To access the parameters, it has to be set to Apply.

	Value	Description
Ⓕ	Not apply [Not apply] [Not apply]	Menu for Tube health check is disabled. Default value.
Ⓕ	Apply [Apply] [Apply]	The menu is enabled.

TuHC result

Displays the result of the tube health check.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	TuHC health result	[Result]	[TuHC health result]	[▷ 258]
Ⓕ	TuHC result flag	[Result flag]	[TuHC result flag]	[▷ 258]
Ⓕ	TuHC change ratio of inlet stiffness	[Inlet stiff chg]	[TuHC change ratio of inlet stiffness]	[▷ 259]
Ⓕ	TuHC change ratio of outlet stiffness	[Outlet stiff chg]	[TuHC change ratio of outlet stiffness]	[▷ 259]
Ⓕ	TuHC date at start	[Date start]	[TuHC date at start]	[▷ 259]
Ⓛ	TuHC time at start	[Time start]	[TuHC time at start]	[▷ 260]
Ⓕ	TuHC operation time at start	[Op time start]	[TuHC operation time at start]	[▷ 260]

TuHC health result

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Result]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC health result]

Shows the result of the Tube health check. This result is also reflected by the icon on Indicator.

	Value	Description
Ⓕ	Not execute [Not exe] [Not execute]	Test is not executed.
Ⓕ	Warning [Warn] [Warning]	Test is stopped or skipped with Alarm or Warning.
Ⓕ	Error [Error] [Error]	Change in stiffness is above the threshold.
Ⓕ	OK [OK] [OK]	Change in stiffness is within the threshold.

TuHC result flag

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Result flag]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC result flag]

Shows the result of the tube health check. The TuHC result flag is defined by a bit. Other values can also be set during the same test.

	Value	Description
Ⓕ	Change of inlet stiffness is over threshold [Chg inlet stiff] [Change of inlet stiffness is over threshold]	This flag is set when the change in inlet stiffness is above the threshold, except for Skip test or Stop test.
Ⓕ	Change of outlet stiffness is over threshold [Chg outlet stiff] [Change of outlet stiffness is over threshold]	This flag is set when the change in outlet stiffness is above the threshold, except for Skip test or Stop test.
Ⓕ	Suspicious test (continue test) [Suspicious test] [Suspicious test (continue test)]	Suspicious test is set when Suspicious test on TuHC warning *[▸ 268]* has been set and an unstable condition occurs.

	Value	Description
Ⓕ	Skip test (continue test) [Skip test] [Skip test (continue test)]	Skip test is set when Stop test on TuHC warning [▶ 268] has been set, but the slope cannot be controlled. Tube health check skips this test, but continues the testing.
Ⓕ	Stop test [Stop test] [Stop test]	Stop test is set when any TuHC alarm [▶ 266] has been set with an error. Tube health check stops the test and sets TuHC enable [▶ 256] to Not running.

TuHC change ratio of inlet stiffness

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Inlet stiff chg]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC change ratio of inlet stiffness]

	Value	Description
Ⓕ	Numeric digits	Specifies stiffness in percent calculated from the inlet pick-off.

TuHC change ratio of outlet stiffness

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Outlet stiff chg]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC change ratio of outlet stiffness]

	Value	Description
Ⓕ	Numeric digits	Specifies stiffness in percent calculated from the outlet pick-off.

TuHC date at start

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Date start]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC date at start]

	Value	Description
Ⓕ	Numeric digits	Specifies test start date.

TuHC time at start

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Time start]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC time at start]

	Value	Description
Ⓕ	Numeric digits	Specifies test start time.

TuHC operation time at start

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Result] ▶ [Op time start]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC result] ▶ [TuHC operation time at start]

	Value	Description
Ⓕ	Numeric digits	Specifies test start time. Time is stated in minutes starting with the time power was first turned on.

TuHC configuration

Sets the parameters for the tube health check function.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	TuHC continue interval	[Cont itrvl]	[TuHC continue interval]	[▸ 260]
Ⓕ	TuHC continue number	[Cont num]	[TuHC continue number]	[▸ 261]
Ⓕ	TuHC stiffness change limit	[Stiff chg lim]	[TuHC stiffness change limit]	[▸ 261]
Ⓕ	TuHC retry number	[Retry num]	[TuHC retry number]	[▸ 261]
Ⓕ	TuHC retry interval	[Retry itrvl]	[TuHC retry interval]	[▸ 262]
Ⓕ	TuHC setting retry	[Set retry]	[TuHC setting retry]	[▸ 262]
Ⓕ	TuHC reference number copy from	[Ref cpy num]	[TuHC reference number copy from]	[▸ 262]
Ⓕ	TuHC magnet temperature selection	[Mgnt temp sel]	[TuHC magnet temperature selection]	[▸ 263]
Ⓕ	TuHC fixed temperature	[Fix temp]	[TuHC fixed temperature]	[▸ 264]
Ⓕ	TuHC temperature ratio for magnet 1	[Mgnt temp ratio1]	[TuHC temperature ratio for magnet 1]	[▸ 264]
Ⓕ	TuHC temperature ratio for magnet 2	[Mgnt temp ratio2]	[TuHC temperature ratio for magnet 2]	[▸ 264]

TuHC continue interval

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Cont itrvl]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC continue interval]

	Value	Description
Ⓕ	Numeric digits	Specifies time between consecutive diagnostics in minutes. Setting range: 0 – 65535 min. Default value is 60 min.

TuHC continue number

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Cont num]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC continue number]

	Value	Description
Ⓕ	Numeric digits	Specifies the number of consecutive tests to be executed. If set to 0, consecutive diagnostics are executed until stopped by TuHC enable *[▸ 256]*. Setting range: 0 – 65535. Default value is 1.

ⓘ In order to to perform Tube health check without count limitation, the TuHC retry interval needs to be set to more than 1440 minutes if TuHC retry number is 0.

TuHC stiffness change limit

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Stiff chg lim]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC stiffness change limit]

	Value	Description
Ⓕ	Numeric digits	Indicates the threshold value for the change in stiffness. An alarm 203 is output, if the change exceeds the numeric value. Setting range: 0.5 – 100 %. Default value is 4.0 %.

TuHC retry number

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Retry num]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC retry number]

	Value	Description
Ⓕ	Numeric digits	Specifies the maximum number of retries. If a TuHC warning is output, diagnostics are attempted again after the specified period has elapsed. Setting range: 0 – 65535. Default value is 3.

TuHC retry interval

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Retry itrvl]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC retry interval]

	Value	Description
Ⓕ	Numeric digits	Specifies time in minutes until a retry is attempted. If a TuHC warning is output, diagnostics are attempted again after the specified period has elapsed. Setting range: 0 – 65535 mins. Default value is 2 min.

TuHC setting retry

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Set retry]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC setting retry]

Sets the condition for executing the retry.

	Value	Description
Ⓕ	No retry [No retry] [No retry]	Do not attempt a retry of the Tube health check when it has failed due to unstable process conditions.
Ⓕ	Retry when skip test [Retry when skip test] [Retry when skip test]	Retry the Tube health check when it has failed due to unstable process conditions.
Ⓕ	Retry when suspicious test [Retry when sus. test] [Retry when suspicious test]	Retry the Tube health check when it has failed due to unstable process conditions. Default value.
Ⓕ	Retry by force [Retry by force] [Retry by force]	Force retry of Tube health check.

TuHC reference number copy from

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Ref cpy num]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC reference number copy from]

There are stored reference stiffness values for a measurement of the tube stiffness when filled with water, air or a user-defined medium (test). This test data is the active reference data against which changes are detected. If the reference data was overwritten by the user, it can be restored by setting the*TuHC reference number copy from* to air or water and then executing a copy by setting *TuHC enable* in *Tube health check* [▷ 256] to Copy reference from shipment to test.

	Value	Description
Ⓕ	Test [Test] [Test]	Reference for test.
Ⓕ	Air [Air] [Air]	Reference for air. Default value.
Ⓕ	Water [Water] [Water]	Reference for water.

TuHC magnet temperature selection

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Mgnt temp sel]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC magnet temperature selection]

A temperature difference between the tubes on one side and the coils (driver and pick-offs) on the other side causes a measuring error in the stiffness. *TuHC magnet temperature selection* defines the calculation method for the temperature of the driver system and pick-offs.

	Value	Description
Ⓕ	Use temperature on sensor [Snsr temp] [Use temperature on sensor]	Use temperature on sensor as the temperature of the driver system and pick-offs. Default value.
Ⓕ	Compensate with fixed temperature [Comp fix temp] [Compensate with fixed temperature]	Use analog input temperature that is set with the parameter TuHC fixed temperature *[▸ 264]* as the temperature of the driver system and pick-offs.
Ⓕ	Compensate with indicator temperature [Comp ind temp] [Compensate with indicator temperature]	Use indicator temperature as the temperature of the driver system and pick-offs. The accuracy of the indicator temperature is poor and is influenced by sunshine.
Ⓕ	Compensate with transmitter temperature [Comp trsmtr temp] [Compensate with transmitter temperature]	Use transmitter temperature as the temperature of the driver system and pick-offs. The accuracy of the transmitter temperature is poor, because electric parts generate heat.

TuHC fixed temperature

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Fix temp]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC fixed temperature]

	Value	Description
Ⓕ	Numeric digits	Specifies field temperature for calculating the temperature of the driver system and pick-offs. Default value is 20 degrees Celsius.

TuHC temperature ratio for magnet 1

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Mgnt temp ratio1]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC temperature ratio for magnet 1]

	Value	Description
Ⓕ	Numeric digits	Specifies the temperature change ratio from the temperature of the tube to the temperature of the S1 pick-off and driver system. Default value is 0.1.

TuHC temperature ratio for magnet 2

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Cfg] ▶ [Mgnt temp ratio2]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC configuration] ▶ [TuHC temperature ratio for magnet 2]

	Value	Description
Ⓕ	Numeric digits	Specifies the temperature change ratio from the temperature of the tube to the temperature on the S2 pick-off and driver system. Default value is 0.1.

TuHC execution/status

Activates the Tube Health Check function and indicates its status. The following parameters can be read electronically to follow the progress of the Tube Health Check function on an external device.

	Full name	Display name	[HART] name	Page
Ⓕ	TuHC enable	[Enable]	[TuHC enable]	[▸ 265]
Ⓕ	TuHC progress percentage	[Progress %]	[TuHC progress percentage]	[▸ 266]
Ⓕ	TuHC test counter	[Test cnt]	[TuHC test counter]	[▸ 266]
Ⓕ	TuHC alarm	[Alm]	[TuHC alarm]	[▸ 266]
Ⓕ	TuHC warning	[Warn]	[TuHC warning]	[▸ 268]

TuHC enable

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Exe/Sts] ▶ [Enable]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC execution/status] ▶ [TuHC enable]

This parameter can be set in the following menu/menus:

Total health check [▷ 256]

	Value	Description
Ⓕ	Not running [Not run] [Not running]	Indicates that the tube health check has not been executed. If it is set, the test is interrupted before completion.
Ⓕ	Start tube health check [Start TuHC] [Start Tube Health Check]	Executes the tube health check. If multiple tests are to be executed consecutively, leave Start tube health check unchanged until the test has been executed the specified number of times.
Ⓕ	Take reference [Take ref] [Take Reference]	Acquires reference data.
Ⓕ	AGC test [AGC test] [AGC Test]	Function that self-checks the stability test. Executes the stability test in automatic gain control mode. Stiffness is not measured.
Ⓕ	Copy current result to reference [Copy result to ref] [Copy current result to reference]	Copies the test results to the reference data. This function is not effective, if the next diagnostic has started.
Ⓕ	Copy reference from shipment to test [Copy ref to test] [Copy reference from shipment to test]	Copies the shipment reference to the reference data.
Ⓕ	Initialize result and flags [Init result flag] [Initialize result and flags]	Resets the internal TuHC alarm and TuHC warning.
Ⓕ	Initialize counter [Init cnt] [Initialize counter]	Resets the test counter.
Ⓕ	Initialize coeff for FDG [Init coeff FDG] [Initialize coeff for FDG]	Resets the drive gain control coefficient. The next test starts following adjustment of the coefficient. This is a maintenance function.

	Value	Description
Ⓕ	Clear reference [Clr ref] [Clear reference]	Clears the reference data for the test.
Ⓕ	Clear all history [Clr all hist] [Clear all history]	Sets all histories and current history number to 0. This is a maintenance function.
Ⓕ	Start one TuHC as interrupt [Start one TuHC] [Start one TuHC as interrupt]	Starts one tube health check immediately.

TuHC progress percentage

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Exe/Sts] ▶ [Progress %]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC execution/status] ▶ [TuHC progress percentage]

	Value	Description
Ⓕ	Numeric digits	Specifies test progress by percentage. Progress is 100 % when a single test has been completed.

TuHC test counter

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Exe/Sts] ▶ [Test cnt]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC execution/status] ▶ [TuHC test counter]

	Value	Description
Ⓕ	Numeric digits	Specifies total test count. Reset to 0 when TuHC enable *[▸ 256]* = Initialize result and flags.

TuHC alarm

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Exe/Sts] ▶ [Alm]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC execution/status] ▶ [TuHC alarm]

	Value	Description
Ⓕ	No error [No err] [No error]	No error.
Ⓕ	S1 amplitude is zero at AGC [S1 amp zero AGC] [S1 amplitude is zero at AGC]	S1 (Pick-off #1) amplitude is zero at AGC. Check the connection to the sensor.

	Value	Description
Ⓕ	S2 amplitude is zero at AGC [**S2 amp zero AGC**] [S2 amplitude is zero at AGC]	S2 (Pick-off #2) amplitude is zero at AGC. Check the connection to the sensor.
Ⓕ	Drive current is zero at AGC [**Drv curr zero AGC**] [Drive current is zero at AGC]	Drive current is zero at AGC. Check the connection to the sensor.
Ⓕ	Drive gain is zero at AGC [**Drv gain zero AGC**] [Drive gain is zero at AGC]	Drive gain is zero at AGC. Check the connection to the sensor.
Ⓕ	Amplitude is zero at fixed drive gain [**Amp zero fix drv**] [Amplitude is zero at fixed drive gain]	Amplitude of pick-off is zero at AGC. Check the connection to the sensor.
Ⓕ	No reference data [**No ref data**] [No reference data]	No reference data. A new reference must be taken.
Ⓕ	Different sensor parameters from reference [**Snsr param to ref**] [Different sensor parameters to reference]	Different sensor from reference. When sensor or parameters are changed, a new reference must be taken.
Ⓕ	Unable to copy bad result to reference [**Unable copy result**] [Unable to copy bad result to reference]	Unable to copy result to reference because test result is bad (warning has occurred). Check TuHC warning *[▶ 268]* and try again.
Ⓕ	Next test was started to copy reference [**Next test start**] [Next test was started to copy reference]	The next test was started before copying the test result to reference. Stop continuous testing before the next test is started.
Ⓕ	Parameter error [**Param err**] [Parameter error]	TuHC parameter is out of range. Check TuHC parameters.

TuHC warning

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Exe/Sts] ▶ [Warn]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC execution/status] ▶ [TuHC warning]

Indicates information related to a warning. This parameter is defined by bit. Other values can also be set during the same test.

	Value	Description
Ⓕ	Suspicious test [Suspicious test] [Suspicious test]	This flag shows that the test did not run under good conditions. This flag is set when the stability of conditions is above the limit or the number of good scans is below the limit. Tube Health Check sets the TuHC result flag *[▸ 258]* to Suspicious test, calculates the change in the stiffness and continues testing. Retry the test. When this warning is shown continuously, check the mechanical vibration, flow noise, electric noise and stability of the testing condition. When this flag is set and the parameter TuHC setting retry *[▸ 262]* is Retry when suspicious test or Retry by force, Tube Health Check retries the test.
Ⓕ	Unstable condition at AGC1 & AGC2 [Unstable AGC1,2] [Unstable condition at AGC1 & AGC2]	This flag is set when a change in conditions (between AGC1 and AGC2) is above the limit. Check the stability of conditions: temperature, frequency (density), pressure, flow rate.
Ⓕ	Unstable condition at test & reference [Unstable test/ref] [Unstable condition at test & reference]	This flag is set when the change in conditions between test and reference is above the limit. Check the change in conditions: temperature, frequency (density), pressure, flow rate.
Ⓕ	Fluctuation of condition at AGC1 [Fluct at AGC1] [Fluctuation of condition at AGC1]	The fluctuation of the signal (amplitude, drive gain, drive current, frequency, and phase shift) is above the limit. Check mechanical vibration, flow noise and electric noise.
Ⓕ	Change threshold level [Chng thresh lev] [Change threshold level]	This flag is set when the threshold level is changed to keep the change ratio of the drive gain within the limit. Because the test result (stiffness) depends on the amplitude, this will lower the accuracy of the test. Take the reference under test conditions to prevent this warning.
Ⓕ	Temperature or Pressure is out of range [T or P out] [Temperature or Pressure is out of range]	This flag is set when temperature or pressure is out of range. Check the temperature or pressure value (input value or fixed value in parameter).

	Value	Description
Ⓕ	Fluctuation of condition at scan [Fluct at scan] [Fluctuation of condition at scan]	The fluctuation of the signal (frequency, compensated frequency and phase shift) is above the limit during the scan. Check mechanical vibration, flow noise and electric noise.
Ⓕ	No cross thresholds [No cross thr] [No cross thresholds]	This flag is set when the amplitude does not cross 4 thresholds. A control error of the slope causes this warning. Normally, the first scan at power-on or taking reference does not cross the thresholds. Check mechanical vibration, flow noise and electric noise.
Ⓕ	Deviation of slope [Dev of slope] [Deviation of slope]	This flag is set when the difference in the slope between setting and measurement is above the limit. Control of slope with fixed drive gain is poor. Check mechanical vibration, flow noise and electric noise.
Ⓕ	Unstable condition at AGC1 & scan [Unstable AGC1 sc] [Unstable condition at AGC1 & scan]	This flag is set when the change in test conditions between AGC1 and Scan is above the limit. Check the stability of the conditions: temperature, frequency (density), pressure, flow rate.
Ⓕ	Skip test [Skip test] [Skip test]	This flag shows that the test has been skipped with an error. Tube Health Check does not stop next test. The TuHC result flag *[▸ 258]* is set to Skip test (continue test), and the change ratio of the stiffness is set to 999.99 %. Check the connection to the sensor and the change in conditions from the reference. When this flag is set and the parameter TuHC setting retry *[▸ 262]* is not No retry, Tube Health Check retries the test.
Ⓕ	Slope control error [Slope cnt err] [Slope control error]	This flag is set when one of 3 factors (coefficients for fixed drive gain, target slope and percentage change of drive gain) is out of range at the slope control. Check the connection to the sensor and the change in conditions from the reference.
Ⓕ	Amplitude is out of limit [Amp out limit] [Amplitude is out of limit]	This flag is set when the amplitude is out of limit during AGC or during the hold time. Check the connection to the sensor and the change in conditions from the reference.
Ⓕ	Data trans error [Data trans err] [Data trans error]	This flag is set when data transfer is stopped at the transmitter. This error is detected if any of these three factors apply: watchdog timer error, buffer overflow, DSP-Main check counter is changed during scan. Retry the test.
Ⓕ	Calculation error [Calc err] [Calculation error]	This flag is set when the calculation is stopped to avoid division by zero. Retry the test.

TuHC reference data

Configures the reference for Tube health function. The reference data that was taken by the TuHC can be examined in the menu *Tube health check Ref n.*

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	TuHC date at reference 1	[Date ref]	[TuHC date at reference 1]	[▸ 270]
Ⓕ	TuHC time at reference 1	[Time ref]	[TuHC time at reference 1]	[▸ 270]
Ⓕ	TuHC operation time at reference 1	[Op time ref]	[TuHC operation time at reference 1]	[▸ 270]
Ⓗ Ⓕ	TuHC temperature at reference 1	–	[TuHC temperature at reference 1]	[▸ 270]
Ⓗ Ⓕ	TuHC mass flow at reference 1	–	[TuHC mass flow at reference 1]	[▸ 271]
Ⓗ Ⓕ	TuHC density at reference 1	–	[TuHC density at reference 1]	[▸ 271]

TuHC date at reference 1

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Ref data] ▶ [Date ref]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC date at reference 1]

	Value	Description
Ⓕ	Numeric digits	Date when TuHC reference was taken.

TuHC time at reference 1

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Ref data] ▶ [Time ref]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC time at reference 1]

	Value	Description
Ⓕ	Numeric digits	Time when TuHC reference was taken.

TuHC operation time at reference 1

Ⓛ [Diag/Service] ▶ [Ttl health chk] ▶ [Tube health chk] ▶ [Ref data] ▶ [Op time ref]

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC operation time at reference 1]

	Value	Description
Ⓕ	Numeric digits	Operation time when the reference measurement was taken.

TuHC temperature at reference 1

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC temperature at reference 1]

	Value	Description
Ⓗ Ⓕ	Numeric digits	Tube temperature when reference was taken.

TuHC mass flow at reference 1

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC mass flow at reference 1]

	Value	Description
Ⓗ Ⓕ	Numeric digits	Mass flow when reference was taken.

TuHC density at reference 1

Ⓗ [Maintenance root menu] ▶ [Total health check] ▶ [Tube health check] ▶ [TuHC reference data] ▶ [TuHC density at reference 1]

	Value	Description
Ⓗ Ⓕ	Numeric digits	Density when reference was taken.

5.4.13 Data logging

Sets the parameters to save a maximum of 4 process and related variables on a microSD card with a defined logging interval and duration.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Logging file name	[Log file]	[Logging file name]	[▷ 271]
–	Logging 1 – 4 select	[Log sel1 – 4]	[Logging 1 – 4 select]	[▷ 271]
–	Logging interval time	[Itrvl time]	[Logging interval time]	[▷ 273]
–	Logging end time	[End time]	[Logging end time]	[▷ 274]
–	Logging execute	[Exe]	[Logging execute]	[▷ 274]
–	Logging start date	[Start date]	[Logging start date]	[▷ 275]
–	Logging start time	[Start time]	[Logging start time]	[▷ 275]
Ⓗ	Data logging display	–	[Data logging display]	[▷ 275] [▷ 275]

Logging File Name

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Log file]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging file name]

Sets the file name of the data logging function on the microSD card.

ⓘ If "Logging file name" is changed, the logged data is saved as a new file.
If "Logging file name" is not changed, the logged data is added to the existing file.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. The following are invalid characters: space, ", *, +, ,, ., /, :, ;, <, =, >, ?, [, \,]

Logging 1 – 4 Select

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Log sel1 – 4]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging 1 – 4 select]

Sets the process variables that are to be logged to the microSD card.

	Value	Description
–	None [None] [None]	Set Logging 1 – 4 select. Default value for setting of Logging 1 is Mass flow. Default value for setting of Logging 2 is Density. Default value for setting of Logging 3 is Temperature. Default value for setting of Logging 4 is Volume flow.
–	Mass flow [Mass] [Mass flow]	
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	
–	Volume flow [Vol] [Volume flow]	
–	Pressure [Pres] [Pressure]	
Ⓕ	Concentration [Conc] [Concentration]	
Ⓕ	Net mass flow 1 [Net mass1] [Net Mass Flow 1]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Viscosity [Visc] [Viscosity]	

	Value	Description
–	Frequency [Freq] [Frequency]	Set Logging 1 – 4 select. Default value for setting of Logging 1 is Mass flow. Default value for setting of Logging 2 is Density. Default value for setting of Logging 3 is Temperature. Default value for setting of Logging 4 is Volume flow.
–	Phase difference [Phase diff] [Phase difference]	
–	Drive gain [Drv gain] [Drive gain]	
–	Drive current [Drv curr] [Drive current]	
–	Transmitter temperature [Trsmtr temp] [Transmitter temperature]	

Logging Interval Time

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Itrvl time]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging interval time]

Sets the interval at which data logging takes place.

If Logging interval time is more than Logging end time, data logging cannot be executed.

	Value	Description
–	1 s [1s] [1s]	Data logging takes place once a second. Default value.
–	10 s [10s] [10s]	Data logging takes place every 10 seconds.
–	30 s [30s] [30s]	Data logging takes place every 30 seconds.
–	1 min [1min] [1min]	Data logging takes place every minute .
–	5 min [5min] [5min]	Data logging takes place every 5 minutes.
–	30 min [30min] [30min]	Data logging takes place every 30 minutes.

	Value	Description
–	60 min [60min] [60min]	Data logging takes place every hour.

Logging End Time

Ⓛ [Diag/Service] ▶ [Data log] ▶ [End time]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging end time]

Sets the period for which data logging is executed.

If Logging interval time is more than Logging end time, data logging cannot be executed.

	Value	Description
–	10 min [10min] [10min]	Data logging is executed for 10 minutes. Default value.
–	30 min [30min] [30min]	Data logging is executed for 30 minutes.
–	60 min [60min] [60min]	Data logging is executed for 1 hour.
–	3 hour [3h] [3hour]	Data logging is executed for 3 hours.
–	12 hour [12h] [12hour]	Data logging is executed for 12 hours.
–	24 hour [24h] [24hour]	Data logging is executed for 24 hours.
–	72 hour [72h] [72hour]	Data logging is executed for 72 hours.
–	240 hour [240h] [240hour]	Data logging is executed for 240 hours.
–	720 hour [720h] [720hour]	Data logging is executed for 720 hours.

Logging Execute

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Exe]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging execute]

Starts data logging and indicates the status.

	Value	Description
–	Not Execute [Not exe] [Not Execute]	Data logging is stopped. While this value is set, data logging is not executed.
–	Execute [Exe] [Execute]	Data logging is started. While this value is set, data logging is executing. When data logging via manual control is completed, this value becomes Not execute. Through auto control of a monitoring event, this value becomes Execute with monitor event.
–	Execute with monitor event [Exe with monitor] [Execute with monitor event]	While this value is set, data logging is not executed. When a monitored Event, as set in the Event settings, occurs, this parameter value becomes Execute, so data logging is started.

Logging Start Date

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Start date]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging 1 – 4 start date]

Shows the date on which data logging was started.

	Value	Description
–	Numeric digits	When the Logging execute parameter becomes Execute, the Logging start date is updated with the current date. Date format is YYYY/MM/DD.

Logging start time

Ⓛ [Diag/Service] ▶ [Data log] ▶ [Start time]

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Logging start time]

Shows the time when data logging has started.

	Value	Description
–	Numeric digits	When the Logging execute parameter becomes Execute, the Logging start time is updated with the current time.

Data logging display

Defines how trend charts of logged process variables are shown on the LCD display.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Display measurement mode	–	[Display measurement mode]	[▷ 275]
Ⓗ	Trend offline LRV	–	[Trend offline LRV]	[▷ 276]
Ⓗ	Trend offline URV	–	[Trend offline URV]	[▷ 276]

Display measurement mode

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Data logging display] ▶ [Display measurement mode]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup
  - *Display [▸ 529]*
  - *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
Ⓗ	Normal **[Normal]** [Normal]	Normal display mode. Default value.
Ⓗ	Trend online **[Trend]** [Trend online]	Real-time trend chart of process values which were specified in the parameters, Logging 1 – 4 select. The trend chart of one of four process values is displayed. By using Up/Down operation on the Indicator, the process value to be shown as trend chart can be changed when the Display scroll parameters are set to Manual.
Ⓗ	Batch control **[Batch control]** [Batch control]	Batch specific screen can be displayed on Indicator.

Trend offline LRV

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Data logging display] ▶ [Trend offline LRV]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 276]*
- *Detailed Setup [▸ 558]*

Sets the LRV for the trend display of logging data to a microSD card on the LCD of the Indicator.

	Value	Description
Ⓗ	Numeric digits	Default value is 0.

Trend offline URV

Ⓗ [Maintenance root menu] ▶ [Data logging] ▶ [Data logging display] ▶ [Trend offline URV]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 276]*
- *Detailed Setup [▸ 558]*

Sets the URV for the trend display of logging data from the microSD card on the LCD of the Indicator.

	Value	Description
Ⓗ	Numeric digits	Default value is 10.0.

5.4.14 Parameter backup/restore

Menu for configuring the backup/restore function.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Backup file name	[Bkup name]	Backup file name	[▷ 277]
–	User configuration backup	[U cfg bkup]	User configuration backup	[▷ 277]
–	User configuration backup name 1 – 3	[U bkup name1 - 3]	User configuration backup name 1 – 3	[▷ 279]
–	User configuration backup date 1 – 3	[U bkup date1 - 3]	User configuration backup date 1 – 3	[▷ 278]
–	Factory backup name	[F bkup name]	Factory backup name	[▷ 278]
–	Factory backup date	[F bkup date]	Factory backup date	[▷ 278]
Ⓛ	Restore	[Restore]	–	[▷ 278]

Backup file name

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [Bkup name]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup]

Sets the file name of the parameter backup data on the microSD card.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is SD_FILE. The following are invalid characters: space, ", *, +, ,, ., /, :, ;, <, =, >, ?, [, \,]

User configuration backup

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [U cfg bkup]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup] ▶ [User configuration backup]

Executes parameter backup.

	Value	Description
–	Not execute [Not exe]	Parameter backup is not executed.
–	Store to 1 [Store to 1]	Parameter backup is executed to indicator memory 1.
–	Store to 2 [Store to 2]	Parameter backup is executed to indicator memory 2.
–	Store to 3 [Store to 3]	Parameter backup is executed to indicator memory 3.
–	Store to microSD [Store to SD]	Parameter backup is executed to the microSD card. The file name defined in the parameter Backup file name is used.

	Value	Description
–	Store from 1 to microSD [Store 1 to SD]	Parameter backup is copied from indicator memory 1 to the microSD card. The file name defined in the parameter Backup file name is used.
–	Store from 2 to microSD [Store 2 to SD]	Parameter backup is copied from indicator memory 2 to the microSD card. The file name defined in the parameter Backup file name is used.
–	Store from 3 to microSD [Store 3 to SD]	Parameter backup is copied from indicator memory 3 to the microSD card. The file name defined in the parameter Backup file name is used.

User configuration backup date 1 – 3

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [U bkup date1 – 3]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup] ▶ [User configuration backup date 1 – 3]

Shows the date of the parameter Backup data in indicator memory 1 – 3.

	Value	Description
–	Numeric digits	Date format is YYYY/MM/DD.

Factory backup name

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [F bkup name]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup] ▶ [Factory backup name]

	Value	Description
–	Factory Delivery	Name of factory backup. Cannot be changed.

Factory backup date

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [F bkup date]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup] ▶ [Factory backup date]

Shows the date of factory backup.

	Value	Description
–	Numeric digits	Date format is YYYY/MM/DD. Cannot be changed.

Restore

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [Restore]

Restores or duplicates the user configuration backup to a device.

	Value	Description
–	Not Execute [Not exe]	Parameter restore is not executed or cancelled.

	Value	Description
–	Duplicate user configuration 1 [Duplicate cfg1]	Parameters are duplicated from backup settings in indicator memory 1.
–	Duplicate user configuration 2 [Duplicate cfg2]	Parameters are duplicated from backup settings in indicator memory 2.
–	Duplicate user configuration 3 [Duplicate cfg3]	Parameters are duplicated from backup settings in indicator memory 3.
–	Duplicate from microSD [Duplicate SD]	Parameters are duplicated from backup settings on the microSD card. The file on the microSD card that has the name defined in the parameter Backup file name is used.
–	Restore user configuration 1 [Restore cfg1]	Parameters are restored from backup settings in indicator memory 1.
–	Restore user configuration 2 [Restore cfg2]	Parameters are restored from backup settings in indicator memory 2.
–	Restore user configuration 3 [Restore cfg3]	Parameters are restored from backup settings in indicator memory 3.
–	Restore from microSD [Restore SD]	Parameters are restored from backup settings on the microSD card. The file on the microSD card that has the name defined in the parameter Backup file name is used.
–	Restore factory default [Restore F val]	Parameters are restored from default settings.
–	Download sensor constant from user configuration 1 [DL snsr cnst cfg1]	Sensor constants are downloaded from indicator memory 1.
–	Download sensor constant from microSD [DL snsr cnst SD]	Sensor constants are downloaded from the microSD card. The file on the microSD card that has the name defined in the parameter Backup file name is used.
	Disable compensations [Disable comp]	Disable compensations to keep compatibility with Device Revision 3. Specifically, initialize each coefficient of SKT1/SKT2/SKT3/FT1/FT2/FT3.

User configuration backup name 1 – 3

Ⓛ [Diag/Service] ▶ [Param bkup/restore] ▶ [U bkup name1 – 3]

Ⓗ [Maintenance root menu] ▶ [Parameter backup/restore] ▶ [Backup] ▶ [User configuration backup name 1 – 3]

Shows the file name of the parameter Backup data in indicator memory 1 – 3.

	Value	Description
–	ASCII characters	Maximum length is 16 characters. Default value is blank.

5.4.15 Calibration date

Defines the parameters to set for the calibration date. These parameters are notes that the user can write and read as a reference. The date is not set automatically. If the user wants to use these parameters, the user must write the date manually.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Last calibration date 1 – 5	[Last calib date1 – 5]	[Last calibration date 1 – 5]	[280]
–	Next calibration date	[Next calib date]	[Next calibration date]	[280]

Last calibration date 1 – 5

Ⓛ [Diag/Service] ▶ [Last calib info] ▶ [Last calib date1 – 5]

Ⓗ [Maintenance root menu] ▶ [Calibration date] ▶ [Last calibration date 1 – 5]

Sets the date when the calibration was performed. The display format of the date is specified by the Display format date parameter.

	Value	Description
–	Numeric digits	Date format is DD/MM/YYYY. Default value is 01/01/2015.

Next calibration date

Ⓛ [Diag/Service] ▶ [Last calib info] ▶ [Next calib date]

Ⓗ [Maintenance root menu] ▶ [Calibration date] ▶ [Next calibration date]

Sets the planned date for the next calibration. The display format of the date is specified by the Display format date parameter.

	Value	Description
–	Numeric digits	Date format is DD/MM/YYYY. Default value is 01/01/2155.

5.4.16 Last calibration information

Defines parameters for setting calibration or service information.

Last calibration information 1 – 5

Ⓛ [Diag/Service] ▶ [Last calib info] ▶ [Last calib info1 – 5]

Ⓗ [Maintenance root menu] ▶ [Last calibration information] ▶ [Last calibration information 1 – 5]

Sets text about calibration or service.

	Value	Description
–	ASCII characters	Maximum length is 32 characters. Default value is space.

5.5 Easy setup wizard

Sets up basic parameters for configuring the device.

Most of the menu items and values are available for all devices. Exceptions are marked with corresponding symbols.

Tab. 31: Explanation of symbols used in the menu description

Symbols	Description
Ⓛ	Menu item or menu path is available via display.
Ⓗ	Menu item or menu path is available via the [HART] configuration tool.
Ⓕ	Menu item is optional. It is available only if a transmitter with the corresponding function is used.
–	No restrictions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Installation configuration	[Install cfg]	[Installation configuration]	[290]
–	Standard device variables	[Std dev var]	[Standard device variables]	[281]
–	Analog outputs	[AO]	[Analog outputs]	[293]
–	Pulse/Status output	[Pls/Sts out]	[Pulse/Status output]	[298]
–	Totalizer	[Ttl]	[Totalizer]	[313]
–	Display select	[Disp sel]	[Display select]	[318]
–	Date/Time	[Date/Time]	[Date/Time]	[321]
Ⓗ	Events/Alarms acknowledge	–	[Events/Alarms acknowledge]	[321]
Ⓕ	Batch 1 function	[Batch1]	[Batch 1 function]	[321]

5.5.1 Standard device variables

Menu for parameters that configure standard process variables.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Mass flow	[Mass]	[Mass flow]	[281]
–	Density	[Dens]	[Density]	[284]
–	Temperature	[Temp]	[Temperature]	[286]
–	Volume flow	[Vol]	[Volume flow]	[288]

Mass flow

Menu for configuring the mass flow measurement.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Mass flow unit	[Unit]	Mass flow unit	[282]

–	Mass flow LRV	[LRV]	Mass flow LRV	[▸ 282]
–	Mass flow URV	[URV]	Mass flow URV	[▸ 283]
–	Mass flow damping	[Damp]	Mass flow damping	[▸ 283]

Mass flow unit

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Mass] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Mass flow] ▶ [Mass flow unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 282]*
- *Basic setup [▸ 336]*
- *Detailed setup [▸ 394]*

Sets the unit for mass flow.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/s	Sets the displayed Mass flow unit. Default value is kg/h.
–	g/min	
–	g/h	
–	kg/s	
–	kg/min	
–	kg/h	
–	kg/d	
–	t/min	
–	t/h	
–	t/d	
–	ton(US)/min	
–	ton(US)/h	
–	ton(US)/d	
–	ton(UK)/min	
–	ton(UK)/h	
–	ton(UK)/d	
–	lb/s	
–	lb/min	
–	lb/h	
–	lb/d	
–	User unit	

Mass flow LRV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Mass] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Mass flow] ▶ [Mass flow LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 282]*
- *Basic setup [▸ 337]*
- *Detailed setup [▸ 395]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≤ Q_{max} LRV ≥ -Q_{max} For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow URV

Ⓛ **[Easy setup wizard] ▶ [Std dev var] ▶ [Mass] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Mass flow] ▶ [Mass flow URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 337]*
- *Detailed setup [▸ 395]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 10000.0. Settings must satisfy the following conditions: URV ≤ Q_{max} URV ≥ -Q_{max} URV ≠ LRV For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow damping

Ⓛ **[Easy setup wizard] ▶ [Std dev var] ▶ [Mass] ▶ [Damp]**

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Mass flow] ▶ [Mass flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 338]*
- *Detailed setup [▸ 396]*
- *SIL mode [▸ 580]*

Sets the damping constant for mass flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. The default value is 3.0 s.

Density

Menu for configuring the density measurement.

The following menus/settings are available:

Density measurement is only reliable if there is no gas in the liquid.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Density unit	[Unit]	[Density unit]	[▸ 284]
–	Density LRV	[LRV]	[Density LRV]	[▸ 285]
–	Density URV	[URV]	[Density URV]	[▸ 285]
–	Density damping	[Damp]	[Density damping]	[▸ 285]

Density unit

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Dens] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Density] ▶ [Density unit]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 284]*
- *Basic setup [▸ 339]*
- *Detailed setup [▸ 400]*

Sets the unit for density.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/mL	Sets the displayed Density unit. Default value is g/ml.
–	kg/L	
–	kg/cm³	
–	kg/dm³	
–	kg/m³	
–	lb/gal	
–	lb/ft³	
–	g/cm³	
–	g/cc	
–	g/L	
–	User unit	

Density LRV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Dens] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Density] ▶ [Density LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 339]*
- *Detailed setup [▸ 401]*

Sets the lower range value, 0 %, for the scaling of frequency output during density measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Density URV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Dens] ▶ [URV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Density] ▶ [Density URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 340]*
- *Detailed setup [▸ 401]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during density measurement.

	Value	Description
–	Numeric digits	Default value is 1.5. Settings must satisfy the following condition: URV ≠ LRV

Density damping

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Dens] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Density] ▶ [Density damping]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 340]*
- *Detailed setup [▸ 401]*
- *SIL mode [▸ 581]*

Sets the damping constant for density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Temperature

Menu for configuring the temperature measurement.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Temperature unit	[Unit]	[Temperature unit]	[▸ 286]
–	Temperature LRV	[LRV]	[Temperature LRV]	[▸ 286]
–	Temperature URV	[URV]	[Temperature URV]	[▸ 287]
–	Temperature damping	[Damp]	[Temperature damping]	[▸ 287]

Temperature unit

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Temp] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Temperature] ▶ [Temperature unit]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 405]*

Sets the unit for temperature.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	degC	Sets the displayed Temperature unit. Default value is degC.
–	degF	
–	degR	
–	K	

Temperature LRV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Temp] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Temperature] ▶ [Temperature LRV]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 406]*

Sets the lower range value, 0 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≥ Temperature Lower Limit [▸ 610] LRV ≤ Temperature Upper Limit [▸ 610]

Temperature URV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Temp] ▶ [URV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Temperature] ▶ [Temperature URV]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed setup [▸ 406]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 150.0. Settings must satisfy the following conditions: URV ≠ LRV URV ≥ Temperature lower limit [▸ 610] URV ≤ Temperature upper limit [▸ 610]

Temperature damping

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Temp] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Temperature] ▶ [Temperature damping]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed Setup [▸ 407]*
- *SIL mode [▸ 583]*

Sets the damping constant for temperature measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 10.0 s.

Volume flow

Menu for configuring the volume flow measurement.

Volume flow is derived from the density and the mass flow measurement. Errors in density measurement, e.g. from gas bubbles, affect the accuracy of the volume flow. For liquids it is therefore recommended that mass flow be used wherever possible.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Volume flow unit	[Unit]	[Volume flow unit]	*[▸ 288]*
–	Volume flow LRV	[LRV]	[Volume flow LRV]	*[▸ 289]*
–	Volume flow URV	[URV]	[Volume flow URV]	*[▸ 290]*
–	Volume flow damping	[Damp]	[Volume flow damping]	*[▸ 290]*

Volume flow unit

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Vol] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Volume flow] ▶ [Volume flow unit]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 288]*
- *Basic setup [▸ 343]*
- *Detailed setup [▸ 411]*

Sets the unit for volume flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	cm^3/s	Sets the displayed Volume flow unit. Default value is m^3/h.
–	cm^3/min	
–	cm^3/h	
–	l/s	
–	l/min	
–	l/h	
–	l/d	
–	m^3/s	
–	m^3/min	
–	m^3/h	
–	m^3/d	
–	gal/s	
–	gal/min	
–	gal/h	
–	gal/d	
–	ft^3/s	
–	ft^3/min	
–	ft^3/h	
–	ft^3/d	
–	bbl/s	
–	bbl/min	
–	bbl/h	
–	bbl/d	
–	Impgal/s	
–	Impgal/min	
–	Impgal/h	
–	Impgal/d	
–	User unit	

Volume flow LRV

Ⓛ **[Easy setup wizard] ▶ [Std dev var] ▶ [Vol] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Volume flow] ▶ [Volume flow LRV]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 289]*
- *Basic setup [▸ 343]*
- *Detailed Setup [▸ 412]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow URV

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Vol] ▶ [URV]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Volume flow] ▶ [Volume flow URV]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 10.0. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow damping

Ⓛ [Easy setup wizard] ▶ [Std dev var] ▶ [Vol] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Standard device variables] ▶ [Volume flow] ▶ [Volume flow damping]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the damping constant for volume flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Installation configuration

Menu for parameters used to configure the installation information.

This submenu is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 334]*
- *Detailed setup [▸ 390]*

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Installation orientation	[Install orient]	[Installation orientation]	*[▸ 291]*

–	Density offset orientation	[Dens offset]	[Density offset orientation]	[291]
–	Flow direction	[Flow dir]	[Flow direction]	[292]
–	Pressure fixed value	[Fix val]	[Pressure fixed value]	[292]

Installation orientation

Ⓛ [Easy setup wizard] ▶ [Install cfg] ▶ [Install orient]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Installation configuration]

Sets the installation orientation of the device.

	Value	Description
–	Vertical [Vertical] [Vertical]	Default value is Vertical.
–	Horizontal bend down [Hrzntl bend down] [Horizontal bend down]	
–	Horizontal bend up [Hrzntl bend up] [Horizontal bend up]	

If the software revision of indicator is R1.01.01 or R2.01.01, and Japanese is selected as display language, please set the value as follows:
When the installation is horizontal bend down: 「水平(ﾁｭｰﾌﾞ上)」
When the installation is horizontal bend up: 「水平(ﾁｭｰﾌﾞ下)」

Density Offset Orientation

Ⓛ [Easy setup wizard] ▶ [Install cfg] ▶ [Dens offset]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Installation configuration]

Sets the density offset value to compensate for the gravitational effect when the device is installed horizontally. This value is added to the originally measured density value.

	Value	Description
–	Numeric digits	The value is automatically converted based on the unit setting. When Vertical is selected in the *Installation orientation*, this value is ignored.

Meter size	Default value in kg/l
FCS100 DN1	5.25e-03
FCS100 DN2	2.70e-03
FCS100 DN4	1.80e-03
FCS100 DN6	2.00e-03
FCS100 DN8	6.00e-04

Meter size	Default value in kg/l
FCS600 DN2	2.70e-03
FCS600 DN4	1.80e-03
FCS600 DN15	9.00e-04
FCS600 DN25	3.50e-04
FCS600 DN40	0
FCS600 DN65	0
FCS700 DN100	0
FCS700 DN150	0
FCS700 DN200	0
FCS500 DN10	1.70e-04
FCS500 DN15	1.30e-04
FCS500 DN25	7.00e-05
FCS500 DN50	1.50e-04
FCS500 DN80	0

If the software revision of indicator is R1.01.01 or R2.01.01, and Japanese is selected as display language, please set the value as follows:
When the installation is horizontal bend down: 「水平(ﾁｭｰﾌﾞ上)」
When the installation is horizontal bend up: 「水平(ﾁｭｰﾌﾞ下)」

Flow Direction

Ⓛ **[Easy setup wizard] ▶ [Install cfg] ▶ [Flow dir]**

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Installation configuration]

Sets the flow direction of the device.

	Value	Description
–	Forward **[Forward]** [Forward]	Direction of flow is the same as the arrow mark on the sensor. Default value.
–	Reverse **[Reverse]** [Reverse]	Opposite direction.

Pressure fixed value

Ⓛ **[Easy setup wizard] ▶ [Install cfg] ▶ [Fix val]**

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Installation configuration]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 292]*
- *Basic setup [▸ 336]*
- Detailed setup
  - *Pressure [▸ 417]*
  - *Installation configuration [▸ 392]*

Sets the average static line pressure to compensate for the effect of the line pressure on mass flow and density. In case of gas measurement, no setting is required.

	Value	Description
–	Numeric digits	The value is automatically converted based on the unit setting. Default value is 0.0. When the value of the parameter External function is not Pressure compensation and the device is not in simulation mode, this value is used for the pressure compensation.

5.5.2 Analog outputs

Analog outputs is a menu for configuring Analog outputs.

Analog output 1 – 2

Menu for configuring analog output 1 – 2.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Analog output 1 – 2 select	[Sel]	[Analog output 1 – 2 select]	[▶ 293]
–	Analog output 1 – 2 low limit	[Lo lim]	[Analog output 1 – 2 low limit]	[▶ 296]
–	Analog output 1 – 2 high limit	[Hi lim]	[Analog output 1 – 2 high limit]	[▶ 296]
–	Analog output 1 – 2 alarm output	[Alm out]	[Analog output 1 – 2 alarm output]	[▶ 297]

Analog output 1 – 2 select

Ⓛ [Easy setup wizard] ▶ [AO] ▶ [AO1 – 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 select]

This parameter can be set in the following menu/menus:

- *Basic setup [▶ 345]*
- *Detailed setup [▶ 482]*

Sets the process variables for Analog output 1 – 2.

	Value	Description
–	None [None] [None]	Sets the value for Analog output 1 – 2. The default value of Analog output 1 is Mass flow. None is not available for Analog output 1. The default value of Analog output 2 is Density.
–	Mass flow [Mass] [Mass flow]	
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	

	Value	Description
–	Pressure **[Pres]** [Pressure]	Sets the value for Analog output 1 – 2. The default value of Analog output 1 is Mass flow. None is not available for Analog output 1. The default value of Analog output 2 is Density.
–	Volume flow **[Vol]** [Volume flow]	
–	Reference density **[Ref dens]** [Reference density]	
–	Relative density **[Rel dens]** [Relative density]	
–	Corrected volume flow **[Corr vol]** [Corrected volume flow]	
Ⓕ	Concentration **[Conc]** [Concentration]	
Ⓕ	Net mass flow 1 **[Net mass1]** [Net mass flow 1]	
Ⓕ	Net mass flow 2 **[Net mass2]** [Net mass flow 2]	
Ⓕ	Net volume flow 1 **[Net vol1]** [Net volume flow 1]	
Ⓕ	Net volume flow 2 **[Net vol2]** [Net volume flow 2]	
Ⓕ	Net corrected volume flow **[Net corr vol]** [Net corrected volume flow]	

	Value	Description
Ⓕ	Batch [Batch] [Batch]	Sets the value for Analog output 1 – 2. The default value of Analog output 1 is Mass flow. None is not available for Analog output 1. The default value of Analog output 2 is Density.
Ⓕ	Viscosity [Visc] [Viscosity]	
Ⓕ	Drive current [Drv curr] [Drive current]	

Analog output 1 – 2 low limit

Ⓛ [Easy setup wizard] ▶ [AO] ▶ [AO1 – 2] ▶ [Lo lim]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 low limit]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 346]*
- *Detailed setup [▸ 483]*

Sets the lower limit of the current for Analog output 1 – 2 during normal operation.

ⓘ This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 3.8 mA.

	Value	Description
–	Numeric digits	Setting range: 2.4 – 21.6 mA Default value is 2.4 mA.

Analog output 1 – 2 high limit

Ⓛ [Easy setup wizard] ▶ [AO] ▶ [AO1 – 2] ▶ [Hi lim]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 high limit]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Basic setup [▸ 346]*
- *Detailed setup [▸ 484]*

Sets the higher limit current of Analog output 1 – 2 during normal operation.

ⓘ This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 20.50 mA.

	Value	Description
–	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 21.6 mA.

Analog output 1 – 2 alarm output

Ⓛ [Easy setup wizard] ▶ [AO] ▶ [AO1 – 2] ▶ [Alm out]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 alarm output]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Basic setup [▸ 347]*
- *Detailed setup [▸ 484]*

Sets the value of the current value for Analog output 1 – 2 during an alarm state.

	Value	Description
–	< 2.4 mA [<2.4mA] [< 2.4 mA]	Sets the value for Analog output 1 – 2 during an alarm state. Default value is > 21.6 mA.
–	4 mA [4.0mA] [4 mA]	
–	> 21.6 mA [>21.6mA] [> 21.6 mA]	
–	Measured value [Meas val] [Measured value]	
–	Hold [Hold] [Hold]	

5.5.3 Pulse/Status outputs

Menu for configuring the pulse/status output.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Pulse/Status configuration	[Pls/Sts cfg]	[Pulse/Status configuration]	[▸ 298]
–	Pulse output 1 – 2	[Pls out1 - 2]	[Pulse output 1 - 2]	[▸ 299]
–	Frequency output 1 – 2	[Freq out1 - 2]	[Frequency output 1 - 2]	[▸ 305]
–	Status output 1 – 3	[Sts out1 - 3]	[Status output 1 - 3]	[▸ 308]
Ⓛ	Double pulse output	[Dbl pls out]		[▸ 311]

Pulse/Status configuration

Menu for configuring the pulse/status output.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Pulse/Status output type	[Pls/Sts type]	[Pulse/Status output type]	[▸ 298]
–	Pulse/Status output 1 – 2 mode	[Pls/Sts1 - 2 mode]	[Pulse/Status output 1 - 2 mode]	[▸ 299]

Pulse/Status output type

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls/Sts cfg] ▶ [Pls/Sts type]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse/Status configuration]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Basic setup [▸ 348]*
- *Detailed setup [▸ 485]*

Sets the pulse signal type of the Pulse/Status signal.

When this parameter has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	Single pulse [Sngl pls] [Single pulse]	No synchronize. Output 1 – 2 is individual. Default value.
–	Double pulse [Dbl pls] [Double pulse]	Pulse/status Output 1 – 2 are set to frequency mode and provide a synchronized double pulse signal.

Pulse/Status 1 – 2 mode

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls/Sts cfg] ▶ [Pls/Sts1 – 2 mode]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse/Status configuration]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Basic setup [▷ 348]*
- *Detailed setup [▷ 486]*

Sets the pulse signal mode of Pulse/Status output 1 – 2.

If Pulse/Status output 1 – 2 mode has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	No function [No func] [No function]	Pulse signal or status signal is not available. Default value. Output signal level depends on the Status output 1 – 2 active mode.
–	Fixed pulse output [Fix pls out] [Fixed pulse output]	Pulse signal with fixed pulse width, duty ratio changes. Status signal is not available.
–	Frequency output [Freq out] [Frequency output]	Pulse signal with fixed duty ratio, pulse width changes. Status signal is not available.
–	Status output [Sts out] [Status output]	Status signal. Pulse or frequency signal is not available.

Pulse output 1 – 2

Menu for configuring the pulse signal. This is available when Fixed pulse output is selected in the parameter Pulse/Status output 1 – 2 mode.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Pulse output 1 – 2 select	[Sel]	[Pulse output 1 – 2 select]	*[▷ 300]*
–	Pulse output 1 – 2 unit select	[Unit]	[Pulse output 1 – 2 unit select]	*[▷ 301]*
–	Pulse output 1 – 2 width	[Width]	[Pulse output 1 – 2 width]	*[▷ 303]*
–	Pulse output 1 – 2 rate	[Rate]	[Pulse output 1 – 2 rate]	*[▷ 305]*

Pulse output 1 – 2 select

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 349]*
- *Detailed setup [▸ 487]*

Assigns a process variable to pulse output 1 – 2.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Sets the value for Pulse output 1 – 2. The default value of Pulse output 1 is Mass flow. The default value of Pulse output 2 is Volume flow.
–	Volume flow [Vol] [Volume flow]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Energy [Energy] [Energy]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the value for Pulse output 1 – 2. The default value of Pulse output 1 is Mass flow. The default value of Pulse output 2 is Volume flow.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	

Pulse output 1 – 2 unit select

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 350]*
- *Detailed setup [▸ 488]*

It can be selected and set for the following process variables. The available units change depending on the process variables that are assigned to the output. The default value for Pulse output 1 is kg/P, and Pulse output 2 is cm^3/P.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

"MetTon" is displayed instead of "t" in HART.

	Process variables	Available units
–	For Mass flow 1 – 2 [Mass flow1 – 2] [Mass flow 1 – 2]	▪ g/P ▪ kg/P ▪ t/P ▪ ton(US)/P ▪ ton(UK)/P ▪ lb/P ▪ P/g ▪ P/kg ▪ P/t ▪ P/ton(US) ▪ P/ton(UK) ▪ P/lb
–	For Net mass flow 1 – 2 [Net mass1 – 2] [Net mass flow 1 – 2]	▪ g/P ▪ kg/P ▪ t/P ▪ lb/P ▪ P/g ▪ P/kg ▪ P/t ▪ P/lb

	Process variables	Available units
–	For Volume flow 1 – 2 [**Volume flow1 – 2**] [Volume flow 1 – 2]	▪ cm^3/P ▪ L/P ▪ m^3/P ▪ gal/P ▪ kgal/P ▪ ft^3/P ▪ bbl/P ▪ Impgal/P ▪ kImpgal/P ▪ P/Cucm ▪ P/L ▪ P/Cum ▪ P/gal ▪ P/kgal ▪ P/Cuft ▪ P/bbl ▪ P/Impgal ▪ P/kImpgal
–	For Net volume flow 1 – 2 [**Net vol1 – 2**] [Net volume flow 1 – 2]	▪ cm^3/P ▪ L/P ▪ m^3/P ▪ gal/P ▪ kgal/P ▪ Cuft/P ▪ bbl/P ▪ Impgal/P ▪ kImpgal/P ▪ P/Cum ▪ P/L ▪ P/m^3 ▪ P/gal ▪ P/kgal ▪ P/Cuft ▪ P/bbl ▪ P/Impgal ▪ P/kImpgal

	Process variables	Available units
–	For Corrected volume flow [Corr vol] [Corrected volume flow]	▪ NmlL/P ▪ NmlCum/P ▪ Std L/P ▪ StdCuft/P ▪ StdCum/P ▪ P/Nml L ▪ P/Nmlm³ ▪ P/Std L ▪ PStdCuft ▪ P/StdCum
–	For Net corrected volume flow [Net corr vol] [Net corrected volume flow]	▪ NmlL/P ▪ NmlCum/P ▪ Std L/P ▪ StdCuft/P ▪ StdCum/P ▪ P/Nml L ▪ P/Nmlm³ ▪ P/Std L ▪ PStdCuft ▪ P/StdCum
–	For Energy [Energy] [Energy]	▪ MJ/P ▪ Btu/P ▪ P/MJ ▪ P/Btu

Pulse output 1 – 2 width

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Width]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 353]*
- *Detailed setup [▷ 491]*

Sets the pulse width, this means the duration of the active state.

	Value	Description
–	0.05 ms [0.05ms] [0.05 ms]	Sets the pulse width. Default value of Pulse output 1 – 2 is 1 ms.
–	0.1 ms [0.1ms] [0.1 ms]	
–	0.5 ms [0.5ms] [0.5 ms]	
–	1 ms [1ms] [1 ms]	
–	5 ms [5ms] [5 ms]	
–	10 ms [10ms] [10 ms]	
–	20 ms [20ms] [20 ms]	
–	33 ms [33ms] [33 ms]	
–	50 ms [50ms] [50 ms]	
–	100 ms [100ms] [100 ms]	
–	200 ms [200ms] [200 ms]	
–	330 ms [330ms] [330 ms]	Sets the pulse width. Default value of Pulse output 1 – 2 is 1 ms.
–	500 ms [500ms] [500 ms]	
–	1000 ms [1000ms] [1000 ms]	
–	2000 ms [2000ms] [2000 ms]	

Pulse output 1 – 2 rate

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Rate]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 353]*
- *Detailed setup [▸ 493]*

Parameter for defining the number of units of the assigned process variable for 1 pulse of Pulse output 1 – 2.

	Value	Description
–	Numeric digits	Setting range: 0 – no check. Default value is 1.0. The unit for this value is defined in the parameter Pulse output 1 – 2 unit. This value depends on the parameter of Pulse output 1 – 2 width and on maximum flow.

Frequency output 1 – 2

Menu for configuring the frequency signal. It is available when Frequency output is selected in the parameter Pulse/Status output 1 – 2 mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Frequency output 1 – 2 select	[Sel]	[Frequency output 1 – 2 select]	*[▸ 305]*
–	Max frequency 1 – 2	[Max freq]	[Max frequency 1 – 2]	*[▸ 307]*
–	Min frequency 1 – 2	[Min freq]	[Min frequency 1 – 2]	*[▸ 308]*

Frequency output 1 – 2 select

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 355]*
- *Detailed setup [▸ 495]*

Assigns a process variable to Frequency output 1 – 2.

	Value	Description
–	Mass flow [**Mass**] [Mass flow]	Sets the process variable for Frequency output 1 – 2. The default value of Frequency output 1 is Mass flow. The default value of Frequency output 2 is Density.
–	Density [**Dens**] [Density]	
–	Temperature [**Temp**] [Temperature]	
–	Pressure [**Pres**] [Pressure]	
–	Volume flow [**Vol**] [Volume flow]	
–	Reference density [**Ref dens**] [Reference density]	

	Value	Description
–	Relative density [Rel dens] [Relative density]	Sets the process variable for Frequency output 1 – 2. The default value of Frequency output 1 is Mass flow. The default value of Frequency output 2 is Density.
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
Ⓕ	Concentration [Conc] [Concentration]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	
Ⓕ	Drive current [Drv curr] [Drive current]	

Max frequency 1 – 2

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [Max freq]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 356]*
- *Detailed setup [▷ 497]*

Sets the frequency value when the process value that is assigned to the Frequency output is the upper range value, 100 %.

	Value	Description
–	Numeric digits	Setting range: 0.0001 – 10000.0 Hz. Default value is 10000.0 Hz.

Min frequency 1 – 2

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [Min freq]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 357]*
- *Detailed setup [▸ 497]*

Sets the frequency value when the process value that is assigned to the Frequency output is the lower range value, 0 %.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10000.0 Hz. Default value is 0.0 Hz.

Status output 1 – 3

Menu for configuring the status output signal. It is available when Status output is selected in the parameter Pulse/Status output mode.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Status output 1 – 3 function

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Status output1 – 3] ▶ [Func]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Pulse/Status outputs] ▶ [Status output 1 – 3]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 358]*
- *Detailed setup [▸ 499]*

Set of menus for configuring Status output functions. These menus are available when Status output is selected in the parameter *Pulse/Status output 1 – 2 mode*.

Concentration high low alarm, Net mass flow 1 – 2 high low alarm, Net volume flow 1 – 2 high low alarm and Net corrected volume flow high low alarm can only be selected if the concentration function is available in the device.

	Value	Description
–	Off [Off] [Off]	Not used. Status signal does not become active. Default value.
–	Flow direction [Flow dir] [Flow direction]	The signal becomes inactive when flow direction is forward and active when flow direction is reverse.

	Value	Description
–	Total limit 1 – 6 [Total limit1 - 6] [Total limit 1 - 6]	Signal becomes active when the value of Totalizer 1 – 6 exceeds the value of the parameter Total 1 – 6 set point.
–	F category [F] [F category]	Signal becomes active when an alarm that is categorized as F on NE107 occurs.
–	S,C,M category [S,C,M] [S,C,M category]	Signal becomes active when an alarm that is categorized as S, C or M on NE107 occurs.
–	F + S,C,M category [F,S,C,M] [F + S,C,M category]	Signal becomes active when an alarm that is categorized as F, S, C or M on NE107 occurs.
–	Slug detection [Slug] [Slug detection]	Signal becomes active when a Slug alarm occurs.
–	Empty pipe [Empty] [Empty pipe]	Signal becomes active when an Empty alarm occurs.
–	Corrosion detection [Crrsn] [Corrosion detection]	Signal becomes active when a Corrosion detection alarm occurs.
–	Mass flow high low alarm [Mass H/L alm] [Mass flow high low alarm]	Signal becomes active when a Mass flow high or low alarm occurs.
–	Density high low alarm [Dens H/L alm] [Density high low alarm]	Signal becomes active when a Density high or low alarm occurs.
–	Reference density high low alarm [Ref dens H/L alm] [Reference density high low alarm]	Signal becomes active when a Reference density high or low alarm occurs.
–	Relative density high low alarm [Rel dens H/L alm] [Relative density high low alarm]	Signal becomes active when a Relative density high or low alarm occurs.

	Value	Description
–	Temperature high low alarm [Temp H/L alm] [Temperature high low alarm]	Signal becomes active when a Temperature high or low alarm occurs.
–	Pressure high low alarm [Pres H/L alm] [Pressure high low alarm]	Signal becomes active when a Pressure high or low alarm occurs.
–	Volume flow high low alarm [Vol H/L alm] [Volume flow high low alarm]	Signal becomes active when a Volume high or low alarm occurs.
–	Corrected volume flow high low alarm [Corr vol H/L alm] [Corrected volume flow high low alarm]	Signal becomes active when a Corrected volume flow high or low alarm occurs.
Ⓕ	Concentration high low alarm [Conc H/L alm] [Concentration high low alarm]	Signal becomes active when a Concentration high or low alarm occurs.
Ⓕ	Net mass flow 1 high low alarm [Net mass1 H/L alm] [Net mass flow 1 high low alarm]	Signal becomes active when a Net mass flow 1 high or low alarm occurs.
Ⓕ	Net mass flow 2 high low alarm [Net mass2 H/L alm] [Net mass flow 2 high low alarm]	Signal becomes active when a Net mass flow 2 high or low alarm occurs.
Ⓕ	Net volume flow 1 high low alarm [Net vol1 H/L alm] [Net volume flow 1 high low alarm]	Signal becomes active when a Net volume flow 1 high or low alarm occurs.
Ⓕ	Net volume flow 2 high low alarm [Net vol2 H/L alm] [Net volume flow 2 high low alarm]	Signal becomes active when a Net volume flow 2 high or low alarm occurs.

	Value	Description
Ⓕ	Net corrected volume flow high low alarm [Net corr vol] [Net corrected volume flow high low alarm]	Signal becomes active when a Net corrected volume flow high or low alarm occurs.
Ⓕ	Batch function [Batch] [Batch function]	Need to be set when a Batch function is used.
Ⓕ	Viscosity high low alarm [Visc H/L alm] [Viscosity high low alarm]	Signal becomes active when a Viscosity high or low alarm occurs.

Double pulse output

Menu for configuring the double pulse signal. This menu is available when Double pulse is selected in the parameter Puls/Status output type.

The following menus/settings are available:

- *Basic setup [▸ 360]*
- *Detailed setup [▸ 502]*

This parameter can be set in the following menu/menus:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
Ⓛ	Frequency output 1 select	[Sel]	–	*[▸ 311]*
Ⓛ	Double pulse phase shift mode	[Phase shift mode]	–	*[▸ 312]*
Ⓛ	Max frequency 1	[Max freq]	–	*[▸ 313]*
Ⓛ	Min frequency 1	[Min freq]	–	*[▸ 313]*

Frequency output 1 select

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Sel]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 360]*
- *Detailed setup [▸ 502]*

Assigns a process variable to double pulse output.

Concentration, Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected, if the concentration function is available on the device.

	Value	Description
Ⓛ	Mass flow [Mass]	Sets the displayed process variable. The default value is Mass flow.
Ⓛ	Density [Dens]	
Ⓛ	Temperature [Temp]	
Ⓛ	Pressure [Pres]	
Ⓛ	Volume flow [Vol]	
Ⓛ	Reference density [Ref dens]	
Ⓛ	Relative density [Rel dens]	
Ⓛ	Corrected volume flow [Corr vol]	
Ⓛ Ⓕ	Concentration [Conc]	Sets the displayed process variable. The default value is Mass flow.
Ⓛ Ⓕ	Net mass flow 1 [Net mass1]	
Ⓛ Ⓕ	Net mass flow 2 [Net mass2]	
Ⓛ Ⓕ	Net volume flow 1 [Net vol1]	
Ⓛ Ⓕ	Net volume flow 2 [Net vol2]	
Ⓛ Ⓕ	Net corrected volume flow [Net corr vol]	
Ⓕ	Viscosity [Visc] [Viscosity]	
Ⓕ	Drive current [Drv curr] [Drive current]	

Double pulse phase shift mode

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Phase shift mode]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 361]*
- *Detailed setup [▸ 504]*

Sets the pulse shift mode of double pulse.

Directly after changing the shift mode, the output signal of pulse/status is not exact.

	Value	Description
Ⓛ	0 degree [0°]	No phase shift between pulse signal 1 and 2.
Ⓛ	180 degree [180°]	Phase shift between pulse signal 1 and 2 is 180 degrees.
Ⓛ	-90 degree [-90°]	Pulse 2 signal is shifted -90 degrees from pulse 1 signal.
Ⓛ	+90 degree [+90°]	Pulse 2 signal is shifted +90 degrees from pulse 1 signal.
Ⓛ	Quadrature [Quadrature]	When the flow direction is forward, pulse 2 signal is shifted +90 degrees from pulse 1 signal. When the flow direction is reverse, pulse 2 is shifted -90 degrees from pulse 1. Default value.

Max frequency 1

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Max freq]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 362]*
- *Detailed setup [▸ 505]*

Sets the frequency value when the process value that is assigned to Double pulse output is the upper range value, 100 %.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0.0001 – 10000.0 Hz Default value is 10000.0 Hz.

Min frequency 1

Ⓛ [Easy setup wizard] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Min freq]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 362]*
- *Detailed setup [▸ 505]*

Sets the frequency value when the process value that is assigned to Double pulse output is the lower range value, 0 %.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0.0 – 10000.0 Hz Default value is 0.0 Hz.

5.5.4 Totalizer

Menu for configuring the totalizer.

Totalizer 1 – 3

Menus for configuring Totalizer 1 – 3.

To configure the additional 3 Totalizers, *Totalizer 4 – 6* , see the *Detailed setup menu [▸ 516]*.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page

–	Total 1 – 3 channel	[Channel]	[Total 1 - 3 channel]	[▸ 314]
–	Total 1 – 3 unit	[Unit]	[Total 1 - 3 unit]	[▸ 315]
–	Total 1 – 3 failure option	[Fail opt]	[Total 1 - 3 failure option]	[▸ 316]
–	Total 1 – 3 start/stop	[Start/Stop]	[Total 1 - 3 start/stop]	[▸ 317]

Total 1 – 3 Channel

Ⓛ [Easy setup wizard] ▶ [Ttl] ▶ [Ttl1 - 3] ▶ [Channel]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Totalizer] ▶ [Totalizer 1 - 3]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 363]*
- *Detailed setup [▸ 516]*

Sets the process value for Totalizer 1 – 3.

Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected if the concentration function is available on the device.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Sets the displayed process variable for Totalizer 1 – 3. The default value for Totalizer 1 is Mass flow. The default value for Totalizer 2 is Volume flow. The default value for Totalizer 3 is Corrected volume flow.
–	Volume flow [Vol] [Volume flow]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Energy [Energy] [Energy]	

	Value	Description
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the displayed process variable for Totalizer 1 – 3. The default value for Totalizer 1 is Mass flow. The default value for Totalizer 2 is Volume flow. The default value for Totalizer 3 is Corrected volume flow.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	

Total 1 – 3 unit

Ⓛ [Easy setup wizard] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Totalizer] ▶ [Totalizer 1 – 3]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 364]*
- *Detailed setup [▸ 517]*

Sets the unit for Total 1 – 3.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g	Sets the unit for Totalizer 1 – 3. The default value for Totalizer 1 is kg. The default value for Totalizer 2 is m^3. The default value for Totalizer 3 is m^3 (standard).
–	kg	
–	t	
–	ton(US)	
–	ton(UK)	
–	lb	
–	cm^3	
–	L	
–	m^3	
–	gal	
–	kgal	
–	ft^3	
–	bbl	
–	Impgal	
–	kImpgal	
–	L(normal)	
–	m^3(normal)	
–	L(standard)	
–	ft^3(standard)	
–	MMscuft	
–	m^3(standard)	
–	MJ	
–	Btu	
–	User unit	

Total 1 – 3 Failure Option

Ⓛ [Easy setup wizard] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Fail opt]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Totalizer] ▶ [Totalizer 1 – 3]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 365]*
- *Detailed setup [▸ 518]*

Defines the behavior of the totalizers when an alarm occurs.

	Value	Description
–	Run [Run] [Run]	Totalizer accumulates assigned process value anyway. Default value.
–	Hold [Hold] [Hold]	Totalizer stops accumulating the assigned process value.
–	Last Valid Value [Last valid val] [Last valid value]	Totalizer accumulates the value that was measured before the alarm ocurred.

Total 1 – 3 start/ stop

Ⓛ [Easy setup wizard] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Start/Stop]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Totalizer] ▶ [Totalizer 1 – 3]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 365]*
- *Detailed setup [▸ 519]*

Starts or stops Totalizer 1 – 3 and shows its status.

5.5.5 Display select

Menu for assigning process variables to be displayed.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

Display Select 1 – 4

Ⓛ [Easy setup wizard] ▶ [Disp sel] ▶ [Sel1 – 4]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Display select]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 366]*
- *Detailed setup [▸ 529]*

Assigns process variables to display lines 1, 2, 3 and 4 of the LCD display. On display, Display measurement mode can be selected and Batch display select 1 – 4 or Logging select 1 – 4 can be selected based on the selection of Display measurement mode.

	Value	Description
–	None [None] [None]	
–	Mass flow [Mass] [Mass flow]	
–	Density [Dens] [Dens]	
–	Temperature [Temp] [Temp]	
–	Volume flow [Vol] [Volume flow]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
–	Reference density [Ref dens] [Reference density]	
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Pressure [Pres] [Pressure]	

	Value	Description
–	Totalizer 1 [Ttl1] [Totalizer 1]	
–	Totalizer 2 [Ttl2] [Totalizer 2]	
–	Totalizer 3 [Ttl3] [Totalizer 3]	
–	Totalizer 4 [Ttl4] [Totalizer 4]	
–	Totalizer 5 [Ttl5] [Totalizer 5]	
–	Totalizer 6 [Ttl6] [Totalizer 6]	
–	Mass flow % graph [Mass %] [Mass flow % graph]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
–	Volume flow % graph [Vol %] [Volume flow % graph]	
–	Corrected volume flow % graph [Corr vol %] [Corrected volume flow % graph]	
–	Tag [Tag] [Tag]	
–	Long tag [Long tag] [Long tag]	
–	Velocity [Vel] [Velocity]	
Ⓕ	Concentration [Conc] [Concentration]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	

	Value	Description
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	
–	Drive current [Drv curr] [Drive current]	
–	24hours totalizer 1 [24h ttl1] [24hours totalizer 1]	
	24hours totalizer 2 [24h ttl2] [24hours totalizer 2]	
	24hours totalizer 3 [24h ttl3] [24hours totalizer 3]	
	Gas void fraction [GVF] [Gas void fraction]	
	Display unit flow dual [Mass flow (dual)]	
	Display unit density dual [Dens (dual)]	

5.5.6 Date/Time

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
–	Set current date	[Set date]	[Set current date]	[321]
–	Set current time	[Set time]	[Set current time]	[321]

Set current date

Ⓛ [Easy setup wizard] ▶ [Date/Time] ▶ [Set date]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Date/Time]

This parameter can be set in the following menu/menus:

- *Basic setup [370]*
- *Detailed setup [560]*

Sets the date.

	Value	Description
–	Numeric digits	The date format on the LCD is defined in the parameter Display format date. The format in [HART] is MM/DD/YYYY. Default value is 01/01/2015.

Set current time

Ⓛ [Easy setup wizard] ▶ [Date/Time] ▶ [Set time]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Date/Time]

This parameter can be set in the following menu/menus:

- *Basic setup [370]*
- *Detailed setup [560]*

Sets the time.

	Value	Description
–	Numeric digits	Time format is hh:mm:ss. Default value is 00:00.00.

5.5.7 Events/Alarms acknowledge

Menu used during HART communication for setting the acknowledgment of Events/ Alarms.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

5.5.8 Batch 1 function

Menu for configuring the Batch function.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page

Ⓕ	Batch 1 configuration	[Cfg]	[Batch 1 configuration]	[▸ 322]
Ⓕ	Batch 1 setting	[Setting]	[Batch 1 setting]	[▸ 324]

Batch 1 configuration

Menu for configuring the Batch function 1.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
Ⓕ	Batch mode	[Mode]	[Batch mode]	[▸ 322]
Ⓕ	Batch variable select 1	[Var sel]	[Batch variable select 1]	[▸ 322]
–	Pulse/Status output 1 mode	[Pls/Sts1 mode]	[Pulse/Status output 1 mode]	[▸ 323]

Batch mode

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Cfg] ▶ [Mode]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 configuration]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 375]*
- *Detailed setup [▸ 562]*

Activates the Batch function.

	Value	Description
–	No [No]	Default value.
–	Yes [Yes]	

Batch variable select 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Cfg] ▶ [Var sel]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 configuration]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 378]*
- *Detailed setup [▸ 566]*

Sets the Process variable which is used in Batch function.

	Value	Value description
–	Mass flow [Mass]	The default value is Mass flow.
–	Volume flow [Vol]	
–	Corrected volume flow [Corr vol]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Pulse/Status 1 mode

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Cfg] ▶ [Pls/Sts1 mode]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 configuration]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 377]*
- *Detailed setup [▸ 573]*

Sets the pulse signal mode of Pulse/Status output 1.

If Pulse/Status output 1 mode has just been changed, the output signal of pulse/status is not exact.

	Value	Value description
–	No function [No func] [No function]	Pulse signal or status signal is not available. Default value. Output signal level depends on the Status output 1 active mode.
–	Fixed pulse output [Fix pls out] [Fixed pulse output]	Pulse signal with fixed pulse width, duty ratio changes. Status signal is not available.
–	Frequency output [Freq out] [Frequency output]	Pulse signal with fixed duty ratio, pulse width changes, . Status signal is not available.
–	Status output [Sts out] [Status output]	Status signal. Pulse or frequency signal is not available.

Batch 1 setting

Menu for configuring the Batch 1 function.

The following menus/settings are available:

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Full name	Display name	[HART] name	Page
Ⓕ	Batch 1 unit	[Unit]	[Batch 1 unit]	[▸ 324]
Ⓕ	Batch quantity 1	[Qty]	[Batch quantity 1]	[▸ 325]
Ⓕ	Fixed compensation value 1	[Fix comp val]	[Fixed compensation value 1]	[▸ 325]
Ⓕ	Batch end judgment value 1	[End judge val]	[Batch end judgment value 1]	[▸ 326]
Ⓕ	Max batch quantity 1	[Max qty]	[Max batch quantity 1]	[▸ 326]
–	Status output 1 function	[Func]	[Status output 1 function]	[▸ 326]
Ⓕ	Batch status output 1	[Sts out1]	[Batch status output 1]	[▸ 329]
–	Display measurement mode	[Meas mode]	[Display measurement mode]	[▸ 330]
Ⓗ	Batch display select 1 – 4	[Sel1 – 4]	[Batch display select 1 – 4]	[▸ 329]
Ⓗ	Display format batch	[Format batch]	[Display format batch]	[▸ 332]

Batch 1 unit

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 379]*
- *Detailed setup [▸ 566]*

Sets the unit for Batch.

	Value	Description
–	g	Sets the unit for Batch. The default value is kg.
–	kg	
–	t	
–	ton(US)	
–	ton(UK)	
–	cm^3	
–	L	
–	m^3	
–	gal	
–	kgal	
–	ft^3	
–	bbl	
–	Impgal	
–	klmpgal	
–	N(normal)	
–	m^3(normal)	
–	L(standard)	
–	ft^3(standard)	
–	Mmscuft	
–	m^3(standard)	
–	User unit	

Batch quantity 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Qty]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 380]*
- *Detailed setup [▷ 566]*

Sets the quantity for the Batch function.

	Value	Description
–	Numeric digits	Default value is 100.0 kg.

Fix compensation value 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Fix comp val]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 380]*
- *Detailed setup [▷ 567]*

Sets the leakage compensation value.

Valve is closed when quantity reaches Batch qty - Fix comp val.

Batch end judgment value 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [End judge val]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 381]*
- *Detailed setup [▸ 568]*

Sets the judgment value of leakage value. The unit is depend on Process variable which is selected by Batch variable select.

	Value	Description
–	Numeric digits	Default value 5 kg/h.

Max batch quantity 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Max qty]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 381]*
- *Detailed setup [▸ 568]*

Sets threshold value of maximum flow.

When the flow rate for batch operation is bigger than the parameter value, 208:Batch overrung/underrun alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Status output 1 function

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Func]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 381]*
- *Detailed setup [▸ 573]*

Set of menus for configuring Status output functions. These menus are available when Status output is selected in the parameter *Pulse/Status output 1 – 2 mode*.

Concentration high low alarm, Net mass flow 1 – 2 high low alarm, Net volume flow 1 – 2 high low alarm and Net corrected volume flow high low alarm can only be selected if the concentration function is available in the device.

	Value	Description
–	Off [off] [Off]	Not used. Status signal does not become active. Default value.

	Value	Description
–	Flow direction [Flow dir] [Flow direction]	The signal becomes inactive when flow direction is forward and active when flow direction is reverse.
–	Total limit 1 – 6 [Total limit1 - 6] [Total limit 1 - 6]	Signal becomes active when the value of Totalizer 1 – 6 exceeds the value of the parameter Total 1 – 6 set point.
–	F category [F] [F category]	Signal becomes active when an alarm that is categorized as F on NE107 occurs.
–	S,C,M category [S,C,M] [S,C,M category]	Signal becomes active when an alarm that is categorized as S, C or M on NE107 occurs.
–	F + S,C,M category [F,S,C,M] [F + S,C,M category]	Signal becomes active when an alarm that is categorized as F, S, C or M on NE107 occurs.
–	Slug detection [Slug] [Slug detection]	Signal becomes active when a Slug alarm occurs.
–	Empty pipe [Empty] [Empty pipe]	Signal becomes active when an Empty alarm occurs.
–	Corrosion detection [Crrsn] [Corrosion detection]	Signal becomes active when a Corrosion detection alarm occurs.
–	Mass flow high low alarm [Mass H/L alm] [Mass flow high low alarm]	Signal becomes active when a Mass flow high or low alarm occurs.
–	Density high low alarm [Dens H/L alm] [Density high low alarm]	Signal becomes active when a Density high or low alarm occurs.
–	Reference density high low alarm [Ref dens H/L alm] [Reference density high low alarm]	Signal becomes active when a Reference density high or low alarm occurs.
–	Relative density high low alarm [Rel dens H/L alm] [Relative density high low alarm]	Signal becomes active when a Relative density high or low alarm occurs.

	Value	Description
–	Temperature high low alarm [Temp H/L alm] [Temperature high low alarm]	Signal becomes active when a Temperature high or low alarm occurs.
–	Pressure high low alarm [Pres H/L alm] [Pressure high low alarm]	Signal becomes active when a Pressure high or low alarm occurs.
–	Volume flow high low alarm [Vol H/L alm] [Volume flow high low alarm]	Signal becomes active when a Volume high or low alarm occurs.
–	Corrected volume flow high low alarm [Corr vol H/L alm] [Corrected volume flow high low alarm]	Signal becomes active when a Corrected volume flow high or low alarm occurs.
Ⓕ	Concentration high low alarm [Conc H/L alm] [Concentration high low alarm]	Signal becomes active when a Concentration high or low alarm occurs.
Ⓕ	Net mass flow 1 high low alarm [Net mass1 H/L alm] [Net mass flow 1 high low alarm]	Signal becomes active when a Net mass flow 1 high or low alarm occurs.
Ⓕ	Net mass flow 2 high low alarm [Net mass2 H/L alm] [Net mass flow 2 high low alarm]	Signal becomes active when a Net mass flow 2 high or low alarm occurs.
Ⓕ	Net volume flow 1 high low alarm [Net vol1 H/L alm] [Net volume flow 1 high low alarm]	Signal becomes active when a Net volume flow 1 high or low alarm occurs.
Ⓕ	Net volume flow 2 high low alarm [Net vol2 H/L alm] [Net volume flow 2 high low alarm]	Signal becomes active when a Net volume flow 2 high or low alarm occurs.

	Value	Description
Ⓕ	Net corrected volume flow high low alarm [Net corr vol] [Net corrected volume flow high low alarm]	Signal becomes active when a Net corrected volume flow high or low alarm occurs.
Ⓕ	Batch function [Batch] [Batch function]	Need to be set when a Batch function is used.
Ⓕ	Viscosity high low alarm [Visc H/L alm] [Viscosity high low alarm]	Signal becomes active when a Viscosity high or low alarm occurs.

Batch status output 1

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Sts out1]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 385]*
- *Detailed setup [▸ 573]*

Sets the Status output function for Batch.

	Value	Description
–	No function [No func]	The default value is No function.
–	Primary valve control [1st valve ctrl]	
–	Secondary valve control [2nd valve ctrl]	
–	Batch running [Batch run]	
–	Batch ended [Batch end]	

Display measurement mode

Ⓛ [Easy setup wizard] ▶ [Batch1] ▶ [Setting] ▶ [Meas mode]

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup

– *Display [▸ 529]*
– *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
–	Normal [Normal]	Default value. Normal display mode.
–	Trend online [Trend]	Real-time trend chart of process values which were specified in parameters, Logging 1 – 4 select. Trend chart of one of four process values is displayed. By using Up/Down operation on the Indicator, the process values to be shown as a trend chard can be changed when the Display scroll parameters are set to Mnaual.
Ⓕ	Batch control [Batch control]	Batch specific mode to indicate/operate batch.

Batch display select 1 – 4

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting] ▶ [Batch display select 1 - 4]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 387]*
- *Detailed setup [▸ 575]*

Sets Display select for batch, if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode.

	Value	Value description
–	None [None]	Sets Batch display select 1 – 4. The default value for Batch display select 1 is Batch quantity. None is not available for Batch display select 1. The default value for Batch display select 2 is Batch upward value. The default value for Batch display select 3 is Total batch quantity. The default value for Batch display select 4 is Batch counter value.
Ⓕ	Batch quantity [Qty]	
Ⓕ	Batch upwards value [Upward val]	
Ⓕ	Batch downwards value [Dwnward val]	
Ⓕ	Batch total quantity [Ttl qty]	
Ⓕ	Batch counter value [Cnt val]	
Ⓕ	Batch select [Batch sel]	
Ⓕ	Batch variable select [Batch var sel]	
Ⓕ	Compensation value [Comp val]	
Ⓕ	Internal close point [Inter close point]	
Ⓕ	Batch time [Batch time]	
–	Mass flow [Mass]	
–	Density [Dens]	
–	Temperature [Temp]	
–	Volume flow [Vol]	

	Value	Value description
–	Reference density [Ref dens]	
–	Corrected volume flow [Corr vol]	
–	Pressure [Pres]	
–	Tag [Tag]	
–	Long Tag [Long tag]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Display format batch

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting] ▶ [Display format batch]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 388]*
- *Detailed setup [▸ 577]*

Sets the decimal format of batch relevant values which are set in *Display format batch 1 – 4*.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
–	0 digit [0digit] [0 digit]	0 digit from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digit from right.

	Value	Description
–	3 digit [**3digit**] [3 digit]	3 digit from right.
–	4 digit [**4digit**] [4 digit]	4 digit from right.
–	5 digit [**5digit**] [5 digit]	5 digit from right.

5.6 Basic setup

Basic setup is a subset of for the most common functions in the advanced setup.

Most of the menu items and values are available for all devices. Exceptions are marked with corresponding symbols.

Tab. 32: Explanation of symbols used in the menu description

Symbols	Description
Ⓛ	Menu item or menu path is available via display.
Ⓗ	Menu item or menu path is available via the [HART] configuration tool.
Ⓕ	Menu item is optional. It is available only if a transmitter with the corresponding function is used.
–	No restrictions.

The following overview shows the selectable menu items within the submenu *Basic setup*.

	Full name	Display name	[HART] name	Page
Ⓗ	Installation configuration	–	[Installation configuration]	*[▸ 334]*
Ⓗ	Mass flow	–	[Mass flow]	*[▸ 336]*
Ⓗ	Density	–	[Density]	*[▸ 339]*
Ⓗ	Temperature	–	[Temperature]	*[▸ 341]*
Ⓗ	Volume flow	–	[Volume flow]	*[▸ 342]*
Ⓗ	Analog outputs	–	[Analog outputs]	*[▸ 345]*
Ⓗ	Pulse/Status outputs	–	[Pulse/Status outputs]	*[▸ 348]*
Ⓗ	Totalizer	–	[Totalizer]	*[▸ 363]*
Ⓗ	Display select	–	[Display select]	*[▸ 366]*
Ⓗ	Date/Time	–	[Date/Time]	*[▸ 369]*
Ⓗ	Events/Alarms acknowledge	–	[Events/Alarms acknowledge]	*[▸ 371]*
Ⓗ Ⓕ	Batch function	–	[Batch function]	*[▸ 375]*

5.6.1 Installation configuration

Menu for configuring installation information via HART communication.

This submenu is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 334]*
- *Detailed setup [▸ 390]*

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Installation orientation	–	[Installation orientation]	*[▸ 335]*
Ⓗ	Density offset orientation	–	[Density offset orientation]	*[▸ 335]*

Ⓗ	Flow direction	–	[Flow direction]	[▶ 336]
Ⓗ	Pressure fixed value	–	[Pressure fixed value]	[▶ 336]

Installation orientation

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Installation configuration] ▶ [Installation orientation]

Sets the installation orientation of the device.

	Value	Description
Ⓗ	Vertical [Vertical]	The default value is Vertical.
Ⓗ	Horizontal bend down [Horizontal bend down]	
Ⓗ	Horizontal bend up [Horizontal bend up]	

Density offset orientation

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Installation configuration] ▶ [Density offset orientation]

Sets the density offset value to compensate for the gravitational effect when the device is installed horizontally. This value is added to the originally measured density value.

	Value	Description
Ⓗ	Numeric digits	The value is automatically converted based on the unit setting. When Vertical is selected in the *Installation orientation*, this value is ignored.

Meter size	Default value in kg/l
FCS100 DN1	5.25e-03
FCS100 DN2	2.70e-03
FCS100 DN4	1.80e-03
FCS100 DN6	2.00e-03
FCS100 DN8	6.00e-04
FCS600 DN15	9.00e-04
FCS600 DN25	3.50e-04
FCS600 DN40	0
FCS600 DN65	0
FCS700 DN100	0
FCS700 DN250	0
FCS500 DN10	1.70e-04
FCS500 DN15	1.30e-04
FCS500 DN25	7.00e-05
FCS500 DN50	1.50e-04

Flow direction

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Installation configuration] ▶ [Flow direction]

Sets the flow direction of the device.

	Value	Description
Ⓗ	Forward [Forward]	The direction of flow is same as the arrow mark on the sensor. Default value.
Ⓗ	Reverse [Reverse]	Opposite direction.

Pressure fixed value

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Installation configuration] ▶ [Pressure fixed value]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 292]*
- *Basic setup [▸ 336]*
- Detailed setup
  - *Pressure [▸ 417]*
  - *Installation configuration [▸ 392]*

Sets the average static line pressure to compensate for the effect of the line pressure on mass flow and density. In case of gas measurement, no setting is required.

	Value	Description
Ⓗ	Numeric digits	The value is automatically converted based on the unit setting. The default value is 0. When the value of the parameter Analog input function is not Pressure compensation and the device is not in simulation mode, this value is used for the pressure compensation.

5.6.2 Mass flow

Menu for configuring the mass flow measurement via HART communication.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Mass flow unit	–	[Mass flow unit]	*[▸ 336]*
Ⓗ	Mass flow LRV	–	[Mass flow LRV]	*[▸ 337]*
Ⓗ	Mass flow URV	–	[Mass flow URV]	*[▸ 337]*
Ⓗ	Mass flow damping	–	[Mass flow damping]	*[▸ 338]*

Mass flow unit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Mass flow] ▶ [Mass flow unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 282]*
- *Basic setup [▸ 336]*
- *Detailed setup [▸ 394]*

Sets the unit for mass flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▶ 809]*.

	Value	Description
Ⓗ	g/s	Sets the displayed Mass flow unit. The default value is kg/h. This parameter depends on the parameter of the Display unit selection.
Ⓗ	g/min	
Ⓗ	g/h	
Ⓗ	kg/s	
Ⓗ	kg/min	
Ⓗ	kg/h	
Ⓗ	kg/d	
Ⓗ	t/min	
Ⓗ	t/h	
Ⓗ	t/d	
Ⓗ	ton(US)/min	
Ⓗ	ton(US)/h	
Ⓗ	ton(US)/d	
Ⓗ	ton(UK)/min	
Ⓗ	ton(UK)/h	
Ⓗ	ton(UK)/d	
Ⓗ	lb/s	
Ⓗ	lb/min	
Ⓗ	lb/h	
Ⓗ	lb/d	
Ⓗ	User unit	

Mass flow LRV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Mass flow] ▶ [Mass flow LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▶ 282]*
- *Basic setup [▶ 337]*
- *Detailed setup [▶ 395]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≤ Q_{max} LRV ≥ -Q_{max} For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow URV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Mass flow] ▶ [Mass flow URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▶ 283]*

- *Basic setup [▸ 337]*
- *Detailed setup [▸ 395]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 10000.0. Settings must satisfy the following conditions: URV ≤ Q_{max} URV ≥ -Q_{max} URV ≠ LRV For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow damping

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Mass flow] ▶ [Mass flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 338]*
- *Detailed setup [▸ 396]*
- *SIL mode [▸ 580]*

Sets the damping constant for mass flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. The default value is 3.0 s.

5.6.3 Density

Menu for configuring the density measurement via HART communication.

Density measurement is only reliable if there is no gas in the liquid.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Density unit	–	[Density unit]	[▸ 339]
Ⓗ	Density LRV	–	[Density LRV]	[▸ 339]
Ⓗ	Density URV	–	[Density URV]	[▸ 340]
Ⓗ	Density damping	–	[Density damping]	[▸ 340]

Density unit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Density] ▶ [Density unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 284]*
- *Basic setup [▸ 339]*
- *Detailed setup [▸ 400]*

Sets the unit for density.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/mL	Sets the displayed Density unit. Default value is g/ml.
–	kg/L	
–	kg/cm³	
–	kg/dm³	
–	kg/m³	
–	lb/gal	
–	lb/ft³	
–	g/cm³	
–	g/cc	
–	g/L	
–	User unit	

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

Density LRV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Density] ▶ [Density LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 339]*
- *Detailed setup [▸ 401]*

Sets the lower range value, 0 %, for the scaling of frequency output during density measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Density URV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Density] ▶ [Density URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 340]*
- *Detailed setup [▸ 401]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during density measurement.

	Value	Description
–	Numeric digits	Default value is 1.5. Settings must satisfy the following condition: URV ≠ LRV

Density damping

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Density] ▶ [Density damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 340]*
- *Detailed setup [▸ 401]*
- *SIL mode [▸ 581]*

Sets the damping constant for density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Default value is 3.0 s. Setting range: 0.0 – 200.0 s.

5.6.4 Temperature

Temperature is a menu for configuring the temperature measurement via HART communication.

The following overview shows the selectable menu items within the submenu *Temperature*.

	Full name	Display name	[HART] name	Page
Ⓗ	Temperature unit	–	[Temperature unit]	[▸ 341]
Ⓗ	Temperature LRV	–	[Temperature LRV]	[▸ 341]
Ⓗ	Temperature URV	–	[Temperature URV]	[▸ 342]
Ⓗ	Temperature damping	–	[Temperature damping]	[▸ 342]

Temperature unit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Temperature] ▶ [Temperature unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 405]*

Sets the unit for temperature.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓗ	degC	Sets the displayed Temperature unit. Default value is degC.
Ⓗ	degF	
Ⓗ	degR	
Ⓗ	K	

Temperature LRV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Temperature] ▶ [Temperature LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 406]*

Sets the lower range value, 0 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≥ Temperature Lower Limit [▸ 610] LRV ≤ Temperature Upper Limit [▸ 610]

Temperature URV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Temperature] ▶ [Temperature URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed setup [▸ 406]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 150.0. Settings must satisfy the following conditions: URV ≠ LRV URV ≥ Temperature lower limit *[▸ 610]* URV ≤ Temperature upper limit *[▸ 610]*

Temperature damping

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Temperature] ▶ [Temperature damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed Setup [▸ 407]*
- *SIL mode [▸ 583]*

Sets the damping constant for temperature measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 10.0 s.

5.6.5 Volume flow

Volume flow is a menu for configuring the volume flow measurement via HART communication.

Volume flow is derived from the density and the mass flow measurement. Errors in density measurement, e.g. from gas bubbles, affect the accuracy of the volume flow. For liquids it is therefore recommended that mass flow be used wherever possible.

The following overview shows the selectable menu items within the submenu *Volume flow*.

	Full name	Display name	[HART] name	Page
Ⓗ	Volume flow unit	–	[Volume flow unit]	*[▸ 343]*
Ⓗ	Volume flow LRV	–	[Volume flow LRV]	*[▸ 343]*
Ⓗ	Volume flow URV	–	[Volume flow URV]	*[▸ 344]*
Ⓗ	Volume flow damping	–	[Volume flow damping]	*[▸ 344]*

Volume flow unit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Volume flow] ▶ [Volume flow unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 288]*
- *Basic setup [▸ 343]*
- *Detailed setup [▸ 411]*

Sets the unit for volume flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓗ	cm^3/s	Sets the displayed Volume flow unit. Default value is m^3/h.
Ⓗ	cm^3/min	
Ⓗ	cm^3/h	
Ⓗ	L/s	
Ⓗ	L/min	
Ⓗ	L/h	
Ⓗ	L/d	
Ⓗ	m^3/s	
Ⓗ	m^3/min	
Ⓗ	m^3/h	
Ⓗ	m^3/d	
Ⓗ	gal/s	
Ⓗ	gal/min	
Ⓗ	gal/h	
Ⓗ	gal/d	
Ⓗ	ft^3/s	
Ⓗ	ft^3/min	
Ⓗ	ft^3/h	
Ⓗ	ft^3/d	
Ⓗ	bbl/s	
Ⓗ	bbl/min	
Ⓗ	bbl/h	
Ⓗ	bbl/d	
Ⓗ	Impgal/s	
Ⓗ	Impgal/min	
Ⓗ	Impgal/h	
Ⓗ	Impgal/d	
Ⓗ	User unit	

Volume flow LRV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Volume flow] ▶ [Volume flow LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 289]*

- *Basic setup [▸ 343]*
- *Detailed Setup [▸ 412]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
Ⓗ	Numeric digits	Default value is 0. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow URV

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Volume flow] ▶ [Volume flow URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
Ⓗ	Numeric digits	Default value is 10. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow damping

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Volume flow] ▶ [Volume flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the damping constant for volume flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

5.6.6 Analog outputs

Menu for configuring the analog outputs via HART communication.

Analog output 1 – 2

Menu for configuring the Analog output 1 – 2 via HART communication.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Analog output 1 – 2 select	–	[Analog output 1 - 2 select]	[▸ 345]
Ⓗ	Analog output 1 – 2 low limit	–	[Analog output 1 - 2 low limit]	[▸ 346]
Ⓗ	Analog output 1 – 2 high limit	–	[Analog output 1 - 2 high limit]	[▸ 346]
Ⓗ	Analog output 1 – 2 alarm output	–	[Analog output 1 - 2 alarm output]	[▸ 347]

Analog output 1 – 2 select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Analog outputs] ▶ [Analog output 1 - 2] ▶ [Analog output 1 - 2 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 293]*
- *Detailed setup [▸ 482]*

Sets the process variables for Analog output 1 – 2.

	Value	Description
Ⓗ	None [None]	Sets the Analog output 1 – 2 value. The default value of Analog output 1 is Mass flow. None is not available for Analog output 1. The default value of Analog output 2 is Density.
Ⓗ	Mass flow [Mass flow]	
Ⓗ	Density [Density]	
Ⓗ	Temperature [Temperature]	
Ⓗ	Pressure [Pressure]	
Ⓗ	Volume flow [Volume flow]	
Ⓗ	Reference density [Reference density]	
Ⓗ	Relative density [Relative density]	

	Value	Description
Ⓗ	Corrected volume flow [Corrected volume flow]	Sets the Analog output 1 – 2 value. The default value of Analog output 1 is Mass flow. None is not available for Analog output 1. The default value of Analog output 2 is Density.
Ⓗ Ⓕ	Concentration [Concentration]	
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	
Ⓗ Ⓕ	Batch [Batch]	
Ⓗ Ⓕ	Viscosity [Visc]	
Ⓗ	Drive current [Drv curr]	

Analog output 1 – 2 low limit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Analog outputs] ▶ [Analog output 1 - 2] ▶ [Analog output 1 - 2 low limit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 296]*
- *Detailed setup [▸ 483]*

Sets the lower limit of the current for Analog output 1 – 2 during normal operation.

ⓘ This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 3.8 mA.

	Value	Description
Ⓗ	Numeric digits	Setting range: 2.4 – 21.6 mA Default value is 2.40 mA.

Analog output 1 – 2 high limit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Analog outputs] ▶ [Analog output 1 - 2] ▶ [Analog output 1 - 2 high limit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 296]*
- *Detailed setup [▸ 484]*

Sets the higher limit current of Analog output 1 – 2 during normal operation.

This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 20.50 mA.

	Value	Description
Ⓗ	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 21.60 mA.

Analog output 1 – 2 alarm output

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Analog outputs] ▶ [Analog output 1 - 2] ▶ [Analog output 1 - 2 alarm output]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 297]*
- *Detailed setup [▸ 484]*

Sets the value of the current value for Analog output 1 – 2 during an alarm state.

	Value	Description
Ⓗ	< 2.4 mA [< 2.4 mA]	Sets the value of Analog output 1 – 2 during an alarm state. Default value is > 21.6 mA.
Ⓗ	4 mA [4 mA]	
Ⓗ	> 21.6 mA [> 21.6 mA]	
Ⓗ	Measured value [Measured value]	
Ⓗ	Hold [Hold]	

5.6.7 Pulse/Status outputs

Menu for configuring the pulse/status output.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Pulse/Status output type	–	[Pulse/Status output type]	[▸ 348]
Ⓗ	Pulse/Status output 1 – 2 mode	–	[Pulse/Status output 1 - 2 mode]	[▸ 348]
Ⓗ	Pulse output 1 – 2	–	[Pulse output 1 - 2]	[▸ 349]
Ⓗ	Frequency output 1 – 2	–	[Frequency output 1 - 2]	[▸ 354]
Ⓗ	Status output 1 – 3	–	[Status output 1 - 3]	[▸ 358]
Ⓗ	Double pulse output	–	[Double pulse output]	[▸ 360]

Pulse/Status output type

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse/Status output type]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 298]*
- *Detailed setup [▸ 485]*

Sets the pulse signal type of the Pulse/Status signal.

When this parameter has just been changed, the output signal of pulse/status is not exact.

	Value	Description
Ⓗ	Single pulse [Single pulse]	No synchronization. Output 1 – 2 is individual. Default value.
Ⓗ	Double pulse [Double pulse]	Pulse/status Output 1 – 2 are set to frequency mode and provide a synchronized double pulse signal.

Pulse/Status output 1 – 2 mode

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse/Status output 1 - 2 mode]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 299]*
- *Detailed setup [▸ 486]*

Sets the pulse signal mode of Pulse/Status output 1 – 2.

If Pulse/Status output 1 – 2 mode has just been changed, the output signal of pulse/status is not exact.

	Value	Description
Ⓗ	No function [No function]	Pulse signal or status signal is not available. Default value. Output signal level depends on the Status output 1 – 2 active mode.
Ⓗ	Fixed pulse output [Fixed pulse output]	Pulse signal with fixed pulse width, duty ratio changes. Status signal is not available.

	Value	Description
Ⓗ	Frequency output [Frequency output]	Pulse signal with fixed duty ratio, pulse width changes. Status signal is not available.
Ⓗ	Status output [Status output]	Status pulse signal. Pulse or frequency signal is not available.

Pulse output 1 – 2

Menu for configuring pulse signal via HART communication. This is available when Fixed pulse output has been selected in the parameter *Pulse/Status output 1 – 2 mode*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Pulse output 1 – 2 select	–	[Pulse output 1 - 2 select]	[▸ 349]
Ⓗ	Pulse output 1 – 2 unit select	–	[Pulse output 1 - 2 unit select]	[▸ 350]
Ⓗ	Pulse output 1 – 2 width	–	[Pulse output 1 - 2 width]	[▸ 353]
Ⓗ	Pulse output 1 – 2 rate	–	[Pulse output 1 - 2 rate]	[▸ 353]
Ⓗ	Pulse output 1 – 2 alarm action	–	[Pulse output 1 - 2 alarm action]	[▸ 354]
Ⓗ	Pulse output 1 – 2 user set alarm value	–	[Pulse output 1 - 2 user set alarm value]	[▸ 354]

Pulse output 1 – 2 select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 select]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 300]*
- *Detailed setup [▸ 487]*

Assigns a process variable to pulse output 1 – 2.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Sets the Pulse output 1 – 2 value. The default value of Pulse output 1 is Mass flow. The default value of Pulse output 2 is Volume flow.
Ⓗ	Volume flow [Volume flow]	
Ⓗ	Corrected volume flow [Corrected volume flow]	
Ⓗ	Energy [Energy]	
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	

Pulse output 1 – 2 unit select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 unit select]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 301]*
- *Detailed setup [▸ 488]*

It can be selected and set for the following process variables. The available units change depending on the process variables that are assigned to the output. The default value for Pulse output 1 is kg/P, and Pulse output 2 is cm^3/P.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

"MetTon" is displayed instead of "t" in HART.

	Process variables	Available units
Ⓗ	For Mass flow 1 – 2: [Mass flow 1 - 2]:	▪ g/P ▪ kg/P ▪ t/P ▪ ton(US)/P ▪ ton(UK)/P ▪ lb/P ▪ P/g ▪ P/kg ▪ P/t ▪ P/lb
Ⓗ	For Net mass flow 1 – 2: [Net mass flow 1 - 2]:	▪ g/P ▪ kg/P ▪ t/P ▪ P/ton(US) ▪ P/ton(UK) ▪ lb/P ▪ P/g ▪ P/kg ▪ P/t ▪ P/lb
Ⓗ	For Volume flow 1 – 2: [Volume flow 1 - 2]:	▪ Cucm/P ▪ L/P ▪ Cum/P ▪ gal/P ▪ kgal/P ▪ Cuft/P ▪ bbl/P ▪ Impgal/P ▪ kImpgal/P ▪ P/Cucm ▪ P/L ▪ P/Cum ▪ P/gal ▪ P/kgal ▪ P/Cuft ▪ P/bbl ▪ P/Impgal ▪ P/kImpgal

	Process variables	Available units
Ⓗ	For Net volume flow 1 – 2: [Net volume flow 1 - 2]:	▪ Cucm/P ▪ L/P ▪ Cum/P ▪ gal/P ▪ kgal/P ▪ Cuft/P ▪ bbl/P ▪ Impgal/P ▪ kImpgal/P ▪ P/Cucm ▪ P/L ▪ P/Cum ▪ P/gal ▪ P/kgal ▪ P/Cuft ▪ P/bbl ▪ P/Impgal ▪ P/kImpgal
Ⓗ	For Corrected volume flow: [Corrected volume flow]:	▪ Nml L/P ▪ NmlCum/P ▪ Std L/P ▪ StdCuft/P ▪ StdCum/P ▪ P/Nml L ▪ P/NmlCum ▪ P/StdL ▪ P/StdCuft ▪ P/StdCum
Ⓗ	For Net corrected volume flow: [Net corrected volume flow]:	▪ Nml L/P ▪ NmlCum/P ▪ Std L/P ▪ StdCuft/P ▪ StdCum/P ▪ P/Nml L ▪ P/NmlCum ▪ P/StdL ▪ P/StdCuft ▪ P/StdCum
Ⓗ	For Energy: [Energy]:	▪ MJ/P ▪ Btu/P ▪ P/MJ ▪ P/Btu

Pulse output 1 – 2 width

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 width]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 303]*
- *Detailed setup [▸ 491]*

Sets the pulse width, this means the duration of the active state.

	Value	Description
Ⓗ	0.05 ms [0.05 ms]	Sets the pulse width. Default value of Pulse output 1 – 2 is 1 ms.
Ⓗ	0.1 ms [0.1 ms]	
Ⓗ	0.5 ms [0.5 ms]	
Ⓗ	1 ms [1 ms]	
Ⓗ	5 ms [5 ms]	
Ⓗ	10 ms [10 ms]	
Ⓗ	20 ms [20 ms]	
Ⓗ	33 ms [33 ms]	
Ⓗ	50 ms [50 ms]	
Ⓗ	100 ms [100 ms]	
Ⓗ	200 ms [200 ms]	
Ⓗ	330 ms [330 ms]	
Ⓗ	500 ms [500 ms]	
Ⓗ	1000 ms [1000 ms]	
Ⓗ	2000 ms [2000 ms]	

Pulse output 1 – 2 rate

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 rate]

This parameter is also available in additional menus. The value can be set in each of these menus:

- *Easy setup wizard [▸ 305]*
- *Detailed setup [▸ 493]*

Parameter for defining the number of units of the assigned process variable for 1 pulse of Pulse output 1 – 2.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0 – no check. Default value is 1.0. The unit for this value is defined in the parameter Pulse output 1 – 2 unit. This value depends on the parameter of Pulse output 1 – 2 width and on maximum flow.

Pulse output 1 – 2 alarm action

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 alarm action]

This parameter is also available in an additional menu. The values can also be set in the following menu:

Detailed setup [▸ 493]

Defines pulse output 1 – 2 when an alarm occurs.

	Value	Description
Ⓗ	0.0 pulse [0.0 pulse]	Pulse signal is stopped. Default value.
Ⓗ	Measured value [Measured value]	Pulse output at measured value.
Ⓗ	Hold [Hold]	Pulse output before an alarm occurs is held.
Ⓗ	User set value [User set value]	Pulse output that has been set in the parameter Pulse output 1 – 2 user-defined alarm value.

Pulse output 1 – 2 user set alarm value

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 user set alarm value]

This parameter is also available in an additional menu. The values can also be set in the following menu:

Detailed setup [▸ 493]

Pulse output 1 – 2 user set alarm value sets the frequency value of Fixed pulse when an alarm occurs, if the parameter Pulse output 1 – 2 alarm action is set to User set value.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 10000.0 P/s. Default value is 0.0 pulse.

Frequency output 1 – 2

Menu for configuring frequency signal via HART communication. It is available when Frequency output has been selected in the parameter Pulse/Status output 1 – 2 mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Frequency output 1 – 2 select	–	[Frequency output 1 - 2 select]	*[▸ 355]*

Ⓗ	Max frequency 1 – 2	–	[Max frequency 1 - 2]	[▸ 356]
Ⓗ	Min frequency 1 – 2	–	[Min frequency 1 - 2]	[▸ 357]
Ⓗ	Frequency output 1 – 2 alarm action	–	[Frequency output 1 - 2 alarm action]	[▸ 357]
Ⓗ	Frequency output 1 – 2 user set alarm value	–	[Frequency output 1 - 2 user set alarm value]	[▸ 357]

Frequency output 1 – 2 select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Frequency output 1 - 2 select]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 305]*
- *Detailed setup [▸ 495]*

Assigns a process variable to Frequency output 1 – 2.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Sets variables for Frequency output 1 – 2. The default value of Frequency output 1 is Mass flow. The default value of Frequency output 2 is Density.
Ⓗ	Density [Density]	
Ⓗ	Temperature [Temperature]	
Ⓗ	Pressure [Pressure]	
Ⓗ	Volume flow [Volume flow]	
Ⓗ	Reference density [Reference density]	
Ⓗ	Relative density [Relative density]	
Ⓗ	Corrected volume flow [Corrected volume flow]	
Ⓗ Ⓕ	Concentration [Concentration]	
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	
Ⓗ Ⓕ	Viscosity [Visc]	
Ⓗ	Drive current [Drv curr]	

Max frequency 1 – 2

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Max frequency 1 - 2]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 307]*
- *Detailed setup [▸ 497]*

Sets the frequency value when the process value that is assigned to the Frequency output is the upper range value, 100 %.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0001 – 10000.0 Hz. Default value is 10000.0 Hz.

Min frequency 1 – 2

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Min frequency 1 - 2]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 307]*
- *Detailed setup [▸ 497]*

Sets the frequency value when the process value that is assigned to the Frequency output is the lower range value, 0 %.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 10000.0 Hz. Default value is 0.0 Hz.

Frequency output 1 – 2 alarm action

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Frequency output 1 - 2 alarm action]

This parameter is also available in an additional menu. The values can also be set in the following menu:

Detailed setup [▸ 498]

Sets the frequency output when an alarm occurs.

	Value	Description
Ⓗ	0.0 Hz [0.0 Hz]	Frequency becomes 0.0 Hz. Default value.
Ⓗ	Measured value [Measured value]	Frequency at measured value.
Ⓗ	Hold [Hold]	Frequency before an alarm occurs is held.
Ⓗ	User set value [User set value]	Frequency that is set in the parameter Frequency output 1 – 2 user-defined alarm value.

Frequency output 1 – 2 user set alarm value

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Frequency output 1 - 2 user set alarm value]

This parameter is also available in an additional menu. The values can also be set in the following menu:

Detailed setup [▸ 498]

Sets the frequency value when an alarm occurs, if the parameter Frequency output 1 – 2 alarm action has been set to User set value.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 15000.0 Hz Default value is 0.0 Hz.

Status output 1 – 3

Set of menus for configuring Status output functions via HART communication.

Status output 1 – 3 function

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Status output 1 - 3] ▶ [Status output 1 - 3 function]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 308]*
- *Detailed setup [▸ 499]*

Set of menus for configuring Status output functions. These menus are available when Status output is selected in the parameter *Pulse/Status output 1 – 2 mode*.

Concentration high low alarm, Net mass flow 1 – 2 high low alarm, Net volume flow 1 – 2 high low alarm and Net corrected volume flow high low alarm can only be selected if the concentration function is available in the device.

	Value	Description
Ⓗ	Off [Off]	Not used. Status signal does not become active. Default value.
Ⓗ	Flow direction [Flow direction]	The signal becomes inactive when flow direction is forward and active when flow direction is reverse.
Ⓗ	Total limit 1 – 6 [Total limit 1 - 6]	Signal becomes active when the value of Totalizer 1 – 6 exceeds the value of the parameter Total 1 – 6 set point.
Ⓗ	F category [F category]	Signal becomes active when an alarm that is categorized as F on NE107 occurs.
Ⓗ	S,C,M category [S,C,M category]	Signal becomes active when an alarm that is categorized as S, C or M on NE107 occurs.
Ⓗ	F + S,C,M category [F + S,C,M category]	Signal becomes active when an alarm that is categorized as F, S, C or M on NE107 occurs.
Ⓗ	Slug detection [Slug detection]	Signal becomes active when a Slug alarm occurs.
Ⓗ	Empty pipe [Empty pipe]	Signal becomes active when an Empty alarm occurs.
Ⓗ	Corrosion detection [Corrosion detection]	Signal becomes active when a Corrosion detection alarm occurs.
Ⓗ	Mass flow high / low alarm [Mass flow high low alarm]	Signal becomes active when a Mass flow high or low alarm occurs.
Ⓗ	Density high / low alarm [Density high low alarm]	Signal becomes active when a Density high or low alarm occurs.

	Value	Description
Ⓗ	Reference density high / low alarm [Reference density high low alarm]	Signal becomes active when a Reference density high or low alarm occurs.
Ⓗ	Relative density high / low alarm [Relative density high low alarm]	Signal becomes active when a Relative density high or low alarm occurs.
Ⓗ	Temperature high / low alarm [Temperature high low alarm]	Signal becomes active when a Temperature high or low alarm occurs.
Ⓗ	Pressure high / low alarm [Pressure high low alarm]	Signal becomes active when a Pressure high or low alarm occurs.
Ⓗ	Volume flow high / low alarm [Volume flow high low alarm]	Signal becomes active when a Volume high or low alarm occurs.
Ⓗ Ⓕ	Corrected volume flow high / low alarm [Corrected volume flow high low alarm]	Signal becomes active when a Corrected volume flow high or low alarm occurs.
Ⓗ Ⓕ	Concentration high / low alarm [Concentration high low alarm]	Signal becomes active when a Concentration high or low alarm occurs.
Ⓗ Ⓕ	Net mass flow 1 high / low alarm [Net mass flow 1 high low alarm]	Signal becomes active when a Net mass flow 1 high or low alarm occurs.
Ⓗ Ⓕ	Net mass flow 2 high / low alarm [Net mass flow 2 high low alarm]	Signal becomes active when a Net mass flow 2 high or low alarm occurs.
Ⓗ Ⓕ	Net volume flow 1 high / low alarm [Net volume flow 1 high low alarm]	Signal becomes active when a Net volume flow 1 high or low alarm occurs.
Ⓗ Ⓕ	Net volume flow 2 high / low alarm [Net volume flow 2 high low alarm]	Signal becomes active when a Net volume flow 2 high or low alarm occurs.
Ⓗ Ⓕ	Corrected net volume flow high / low alarm [Corrected net volume flow high low alarm]	Signal becomes active when a Net corrected volume flow high or low alarm occurs.

	Value	Description
	Batch function [Batch functon]	Need to be set when a Batch function is used.
	Viscosity high low alarm [Viscosity high low alarm]	Signal becomes active when a Viscosity high or low alarm occurs.

Double pulse output

Menu for configuring the Double pulse output via HART communication.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Frequency output 1 select	–	[Frequency output 1 select]	*[▸ 360]*
Ⓗ	Double pulse phase shift mode	–	[Double pulse phase shift mode]	*[▸ 361]*
Ⓗ	Max frequency 1	–	[Max frequency 1]	*[▸ 362]*
Ⓗ	Min frequency 1	–	[Min frequency 1]	*[▸ 362]*
Ⓗ	Frequency output 1 alarm action	–	[Frequency output 1 alarm action]	*[▸ 362]*
Ⓗ	Frequency output 1 user set alarm value	–	[Frequency output 1 user set alarm value]	*[▸ 363]*

Frequency output 1 select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 – 2 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 311]*
- *Detailed setup [▸ 502]*

Assigns a process variable to double pulse output.

Concentration, Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected, if the concentration function is available on the device.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Sets the displayed process variables. Default value is Mass flow.
Ⓗ	Density [Density]	
Ⓗ	Temperature [Temperature]	
Ⓗ	Pressure [Pressure]	
Ⓗ	Volume flow [Volume flow]	
Ⓗ	Reference density [Reference density]	
Ⓗ	Relative density [Relative density]	
Ⓗ	Corrected volume flow [Corrected volume flow]	
Ⓗ Ⓕ	Concentration [Concentration]	
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	Sets the displayed process variables. Default value is Mass flow.
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	
Ⓗ Ⓕ	Viscosity [Viscosity]	
Ⓗ	Drive current [Drive current]	

Double pulse phase shift mode

Ⓗ	[Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Double pulse phase shift mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 312]*
- *Detailed setup [▸ 504]*

Sets the pulse shift mode of double pulse.

Directly after changing the shift mode, the output signal of pulse/status is not exact.

	Value	Description
Ⓗ	0 degrees [0 deg]	No phase shift between pulse signal 1 and 2.
Ⓗ	180 degrees [180 deg]	The phase shift between pulse signal 1 and 2 is 180 degrees.
Ⓗ	-90 degrees [-90 deg]	Pulse 2 signal is shifted -90 degrees from pulse 1 signal.
Ⓗ	+90 degrees [+90 deg]	Pulse 2 signal is shifted +90 degrees from pulse 1 signal.
Ⓗ	Quadrature [Quadrature]	When the flow direction is forward, the pulse 2 signal is shifted +90 degrees from the pulse 1 signal. When the flow direction is reverse, pulse 2 is shifted -90 degrees from pulse 1. Default value.

Max frequency 1

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Max frequency 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 313]*
- *Detailed setup [▸ 505]*

Sets the frequency value when the process value that is assigned to Double pulse output is the upper range value, 100 %.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0001 – 10000.0 Hz. Default value is 10000.0 Hz.

Min frequency 1

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Min frequency 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 313]*
- *Detailed setup [▸ 505]*

Sets the frequency value when the process value that is assigned to Double pulse output is the lower range value, 0 %.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 10000.0 Hz. Default value is 0.0 Hz.

Frequency output 1 alarm action

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 alarm action]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 505]

Sets the frequency output of double pulse when an alarm occurs.

	Value	Description
Ⓗ	0.0 Hz [0.0 Hz]	Frequency becomes 0.0 Hz. Default value.
Ⓗ	Measured value [Measured value]	Frequency at measured value.
Ⓗ	Hold [Hold]	The frequency before an alarm occurs is held.
Ⓗ	User set value [User set value]	The frequency that is set in the parameter Frequency output 1 – 2 user-defined alarm value.

Frequency output 1 user set alarm value

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 user set alarm value]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 506]

Sets the frequency value of double pulse when an alarm occurs, if User set value has been set in the parameter *Frequency output 1 – 2 alarm action*.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 15000.0 Hz Default value is 0.0 Hz.

5.6.8 Totalizer

Totalizer is a menu for configuring Totalizers.

Totalizer 1 – 3

Totalizer 1 – 3 is a set of menus for configuring Totalizers.

The following overview shows the selectable menu items within the submenu *Totalizer 1 – 3*.

	Full name	Display name	[HART] name	Page
Ⓗ	Total 1 – 3 channel	–	[Total 1 - 3 channel]	*[▸ 363]*
Ⓗ	Total 1 – 3 unit	–	[Total 1 - 3 unit]	*[▸ 364]*
Ⓗ	Total 1 – 3 failure option	–	[Total 1 - 3 failure option]	*[▸ 365]*
Ⓗ	Total 1 – 3 start/stop	–	[Total 1 - 3 start/stop]	*[▸ 365]*

Total 1 – 3 channel

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Totalizer] ▶ [Totalizer 1 - 3] ▶ [Total 1 - 3 channel]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 314]*
- *Detailed setup [▸ 516]*

Sets the process value for Totalizer 1 – 3.

Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected if the concentration function is available on the device.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Sets the displayed process variables. The default value for Total 1 is Mass flow. The default value for Total 2 is Volume flow. The default value for Total 3 is Corrected volume flow.
Ⓗ	Volume flow [Volume flow]	
Ⓗ	Corrected volume flow [Corrected volume flow]	
Ⓗ	Energy [Energy]	
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	
Ⓗ	Off [Off]	

Total 1 – 3 unit

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Totalizer] ▶ [Totalizer 1 - 3] ▶ [Total 1 - 3 unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 315]*
- *Detailed setup [▸ 517]*

Sets the unit for Total 1 – 3.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓗ	g	Sets the unit for Total 1 – 3. The default value for Total 1 is kg. The default value for Total 2 is m^3. The default value for Total 3 is $Stdm^3$.
Ⓗ	kg	
Ⓗ	t	
Ⓗ	ton(US)	
Ⓗ	ton(UK)	
Ⓗ	lb	
Ⓗ	cm^3	
Ⓗ	L	
Ⓗ	m^3	
Ⓗ	gal	
Ⓗ	kgal	
Ⓗ	ft^3	
Ⓗ	bbl	
Ⓗ	Impgal	
Ⓗ	kImpgal	
Ⓗ	L(normal)	
Ⓗ	m^3(normal)	
Ⓗ	L(Standard)	
Ⓗ	$Stdft^3$	
Ⓗ	MMscuft	
Ⓗ	m^3(Standard)	
Ⓗ	MJ	
Ⓗ	Btu	
Ⓗ	User unit	

Total 1 – 3 failure option

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Totalizer] ▶ [Totalizer 1 - 3] ▶ [Total 1 - 3 failure option]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 316]*
- *Detailed setup [▸ 518]*

Defines the behavior of the totalizers when an alarm occurs.

	Value	Description
Ⓗ	Run [Run]	Totalizer accumulates assigned process value anyway. Default value.
Ⓗ	Hold [Hold]	Totalizer stops accumulating the process value.
Ⓗ	Last Valid Value [Last valid value]	Totalizer accumulates the value that was measured before the alarm occured.

Total 1 – 3 start/ stop

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Totalizer] ▶ [Totalizer 1 - 3] ▶ [Total 1 - 3 start/stop]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 317]*
- *Detailed setup [▸ 519]*

Starts or stops Totalizer 1 – 3 and shows its status.

	Value	Description
Ⓗ	Stop [Stop]	Totalizer 1 – 3 stops accumulation of the assigned process value. When accumulation is stopped, the value is kept.
Ⓗ	Start [Start]	Totalizer 1 – 3 starts accumulation of the assigned process value. If the value of the Totalizer is not 0, the accumulation starts from that value.

5.6.9 Display select

Display select is a menu for assigning process variables to display.

Display select 1 – 4

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Display select] ▶ [Display select 1 - 4]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 318]*
- *Detailed setup [▸ 529]*

Assigns process variables to display lines 1, 2, 3 and 4 of the LCD display. On display, Display measurement mode can be selected and Batch display select 1 – 4 or Logging select 1 – 4 can be selected based on the selection of Display measurement mode.

	Value	Description
Ⓗ	None [None]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
Ⓗ	Mass flow [Mass flow]	
Ⓗ	Density [Dens]	
Ⓗ	Temperature [Temp]	
Ⓗ	Volume flow [Vol flo]	
Ⓗ	Reference density [Reference density]	
Ⓗ	Relative density [Relative density]	
Ⓗ	Corrected volume flow [Corrected volume flow]	
Ⓗ	Pressure [Pressure]	
Ⓗ	Totalizer 1 [Totalizer 1]	
Ⓗ	Totalizer 2 [Totalizer 2]	
Ⓗ	Totalizer 3 [Totalizer 3]	
Ⓗ	Totalizer 4 [Totalizer 4]	

	Value	Description
Ⓗ	Totalizer 5 [Totalizer 5]	
Ⓗ	Totalizer 6 [Totalizer 6]	
Ⓗ	Mass flow % graph [Mass flow % graph]	
Ⓗ	Volume flow % graph [Volume flow % graph]	
Ⓗ	Corrected volume flow % graph [Corrected volume flow % graph]	
Ⓗ	Tag [Tag]	
Ⓗ	Long tag [Long tag]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow.
Ⓗ	Velocity [Velocity]	None is not available for Display select 1. The default value for Display select 2 is Density.
Ⓗ Ⓕ	Concentration [Concentration]	The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	
Ⓗ	Drive current [Drive current]	

	Value	Description
Ⓗ Ⓕ	Viscosity [Viscosity]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
Ⓗ	Drive current [Drive current]	
Ⓗ	24hours totalizer 1 [24hours totalizer 1]	
Ⓗ	24hours totalizer 2 [24hours totalizer 2]	
Ⓗ	24hours totalizer 3 [24hours totalizer 3]	
Ⓗ Ⓕ	Gas void fraction [Gas void fraction]	
Ⓗ	Display unit mass flow dual [Display unit mass flow dual]	
Ⓗ	Display unit density dual [Display unit density dual]	

5.6.10 Date/Time

The following overview shows the selectable menu items within the submenu *Date/Time*.

	Full name	Display name	[HART] name	Page
Ⓗ	Current Date	–	[Current Date]	[▸ 369]
Ⓗ	Current Time	–	[Current Time]	[▸ 370]
Ⓗ	Set current date	–	[Set current date]	[▸ 370]
Ⓗ	Set current time	–	[Set current time]	[▸ 370]

Current Date

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Date/Time] ▶ [Current Date]

This parameter is also available in additional menus. The values can be shown in each of these menus:

- *Diag/Service [▸ 161]*
- *Detailed setup [▸ 559]*

Shows the current date on the device.

	Value	Description
Ⓗ	Date	Shows the actual current date, if the date was set correctly when the device started running.

Current Time

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Date/Time] ▶ [Current Time]

This parameter is also available in additional menus. The values can be shown in each of these menus:

- *Diag/Service [▸ 161]*
- *Detailed setup [▸ 559]*

Shows the current time on the device.

	Value	Description
Ⓗ	Time	Shows the actual current time, if the time was set correctly when the device started running.

Set current date

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Date/Time] ▶ [Set current date]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 321]*
- *Detailed setup [▸ 560]*

Sets the date.

	Value	Description
Ⓗ	Date	The date format on the LCD is defined in the parameter Display format date. The format in [HART] is MM/DD/YYYY. Default value is 01/01/2015.

Set current time

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Date/Time] ▶ [Set current time]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Easy setup wizard [▸ 321]*
- *Detailed setup [▸ 560]*

Sets the time.

	Value	Description
Ⓗ	Time	The time format is hh:mm:ss.

5.6.11 Events/Alarms acknowledge

Menu for displaying device statuses and setting the acknowledge for Events/Alarms via HART communication.

Events/Alarms acknowledge

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Events/Alarms acknowledge]

This parameter can be set in the following menu/menus:

Diag/Service [▸ 131]

The following table shows parameters in the *Events/Alarms acknowledge* menu and corresponding events.

	Display parameter	Description
Ⓗ	Device status [Device status]	Status of the following events: ▪ Process applied to the primary variable is outside the operating limits of the field device ▪ Process applied to the non-primary variable is outside the operating limits of the field device ▪ PV Analog Channel Saturated ▪ PV Analog Channel Fixed ▪ Field device has more statuses available ▪ A reset or self test of the field device has occurred, or power has been disconnected and reconnected ▪ The configuration of the field device has been modified ▪ Field device has malfunctioned due to a hardware error or failure
Ⓗ	Status group 0 [Status group 0]	Status of the following events: ▪ 101:Resonance frequency failure ▪ 102:Signal failure ▪ 103 – 104:Pick off 1 failure ▪ 105 – 106:Pick off 2 failure ▪ 107 – 108:Temperature failure
Ⓗ	Status group 1 [Status group 1]	Status of the following events: ▪ 121 – 122:Mainboard failure
Ⓗ	Status group 2 [Status group 2]	Status of the following events: ▪ 123:Parameter restore incomplete ▪ 124 – 125:Sensor board failure ▪ 126:Sensor communication error ▪ 127 – 129:Option board failure ▪ 130 – 132:Indicator board failure ▪ 133:Indicator board mismatch ▪ 134:Indicator communication error ▪ 135:microSD card failure

	Display parameter	Description
Ⓗ	Status group 3 [Status group 3]	Status of the following events: ▪ 201:Slug detection ▪ 202:Empty pipe detection ▪ 203:Corrosion detection ▪ 204 – 206:Autozero failure ▪ 207 – 209:Batch failure ▪ 210 – 212:NOC failure
Ⓗ	Status group 4 [Status group 4]	Status of the following events: ▪ 221:Analog input failure ▪ 222:Mass flow high high low low alarm ▪ 223:Density high high low low alarm ▪ 224:Temperature high high low low alarm ▪ 225:Pressure high high low low alarm ▪ 226:Volume flow high high low low alarm ▪ 227:Corrected volume flow high high low low alarm ▪ 228:Concentration high high low low alarm
Ⓗ	Status group 5 [Status group 5]	Status of the following events: ▪ 229:Net mass flow 1 high high low low alarm ▪ 230:Net mass flow 2 high high low low alarm ▪ 231:Net volume flow 1 high high low low alarm ▪ 232:Net volume flow 2 high high low low alarm ▪ 233:Corrected Net Volume Flow high high low low Alarm. ▪ 234:Relative density high high low low alarm ▪ 235:Reference density high high low low alarm ▪ 236:Viscosity high high low low alarm
Ⓗ	Extended device status [Ext dev status]	Extended device status that is defined in the HART specifications. ▪ Maintenance required ▪ Device variable alert ▪ Critical power failure ▪ Failure ▪ Out of specification ▪ Function check
Ⓗ	Standardized device status 0 [Device Diagnostic Status 0]	Standardized device status that is defined in the HART specifications. ▪ Device variable simulation active ▪ Non-volatile memory defect ▪ Volatile memory defect ▪ Watchdog reset executed ▪ Power supply conditions out of range ▪ Environmental conditions out of range ▪ Electronic defect ▪ Device configuration locked

	Display parameter	Description
Ⓗ	Standardized device status 1 [Device Diagnostic Status1]	Standardized device status that is defined in the HART specifications. ▪ Status simulation active ▪ Discrete variable simulation active ▪ Event notification overflow
Ⓗ	Analog channel saturated [AO saturated]	Status of saturated analog channel that is defined in the HART specifications. ▪ Analog channel 1 ▪ Analog channel 2 ▪ Analog channel 3 ▪ Analog channel 4
Ⓗ	Standardized device status 2 [Device Diagnostic Status2]	Standardized device status that is defined in the HART specifications. ▪ Sub-device list changed ▪ Duplicate master detected ▪ Sub-device mismatch ▪ Sub-devices with duplicate IDs found ▪ Stale data notice
Ⓗ	Standardized device status 3 [Device Diagnostic Status3]	Standardized device status that is defined in the HART specifications. ▪ Capacity denied ▪ Bandwidth allocation pending ▪ Block transfer pending ▪ Radio failure
Ⓗ	Analog channel fixed [AO fixed]	Status of fixed analog channel that is defined in the HART specifications. ▪ Analog channel 1 ▪ Analog channel 2 ▪ Analog channel 3 ▪ Analog channel 4
Ⓗ	Status group 14 [Status group 14]	Status of the following events: ▪ 241:Totalizer 1 threshold exceeded ▪ 242:Totalizer 2 threshold exceeded ▪ 243:Totalizer 3 threshold exceeded ▪ 244:Totalizer 4 threshold exceeded ▪ 245:Totalizer 5 threshold exceeded ▪ 246:Totalizer 6 threshold exceeded

	Display parameter	Description
Ⓗ	Status group 15 [Status group 15]	Status of the following events: ▪ 301 – 320:Process variables configuration error ▪ 321:Analog output 1 configuration error ▪ 322: Analog output 2 configuration error ▪ 323 – 325:Pulse/Status output 1 configuration error ▪ 326 – 329:Pulse/Status output 2 configuration error ▪ 330:Double pulse output configuration error ▪ 331:Status output 3 configuration error ▪ 332:Status input configuration error
Ⓗ	Status group 16 [Status group 16]	Status of the following events: ▪ 333:Analog input configuration error ▪ 335 – 340:Totalizer configuration error ▪ 341:Batch configuration error ▪ 342:Data logging not started ▪ 343:Option function mismatch
Ⓗ	Status group 17 [Status group 17]	Status of the following events: ▪ 701:Analog output 1 fixed ▪ 702:Analog output 2 fixed ▪ 703:Density fixed ▪ 704:Temperature fixed ▪ 705:Pressure fixed ▪ 706:Reference density fixed ▪ 707:Calorific value fixed ▪ 708:Process variable simulation
Ⓗ	Status group 18 [Status group 18]	Status of the following events: ▪ 709:Analog output simulation ▪ 710:Pulse output simulation ▪ 711:Status output simulation ▪ 715:Process variable trimming ▪ 716:Analog output 1 saturated
Ⓗ	Status group 19 [Status group 19]	Status of the following events: ▪ 717:Analog output 2 saturated ▪ 718:Pulse output 1 saturated ▪ 719:Pulse output 2 saturated ▪ 720:Double pulse output saturated ▪ 721:Autozero running ▪ 722:Tube health check execution error ▪ 723:Date/Time not set ▪ 724:Display over warning

	Display parameter	Description
Ⓗ	Status group 20 [Status group 20]	Status of the following events: ▪ 725:microSD card size warning ▪ 726:microSD card mismatch ▪ 728:microSD card removal procedure error ▪ 729:Parameter backup incomplete ▪ 730:Parameter restore running ▪ 732:Batch progress indication
Ⓗ	Status group 21 [Status group 21]	Status of the following events: ▪ 733,734:Viscosity warning ▪ 735:Autozero warning
Ⓗ	Status group 22 [Status group 22]	Status of the following events: ▪ 901:Device configuration locked ▪ 902:Device configuration not locked ▪ 903:Parameter backup running ▪ 904:Data logging running ▪ 905:Tube health check running ▪ 908:SIL mode active
Ⓗ	Status group 23 [Status group 23]	Status of the following event: 905:Maintenance mode running

Event acknowledge

Ⓗ	[Device root menu] ▶ [Basic setup] ▶ [Events/Alarms acknowledge] ▶ [Event acknowledge]

This parameter is also available in additional menus. The values can be set in each of these menus:

- *Diag/Service [▸ 131]*
- *Parameter description [▸ 115]*

If *Acknowledge* or *Monitor + acknowledge* is selected in the event setting parameters, it is necessary to acknowledge the event to reset the event status. For additional information, see chapter *Event setting [▸ 64]*.

	Value	Description
Ⓗ	Acknowledged [Acknowledged]	Status whereby a generated event is acknowledged. When the event is acknowledged, its status automatically reverts to Unacknowledged.
Ⓗ	Unacknowledged [Unacknowledged]	An event was not generated, or if it was, it was not acknowledged.

5.6.12 Batch function

The following overview shows the selectable menu items within the submenu Batch function.

	Full name	Display name	[HART] name	Page
Ⓗ Ⓕ	Batch mode	–	[Batch mode]	*[▸ 376]*
Ⓗ Ⓕ	Batch select	–	[Batch select]	*[▸ 376]*

Ⓗ Ⓕ	Pulse/Status output 1 mode	–	[Pulse/Status output 1 mode]	[▸ 377]
Ⓗ Ⓕ	Batch start/stop	–	[Batch start/stop]	[▸ 377]
Ⓗ Ⓕ	Batch reset	–	[Batch reset]	[▸ 377]
Ⓗ Ⓕ	Batch 1	–	[Batch 1]	[▸ 378]
Ⓗ Ⓕ	Batch status output	–	[Batch status output]	[▸ 381]
Ⓗ Ⓕ	Batch display	–	[Batch display]	[▸ 386]

Batch mode

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 322]*
- *Detailed setup [▸ 562]*

Activates the Batch function.

	Value	Description
–	No [No]	Default value.
–	Yes [Yes]	

Batch select

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch select]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 564]*

Sets the used batch setting in Batch 1 – 5.

	Value	Description
–	Batch 1 [Batch1]	The default value is Batch 1.
	Batch 2 [Batch2]	
	Batch 3 [Batch3]	
	Batch 4 [Batch4]	
–	Batch 5 [Batch5]	

Pulse/Status output 1 mode

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Pulse/Status output 1 mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 329]*
- *Detailed setup [▸ 573]*

Pulse/Status output 1 mode sets the pulse signal mode of Pulse/Status output 1.

If Pulse/Status output 1 mode has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	No function **[No func]** [No function]	Pulse signal or status signnal is not available. Default value. Output signal level depends on the Status output 1 active mode.
–	Fixed pulse output **[Fix pls out]** [Fixed pulse output]	Pulse signal with fixed pulse width, duty ratio changes. Status signal is not available.
–	Frequency output **[Freq out]** [Frequency output]	Pulse signal with fixed duty ratio, pulse width changes. Status signal is not available.
–	Status output **[Sts out]** [Status output]	Status signal. Pulse or frequency signal is not available.

Batch start/stop

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch start/stop]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 173]*
- *Detailed setup [▸ 519]*

Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
–	Stop **[Stop]**	The default value is Stop.
–	Start **[Start]**	
–	Hold **[Hold]**	
–	Resume **[Resume]**	

Batch reset

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch reset]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 565]*

Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
–	No [No]	The default value is No.
–	Reset [Reset]	

Batch 1

Menu for configuring the Batch function.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ Ⓕ	Batch variable select 1	[Var sel]	[Batch variable select 1]	[▸ 378]
Ⓗ Ⓕ	Batch unit 1	[Unit]	[Batch unit 1]	[▸ 379]
Ⓗ Ⓕ	Batch quantity 1	[Qty]	[Batch quantity 1]	[▸ 380]
Ⓗ Ⓕ	Batch primary valve close 1	[1st valve close]	[Batch primary valve close 1]	[▸ 380]
Ⓗ Ⓕ	Fixed compensation value 1	[Fix comp val]	[Fixed compensation value 1]	[▸ 380]
Ⓗ Ⓕ	Batch end judgment value 1	[End judge val]	[Batch end judgment value 1]	[▸ 381]
Ⓗ Ⓕ	Max batch quantity 1	[Max qty]	[Max batch quantity 1]	[▸ 381]

Batch variable select 1

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 configuration] ▶ [Batch variable select 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 322]*
- *Detailed setup [▸ 566]*

Sets the Process variable which is used in Batch function.

	Value	Value description
–	Mass flow [Mass]	The default value is Mass flow.
–	Volume flow [Vol]	
–	Corrected volume flow [Corr vol]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Batch 1 unit

Ⓗ	[Device root menu] ▶ [Basic setup] ▶ [Batch 1 function] ▶ [Batch 1] ▶ [Batch 1 unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 324]*
- *Detailed setup [▸ 566]*

Sets the unit for Batch.

	Value	Description
–	g	Sets the unit for Batch. The default value is kg.
–	kg	
–	t	
–	ton(US)	
–	ton(UK)	
–	cm^3	
–	L	
–	m^3	
–	gal	
–	kgal	
–	ft^3	
–	bbl	
–	Impgal	
–	klmpgal	
–	N(normal)	
–	m^3(normal)	
–	L(standard)	
–	ft^3(standard)	
–	Mmscuft	
–	m^3(standard)	
–	User unit	

Batch quantity 1

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch 1] ▶ [Batch quantity 1]

This parameter can be set in the following menu/menus:

- *Easy setup [▸ 325]*
- *Detailed setup [▸ 566]*

Sets the quantity for the Batch function.

	Value	Description
–	Numeric digits	Default value is 100.0 kg.

Batch primary valve close 1

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch 1] ▶ [Batch primary valve close 1]

This parameter can be set in the following menu/menus:

- *Detailed setup [▸ 567]*

Shows the quantity when the primary valve is closed.

Setting of valve control function is set by the Status output 1 – 3 function.

	Value	Description
–	Numeric digits	Default value is 0.0 kg

Fix compensation value 1

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting] ▶ [Fix compensation value 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 325]*
- *Detailed setup [▸ 567]*

Sets the leakage compensation value.

Valve is closed when quantity reaches Batch qty - Fix comp val.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Batch end judgment value 1

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting] ▶ [Batch end judgment value 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 326]*
- *Detailed setup [▸ 568]*

Sets the judgment value of leakage value. The unit is depend on Process variable which is selected by Batch variable select.

	Value	Description
–	Numeric digits	Default value 5 kg/h.

Max batch quantity 1

Ⓗ [Device root menu] ▶ [Easy setup wizard] ▶ [Batch 1 function] ▶ [Batch 1 setting] ▶ [Max batch quantity 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 326]*
- *Detailed setup [▸ 568]*

Sets threshold value of maximum flow.

When the flow rate for batch operation is bigger than the parameter value, 208:Batch overrung/underrun alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Batch status output

Batch status output is a menu for configuring the Batch function.

The following overview shows the selectable menu items within the submenu *Batch status output*.

	Full name	Display name	[HART] name	Page
Ⓗ	Status output 1 function	[Func]	[Status output 1 function]	*[▸ 381]*
Ⓗ Ⓕ	Batch status output 1	[Sts out1]	[Batch status output 1]	*[▸ 385]*

Status output 1 function

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch status output] ▶ [Status output 1 function]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 326]*

- *Detailed setup [▸ 499]*

Set of menus for configuring Status output functions. These menus are available when Status output is selected in the parameter *Pulse/Status output 1 – 2 mode*.

Concentration high low alarm, Net mass flow 1 – 2 high low alarm, Net volume flow 1 – 2 high low alarm and Net corrected volume flow high low alarm can only be selected if the concentration function is available in the device.

	Value	Description
–	Off [**Off**] [Off]	Not used. Status signal does not become active.
–	Flow direction [**Flow dir**] [Flow direction]	Signal becomes active, when the flow direction is forward. It becomes not active, when the flow is reverse.
–	Total limit 1 – 6 [**Total limit1 - 6**] [Total limit 1 - 6]	Signal becomes active, when value of Totalizer 1 – 6 reaches value of parameter Total 1 – 6 set point.
–	F category [**F**] [F category]	Signal becomes active, when an alarm which is categorized as F on NE107 occurs.
–	S,C,M category [**S,C,M**] [S,C,M category]	Signal becomes active, when an alarm which is categorized as S, C or M on NE107 occurs.
–	F + S,C,M category [**F,S,C,M**] [F + S,C,M category]	Signal becomes active, when an alarm which is categorized as F, S, C or M on NE107 occurs.
–	Slug detection [**Slug**] [Slug detection]	Signal becomes active, when Slug alarm occurs.
–	Empty pipe [**Empty**] [Empty pipe]	Signal becomes active, when Empty alarm occurs.
–	Corrosion detection [**Crrsn**] [Corrosion detection]	Signal becomes active, when Corrosion detection alarm occurs.
–	Mass flow high low alarm [**Mass H/L alm**] [Mass flow high low alarm]	Signal becomes active, when Mass flow high or low alarm occurs.
–	Density high low alarm [**Dens H/L alm**] [Density high low alarm]	Signal becomes active, when Density high or low alarm occurs.

	Value	Description
–	Reference density high low alarm [Ref dens H/L alm] [Reference density high low alarm]	Signal becomes active, when Reference density high or low alarm occurs.
–	Relative density high low alarm [Rel dens H/L alm] [Relative density high low alarm]	Signal becomes active, when Relative density high or low alarm occurs.
–	Temperature high low alarm [Temp H/L alm] [Temperature high low alarm]	Signal becomes active, when Temperature high or low alarm occurs.
–	Pressure high low alarm [Pres H/L alm] [Pressure high low alarm]	Signal becomes active, when Pressure high or low alarm occurs.
–	Volume flow high low alarm [Vol H/L alm] [Volume flow high low alarm]	Signal becomes active, when Volume high or low alarm occurs.
–	Corrected volume flow high low alarm [Corr vol H/L alm] [Corrected volume flow high low alarm]	Signal becomes active, when Corrected volume flow high or low alarm occurs.
Ⓕ	Concentration high low alarm [Conc H/L alm] [Concentration high low alarm]	Signal becomes active, when Concentration high or low alarm occurs.
Ⓕ	Net mass flow 1 high low alarm [Net mass1 H/L alm] [Net mass flow 1 high low alarm]	Signal becomes active, when Net mass flow 1 high or low alarm occurs.
Ⓕ	Net mass flow 2 high low alarm [Net mass2 H/L alm] [Net mass flow 2 high low alarm]	Signal becomes active, when Net mass flow 2 high or low alarm occurs.

	Value	Description
Ⓕ	Net volume flow 1 high low alarm [Net vol1 H/L alm] [Net volume flow 1 high low alarm]	Signal becomes active, when Net volume flow 1 high or low alarm occurs.
Ⓕ	Net volume flow 2 high low alarm [Net vol2 H/L alm] [Net volume flow 2 high low alarm]	Signal becomes active, when Net volume flow 2 high or low alarm occurs.
Ⓕ	Net corrected volume flow high low alarm [Net corr vol H/L alm] [Net corrected volume flow high low alarm]	Signal becomes active when a Net corrected volume flow high or low alarm occurs.
Ⓕ	Batch function [Batch] [Batch function]	Need to be set when a Batch function is used.
Ⓕ	Viscosity high low alarm [Visc H/L alm] [Viscosity high low alarm]	Signal becomes active when a Viscosity high or low alarm occurs.

	Value	Description
–	Mass flow [Mass] [Mass flow]	The default value is Mass flow.
–	Volume flow [Vol] [Volume flow]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	

Batch status output 1

Ⓗ	[Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch status output] ▶ [Batch status output 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 329]*
- *Detailed setup [▸ 573]*

Sets the Status output function for Batch.

	Value	Description
–	No function [No func]	The default value is No function.
–	Primary valve control [1st valve ctrl]	
–	Secondary valve control [2nd valve ctrl]	
–	Batch running [Batch run]	
–	Batch ended [Batch end]	

Batch display

Batch display is a menu to configure display for Batch function.

The following overview shows the selectable menu items within the submenu Batch display.

	Full name	Display name	[HART] name	Page
Ⓗ	Display measurement mode	[Meas mode]	[Display measurement mode]	*[▸ 386]*
Ⓗ Ⓕ	Batch display select 1 – 4	[Sel1 – 4]	[Batch display select 1 – 4]	*[▸ 387]*
Ⓗ Ⓕ	Display format batch	[Format batch]	[Display format batch]	*[▸ 388]*

Display measurement mode

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch] ▶ [Batch display] ▶ [Display measurement mode]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup
  - *Display [▸ 529]*
  - *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
–	Normal [Normal]	Default value. Normal display mode.
–	Trend online [Trend]	Real-time trend chart of process values which were specified in parameters, Logging 1 – 4 select. Trend chart of one of four process values is displayed. By using Up/Down operation on the Indicator, the process values to be shown as a trend chard can be changed when the Display scroll parameters are set to Mnaual.
Ⓕ	Batch control [Batch control]	Batch specific mode to indicate/operate batch.

Batch display select 1

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch function] ▶ [Batch display] ▶ [Batch display select 1 – 4]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 330]*
- *Detailed setup [▸ 575]*

Sets Display select for batch, if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode.

	Value	Value description
–	None [None]	Sets Batch display select 1 – 4. The default value for Batch display select 1 is Batch quantity. None is not available for Batch display select 1. The default value for Batch display select 2 is Batch upward value. The default value for Batch display select 3 is Total batch quantity. The default value for Batch display select 4 is Batch counter value.
Ⓕ	Batch quantity [Qty]	
Ⓕ	Batch upwards value [Upward val]	
Ⓕ	Batch downwards value [Dwnward val]	
Ⓕ	Batch total quantity [Ttl qty]	
Ⓕ	Batch counter value [Cnt val]	
Ⓕ	Batch select [Batch sel]	
Ⓕ	Batch variable select [Batch var sel]	
Ⓕ	Compensation value [Comp val]	
Ⓕ	Internal close point [Inter close point]	
Ⓕ	Batch time [Batch time]	
–	Mass flow [Mass]	
–	Density [Dens]	
–	Temperature [Temp]	
–	Volume flow [Vol]	

	Value	Value description
–	Reference density [Ref dens]	
–	Corrected volume flow [Corr vol]	
–	Pressure [Pres]	
–	Tag [Tag]	
–	Long Tag [Long tag]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Display format batch

Ⓗ [Device root menu] ▶ [Basic setup] ▶ [Batch display] ▶ [Batch 1 setting] ▶ [Display format batch]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 332]*
- *Detailed setup [▸ 577]*

Sets the decimal format of batch relevant values which are set in *Display format batch 1 – 4*.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
–	0 digit [0digit] [0 digit]	0 digit from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digit from right.

	Value	Description
–	3 digit [**3digit**] [3 digit]	3 digit from right.
–	4 digit [**4digit**] [4 digit]	4 digit from right.
–	5 digit [**5digit**] [5 digit]	5 digit from right.

5.7 Detailed setup

Menu for setting up the details of the configuration.

Most of the menu items and values are available for all devices. Exceptions are marked with corresponding symbols.

Tab. 33: Explanation of symbols used in the menu description

Symbols	Description
Ⓛ	Menu item or menu path is available via display.
Ⓗ	Menu item or menu path is available via the [HART] configuration tool.
Ⓕ	Menu item is optional. It is available only if a transmitter with the corresponding function is used.
–	No restrictions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Installation configuration	[Install cfg]	[Installation configuration]	[390]
–	Process variables	[Pro var]	[Process variables]	[393]
–	Analog outputs	[AO]	[Analog outputs]	[481]
–	Pulse/Status outputs	[Pls/Sts out]	[Pulse/status outputs]	[485]
Ⓗ	HART output	–	[HART output]	[510]
–	Analog input	[AI]	[Analog input]	[511]
–	Status input	[Sts in]	[Status input]	[513]
–	Totalizer	[Ttl]	[Totalizer]	[515]
–	Display	[Disp]	[Display]	[527]
–	Date/Time	[Date/Time]	[Date/Time]	[559]
–	User access configuration	[Access cfg]	[User access configuration]	[560]
Ⓕ	Batch function	[Batch]	[Batch function]	[562]
–	SIL mode	[SIL mode]	[SIL mode]	[580]
–	Proving	[Proving]	[Proving]	[591]
–	Sensor constants	[Snsr cnst]	[Sensor constants]	[591]
–	Compensation	[Compensation]	[Compensation]	[595]
–	Device information	[Dev info]	[Device information]	[599]
Ⓗ	Burst/Event notification	–	[Burst/Event notification]	[617]
–	Write protect	[Protect]	[Write protect]	[621]
–	Others	[Others]	[Others]	[622]

5.7.1 Installation configuration

Menu of parameters for configuring the installation information.

This parameter can be set in the following menu/menus:

- *Easy setup wizard [290]*
- *Basic setup [334]*
- *Detailed setup [390]*

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Installation orientation	[Install orient]	[Installation orientation]	[▶ 391]
–	Density offset orientation	[Dens offset]	[Density offset orientation]	[▶ 391]
–	Flow direction	[Flow dir]	[Flow direction]	[▶ 392]
Ⓗ	Pressure fixed value	–	[Pressure fixed value]	[▶ 392]

Installation orientation

Ⓛ [Detailed setup] ▶ [Install cfg] ▶ [Install orient]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Installation configuration] ▶ [Installation orientation]

Sets the installation orientation of the device.

	Value	Description
–	Vertical [Vertical] [Vertical]	Default value is Vertical.
–	Horizontal bend down [Hrzntl bend down] [Horizontal bend down]	
–	Horizontal bend up [Hrzntl bend up] [Horizontal bend up]	

Density Offset Orientation

Ⓛ [Detailed setup] ▶ [Install cfg] ▶ [Dens offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Installation configuration] ▶ [Density offset orientation]

Sets the density offset value to compensate for the gravitational effect when the device is installed horizontally. This value is added to the originally measured density value.

	Value	Description
–	Numeric digits	The value is automatically converted based on the unit setting. When Vertical is selected in the *Installation orientation*, this value is ignored.

Meter size	Default value in kg/l
FCS100 DN1	5.25e-03
FCS100 DN2	2.70e-03
FCS100 DN4	1.80e-03
FCS100 DN6	2.00e-03
FCS100 DN8	6.00e-04

Meter size	Default value in kg/l
FCS600 DN2	2.70e-03
FCS600 DN4	1.80e-03
FCS600 DN15	9.00e-04
FCS600 DN25	3.50e-04
FCS600 DN40	0
FCS600 DN65	0
FCS700 DN100	0
FCS700 DN150	0
FCS700 DN200	0
FCS500 DN10	1.70e-04
FCS500 DN15	1.30e-04
FCS500 DN25	7.00e-05
FCS500 DN50	1.50e-04
FCS500 DN80	0

Flow Direction

Ⓛ **[Detailed setup] ▶ [Install cfg] ▶ [Flow dir]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Installation configuration] ▶ [Flow direction]

Sets the flow direction of the device.

	Value	Description
–	Forward **[Forward]** [Forward]	The direction of flow is the same as the arrow mark on the sensor. Default value.
–	Reverse **[Reverse]** [Reverse]	Opposite direction.

Pressure fixed value

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Installation configuration] ▶ [Pressure fixed value]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 292]*
- *Basic setup [▷ 336]*
- Detailed setup
  - *Pressure [▷ 417]*
  - *Installation configuration [▷ 392]*

Sets the average static line pressure to compensate for the effect of the line pressure on mass flow and density. In case of gas measurement, no setting is required.

	Value	Description
Ⓗ	Numeric digits	The value is automatically converted based on the unit setting. Default value is 0. When the value of the parameter Analog input function is not Pressure compensation and the device is not in simulation mode, this value is used for the pressure compensation.

5.7.2 Process variables

Menu for configuring parameters that are related to process variables.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Process variables additional parameters	[Pro var add]	[Process variables additional parameters]	[393]
–	Mass flow	[Mass]	[Mass flow]	[394]
–	Density	[Dens]	[Density]	[399]
–	Temperature	[Temp]	[Temperature]	[405]
–	Volume flow	[Vol]	[Volume flow]	[410]
–	Pressure	[Pres]	[Pressure]	[415]
–	Reference density	[Ref dens]	[Reference density]	[420]
–	Relative density	[Rel dens]	[Relative density]	[425]
–	Corrected volume flow	[Corr vol]	[Corrected volume flow]	[429]
–	Calorific value	[Cal]	[Calorific value]	[433]
–	Velocity	[Vel]	[Velocity]	[436]
Ⓕ	Concentration	[Conc]	[Concentration]	[436]
Ⓕ	Net mass flow 1 – 2	[Net mass1 – 2]	[Net mass flow 1 – 2]	[462]
Ⓕ	Net volume flow 1 – 2	[Net vol1 – 2]	[Net volume flow 1 – 2]	[467]
Ⓕ	Net corrected volume flow	[Net corr vol]	[Net corrected volume flow]	[472]
Ⓕ	Viscosity	[Visc]	[Viscosity]	[477]
–	Drive current	[Drv curr]	[Drive current]	[480]

Process variables additional parameters

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pro var add]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Process variables additional parameters]

Process variables additional parameters enables or disables the menu for accessing parameters that are located under the *Additional function* menu of each process variables. To access the parameters, this parameter must be set to "Apply Apply" to allow access to "additional function" that require further configuration.

	Value	Description
–	Apply [Apply] [Apply]	The menu for Additional parameters of each process variable is enabled.
–	Not Apply [Not apply] [Not Apply]	The menu for Additional parameters of each process variable is disabled. Default value.

Mass flow

Menu for configuring the mass flow measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Mass flow unit	[Unit]	[Mass flow unit]	[▸ 394]
–	Mass flow LRV	[LRV]	[Mass flow LRV]	[▸ 395]
–	Mass flow URV	[URV]	[Mass flow URV]	[▸ 395]
–	Mass flow damping	[Damp]	[Mass flow damping]	[▸ 396]
–	Additional function	[Add func]	[Additional function]	[▸ 396]

Mass flow unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Mass flow unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 282]*
- *Basic setup [▸ 336]*
- *Detailed setup [▸ 394]*

Sets the unit for mass flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/s	Sets the displayed Mass flow unit. Default value is kg/h.
–	g/min	
–	g/h	
–	kg/s	
–	kg/min	
–	kg/h	
–	kg/d	
–	t/min	
–	t/h	
–	t/d	
–	ton(US)/min	
–	ton(US)/h	
–	ton(US)/d	
–	ton(UK)/min	
–	ton(UK)/h	
–	ton(UK)/d	
–	lb/s	
–	lb/min	
–	lb/h	
–	lb/d	
–	User unit	

Mass flow LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Mass flow LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 282]*
- *Basic setup [▸ 337]*
- *Detailed setup [▸ 395]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≤ Q_{max} LRV ≥ -Q_{max} For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Mass flow URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 337]*
- *Detailed setup [▸ 395]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse outputs during mass flow measurement.

	Value	Description
–	Numeric digits	Default value is 10000.0. Settings must satisfy the following conditions: URV ≤ Q_{max} URV ≥ -Q_{max} URV ≠ LRV For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Mass flow damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Mass flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 338]*
- *Detailed setup [▸ 396]*
- *SIL mode [▸ 580]*

Sets the damping constant for mass flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. The default value is 3.0 s.

Additional function

Menu for configuring the Mass flow measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Mass flow low cut	[Lowcut]	[Mass flow lowcut]	*[▸ 397]*
–	Mass flow user unit	[User unit]	[Mass flow user unit]	*[▸ 397]*
–	Mass flow user unit conversion factor	[Conv factor]	[Mass flow user unit conversion factor]	*[▸ 397]*
–	Mass flow bi-directional mode	[Bi-dir mode]	[Mass flow bi-directional mode]	*[▸ 397]*
–	Mass flow damping pulse/total	[Damp pls/ttl]	[Mass flow damping pulse/total]	*[▸ 398]*
–	Mass flow trim select	[Trim sel]	[Mass flow trim select]	*[▸ 398]*
–	Mass flow trim offset	[Trim offset]	[Mass flow trim offset]	*[▸ 398]*
–	Mass flow trim gain	[Trim gain]	[Mass flow trim gain]	*[▸ 399]*

–	Display unit mass flow dual	[Display Unit dual]	[Display unit mass flow dual]	[▶ 399]

Mass flow low cut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow lowcut]

Sets the mass flow low cut-off.

	Value	Description
–	Numeric digits	Selects the mass flow value below which output is set to zero, to prevent the Totalizer from accumulating values when the valves are closed. Settings must satisfy the following condition: |Mass flow low cut| ≤ Q_{nom} * 0.2 For the value of Q_{nom}, refer to the Operating Instructions (OI) of the particular product.

Mass flow user unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow user unit]

The mass flow can be displayed in custom user-defined units. This parameter sets the user-defined unit name.

Mass flow unit is effective when *Mass flow unit* is set to User-defined unit.

	Value	Description
–	ASCII characters	Maximum length is 8 characters.

Mass flow user unit conversion factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow user unit conversion factor]

Sets the conversion factor for the mass flow user-defined unit.

	Value	Description
–	Numeric digits	Conversion factor for calculating the user-defined unit from the standard unit.

Mass flow bi-directional mode

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Bi-dir mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow bi-directional mode]

Sets the direction of the mass flow for setting Analog or Frequency output.

	Value	Description
–	Not active [Not active] [Not active]	Sets the direction of the mass flow to a single direction. Default value.
–	Active [Active] [Active]	Sets the direction of the mass flow to bi-directional. Mass flow URV and Mass flow LRV must be the same sign.

Mass flow damping pulse/total

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Damp pls/ttl]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow damping pulse/total]

Sets the damping constant for the mass flow value in pulse output and total.

The value is the time it takes for the output value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Mass flow trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow trim select]

Enables or disables the mass flow trim.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Disables the mass flow trim. Default value.
–	Enable [Enable] [Enable]	Enables the mass flow trim.

Mass flow trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow trim offset]

Sets the mass flow zero offset value.

	Value	Description
–	Numeric digits	Value that is added to the mass flow. Default value is 0.000e+000.

Mass flow trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Mass flow trim gain]

Sets the mass flow span offset value.

Only effective if *Mass flow trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Display Unit Mass Flow Dual

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Mass] ▶ [Add func] ▶ [Display Unit dual]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Mass flow] ▶ [Additional function] ▶ [Display unit mass flow dual]

Sets the unit for mass flow to display on Indicator when Display unit mass flow dual is selectd in Display select 1 – 20.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/s	Sets the displayed Mass flow unit. Default value is kg/h.
–	g/min	
–	g/h	
–	kg/s	
–	kg/min	
–	kg/h	
–	kg/d	
–	t/min	
–	t/h	
–	t/d	
–	ton(US)/min	
–	ton(US)/h	
–	ton(US)/d	
–	ton(UK)/min	
–	ton(UK)/h	
–	ton(UK)/d	
–	lb/s	
–	lb/min	
–	lb/h	
–	lb/d	
–	User unit	

Density

Menu for configuring the density measurement.

Density measurement is only reliable if there is no gas in the liquid.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Density unit	[Unit]	[Density unit]	[▸ 400]
–	Density LRV	[LRV]	[Density LRV]	[▸ 401]
–	Density URV	[URV]	[Density URV]	[▸ 401]
–	Density damping	[Damp]	[Density damping]	[▸ 401]
–	Additional function	[Add func]	[Additional function]	[▸ 402]

Density unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Density unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 284]*
- *Basic setup [▸ 339]*
- *Detailed setup [▸ 400]*

Sets the unit for density.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/mL	Sets the displayed Density unit. Default value is g/ml.
–	kg/L	
–	kg/cm³	
–	kg/dm³	
–	kg/m³	
–	lb/gal	
–	lb/ft³	
–	g/cm³	
–	g/cc	
–	g/L	
–	User unit	

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

Density LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Density LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 285]*
- *Basic setup [▷ 339]*
- *Detailed setup [▷ 401]*

Sets the lower range value, 0 %, for the scaling of frequency output during density measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Density URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Density URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 285]*
- *Basic setup [▷ 340]*
- *Detailed setup [▷ 401]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during density measurement.

	Value	Description
–	Numeric digits	Default value is 1.5. Settings must satisfy the following condition: URV ≠ LRV

Density damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Mass flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 285]*
- *Basic setup [▷ 340]*
- *Detailed setup [▷ 401]*
- *SIL mode [▷ 581]*

Sets the damping constant for density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Default value is 3.0 s. Setting range: 0.0 – 200.0 s.

Additional function

Menu for configuring the Density measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Density low cut	[Lowcut]	[Density lowcut]	[▸ 402]
–	Density user unit	[User unit]	[Density user unit]	[▸ 402]
–	Density user unit conversion factor	[Conv factor]	[Density user unit conversion factor]	[▸ 402]
–	Density value select	[Val sel]	[Density value select]	[▸ 403]
–	Density fixed value	[Fix val]	[Density fixed value]	[▸ 403]
–	Density trim select	[Trim sel]	[Density trim select]	[▸ 404]
–	Density trim offset	[Trim offset]	[Density trim offset]	[▸ 404]
–	Density trim gain	[Trim gain]	[Density trim gain]	[▸ 404]
–	Display unit density dual	[Display Unit dual]	[Display unit density dual]	[▸ 405]

Density lowcut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density lowcut]

Sets the density low cut-off.

	Value	Description
–	Numeric digits	Value of the density measurement below which the density is set to zero. Settings must satisfy the following conditions: Density low cut ≤ 0.5kg/l

Density user unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density user unit]

Density can be displayed in custom user-defined units. This parameter sets the user-defined unit name.

This parameter is effective when *Density unit* is set to User-defined unit.

	Value	Description
–	ASCII characters	Maximum length is 8 characters.

Density user unit conversion factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density user unit conversion factor]

Sets the conversion factor for the density user-defined unit.

	Value	Description
–	Numeric digits	Conversion factor for calculating the user-defined unit from the standard unit. Default value is 1.

Density value select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Val sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density value select]

This parameter can be set in the following menu/menus:

SIL mode [▸ 582]

Sets whether to use a measured density value, a preset fixed density value or a calculated density value.

It is recommended to set either Fixed Value or Calculated value for gas measurement.

	Value	Description
–	Measured value [Meas val] [Measured value]	Measured density value is used. Default value.
–	Fixed value [Fix val] [Fixed value]	Preset fixed density value is used.
–	Calculated value [Calc val] [Calculated value]	Available for gas measurement only and Liquid gas select Liquid gas select *[▸ 606]* must be set to Gas. Calculated value ρ_m is calculated from the following formula. $\rho_m = \rho_{comp} \times \frac{(273.15 + t_{comp})}{(273.15 + t_m)} \times \frac{P_m}{P_{comp}}$ The following parameters have to be appropriately configured to use this function. The pressure value must be the absolute pressure. ▪ ρ_{comp}: Reference density fixed value *[▸ 423]* ▪ t_{comp}: Reference temperature *[▸ 422]* ▪ t_m: Measured temperature of fluid ▪ P_{comp}: Reference pressure (abs) *[▸ 424]* ▪ P_m: Pressure of fluid (abs) – If the Analog input function *[▸ 512]* is set to Pressure compensation and the Absolute/Gauge selection *[▸ 418]* is set to Absolute, this is the measured pressure value of the fluid. – If not, it is the value of the gas density pressure *[▸ 418]*

Density fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Fix val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density fixed value]

Sets a fixed density value.

For gas measurement, input the actual density to output the volume flow.

For liquid measurement, enter the actual density if anything prevents the density measurement from being performed.

Please note, *density low cut [▸ 402]* affects also fixed density value. Make sure density low-cut value is below density fixed value.

	Value	Description
–	Numeric digits	Default value is 1.

Density trim select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density trim select]

This parameter can be set in the following menu/menus:

SIL mode [▸ 582]

Enables or disables the density trim.

	Value	Description
–	Inhibit **[Inhibit]** [Inhibit]	Disables density trim. Default value.
–	Enable **[Enable]** [Enable]	Enables density trim.

Density trim offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density trim offset]

Sets the density zero offset value.

	Value	Value description
–	Numeric digits	Value that is added to the density. Default value is 0.000e+000.

Density trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Density trim gain]

Sets the density span offset value.

Only effective if *Density trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Display Unit Density Dual

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Dens] ▶ [Add func] ▶ [Dens (dual)]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Density] ▶ [Additional function] ▶ [Display unit density dual]

Sets the unit for density to display on Indicator when Display unit density dual is selected in Display select 1 – 20.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g/ml	Sets the displayed Density unit. Default value is g/ml.
–	kg/L	
–	kg/cm³	
–	kg/dm³	
–	kg/m³	
–	lb/gal	
–	lb/ft³	
–	g/cm³	
–	g/cc	
–	g/L	
–	User unit	

Temperature

Menu for configuring the temperature measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Temperature unit	[Unit]	[Temperature unit]	*[▸ 405]*
–	Temperature LRV	[LRV]	[Temperature LRV]	*[▸ 406]*
–	Temperature URV	[URV]	[Temperature URV]	*[▸ 406]*
–	Temperature damping	[Damp]	[Temperature damping]	*[▸ 407]*
–	Additional function	[Add func]	[Additional function]	*[▸ 407]*

Temperature unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Temperature unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 405]*

Sets the unit for temperature.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	degC	Sets the displayed Temperature unit. Default value is degC.
–	degF	
–	degR	
–	K	

Temperature LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Temperature LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 286]*
- *Basic setup [▸ 341]*
- *Detailed setup [▸ 406]*

Sets the lower range value, 0 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≥ Temperature Lower Limit *[▸ 610]* LRV ≤ Temperature Upper Limit *[▸ 610]*

Temperature URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Temperature URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed setup [▸ 406]*

Sets the upper range value, 100 %, for scaling the analog and frequency output during temperature measurement.

	Value	Description
–	Numeric digits	Default value is 150.0. Settings must satisfy the following conditions: URV ≠ LRV URV ≥ Temperature lower limit *[▸ 610]* URV ≤ Temperature upper limit *[▸ 610]*

Temperature damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Temperature damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed Setup [▸ 407]*
- *SIL mode [▸ 583]*

Sets the damping constant for temperature measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 10.0 s.

Additional function

Menu for configuring temperature measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter Process variables additional parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Temperature function select	[Func sel]	[Temperature function select]	*[▸ 407]*
–	Temperature fixed value	[Fix val]	[Temperature fixed value]	*[▸ 408]*
–	Analog input temperature unit	[AI unit]	[Analog input temperature unit]	*[▸ 408]*
–	Analog input temperature LRV	[AI LRV]	[Analog input temperature LRV]	*[▸ 409]*
–	Analog input temperature URV	[AI URV]	[Analog input temperature URV]	*[▸ 409]*
–	Temperature trim select	[Trim sel]	[Temperature trim select]	*[▸ 409]*
–	Temperature trim offset	[Trim offset]	[Temperature trim offset]	*[▸ 410]*
–	Temperature trim gain	[Trim gain]	[Temperature trim gain]	*[▸ 410]*

Temperature function select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [Func sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Temperature function select]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▸ 583]

Sets whether to use a measured temperature value or a preset fixed temperature value.

If the device is equipped with a function for analog input to a remote terminal and Temperature for compensation is set to analog input, the measured temperature is used for this setting regardless of the analog input.

	Value	Description
–	Internal value [Inter val] [Internal value]	Measured temperature value is used.
–	Fixed value [Fix val] [Fixed value]	Preset fixed temperature value is used, but only if the temperature sensor does not function properly.

Temperature fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [Fix val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Temperature fixed value]

Sets a fixed temperature value.

If a temperature error due to a temperature sensor fault occurs, that error can be reset by setting the *Temperature function select* to a Fixed value. The preset fixed value is the displayed and output as the temperature measurement value. Changing the temperature value of the application is recommended. In this case, the temperature is not measured correctly and may be outside the accuracy range.

	Value	Description
–	Numeric digits	Fixed temperature that is to be displayed. Default value is 30 °C.

Analog input temperature unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [AI unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Analog input temperature unit]

Sets the unit of the temperature displayed from the analog input signal.

It is effective if the device is equipped with a function for analog input to a remote terminal and Temperature for compensation is set to the analog input function.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters* [▶ 809].

	Value	Description
–	degC	Sets the Analog input temperature unit. Default value is degC.
–	degF	
–	degR	
–	K	

Analog input temperature LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [AI LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Analog input temperature LRV]

Sets the temperature to the equivalent of the 4 mA analog input signal.

It is effective if the device is equipped with a function for analog input to a remote terminal and Temperature for compensation is set to the analog input function.

	Value	Description
–	Numeric digits	Default value is 0.0 degC. Settings must satisfy the following conditions: URV ≠ LRV LRV ≥ Temperature lower limit *[▸ 610]* LRV ≤ Temperature upper limit *[▸ 610]*

Analog input temperature URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [AI URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Analog input temperature URV]

Sets the temperature to the equivalent of the 20 mA analog input signal.

It is effective if the device is equipped with a function for analog input to a remote terminal and Temperature for compensation is set to the analog input function.

	Value	Description
–	Numeric digits	Default value is 150.0 degC. Settings must satisfy the following conditions: URV ≠ LRV URV ≥ Temperature lower limit *[▸ 610]* URV ≤ Temperature upper limit *[▸ 610]*

Temperature trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Temperature trim select]

This parameter is also available in an additional menu. The values can also be set in the following menu:

SIL mode [▸ 583]

Enables or disables the temperature trim.

ⓘ The temperature trim function can be used to correct the temperature measurement of the SITRANS FC system by adjusting the offset and the slope of the temperature sensor. It is not recommended that this function be used unless correct measurement across the entire process temperature range can be confirmed. It is not sufficient to prove correct measurement at one temperature or in a very narrow temperature range, unless the process operates exclusively within that range.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Disables the temperature trim. Default value.
–	Enable [Enable] [Enable]	Enables the temperature trim.

Temperature trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Temperature trim offset]

Sets the temperature zero offset value.

Only effective if *Temperature trim select* is set to Enable.

	Value	Description
–	Numeric digits	Value that is added to the measured temperature. Default value is 0.000e+000.

Temperature trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Temp] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Temperature] ▶ [Additional function] ▶ [Temperature trim gain]

Sets the temperature span offset value.

Only effective if *Temperature trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Volume flow

Menu for configuring the Volume flow measurement.

The following menus/settings are available:

Volume flow is derived from the density and the mass flow measurement. Errors in density measurement, e.g. from gas bubbles, affect the accuracy of the volume flow. For liquids it is therefore recommended that mass flow be used wherever possible.

	Full name	Display name	[HART] name	Page
–	Volume flow unit	[Unit]	[Volume flow unit]	[▸ 411]
–	Volume flow LRV	[LRV]	[Volume flow LRV]	[▸ 412]
–	Volume flow URV	[URV]	[Volume flow URV]	[▸ 412]
–	Volume flow damping	[Damp]	[Volume flow damping]	[▸ 412]
–	Additional function	[Add func]	[Additional function]	[▸ 413]

Volume flow unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Volume flow unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 288]*
- *Basic setup [▸ 343]*
- *Detailed setup [▸ 411]*

Sets the unit for volume flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	cm^3/s	Sets the displayed Volume flow unit. Default value is m^3/h.
–	cm^3/min	
–	cm^3/h	
–	L/s	
–	L/min	
–	L/h	
–	L/d	
–	m^3/s	
–	m^3/min	
–	m^3/h	
–	m^3/d	
–	gal/s	
–	gal/min	
–	gal/h	
–	gal/d	
–	ft^3/s	
–	ft^3/min	
–	ft^3/h	
–	ft^3/d	
–	bbl/s	
–	bbl/min	
–	bbl/h	
–	bbl/d	
–	Impgal/s	
–	Impgal/min	
–	Impgal/h	
–	Impgal/d	
–	User unit	

Volume flow LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Volume flow LRV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 289]*
- *Basic setup [▸ 343]*
- *Detailed Setup [▸ 412]*

Sets the lower range value, 0 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 0. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Volume flow URV]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the upper range value, 100 %, for scaling the analog, frequency and pulse output during volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 10. Settings must satisfy the following conditions: URV ≠ LRV

Volume flow damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Volume flow damping]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 290]*
- *Basic setup [▸ 344]*
- *Detailed setup [▸ 412]*

Sets the damping constant for volume flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Additional function

Menu for configuring the volume flow measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Volume flow low cut	[Lowcut]	[Volume flow lowcut]	[413]
–	Volume flow user unit	[User unit]	[Volume flow user unit]	[413]
–	Volume flow bi-directional mode	[Bi-dir mode]	[Volume flow bi-directional mode]	[413]
–	Volume flow damping pulse/total	[Damp pls/ttl]	[Volume flow damping pulse/total]	[414]
–	Volume flow trim select	[Trim sel]	[Volume flow trim select]	[414]
–	Volume flow trim offset	[Trim offset]	[Volume flow trim offset]	[414]
–	Volume flow trim gain	[Trim gain]	[Volume flow trim gain]	[414]

Volume flow low cut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow lowcut]

Sets the volume flow low cut-off.

	Value	Description
–	Numeric digits	Value below which the volume flow is set to zero by SITRANS FC.

Volume flow user unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow user unit]

Sets the user-defined unit name.

Only effective when Volume flow unit is set to User-defined unit.

	Value	Description
–	ASCII characters	Maximum length is 8 characters.

Volume flow bi-directional mode

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Bi-dir mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow bi-directional mode]

Sets the direction of the volume flow when setting the analog or frequency output.

	Value	Description
–	Not active [Not active] [Not active]	Sets direction of volume flow to single direction. Default value.

	Value	Description
–	Active [Active] [Active]	Sets direction of volume flow to bi-directional. Volume flow URV and Volume flow LRV must be the same sign.

Volume flow damping pulse/total

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Damp pls/ttl]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow damping pulse/total]

Sets the damping constant for the volume flow value for pulse output and total.

The value is the time it takes for the output value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Volume flow trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow trim select]

Enables or disables the volume flow trim.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Disables the volume flow trim. Default value.
–	Enable [Enable] [Enable]	Enables the volume flow trim.

Volume flow trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow trim offset]

Sets the volume flow zero offset value.

Only effective if *Volume flow trim select* is set to Enable.

	Value	Description
–	Numeric digits	Value that is added to the volume flow. Default value is 0.000e+000.

Volume flow trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vol] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Volume flow] ▶ [Additional function] ▶ [Volume flow trim gain]

Sets the volume flow span offset value.

Only effective if *Volume flow trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Pressure

Menu for configuring the pressure measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Pressure unit	[Unit]	[Pressure unit]	[▸ 415]
–	Pressure LRV	[LRV]	[Pressure LRV]	[▸ 416]
–	Pressure URV	[URV]	[Pressure URV]	[▸ 416]
–	Pressure damping	[Damp]	[Pressure damping]	[▸ 417]
–	Pressure fixed value	[Fix val]	[Pressure fixed value]	[▸ 417]
–	Additional function	[Add func]	[Additional function]	[▸ 417]

Pressure unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Pressure unit]

Sets the pressure unit.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	inH20(68°F)	Sets the displayed Pressure unit. Default value is bar.
–	inHg	
–	ftH20(68°F)	
–	mmH20(68°F)	
–	mmHg	
–	psi	
–	bar	
–	mbar	
–	g/cm²	
–	kg/cm²	
–	Pa	
–	kPa	
–	torr	
–	atm	
–	MPa	
–	inH20	
–	mmH20	
–	ftH20	
–	hPa	

Pressure LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Pressure LRV]

Sets the lower range value, 0 %, for scaling the analog and frequency output during pressure measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Pressure URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Pressure URV]

Sets the upper range value, 100 %, for scaling the analog and frequency output during pressure measurement.

	Value	Description
–	Numeric digits	Default value is 200 bar. Settings must satisfy the following conditions: URV ≠ LRV

Pressure damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Pressure damping]

Sets the damping constant for pressure measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Pressure fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Fix val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Pressure fixed value]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 292]*
- *Basic setup [▸ 336]*
- Detailed setup
  - *Pressure [▸ 417]*
  - *Installation configuration [▸ 392]*

Sets the average static line pressure to compensate for the effect of the line pressure on mass flow and density. In case of gas measurement, no setting is required.

	Value	Description
–	Numeric digits	The value is automatically converted based on the unit setting. Default value is 0. When the value of the parameter Analog input function is not Pressure compensation and the device is not in simulation mode, this value is used for the pressure compensation.

Additional function

Menu for configuring the pressure measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter Process variables additional parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Absolute/Gauge select	[Abs/Gauge sel]	[Absolute/Gauge select]	*[▸ 418]*
–	Gas density pressure	[Gas dens pres]	[Gas density pressure]	*[▸ 418]*
–	Analog input pressure unit	[AI unit]	[Analog input pressure unit]	*[▸ 418]*
–	Analog input pressure LRV	[AI LRV]	[Analog input pressure LRV]	*[▸ 419]*
–	Analog input pressure URV	[AI URV]	[Analog input pressure URV]	*[▸ 419]*
–	Pressure trim select	[Trim sel]	[Pressure trim select]	*[▸ 420]*
–	Pressure trim offset	[Trim offset]	[Pressure trim offset]	*[▸ 420]*

–	Pressure trim gain	[Trim gain]	[Pressure trim gain]	[▶ 420]

Absolute/Gauge Select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [Abs/Gauge sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Absolute/Gauge select]

Make this setting only when the pressure is input as current from the pressure transmitter. Sets the type of pressure gauge to be used.

	Value	Description
–	Gauge [Gauge] [Gauge]	Selects gauge pressure. Default value.
–	Absolute [Abs] [Absolute]	Selects absolute pressure.

Gas Density Pressure

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [Gas dens pres]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Gas density pressure]

Sets the pipe pressure, absolute pressure, when measuring gas. The unit set in the pressure unit is applied.

If Calculated value has been set in the Density value selection, density is calculated based on this value. If the Analog input function is set to "Pressure compensation" and the Absolute/Gauge select is set to "Absolute", measured value of the pressure transmitter is applied.

	Value	Description
–	Numeric digits	Default value is 1.01325 bar abs.

Analog input pressure unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [AI unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Analog input pressure unit]

Sets the unit of the displayed pressure for the analog input signal.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▶ 809]*.

	Value	Description
–	inH20 (68 °F)	Sets the displayed Pressure unit. Default value is bar.
–	inHg	
–	ftH20 (68 °F)	
–	mmH20 (68 °F)	
–	mmHg	
–	psi	
–	bar	
–	mbar	
–	g/cm^2	
–	kg/cm^2	
–	Pa	
–	kPa	
–	torr	
–	atm	
–	MPa	
–	inH20	
–	mmH20	
–	ftH20	
–	hPa	

Analog input pressure LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [AI LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Analog input pressure LRV]

Sets the pressure to the equivalent of the 4 mA analog input signal.

It is effective if the device is equipped with a function for analog input to a remote terminal and Pressure for compensation has been set.

	Value	Description
–	Numeric digits	Default value is 0 bar. Settings must satisfy the following condition: URV ≠ LRV

Analog input pressure URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [AI URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Analog input pressure URV]

Sets the pressure to the equivalent of the 20 mA analog input signal.

It is effective if the device is equipped with a function for analog input to a remote terminal and Pressure for compensation has been set.

	Value	Description
–	Numeric digits	Settings must satisfy the following condition: Analog input pressure URV ≠ Analog input pressure LRV Default value is 200 bar.

Pressure trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Pressure trim select]

Enables or disables the pressure offset.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Disables the pressure trim. Default value.
–	Enable [Enable] [Enable]	Enables the pressure trim.

Pressure trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Pressure trim offset]

Sets the pressure zero offset value.

	Value	Description
–	Numeric digits	Value that is added to the pressure. Default value is 0.000e+000.

Pressure trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Pres] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Pressure] ▶ [Additional function] ▶ [Pressure trim gain]

Sets the pressure span offset value.

Only effective if Pressure trim select is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Reference density

Menu for configuring the reference density measurement.

The SITRANS FC transmitter can calculate the density of the measured medium at a reference temperature if the corresponding density function can be approximated by a quadratic polynomial of the form:

$\rho ref = \rho / (1 + A (t - tref) + B (t - tref)^2)$

ρref : density at reference temperature
ρ : measured density
t : measured temperature
tref : reference temperature
A : linear coefficient
B : quadratic coefficient

The corresponding reference temperature, reference density and coefficients can be accessed through this menu.

	Full name	Display name	[HART] name	Page
–	Reference density LRV	[LRV]	[Reference density LRV]	[▶ 421]
–	Reference density URV	[URV]	[Reference density URV]	[▶ 421]
–	Reference density damping	[Damp]	[Reference density damping]	[▶ 421]
–	Reference temperature	[Ref temp]	[Reference temperature]	[▶ 422]
–	Temperature coefficient A	[Temp coeff A]	[Temperature coeff A]	[▶ 422]
–	Temperature coefficient B	[Temp coeff B]	[Temperature coeff B]	[▶ 422]
–	Additional function	[Add func]	[Additional function]	[▶ 422]

Reference density LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Reference density LRV]

Sets the low range value, 0%, for scaling the analog and frequency output during the reference density measurement.

	Value	Description
–	Numeric digits	Default value is 0. Settings must satisfy the following condition: URV ≠ LRV

Reference density URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Reference density URV]

Sets the upper range value, 100%, for scaling the analog and frequency output during reference density measurement.

When Reference density is set to the Channel of AI 1-6: Sets the upper range value, 100%, for scaling the frequency output during reference density measurement.

	Value	Description
–	Numeric digits	Default value is 1.5 kg/l.

Reference density damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Reference density damping]

Sets the damping constant for the reference density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Reference Temperature

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Ref temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Reference temperature]

Sets the reference temperature.

	Value	Description
–	Numeric digits	Temperature at which the reference density is determined. Default value is 25.0 degC.

Temperature coefficient A

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Temp coeff A]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Temperature coeff A]

Sets the primary temperature coefficient for the density of the liquid.

Sets density variation per 1 °C rise in liquid temperature.

	Value	Description
–	Numeric digits	Default value is 0.000e+000.

Temperature coefficient B

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Temp coeff B]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Temperature coeff B]

Sets the secondary temperature coefficient for the density of the liquid.

Sets density variation per 1 °C rise in liquid temperature.

	Value	Description
–	Numeric digits	Default value is 0.000e+000.

Additional function

Menu for configuring the reference density measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Reference density low cut	[Lowcut]	[Reference density lowcut]	[▶ 423]
–	Reference density value select	[Val sel]	[Reference density value select]	[▶ 423]
–	Reference density fixed value	[Fix val]	[Reference density fixed value]	[▶ 423]
–	Reference pressure	[Ref pres]	[Reference pressure]	[▶ 424]
–	Reference density trim select	[Trim sel]	[Reference density trim select]	[▶ 424]
–	Reference density trim offset	[Trim offset]	[Reference density trim offset]	[▶ 424]

–	Reference density trim gain	[Trim gain]	[Reference density trim gain]	[424]

Reference density low cut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density lowcut]

Sets the reference density low cut.

	Value	Description
–	Numeric digits	Value below which the density is set to 0. Settings must satisfy the following condition: Reference density low cut ≤ 0.5kg/l

Reference Density Value Select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Val sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density value select]

Sets whether to use the reference density value or a preset fixed value.

For gas measurements, set this parameter to Fixed value and set Fixed value of reference density to Fixed reference density. If measured value is selected, the formula described in the Calculated Value of *Additional function [403]* is applied.

	Value	Description
–	Measured value [Meas val] [Measured value]	A reference density value calculated from the measured density is used. Temperature coefficient A or Temperature coefficient B must be set to a value other than 0.
–	Fixed value [Fix val] [Fixed value]	Preset fixed reference density value is used. Default value.

Reference density fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Fix val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density fixed value]

Sets a fixed reference density value.

When Reference density fixed value is selected, the volume flow of a gas can be calculated from the mass flow and the temperature/pressure using the ideal gas equation.

Set the reference density fixed value in the reference state of the measuring fluid (reference state is different by normal or standard).

For liquid measurements enter the reference density value if anything prevents the density measurement from being performed.

Please note, *reference density low-cut [423]* affects reference density fixed value. Make sure reference density low-cut value is below reference density fixed value.

	Value	Description
–	Numeric digits	Default value is 1.

Reference Pressure

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Ref pres]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference pressure]

Sets the reference pressure.

For gas measurements, set the value of the reference pressure (absolute pressure).

	Value	Description
–	Numeric digits	Default value is 1.01325 bar.

Reference density trim select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density trim select]

Enables or disables the reference density offset.

	Value	Description
–	Inhibit **[Inhibit]** [Inhibit]	Disables the reference density trim. Default value.
–	Enable **[Enable]** [Enable]	Enables the reference density trim.

Reference density trim offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density trim offset]

Sets the reference density zero offset value.

Only effective if *Reference density trim select* is set to Enable.

	Value	Description
–	Numeric digits	Default value is 0.000e+000.

Reference density trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Ref dens] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Reference density] ▶ [Additional function] ▶ [Reference density trim gain]

Sets the reference density span offset value.

Only effective if *Reference density trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Relative density

Menu for configuring the relative density measurement.

The density of the processed medium at a selected standard temperature that is different from the current process temperature can be calculated from a known temperature dependence.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Relative density indication/ equation select	[Disp ind & equ sel]	[Relative density indication/equation select]	[▸ 425]
–	Relative density LRV	[LRV]	[Relative density LRV]	[▸ 427]
–	Relative density URV	[URV]	[Relative density URV]	[▸ 427]
–	Relative density damping	[Damp]	[Relative density damping]	[▸ 427]
–	Relative density reference select	[Ref sel]	[Relative density reference select]	[▸ 428]
–	Additional function	[Add func]	[Additional function]	[▸ 428]

Relative density indication/ equation select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Disp ind & equ sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Relative density indication/equation select]

Sets the unit of measure for relative density.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Relative density reference select		Reference density value select is set to Measured value and Reference temperature		
Relative density indication/ equation select	**Actual dens**	**Ref dens**	**60 °F**	**15 °C**	**Other temp.**
No Function	x	x	x	x	x
SG 4 °C	x	x	x	x	x
SG 15 °C	x	x	x	x	x
SG 20 °C	x	x	x	x	x
SG 60 °F	x	x	x	x	x
°API	-	x	x	-	-
°Béhv	-	x	x	-	-
°Bélt	-	x	x	-	-

	Relative density reference select		Reference density value select is set to Measured value and Reference temperature		
Relative density indication/ equation select	**Actual dens**	**Ref dens**	**60 °F**	**15 °C**	**Other temp.**
Bh	-	x	-	x	-
Bl	-	x	-	x	-
°Sake	-	x	-	x	-

x : available
- : configuration error

	Value	Description
–	No func [No func] [No function]	Do not measure relative density. Value of relative density is zero.
–	SG 4 °C Specific gravity [SG 4°C] [SG 4 degC]	Specific gravity relative to 4 °C water. Dimensionless Default value.
–	SG 15 °C Specific gravity [SG 15°C] [SG 15 degC]	Specific gravity relative to 15 °C water. Dimensionless
–	SG 20 °C Specific gravity [SG 20°C] [SG 20 degC]	Specific gravity relative to 20 °C water. Dimensionless
–	SG 60 °F Specific gravity [SG 60°F] [SG 60degF]	Specific gravity relative to 60 °F (15.56 °C) water. Dimensionless
–	°API [°API] [degAPI]	°API units are used for quantifying the mass densities of mineral oils. °API = 141.5 / SG (60 / 60 °F) - 131.5 Dimensionless
–	°Baumé heavy [°Bé hv] [degBaum hv]	°Baumé heavy is used for liquids heavier than water. °Bé hv = 145 - 145 / (SG (60 / 60 °F)) Dimensionless.
–	°Baumé light [°Bé lt] [degBaum lt]	°Bé lt = 140 / (SG (60 / 60 °F)) - 130 Dimensionless
–	°Baumé heavy for JIS [Bh] [Bh]	°Baumé heavy for JIS Z 8804:2012 Bh = 144.3 - 144.3 / (SG (15 / 4 °C)) Dimensionless

	Value	Description
–	°Baumé light for JIS [Bl] [Bl]	°Baumé light for JIS Z 8804:2012 Bl = 144.3 / (SG (15 / 4 °C)) - 134.3 Dimensionless
–	°Sake [°Sake] [degSake]	°Sake units are used for quantifying the mass densities of sake. °Sake = 1443 / (SG (15 / 4 °C)) - 1443 Dimensionless

Relative density LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Relative density LRV]

Sets the reference density to the lower range value, 0 %, for the scaling of the analog and frequency output for relative density measurement.

	Value	Description
–	Numeric digits	Default value is 0. Settings must satisfy the following condition: URV ≠ LRV

Relative density URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Relative density URV]

Sets the upper range value, 100 %, for the scaling of the analog and frequency output for relative density measurement.

	Value	Description
–	Numeric digits	Default value is 100. Settings must satisfy the following conditions: URV ≠ LRV

Relative density damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Relative density damping]

Sets the damping constant for the relative density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Relative density reference select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Ref sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Relative density reference select]

Sets Relative Density.

	Value	Description
–	Actual density [Actual dens] [Actual density]	Relative Density is calculated using the Actual density. Default value.
–	Reference density [Ref dens] [Reference density]	Relative Density is calculated using the Reference density.

Additional function

Menu for configuring the relative density measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter Process variables additional parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Relative density trim select	[Trim sel]	[Relative density trim select]	[▸ 428]
–	Relative density trim offset	[Trim offset]	[Relative density trim offset]	[▸ 429]
–	Relative density trim gain	[Trim gain]	[Relative density trim gain]	[▸ 429]

Relative density trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Additional function] ▶ [Relative density trim select]

Enables or disables the relative density offset.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Disables Relative density trim. Default value.
–	Enable [Enable] [Enable]	Enables Relative density trim.

Relative density trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Additional function] ▶ [Relative density trim offset]

Sets the relative density trim offset value.

	Value	Description
–	Numeric digits	Value that is added to the relative density. Default value is 0.000e+000.

Relative density trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Rel dens] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Relative density] ▶ [Additional function] ▶ [Relative density trim gain]

Sets the relative density span offset value.

Only effective if *Relative density trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Corrected volume flow

Menu for configuring the corrected volume flow measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Corrected volume flow unit	[Unit]	[Corrected volume flow unit]	*[▸ 429]*
–	Corrected volume flow LRV	[LRV]	[Corrected volume flow LRV]	*[▸ 430]*
–	Corrected volume flow URV	[URV]	[Corrected volume flow URV]	*[▸ 430]*
–	Corrected volume flow damping	[Damp]	[Corrected volume flow damping]	*[▸ 431]*
–	Additional function	[Add func]	[Additional function]	*[▸ 431]*

Corrected volume flow unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Corrected volume flow unit]

Sets the corrected reference volume flow unit.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	L/s(normal)	Sets the displayed Corrected volume flow unit. Regardless of the unit selected here, the calculation is performed using the reference density fixed value set in *[▶ 423]*. Default value is m^3/h(standard).
–	L/min(normal)	
–	L/h(normal)	
–	L/d(normal)	
–	m^3/s(normal)	
–	m^3/min(normal)	
–	m^3/h(normal)	
–	m^3/d(normal)	
–	L/s(standard)	
–	L/min(standard)	
–	L/h(standard)	
–	L/d(standard)	
–	ft^3/s(standard)	
–	ft^3/min(standard)	
–	ft^3/h(standard)	
–	ft^3/d(standard)	
–	m^3/s(standard)	
–	m^3/min(standard)	
–	m^3/h(standard)	
–	m^3/d(standard)	
–	MMft^3/h	
–	MMft^3/d	
–	User Unit	

Corrected volume flow LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Corrected volume flow LRV]

Sets the lower range value, 0 %, for the scaling of the analog, frequency and pulse outputs for corrected volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 0. When measuring reverse flow, a negative value for Corrected volume flow LRV can be set. Settings must satisfy the following condition: URV ≠ LRV

Corrected volume flow URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Corrected volume flow URV]

Sets the upper range value, 100 %, for the scaling of the analog, frequency and pulse outputs for corrected volume flow measurement.

	Value	Description
–	Numeric digits	Default value is 10. Settings must satisfy the following condition: URV ≠ LRV

Corrected volume flow damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Corrected volume flow damping]

Sets the damping time constant in seconds for analog output and frequency output. Damping time constant is the time it takes to reach 63.2 % of the total change for step variation.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0s

Additional function

Menu for configuring the corrected volume flow measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Corrected volume flow low cut	[Lowcut]	[Corrected volume flow lowcut]	[▷ 431]
–	Corrected volume flow user unit	[User unit]	[Corrected volume flow user unit]	[▷ 432]
–	Corrected volume flow user unit conversion factor	[Conv factor]	[Corrected volume flow user unit conversion factor]	[▷ 432]
–	Corrected volume flow bi-directional mode	[Bi-dir mode]	[Corrected volume flow bi-directional mode]	[▷ 432]
–	Corrected volume flow damping pulse/total	[Damp pls/ttl]	[Corrected volume flow damping pulse/total]	[▷ 432]
–	Corrected volume trim select	[Trim sel]	[Corrected volume trim select]	[▷ 433]
–	Corrected volume flow trim offset	[Trim offset]	[Corrected volume flow trim offset]	[▷ 433]
–	Corrected volume flow trim gain	[Trim gain]	[Corrected volume flow trim gain]	[▷ 433]

Corrected volume flow lowcut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow lowcut]

Sets the corrected volume flow low cut-off.

	Value	Description
–	Numeric digits	

Corrected volume flow user unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow user unit]

Sets the user-defined unit name.

Corrected volume flow user-defined unit is effective when *Corrected volume flow user unit* is set to User-defined unit.

	Value	Description
–	ASCII characters	Maximum length is 8 characters.

Corrected volume flow user unit conversion factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow user unit conversion factor]

Sets the conversion factor for the corrected volume flow user-defined unit.

	Value	Description
–	Numeric digits	Default value is 1.

Corrected volume flow bi-directional mode

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Bi-dir mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow bi-directional mode]

Sets the direction of the corrected volume flow when setting analog output or frequency output.

	Value	Description
–	Not active [Not active] [Not active]	Sets the direction of the corrected volume flow to single direction. Default value.
–	Active [Active] [Active]	Sets the direction of the corrected volume flow to bi-directional. Corrected volume flow URV and Corrected volume flow LRV must be the same sign.

Corrected volume flow damping pulse/total

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Damp pls/ttl]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow damping pulse/total]

Sets the damping time constant in seconds for pulse output and total. Damping time constant is the time it takes to reach 63.2 % of the total change for step variation.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Corrected volume flow trim select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume trim select]

Enables or disables the corrected volume flow offset.

	Value	Description
–	Inhibit **[Inhibit]** [Inhibit]	Disables the corrected volume flow trim. Default value.
–	Enable **[Enable]** [Enable]	Enables the corrected volume flow trim.

Corrected volume flow trim offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow trim offset]

Sets the corrected volume flow zero offset value.

	Value	Description
–	Numeric digits	Default value is 0.000e+000.

Corrected volume flow trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Corr vol] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Corrected volume flow] ▶ [Additional function] ▶ [Corrected volume flow trim gain]

Sets the corrected volume flow span offset value.

Only effective if *Corrected volume flow trim select* is set to Enable.

	Value	Description
–	Numeric digits	Factor for manually adjusting a scaling error by SITRANS FC. Default value is 1.000.

Calorific value

Menu for configuring the calorific value measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Calorific unit	[Unit]	[Calorific unit]	*[▷ 434]*
–	Calorific damping	[Damp]	[Calorific damping]	*[▷ 434]*

–	Calorific fixed value	[Fix val]	[Calorific fixed value]	[▸ 434]
–	Additional function	[Add func]	[Additional function]	[▸ 435]

Calorific unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Calorific unit]

Sets the calorific unit.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	MJ/kg	Sets the displayed Calorific unit. Default value is MJ/kg.
–	Btu/lb	
–	MJ/m³	
–	Btu/gal	
–	MJ/Nm³	
–	Btu/Sft³	

Calorific damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Calorific damping]

Sets the damping time constant in seconds for analog output and frequency output. Damping time constant is the time it takes to reach 63.2 % of the total change for step variation.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Calorific fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Fix val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Calorific fixed value]

Sets a fixed calorific value.

It is disabled if the device is equipped with a function for analog input to a remote terminal and Analog input select has been set to Calorific value.

	Value	Description
–	Numeric digits	Default value is 0.

Additional function

Menu for configuring the calorific value measurement in detail. Access to this menu and the parameters below is available if Apply has been set in the parameter *Process variables additional parameters*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Analog input calorific unit	[AI unit]	[Analog input calorific unit]	[▸ 435]
–	Analog input calorific LRV	[AI LRV]	[Analog input calorific LRV]	[▸ 435]
–	Analog input calorific URV	[AI URV]	[Analog input calorific URV]	[▸ 436]

Analog input calorific unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Add func] ▶ [AI unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Additional function] ▶ [Analog input calorific unit]

Analog input calorific unit selects the unit of the displayed calorific for the analog input signal.

It is disabled if the device is equipped with a function for analog input to a remote terminal, and Analog input select has been set to Calorific value.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	MJ/kg	Sets the displayed Analog input calorific unit. Default value is MJ/kg.
–	MJ/m³	
–	MJ/m³	
–	Btu/lb	
–	Btu/gal	
–	Btu/Sft³	

Analog input calorific LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Add func] ▶ [AI LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Additional function] ▶ [Analog input calorific LRV]

Analog input calorific LRV sets the calorific value to the equivalent of the 4 mA analog input signal.

It is disabled if the device is equipped with a function for analog input to a remote terminal and Analog input select has been set to Calorific value.

	Value	Description
–	Numeric digits	Default value is 0. Settings must satisfy the following conditions: URV ≠ LRV

Analog input calorific URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Cal] ▶ [Add func] ▶ [AI URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Calorific value] ▶ [Additional function] ▶ [Analog input calorific URV]

Analog input calorific URV sets the calorific value to the equivalent of the 20 mA analog input signal.

It is disabled if the device is equipped with a function for analog input to a remote terminal and Analog input select has been set to Calorific value.

	Value	Description
–	Numeric digits	Default value is 50. Settings must satisfy the following conditions: URV ≠ LRV

Velocity

Menu for configuring the Velocity measurement of fluid.

Velocity unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Vel] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Velocity] ▶ [Velocity unit]

Sets the unit for velocity.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▶ 809]*.

	Value	Description
–	m/s	Default value is m/s.
–	ft/s	

Concentration

Menu for configuring the Concentration measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Selected concentration set	[Set]	[Selected concentration set]	*[▶ 437]*
Ⓕ	Select concentration set manually	[Set man]	[Select concentration set manual]	*[▶ 437]*
Ⓕ	Select concentration set status input open	[Set sts in open]	[Select concentration set status input open]	*[▶ 438]*

Ⓕ	Select concentration set status input short	[Set sts in short]	[Select concentration set status input short]	[438]
Ⓕ	Concentration measurement unit set 1 – 4	[Unit set1 - 4]	[Concentration measurement unit set 1 - 4]	[439]
Ⓕ	Concentration measurement LRV set 1 – 4	[LRV set1 - 4]	[Concentration measurement LRV set 1 - 4]	[440]
Ⓕ	Concentration measurement URV set 1 – 4	[URV set1 - 4]	[Concentration measurement URV set 1 - 4]	[441]
Ⓕ	Concentration damping	[Damp]	[Concentration damping]	[441]
Ⓕ	Additional function	[Add func]	[Additional function]	[443]
Ⓕ	Standard concentration set 1 – 4	[Std conc set1 - 4]	[Standard concentration set 1 - 4]	[439]
Ⓗ Ⓕ	Advanced concentration set 1 – 4	–	[Advanced concentration set 1 - 4]	[444]
Ⓕ	NOC	[NOC]	[NOC]	[454]

Selected concentration set

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Set]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Selected concentration set]

Shows the selected configuration set to be used for concentration measurement.

	Value	Description
Ⓕ	Set1 [Set1] [Set1]	4 configuration sets can be defined on the device and one of them can be selected for concentration measurement.
Ⓕ	Set2 [Set2] [Set 2]	
Ⓕ	Set3 [Set3] [Set3]	
Ⓕ	Set4 [Set4] [Set4]	

Select concentration set manual

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Set man]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Select concentration set manual]

Sets the concentration configuration set to be used when the value of the parameter *Status input function* **is not** Concentration set select.

	Value	Description
Ⓕ	Set1 [Set1] [Set1]	Default value is Set1.
Ⓕ	Set2 [Set2] [Set2]	
Ⓕ	Set3 [Set3] [Set3]	
Ⓕ	Set4 [Set4] [Set4]	

Select concentration set status input open

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Set sts in open]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Select concentration set status input open]

Sets the concentration configuration set to be used when the value of the parameter Status input function is Concentration set select and the signal status of Status input is open.

	Value	Description
Ⓕ	Set1 [Set1] [Set1]	Default value is Set1.
Ⓕ	Set2 [Set2] [Set2]	
Ⓕ	Set3 [Set3] [Set3]	
Ⓕ	Set4 [Set4] [Set4]	

Select concentration set status input short

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Set sts in short]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Select concentration set status input short]

Sets the concentration configuration set to be used when the value of the parameter *Status input function* is Concentration set select and the signal status of Status input is short.

	Value	Description
Ⓕ	Set1 [Set1] [Set1]	Default value is Set2.
Ⓕ	Set2 [Set2] [Set2]	
Ⓕ	Set3 [Set3] [Set3]	
Ⓕ	Set4 [Set4] [Set4]	

Standard concentration set 1 – 4

Set of menus for configuring Standard concentration set 1 – 4.

One of 4 sets can be selected and used for concentration measurement. The set to be used is selected manually or by Status input.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Concentration reference temperature set 1 – 4	[Ref temp]	[Concentration reference temperature set 1 - 4]	[▷ 441]
Ⓕ	Concentration reference density carrier set 1 – 4	[Ref dens car]	[Concentration reference density carrier set 1 - 4]	[▷ 441]
Ⓕ	Concentration temperature coefficient A carrier set 1 – 4	[Temp A car]	[Concentration temperature coeff A carrier set 1 - 4]	[▷ 442]
Ⓕ	Concentration temperature coefficient B carrier set 1 – 4	[Temp B car]	[Concentration temperature coeff B carrier set 1 - 4]	[▷ 442]
Ⓕ	Concentration reference density product set 1 – 4	[Ref dens pro]	[Concentration reference density product set 1 - 4]	[▷ 442]
Ⓕ	Concentration temperature coefficient A product set 1 – 4	[Temp A pro]	[Concentration temperature coeff A product set 1 - 4]	[▷ 442]
Ⓕ	Concentration temperature coefficient B product set 1 – 4	[Temp B pro]	[Concentration temperature coeff B product set 1 - 4]	[▷ 443]

Concentration measurement unit set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 - 4] ▶ [Unit set1 - 4]

Ⓗ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Concentration measurement unit set 1 - 4]

Sets the unit for the concentration measurement Set 1 – 4.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▶ 809]*.

	Value	Description
Ⓕ	degBrix [°Brix] [degBrix]	Default value is Wt %.
Ⓕ	Wt % sol [Wt% sol] [% sol-wt]	
Ⓕ	Vol % sol [Vol% sol] [% sol-vol]	
Ⓕ	Wt % [Wt%] [%]	
Ⓕ	Vol % [Vol %] [Vol %]	
Ⓕ	Wt % user unit [User unit(Wt%)] [Wt % User unit]	
Ⓕ	Vol % user unit [User unit(Vol%)] [Vol % User unit]	

Concentration measurement LRV set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [LRV set1 – 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Concentration measurement LRV set 1 – 4]

Sets the lower range value, 0%, for scaling the analog and frequency output during Concentration measurement set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 110.0. Default value is 0.0. Settings must satisfy the following condition: URV ≠ LRV

Concentration measurement URV set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [URV set1 – 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Concentration measurement URV set 1 – 4]

Sets the upper range value, 100%, for scaling the analog and frequency output during Concentration measurement set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 110.0. Default value is 100.0. Settings must satisfy the following condition: URV ≠ LRV

Concentration FTime (damping)

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶[Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Concentration damping]

Sets the damping constant for concentration measurement. The value is the time for the process value to become 63.2 % of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Concentration reference temperature set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Ref temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration reference temperature set 1 – 4]

Sets the temperature when the reference density of both components of the mixture is defined for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 25.0.

Concentration reference density carrier set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Ref dens car]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration reference density carrier set 1 – 4]

Sets the reference density of the carrier that is defined at the reference temperature for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.997.

Concentration temperature coefficient A carrier set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Temp A car]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration temperature coeff A carrier set 1 – 4]

Sets the linear temperature coefficient of density of the carrier for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is -2.610e^{-04} .

Concentration temperature coefficient B carrier set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Temp B car]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration temperature coeff B carrier set 1 – 4]

Sets the quadratic temperature coefficient of density of the carrier for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is -3.600e^{-06}.

Concentration reference density product set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Ref dens pro]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration reference density product set 1 – 4]

Sets the reference density of the product that is defined at the reference temperature for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Concentration temperature coefficient A product set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Temp A pro]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 – 4] ▶ [Concentration temperature coeff A product set 1 – 4]

Sets the linear temperature coefficient of density of the product for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Concentration temperature coefficient B product set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 - 4] ▶ [Temp B pro]

Ⓗ [Device root menu] ▶ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Standard concentration set 1 - 4] ▶ [Concentration temperature coeff B product set 1 - 4]

Sets the quadratic temperature coefficient of density of the product for concentration set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Additional function

Menu for parameters to configure Concentration measurement in detail. The menu is only available when Process variables additional parameters has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Concentration name set 1 – 4	[Name set1 - 4]	[Concentration name set 1 - 4]	[▷ 443]
Ⓕ	Concentration measurement user unit set 1 – 4	[User unit set1 - 4]	[Concentration measurement user unit set 1 - 4]	[▷ 443]
Ⓕ	Concentration trim select	[Trim sel]	[Concentration trim select]	[▷ 444]
Ⓕ	Concentration trim offset	[Trim offset]	[Concentration trim offset]	[▷ 444]
Ⓕ	Concentration trim gain	[Trim gain]	[Concentration trim gain]	[▷ 444]

Concentration name set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 - 4] ▶ [Add func] ▶ [Name set1 - 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Additional function] ▶ [Concentration name set 1 - 4]

Sets a name to help identify concentration set 1 – 4.

	Value	Description
Ⓕ	Characters	Maximum length is 16 characters. Default value is Set 1 – 4.

Concentration measurement user unit set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 - 4] ▶ [Add func] ▶ [User unit set1 - 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Additional function] ▶ [Concentration measurement user unit set 1 - 4]

Sets the user-defined unit for concentration measurement set 1 – 4.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Concentration trim select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Additional function] ▶ [Concentration trim select]

Enables or disables the trim function for concentration measurement.

	Value	Description
Ⓕ	Inhibit **[Inhibit]** [Inhibit]	Disables the concentration trim. Default value.
Ⓕ	Enable **[Enable]** [Enable]	Enables the concentration trim.

Concentration trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Additional function] ▶ [Concentration trim gain]

Sets the gain for trimming the concentration measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 1.000.

Concentration trim offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Conc] ▶ [Std conc set1 – 4] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Additional function] ▶ [Concentration trim offset]

Sets the offset for trimming the concentration measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Advanced concentration set 1 – 4

Set of menus for configuring the Advanced concentration set 1 – 4.

One of 4 sets can be selected and used for concentration measurement. The set to be used is selected manually or by Status input.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ Ⓕ	Concentration temperature set 1 – 4 number	–	[Concentration temperature set 1 – 4 number]	*[▸ 446]*

Ⓗ Ⓕ	Concentration temperature 1 set 1 – 4	–	[Concentration temperature 1 set 1 - 4]	[▷ 447]
Ⓗ Ⓕ	Concentration A 1 set 1 – 4	–	[Concentration A 1 set 1 - 4]	[▷ 447]
Ⓗ Ⓕ	Concentration B 1 set 1 – 4	–	[Concentration B 1 set 1 - 4]	[▷ 447]
Ⓗ Ⓕ	Concentration C 1 set 1 – 4	–	[Concentration C 1 set 1 - 4]	[▷ 447]
Ⓗ Ⓕ	Concentration D 1 set 1 – 4	–	[Concentration D 1 set 1 - 4]	[▷ 447]
Ⓗ Ⓕ	Concentration temperature 2 set 1 – 4	–	[Concentration temperature 2 set 1 - 4]	[▷ 448]
Ⓗ Ⓕ	Concentration A 2 set 1 – 4	–	[Concentration A 2 set 1 - 4]	[▷ 448]
Ⓗ Ⓕ	Concentration B 2 set 1 – 4	–	[Concentration B 2 set 1 - 4]	[▷ 448]
Ⓗ Ⓕ	Concentration C 2 set 1 – 4	–	[Concentration C 2 set 1 - 4]	[▷ 448]
Ⓗ Ⓕ	Concentration D 2 set 1 – 4	–	[Concentration D 2 set 1 - 4]	[▷ 448]
Ⓗ Ⓕ	Concentration temperature 3 set 1 – 4	–	[Concentration temperature 3 set 1 - 4]	[▷ 449]
Ⓗ Ⓕ	Concentration A 3 set 1 – 4	–	[Concentration A 3 set 1 - 4]	[▷ 449]
Ⓗ Ⓕ	Concentration B 3 set 1 – 4	–	[Concentration B 3 set 1 - 4]	[▷ 449]
Ⓗ Ⓕ	Concentration C 3 set 1 – 4	–	[Concentration C 3 set 1 - 4]	[▷ 449]
Ⓗ Ⓕ	Concentration D 3 set 1 – 4	–	[Concentration D 3 set 1 - 4]	[▷ 449]
Ⓗ Ⓕ	Concentration temperature 4 set 1 – 4	–	[Concentration temperature 4 set 1 - 4]	[▷ 450]
Ⓗ Ⓕ	Concentration A 4 set 1 – 4	–	[Concentration A 4 set 1 - 4]	[▷ 450]
Ⓗ Ⓕ	Concentration B 4 set 1 – 4	–	[Concentration B 4 set 1 - 4]	[▷ 450]
Ⓗ Ⓕ	Concentration C 4 set 1 – 4	–	[Concentration C 4 set 1 - 4]	[▷ 450]
Ⓗ Ⓕ	Concentration D 4 set 1 – 4	–	[Concentration D 4 set 1 - 4]	[▷ 450]
Ⓗ Ⓕ	Concentration temperature 5 set 1 – 4	–	[Concentration temperature 5 set 1 - 4]	[▷ 451]
Ⓗ Ⓕ	Concentration A 5 set 1 – 4	–	[Concentration A 5 set 1 - 4]	[▷ 451]

Ⓗ Ⓕ	Concentration B 5 set 1 – 4	–	[Concentration B 5 set 1 - 4]	[▸ 451]
Ⓗ Ⓕ	Concentration C 5 set 1 – 4	–	[Concentration C 5 set 1 - 4]	[▸ 451]
Ⓗ Ⓕ	Concentration D 5 set 1 – 4	–	[Concentration D 5 set 1 - 4]	[▸ 451]
Ⓗ Ⓕ	Concentration temperature 6 set 1 – 4	–	[Concentration temperature 6 set 1 - 4]	[▸ 452]
Ⓗ Ⓕ	Concentration A 6 set 1 – 4	–	[Concentration A 6 set 1 - 4]	[▸ 452]
Ⓗ Ⓕ	Concentration B 6 set 1 – 4	–	[Concentration B 6 set 1 - 4]	[▸ 452]
Ⓗ Ⓕ	Concentration C 6 set 1 – 4	–	[Concentration C 6 set 1 - 4]	[▸ 452]
Ⓗ Ⓕ	Concentration D 6 set 1 – 4	–	[Concentration D 6 set 1 - 4]	[▸ 452]
Ⓗ Ⓕ	Concentration temperature 7 set 1 – 4	–	[Concentration temperature 7 set 1 - 4]	[▸ 453]
Ⓗ Ⓕ	Concentration A 7 set 1 – 4	–	[Concentration A 7 set 1 - 4]	[▸ 453]
Ⓗ Ⓕ	Concentration B 7 set 1 – 4	–	[Concentration B 7 set 1 - 4]	[▸ 453]
Ⓗ Ⓕ	Concentration C 7 set 1 – 4	–	[Concentration C 7 set 1 - 4]	[▸ 453]
Ⓗ Ⓕ	Concentration D 7 set 1 – 4	–	[Concentration D 7 set 1 - 4]	[▸ 453]
Ⓗ Ⓕ	Concentration temperature 8 set 1 – 4	–	[Concentration temperature 8 set 1 - 4]	[▸ 454]
Ⓗ Ⓕ	Concentration A 8 set 1 – 4	–	[Concentration A 8 set 1 - 4]	[▸ 454]
Ⓗ Ⓕ	Concentration B 8 set 1 – 4	–	[Concentration B 8 set 1 - 4]	[▸ 454]
Ⓗ Ⓕ	Concentration C 8 set 1 – 4	–	[Concentration C 8 set 1 - 4]	[▸ 454]
Ⓗ Ⓕ	Concentration D 8 set 1 – 4	–	[Concentration D 8 set 1 - 4]	[▸ 454]

Concentration temperature set 1 – 4 number

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature set 1 - 4 number]

Sets the number of the set of temperatures for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Setting range: 2 – 8. Default value is 8.

Concentration temperature 1 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 1 set 1 - 4]

Sets the temperature of coefficient set 1 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 1 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 1 set 1 - 4]

Sets coefficient A of coefficient set 1 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 1 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 1 set 1 - 4]

Sets coefficient B of coefficient set 1 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 1 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 1 set 1 - 4]

Sets coefficient C of coefficient set 1 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 1 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 1 set 1 - 4]

Sets coefficient D of coefficient set 1 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 2 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 2 set 1 - 4]

Sets the temperature of coefficient set 2 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 2 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 2 set 1 - 4]

Sets coefficient A of coefficient set 2 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 2 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 2 set 1 - 4]

Sets coefficient B of coefficient set 2 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 2 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 2 set 1 - 4]

Sets coefficient C of coefficient set 2 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 2 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 2 set 1 - 4]

Sets coefficient D of coefficient set 2 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 3 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 3 set 1 - 4]

Sets the temperature of coefficient set 3 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 3 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 3 set 1 - 4]

Sets coefficient A of coefficient set 3 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 3 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 3 set 1 - 4]

Sets coefficient B of coefficient set 3 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 3 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 3 set 1 - 4]

Sets coefficient C of coefficient set 3 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 3 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 3 set 1 - 4]

Sets coefficient D of coefficient set 3 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 4 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 4 set 1 - 4]

Sets the temperature of coefficient set 4 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 4 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 4 set 1 - 4]

Sets coefficient A of coefficient set 4 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 4 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 4 set 1 - 4]

Sets coefficient B of coefficient set 4 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 4 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 4 set 1 - 4]

Sets coefficient C of coefficient set 4 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 4 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 4 set 1 - 4]

Sets coefficient D of coefficient set 4 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 5 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 5 set 1 - 4]

Sets the temperature of coefficient set 5 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 5 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 5 set 1 - 4]

Sets coefficient A of coefficient set 5 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 5 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 5 set 1 - 4]

Sets coefficient B of coefficient set 5 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.0.

Concentration C 5 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 5 set 1 - 4]

Sets coefficient C of coefficient set 5 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 5 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 5 set 1 - 4]

Sets coefficient D of coefficient set 5 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 6 set 1 – 4

Ⓗ [Device root menu] ▶ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 6 set 1 - 4]

Sets the temperature of coefficient set 6 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 6 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 6 set 1 - 4]

Sets coefficient A of coefficient set 6 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 6 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 6 set 1 - 4]

Sets coefficient B of coefficient set 6 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 6 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 6 set 1 - 4]

Sets coefficient C of coefficient set 6 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 6 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 6 set 1 - 4]

Sets coefficient D of coefficient set 6 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 7 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration temperature 7 set 1 - 4]

Sets the temperature of coefficient set 7 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration A 7 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration A 7 set 1 - 4]

Sets coefficient A of coefficient set 7 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 7 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration B 7 set 1 - 4]

Sets coefficient B of coefficient set 7 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 7 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration C 7 set 1 - 4]

Sets coefficient C of coefficient set 7 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 7 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 - 4] ▶ [Concentration D 7 set 1 - 4]

Sets coefficient D of coefficient set 7 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration temperature 8 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 – 4] ▶ [Concentration temperature 8 set 1 – 4]

Sets the temperature of coefficient set 8 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.0.

Concentration A 8 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 – 4] ▶ [Concentration A 8 set 1 – 4]

Sets coefficient A of coefficient set 8 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration B 8 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 – 4] ▶ [Concentration B 8 set 1 – 4]

Sets coefficient B of coefficient set 8 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration C 8 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 – 4] ▶ [Concentration C 8 set 1 – 4]

Sets coefficient C of coefficient set 8 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

Concentration D 8 set 1 – 4

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [Advanced concentration set 1 – 4] ▶ [Concentration D 8 set 1 – 4]

Sets coefficient D of coefficient set 8 for concentration set 1 – 4.

	Value	Description
Ⓗ Ⓕ	Numeric digits	Default value is 0.

NOC

Set of menus for configuring the net NOC and GVF (Gas Void Fraction).

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Oil density	[Oil dens]	[Oil density]	[▷ 455]
Ⓕ	Water density	[Water dens]	[Water density]	[▷ 455]
Ⓕ	Mass concentration value	[Mass conc]	[Mass concentration value]	[▷ 455]
Ⓕ	Volume concentration value	[Vol conc]	[Volume concentration value]	[▷ 456]
Ⓕ	Water cut value	[Water cut]	[Water cut value]	[▷ 456]
Ⓕ	Gas void fraction	[GVF]	[Gas void fraction]	[▷ 456]
Ⓕ	Current thermal expansion factor	–	[Current thermal expansion factor]	[▷ 456]
Ⓕ	Current K0 coefficient	–	[Current K0 coefficient]	[▷ 456]
Ⓕ	Current K1 coefficient	–	[Current K1 coefficient]	[▷ 456]
Ⓕ	Current K2 coefficient	–	[Current K2 coefficient]	[▷ 457]
Ⓕ	Concentration select	[Conc sel]	[Concentration select]	[▷ 457]
Ⓕ	GVF select	[GVF sel]	[GVF select]	
Ⓕ	NOC pressure fixed value	[NOC pres fix]	[NOC pressure fixed value]	[▷ 457]
Ⓕ	NOC density hysteresis	[NOC dens hys]	[NOC density hysteresis]	[▷ 457]
Ⓕ	GVF density hysteresis	[GVF dens hys]	[GVF density hysteresis]	[▷ 458]

Oil density

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Oil dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Oil density]

Shows the density of oil at alternate conditions.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [kg/L].

Water density

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Water dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Water density]

Shows the density of water at alternate conditions.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [kg/L].

Mass concentration value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Mass conc]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Mass concentration value]

Shows the concentration value of the mass flow.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0%

Volume concentration value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Vol conc]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Volume concentration value]

Shows the concentration value of the volume flow.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0%

Water cut value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Water cut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Water cut value]

Shows the water cut value.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0%

Gas void fraction

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [GVF]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Gas void fraction]

Shows the gas void fraction value. This value is available only for option S14.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0%

Current thermal expansion factor

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Current thermal expansion factor]

Shows the current thermal expansion factor which is used for oil density calculation.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Current K0 coefficient

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Current K0 coefficient]

Shows the current K0 coefficient which is used for oil density calculation.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Current K1 coefficient

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Current K1 coefficient]

Shows the current K1 coefficient which is used for oil density calculation.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Current K2 coefficient

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Current K2 coefficient]

Shows the current K2 coefficient which is used for oil density calculation.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Concentration select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Conc sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [Concentration select]

Selects the output value for Concentration value and relavant Analog output/Frequency if assigned.

	Value	Description
Ⓕ	Concentration(mass)	Concentration configuration error alarm is set to On when Concentration unit except for degBrix, WT-% sol, WT-% or WT-% User unit is selected.
Ⓕ	Concentration(volume)	Concentration configuration error alarm is set to On when Concentration unit except for Vol-% sol, Vol-% or Vol-% User unit is selected.
Ⓕ	Water cut	Concentration configuration error alarm is set to On when Concentration unit except for Vol-% sol, Vol-% or Vol-% User unit is selected.

NOC pressure fixed value

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [NOC pres fix]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC pressure fixed value]

Sets the pressure value for NOC. When the value of Analog input selection is not “Pressure NOC” and “Pressure compensation and NOC”, this value is valid for the pressure for NOC calculation.

When the above selection is others or not available, a value on this parameter is used as pressure value for NOC calculation.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [bar].

NOC density hysteresis

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [NOC dens hys]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC density hysteresis]

Sets the NOC hysteresis value for threshold density.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [kg/L].

GVF density hysteresis

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [GVF dens hys]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [GVF density hysteresis]

Sets the GVF hysteresis value for threshold density.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [kg/L].

NOC concentration set 1 – 4

Set of menus for configuring the oil/water density for NOC for each set.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Reference oil density set 1 – 4	[Ref oil dens]	[Reference oil density set 1 - 4]	[▸ 458]
Ⓕ	Reference water density set 1 – 4	[Ref water dens]	[Reference water density set 1 - 4]	[▸ 459]
Ⓕ	Oil density calculator set 1 – 4	[Oil dens calc]	[Oil density calculator set 1 - 4]	[▸ 459]
Ⓕ	Thermal expansion factor set 1 – 4	[Thermal factor]	[Thermal expansion factor set 1 - 4]	[▸ 460]
Ⓕ	K0 coefficient set 1 – 4	[K0]	[K0 coefficient set 1 - 4]	[▸ 460]
Ⓕ	K1 coefficient set 1 – 4	[K1]	[K1 coefficient set 1 - 4]	[▸ 460]
Ⓕ	K2 coefficient set 1 – 4	[K2]	[K2 coefficient set 1 - 4]	[▸ 460]
Ⓕ	Water density calculator set 1 – 4	[Water dens calc]	[Water density calculator set 1 - 4]	[▸ 460]
Ⓕ	Water density UNESCO1980 set 1 – 4	[Water dens UNESCO]	[Water density UNESCO1980 set 1 - 4]	[▸ 461]
Ⓕ	Reference temperature set 1 – 4	[Ref temp]	[Reference temperature set 1 - 4]	[▸ 461]
Ⓕ	Salinity ppt set 1 – 4	[Salinity]	[Salinity ppt set 1 - 4]	[▸ 462]
Ⓕ	Salinity fixed value set 1 – 4	[Salinity fix]	[Salinity fixed value set 1 - 4]	[▸ 462]

Reference oil density set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 - 4] ▶ [Ref oil dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 - 4] ▶ [Reference oil density set 1 - 4]

Sets the density of the oil determined at the reference temperature. Density at base conditions (60°F and 0 psig) ρ60.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.8 [kg/L].

Reference water density set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Ref water dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Reference water density set 1 – 4]

Sets the density of the produced water determined at the reference temperature. Density of produced water at 15 (°C) or 60 (°F).

	Value	Description
Ⓕ	Numeric digits	Default value is 1.0 [kg/L].

Oil density calculator set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Oil dens calc]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Oil density calculator set 1 – 4]

Selects how API calculation is performed. Calculation method for Thermal expansion factor set 1 – 4 is decided.

	Value	Description
Ⓕ	Off [Off] [Off]	No correction. Oil density is calculated as Reference oil density.
Ⓕ	Crude oil [Crude oil] [Crude oil]	The temperature coefficient α60 is calculated based on API standard. as shown in equations. A complete calculation is performed when entering a new reference density for the oil in Reference oil density. The factors FP and CPL are recalculated every time the pressure changes. The factor CPL is calculated each time the temperature changes.
Ⓕ	Products [Products] [Products]	
Ⓕ	Lubricating oil [Lubricating oil] [Lubricating oil]	
Ⓕ	Fixed thermal exp factor [Thermal factor] [Fixed thermal exp factor]	A temperature coefficient α60 has to be specified in Thermal expansion factor set 1 – 4. This value is used for NOC calculations.
Ⓕ	Other [Other] [Other]	Same as Crude Oil except using user defined K0, K1, and K2.

Thermal expansion factor set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Thermal factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Thermal expansion factor set 1 – 4]

Sets the Thermal expansion factor which is used for oil density calculation for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

K0 coefficient set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [K0]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [K0 coefficient set 1 – 4]

Sets the current K0 coefficient which is used for oil density calculation for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

K1 coefficient set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [K1]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [K1 coefficient set 1 – 4]

Sets the K1 coefficient which is used for oil density calculation for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

K2 coefficient set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [K2]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [K2 coefficient set 1 – 4]

Sets the K2 coefficient which is used for oil density calculation each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0.

Water density calculator set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Water dens calc]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Water density calculator set 1 – 4]

Selects the calculation method for water density.

	Value	Description
Ⓕ	SMOW [SMOW] [SMOW]	Standard Mean Ocean Water (SMOW)
Ⓕ	UNESCO1980 [UNESCO1980] [UNESCO1980]	Density by UNESCO1980
Ⓕ	Fresh water [Fresh water] [Fresh water]	Fresh Water Density by API MPMS 11.4
Ⓕ	Produced water [Produced water] [Produced water]	Produced Water Density by API MPMS 20.1 Appendix A.2
Ⓕ	Brine water [Brine water] [Brine water]	Brine water density by El-Dessouky, Ettouy (2002)
Ⓕ	STD formula [Std formula] [STD formula]	Same as Standard concentration formula

Water density UNESCO1980 set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Water dens UNESCO]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Water density UNESCO1980 set 1 – 4]

Selects the method for water density correction. This value is available only for UNESCO 1980 in Water density calculator set 1 – 4

	Value	Description
Ⓕ	SMOW [SMOW] [SMOW]	Standard Mean Ocean Water (SMOW)
Ⓕ	UNESCO1980 [UNESCO1980] [UNESCO1980]	Density by UNESCO1980

Reference temperature set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Ref temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Reference temperature set 1 – 4]

Sets the Reference temperature for water density calculation for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 15.0 [degC].

Salinity ppt set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Salinity]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Salinity ppt set 1 – 4]

Sets the Salinity of brine water. This value is used by Brine water density by El-Dessouky, Ettouy (2002) for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0 [ppt (parts par thousands)].

Salinity fixed value set 1 – 4

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [NOC] ▶ [Set1 – 4] ▶ [Salinity fix]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Concentration] ▶ [NOC] ▶ [NOC concentration set 1 – 4] ▶ [Salinity fixed value set 1 – 4]

This parameter is available when Water density calculator is Produced water. Water density is calculated by calculating Reference density water from set value in this parameter when Reference density water is set to 0 for each set 1 – 4.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0%

Net mass flow 1 – 2

Set of menus for configuring net mass flow measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net mass flow 1 – 2 unit	[Unit]	[Net mass flow 1 – 2 unit]	*[▸ 462]*
Ⓕ	Net mass flow 1 – 2 LRV	[LRV]	[Net mass flow 1 – 2 LRV]	*[▸ 463]*
Ⓕ	Net mass flow 1 – 2 URV	[URV]	[Net mass flow 1 – 2 URV]	*[▸ 463]*
Ⓕ	Net mass flow 1 – 2 damping	[Damp]	[Net mass flow 1 – 2 damping]	*[▸ 464]*
Ⓕ	Additional function	[Add func]	[Additional function]	*[▸ 464]*

Net mass flow 1 – 2 unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 – 2] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 – 2] ▶ [Net mass flow 1 – 2 unit]

Sets the unit for net mass flow 1 – 2.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓕ	g/s	Sets the displayed Net mass flow 1 – 2 unit. Default value is t/h.
Ⓕ	g/min	
Ⓕ	g/h	
Ⓕ	kg/s	
Ⓕ	kg/min	
Ⓕ	kg/h	
Ⓕ	kg/d	
Ⓕ	t/min	
Ⓕ	t/h	
Ⓕ	t/d	
Ⓕ	ton(US)/min	
Ⓕ	ton(US)/h	
Ⓕ	ton(US)/d	
Ⓕ	ton(UK)/min	
Ⓕ	ton(UK)/h	
Ⓕ	ton(UK)/d	
Ⓕ	lb/s	
Ⓕ	lb/min	
Ⓕ	lb/h	
Ⓕ	lb/d	
Ⓕ	User unit	

Net mass flow 1 – 2 LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Net mass flow 1 - 2 LRV]

Sets the lower range value, 0 %, for the scaling of the analog, frequency and pulse outputs for net mass flow 1 – 2 measurement.

	Value	Description
–	Numeric digits	Default value is 0.0. Settings must satisfy the following conditions: URV ≠ LRV LRV ≤ Q_{max} LRV ≥ -Q_{max} For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Net mass flow 1 – 2 URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Net mass flow 1 - 2 URV]

Sets the upper range value, 100 %, for the scaling of the analog, frequency and pulse outputs for net mass flow 1 – 2 measurement.

	Value	Description
–	Numeric digits	Default value is 10.0. Settings must satisfy the following conditions: URV ≤ Q_{max} URV ≥ -Q_{max} URV ≠ LRV For the Q_{max} value refer to the Operating Instructions (OI) of each product.

Net mass flow 1 – 2 damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Net mass flow 1 - 2 damping]

Sets the damping constant for the net mass flow 1 – 2 measurement.

The value is time for the value to become 63.2% of total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Additional function

Menu for configuring the Net mass flow measurement in detail. The menu is only available when Process variables additional parameters has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net mass flow 1 – 2 low cut	[Lowcut]	[Net mass flow 1 - 2 lowcut]	[▸ 464]
Ⓕ	Net mass flow 1 – 2 user unit	[User unit]	[Net mass flow 1 - 2 user unit]	[▸ 465]
Ⓕ	Net mass flow 1 – 2 user unit conversion factor	[Conv factor]	[Net mass flow 1 - 2 user unit conversion factor]	[▸ 465]
Ⓕ	Net mass flow 1 – 2 bi-directional mode	[Bi-dir mode]	[Net mass flow 1 - 2 bi-directional mode]	[▸ 465]
Ⓕ	Net mass flow 1 – 2 damping pulse/total	[Damp pls/ttl]	[Net mass flow 1 - 2 damping pulse/total]	[▸ 466]
Ⓕ	Net mass flow 1 – 2 trim select	[Trim sel]	[Net mass flow 1 - 2 trim select]	[▸ 466]
Ⓕ	Net mass flow 1 – 2 trim offset	[Trim offset]	[Net mass flow 1 - 2 trim offset]	[▸ 466]
Ⓕ	Net mass flow 1 – 2 trim gain	[Trim gain]	[Net mass flow 1 - 2 trim gain]	[▸ 466]

Net mass flow 1 – 2 lowcut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Additional function] ▶ [Net mass flow 1 - 2 lowcut]

Sets a value for the low cut-off of net mass flow 1 – 2.

	Value	Description
Ⓕ	Numeric digits	Settings must satisfy the following condition: |Net mass flow 1 – 2 low cut| ≤ Q_{nom} * 0.2 For the value of Q_{max}, refer to the Operating Instructions (OI) of the particular product.

Net Mass Flow 1 – 2 User Unit

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net mass1 – 2] ▶ [Add func] ▶ [User unit]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 – 2] ▶ [Additional function] ▶ [Net mass flow 1 – 2 user unit]

Sets the user-defined unit for net mass flow 1 – 2.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Net Mass Flow 1 – 2 User Unit Conversion Factor

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net mass1 – 2] ▶ [Add func] ▶ [Conv factor]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 – 2] ▶ [Additional function] ▶ [Net mass flow 1 – 2 user unit conversion factor]

Sets the conversion factor for the user-defined unit.

	Value	Description
Ⓕ	Numeric digits	Reference unit is kg/h. Default value is 1.0. Measured value at user-defined unit = measured net mass flow value at kg/h * conversion factor from kg/h.

Net mass flow 1 – 2 bi-directional mode

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net mass1 – 2] ▶ [Add func] ▶ [Bi-dir mode]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 – 2] ▶ [Additional function] ▶ [Net mass flow 1 – 2 bi-directional mode]

Sets whether bi-directional mode on analog output and pulse output is used for net mass flow 1 – 2.

	Value	Description
Ⓕ	Not active **[Not active]** [Not active]	Bi-directional mode is not active. Analog and pulse signals are generated when flow direction is either forward or reverse. Default value.
Ⓕ	Active **[Active]** [Active]	Bi-directional mode is active. Analog and pulse signals are generated for both forward flow and reverse flow. Net mass flow 1 – 2 URV and Net mass flow 1 – 2 LRV must be the same sign.

Net mass flow 1 – 2 damping pulse/total

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Add func] ▶ [Damp pls/ttl]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Additional function] ▶ [Net mass flow 1 - 2 damping pulse/total]

Sets the damping constant for the net mass flow value 1 – 2 on pulse output and total.

The value is the time it takes for this value on the output to become 63.2% of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Net Mass Flow 1 – 2 Trim Select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Additional function] ▶ [Net mass flow 1 - 2 trim select]

Enables or disables the trim function during net mass flow 1 – 2 measurement.

	Value	Description
Ⓕ	Inhibit [Inhibit] [Inhibit]	Trim function during net mass flow 1 – 2 measurement is disabled. Default value.
Ⓕ	Enable [Enable] [Enable]	Trim function during net mass flow 1 – 2 measurement is enabled. Net mass flow value is linearly trimmed using Net mass flow trim offset and Net mass flow trim gain. Trimmed net mass flow value = gain * net mass flow value + offset

Net Mass Flow 1 – 2 Trim Offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Additional function] ▶ [Net mass flow 1 - 2 trim offset]

Sets the offset for trimming of net mass flow 1 – 2.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Net mass flow 1 – 2 trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net mass1 - 2] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net mass flow 1 - 2] ▶ [Additional function] ▶ [Net mass flow 1 - 2 trim gain]

Sets the gain for trimming the net mass flow 1 – 2 measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 1.000.

Net volume flow 1 – 2

Set of menus for configuring the net volume flow 1 – 2 measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net volume flow 1 – 2 unit	[Unit]	[Net volume flow 1 – 2 unit]	[▸ 467]
Ⓕ	Net volume flow 1 – 2 LRV	[LRV]	[Net volume flow 1 – 2 LRV]	[▸ 468]
Ⓕ	Net volume flow 1 – 2 URV	[URV]	[Net volume flow 1 – 2 URV]	[▸ 468]
Ⓕ	Net volume flow 1 – 2 damping	[Damp]	[Net volume flow 1 – 2 damping]	[▸ 469]
Ⓕ	Additional function	[Add func]	[Additional function]	[▸ 469]

Net volume flow 1 – 2 unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Net volume flow 1 – 2 unit]

Sets the unit for net volume flow 1 – 2.

ⓘ The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓕ	cm^3/s	Sets the displayed Net volume flow 1 – 2 unit. Default value is m^3/h.
Ⓕ	cm^3/min	
Ⓕ	cm^3/h	
Ⓕ	l/s	
Ⓕ	l/min	
Ⓕ	l/h	
Ⓕ	l/d	
Ⓕ	m^3/s	
Ⓕ	m^3/min	
Ⓕ	m^3/h	
Ⓕ	m^3/d	
Ⓕ	gal/s	
Ⓕ	gal/min	
Ⓕ	gal/h	
Ⓕ	gal/d	
Ⓕ	ft^3/s	
Ⓕ	ft^3/min	
Ⓕ	ft^3/h	
Ⓕ	ft^3/d	
Ⓕ	bbl/s	
Ⓕ	bbl/min	
Ⓕ	bbl/h	
Ⓕ	bbl/d	
Ⓕ	Impgal/s	
Ⓕ	Impgal/min	
Ⓕ	Impgal/h	
Ⓕ	Impgal/d	
Ⓕ	User unit	

Net volume flow 1 – 2 LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Net volume flow 1 – 2 LRV]

Sets the lower range value, 0 %, for the scaling of the analog, frequency and pulse outputs for the net volume flow 1 – 2 measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.0. Settings must satisfy the following condition: URV ≠ LRV

Net volume flow 1 – 2 URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Net volume flow 1 – 2 URV]

Sets the upper range value, 100 %, for the scaling of the analog, frequency and pulse outputs for the net volume flow 1 – 2 measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 10.0.

Net volume flow 1 – 2 damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Net mass flow 1 – 2 damping]

Sets the damping constant for the net volume flow 1 – 2 measurement.

The value is the time it takes for this value to become 63.2% of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Additional function

Menu for configuring the net volume flow measurement in detail. The menu is only available when Process variables additional parameters has been set in Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net volume flow 1 – 2 low cut	[Lowcut]	[Net volume flow 1 – 2 lowcut]	[▷ 469]
Ⓕ	Net volume flow 1 – 2 user unit	[User unit]	[Net volume flow 1 – 2 user unit]	[▷ 470]
Ⓕ	Net volume flow 1 – 2 user unit conversion factor	[Conv factor]	[Net volume flow 1 – 2 user unit conversion factor]	[▷ 465]
Ⓕ	Net volume flow 1 – 2 bi-directional mode	[Bi-dir mode]	[Net volume flow 1 – 2 bi-directional mode]	[▷ 470]
Ⓕ	Net volume flow 1 – 2 damping pulse/total	[Damp pls/ttl]	[Net volume flow 1 – 2 damping pulse/total]	[▷ 470]
Ⓕ	Net volume flow 1 – 2 trim select	[Trim sel]	[Net volume flow 1 – 2 trim select]	[▷ 471]
Ⓕ	Net volume flow 1 – 2 trim offset	[Trim offset]	[Net volume flow 1 – 2 trim offset]	[▷ 471]
Ⓕ	Net volume flow 1 – 2 trim gain	[Trim gain]	[Net volume flow 1 – 2 trim gain]	[▷ 471]

Net volume flow 1 – 2 low cut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Additional function] ▶ [Net volume flow 1 – 2 lowcut]

Sets a value for the low cut-off of net volume flow 1 – 2.

	Value	Description
Ⓕ	Numeric digits	

Net Volume Flow 1 – 2 User Unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Additional function] ▶ [Net volume flow 1 – 2 user unit]

Sets the user-defined unit for net volume flow 1 – 2.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Net Volume Flow 1 – 2 User Unit Conversion Factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Additional function] ▶ [Net volume flow 1 – 2 user unit conversion factor]

Sets the conversion factor for the user-defined unit.

	Value	Description
Ⓕ	Numeric digits	Reference unit is m^3/h. Default value is 1.0. Measured value at user-defined unit = measured net volume flow value at m^3/h * conversion factor from m^3/h.

Net volume flow 1 – 2 bi-directional mode

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Add func] ▶ [Bi-dir mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Additional function] ▶ [Net volume flow 1 – 2 bi-directional mode]

Sets whether bi-directional mode on analog output and pulse output is used for net volume flow 1 – 2.

	Value	Description
Ⓕ	Not active [Not active] [Not active]	Bi-directional mode is not active. Analog and pulse signals are generated when flow direction is either forward or reverse. Default value.
Ⓕ	Active [Active] [Active]	Bi-directional mode is active. Analog and pulse signals are generated for both forward flow and reverse flow. Net volume flow 1 – 2 URV and Net volume flow 1 – 2 LRV must be the same sign.

Net volume flow 1 – 2 damping pulse/total

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net vol1 – 2] ▶ [Add func] ▶ [Damp pls/ttl]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 – 2] ▶ [Additional function] ▶ [Net volume flow 1 – 2 damping pulse/total]

Sets the damping constant for the net volume flow value 1 – 2 on pulse output and total.

The value is the time it takes for this value on the output to become 63.2% of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Net Volume Flow 1 – 2 Trim Select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net vol1 - 2] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 - 2] ▶ [Additional function] ▶ [Net volume flow 1 - 2 trim select]

Enables or disables the trim function during net volume flow 1 – 2 measurement.

	Value	Description
Ⓕ	Inhibit **[Inhibit]** [Inhibit]	Trim function during net volume flow 1 – 2 measurement is disabled. Default value.
Ⓕ	Enable **[Enable]** [Enable]	Trim function during net volume flow 1 – 2 measurement is enabled.

Net Volume Flow 1 – 2 Trim Offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net vol1 - 2] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 - 2] ▶ [Additional function] ▶ [Net volume flow 1 - 2 trim offset]

Sets the offset for trimming of net volume flow 1 – 2.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Net volume flow 1 – 2 trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net vol1 - 2] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net volume flow 1 - 2] ▶ [Additional function] ▶ [Net volume flow 1 - 2 trim gain]

Sets the gain for trimming of the net volume flow 1 – 2 measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 1.000.

Net corrected volume flow

Menu for configuring the net corrected volume flow measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net corrected volume flow unit	[Unit]	[Net corrected volume flow unit]	[▸ 472]
Ⓕ	Net corrected volume flow LRV	[LRV]	[Net corrected volume flow LRV]	[▸ 473]
Ⓕ	Net corrected volume flow URV	[URV]	[Net corrected volume flow URV]	[▸ 473]
Ⓕ	Net corrected volume flow damping	[Damp]	[Net corrected volume flow damping]	[▸ 474]
Ⓕ	Additional function	[Add func]	[Additional function]	[▸ 474]

Net corrected volume flow unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Net corrected volume flow unit]

Sets the unit for the net corrected volume flow.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
Ⓕ	L/s(normal)	Setting of indicated Net corrected volume flow unit. Default value is m^3/h(standard).
Ⓕ	L/min(normal)	
Ⓕ	L/h(normal)	
Ⓕ	L/d(normal)	
Ⓕ	m^3/s(normal)	
Ⓕ	m^3/min(normal)	
Ⓕ	m^3/h(normal)	
Ⓕ	m^3/d(normal)	
Ⓕ	L/s(standard)	
Ⓕ	L/min(standard)	
Ⓕ	L/h(standard)	
Ⓕ	L/d(standard)	
Ⓕ	ft^3/s(standard)	
Ⓕ	ft^3/min(standard)	
Ⓕ	ft^3/h(standard)	
Ⓕ	ft^3/d(standard)	
Ⓕ	m^3/s(standard)	
Ⓕ	m^3/min(standard)	
Ⓕ	m^3/h(standard)	
Ⓕ	m^3/d(standard)	
Ⓕ	MMft^3/h	
Ⓕ	MMft^3/d	
Ⓕ	User unit	

Net corrected volume flow LRV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [LRV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Net corrected volume flow LRV]

Sets the lower range value, 0 %, for the scaling of the analog, frequency and pulse outputs for the net corrected volume flow measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Settings must satisfy the following condition: URV ≠ LRV

Net corrected volume flow URV

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [URV]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Net corrected volume flow URV]

Sets the upper range value, 100 %, for the scaling of the analog, frequency and pulse outputs for the net corrected volume flow measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 10.0.

Net corrected volume flow damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Net corrected volume flow damping]

Sets the damping constant for the net corrected volume flow measurement.

The value is the time it takes for this value to become 63.2% of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Additional function

Menu for configuring the net corrected volume flow measurement in detail. The menu is only available when Process variables additional parameters has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Net corrected volume flow low cut	[Lowcut]	[Net corrected volume flow lowcut]	[474]
Ⓕ	Net corrected volume flow user unit	[User unit]	[Net corrected volume flow user unit]	[475]
Ⓕ	Net corrected volume flow user unit conversion factor	[Conv factor]	[Net corrected volume flow user unit conversion factor]	[475]
Ⓕ	Net corrected volume flow bi-directional mode	[Bi-dir mode]	[Net corrected volume flow bi-directional mode]	[475]
Ⓕ	Net corrected volume flow damping pulse/total	[Damp pls/ttl]	[Net corrected volume flow damping pulse/total]	[476]
Ⓕ	Net corrected volume flow trim select	[Trim sel]	[Net corrected volume flow trim select]	[476]
Ⓕ	Net corrected volume flow trim offset	[Trim offset]	[Net corrected volume flow trim offset]	[476]
Ⓕ	Net corrected volume flow trim gain	[Trim gain]	[Net corrected volume flow trim gain]	[476]

Net corrected volume flow low cut

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Lowcut]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow lowcut]

Sets a value for the low cut-off of the net corrected volume flow.

	Value	Description
Ⓕ	Numeric digits	

Net Corrected Volume Flow User Unit

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [User unit]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow user unit]

Sets the unit for the net corrected volume flow.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Net Corrected Volume Flow User Unit Conversion Factor

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Conv factor]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow user unit conversion factor]

Sets the conversion factor for the user-defined unit.

	Value	Description
Ⓕ	Numeric digits	Reference unit is m^3/h Default value is 1.0. Measured value at user-defined unit = measured net corrected volume flow value at m^3/h * conversion factor from m^3/h.

Net corrected volume flow bi-directional mode

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Bi-dir mode]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow bi-directional mode]

Sets whether bi-directional mode on analog output and pulse output is used for the net corrected volume flow.

	Value	Description
Ⓕ	Not active **[Not active]** [Not active]	Bi-directional mode is not active. Analog and pulse signals are generated when the flow direction is either forward or reverse. Default value.
Ⓕ	Active **[Active]** [Active]	Bi-directional mode is active. Analog and pulse signals are generated for both of forward flow and reverse flow. Net corrected volume flow URV and Net corrected volume flow LRV must be the same sign.

Net corrected volume flow damping pulse/ total

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Damp pls/ ttl]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow damping pulse/total]

Sets the damping constant for the net corrected volume flow value on pulse output and total.

The value is the time it takes for this value on the output to become 63.2% of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 0.0 s.

Net Corrected Volume Flow Trim Select

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Trim sel]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow trim select]

Enables or disables the trim function during net corrected volume flow measurement.

	Value	Description
Ⓕ	Inhibit **[Inhibit]** [Inhibit]	Trim function during net corrected volume flow measurement is disabled. Default value.
Ⓕ	Enable **[Enable]** [Enable]	Trim function during net corrected volume flow measurement is enabled.

Net Corrected Volume Flow Trim Offset

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Trim offset]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow trim offset]

Sets the offset for trimming of the net corrected volume flow measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Net corrected volume flow trim gain

Ⓛ **[Detailed setup] ▶ [Pro var] ▶ [Net corr vol] ▶ [Add func] ▶ [Trim gain]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Net corrected volume flow] ▶ [Additional function] ▶ [Net corrected volume flow trim gain]

Sets the gain for trimming the net corrected volume flow measurement.

	Value	Description
Ⓕ	Numeric digits	Default value is 1.000.

Viscosity

Menu for configuring the Viscosity. This function is available only for S15 option.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Viscosity unit	[Unit]	[Viscosity unit]	[▶ 477]
Ⓕ	Viscosity LRV	[LRV]	[Viscosity LRV]	[▶ 477]
Ⓕ	Viscosity URV	[URV]	[Viscosity URV]	[▶ 478]
Ⓕ	Viscosity damping	[Damp]	[Viscosity damping]	[▶ 478]
Ⓕ	Additional function	[Add func]	[Additional function]	[▶ 478]

Viscosity unit

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Viscosity unit]

Sets the unit for Viscosity.

	Value	Description
Ⓕ	mPas	Setting of indicated Viscosity unit. Default value is mPas.
Ⓕ	Pas	
Ⓕ	cP	
Ⓕ	Ns/m^2	
Ⓕ	kg/ms	
Ⓕ	User unit (dynamic)	
Ⓕ	cSt	
Ⓕ	St	
Ⓕ	mm^2/s	
Ⓕ	cm^2/s	
Ⓕ	dm^2/s	
Ⓕ	m^2/s	
Ⓕ	User unit (kinematic)	

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▶ 809]*.

Viscosity LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Viscosity LRV]

Sets the lower range value, 0 %, for the scaling of the analog and frequency for the Viscosity.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Viscosity URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Viscosity URV]

Sets the upper range value, 100 %, for the scaling of the analog and frequency for the Viscosity.

	Value	Description
Ⓕ	Numeric digits	Default value is 100.0.

Viscosity damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Viscosity damping]

Sets the damping constant for the Viscosity.

The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Additional function

Menu for cofiguring the Viscosity in detail. The menu is only available when Process variables additional parameters has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Viscosity user unit dynamic	[User unit (d)]	[Viscosity user unit dynamic]	[478]
Ⓕ	Viscosity user unit kinematic	[User unit (k)]	[Viscosity user unit kinematic]	[479]
Ⓕ	Viscosity user unit dynamic conversion factor	[Conv factor(d)]	[Viscosity user unit dynamic conversion factor]	[479]
Ⓕ	Viscosity user unit kinematic conversion factor	[Conv factor(k)]	[Viscosity user unit kinematic conversion factor]	[479]
Ⓕ	Viscosity trim select	[Trim sel]	[Viscosity trim select]	[479]
Ⓕ	Viscosity trim offset	[Trim offset]	[Viscosity trim offset]	[480]
Ⓕ	Viscosity trim gain	[Trim gain]	[Viscosity trim gain]	[480]

Viscosity user unit dynamic

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [User unit (d)]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function] ▶ [Viscosity user unit dynamic]

Sets the unit for the Viscosity (Dynamic).

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Viscosity user unit kinematic

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [User unit (k)]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function]▶ [Viscosity user unit kinematic]

Sets the unit for the Viscosity (Kinematic).

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Viscosity user unit dynamic conversion factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [Conv factor(d)]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function]▶ [Viscosity user unit conversion factor (Dynamic)]

Sets the conversion factor for the user-defined unit.

	Value	Description
Ⓕ	Numeic digits	Reference unit is mPas. Default value is 1.0. Measured value at user-defined unit = Viscosity value at mPas * conversion factor from mPas.

Viscosity user unit kinematic conversion factor

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [Conv factor(k)]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function]▶ [Viscosity user unit conversion factor(Kinematic)]

Sets the conversion factor for the user-defined unit.

	Value	Description
Ⓕ	Numeric digits	Reference unit is cSt. Default value is 1.0. Measured value at user-defined unit = Viscosity value at cSt * conversion factor from cSt.

Viscosity trim select

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [Trim sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function]▶ [Viscosity trim select]

Enables or disables the trim function during Viscosity.

	Value	Description
Ⓕ	Inhibit [Inhibit] [Inhibit]	Trim function during Viscosity is disabled. Default value.
Ⓕ	Enable [Enable] [Enable]	Trim function during Viscosity is enabled.

Viscosity trim offset

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [Trim offset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function] ▶ [Viscosity trim offset]

Sets the offset for trimming the Viscosity.

	Value	Description
Ⓕ	Numeric digits	Default value is 0.000e+000.

Viscosity trim gain

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Visc] ▶ [Add func] ▶ [Trim gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Viscosity] ▶ [Additional function] ▶ [Viscosity trim gain]

Sets the gain for trimming the Viscosity.

	Value	Description
Ⓕ	Numeric digits	Default value is 1.000.

Drive current

Menu for configuring the Drive current.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Drive current LRV	[LRV]	[Drive current LRV]	*[▸ 480]*
–	Drive current URV	[URV]	[Drive current URV]	*[▸ 481]*
–	Drive current damping	[Damp]	[Drive current damping]	*[▸ 481]*

Drive current LRV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Drv curr] ▶ [LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Drive current] ▶ [Drive current LRV]

Sets the lower range value, 0 %, for the scaling of the analog and frequency for the Viscosity.

	Value	Description
Ⓕ	Numeric digits	Default value is 0. Setting must satisfy the following condition: URV ≠ LRV

Drive current URV

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Drv curr] ▶ [URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Drive current] ▶ [Drive current URV]

Sets the upper range value, 100 %, for the scaling of the analog and frequency for the Drive current.

	Value	Description
Ⓕ	Numeric digits	Default value is 100.0.

Drive current damping

Ⓛ [Detailed setup] ▶ [Pro var] ▶ [Drv curr] ▶ [Drv curr damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Process variables] ▶ [Drive current] ▶ [Drive current damping]

This parameter can be set in the following menu/menus:

- *Diag/Service [▷ 251]*

Sets the damping constant for the Drive current.

The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓕ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

5.7.3 Analog outputs

Menu for configuring the analog output and the NAMUR option.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Analog output 1 – 2	[AO1 – 2]	[Analog output 1 – 2]	*[▷ 481]*
–	NAMUR NE 43 option	[NE43 opt]	[NAMUR NE 43 option]	*[▷ 485]*

Analog output 1 – 2 HART

Set of menus for configuring Analog output 1 – 2.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Analog output 1 – 2 select	[Sel]	[Analog output 1 – 2 select]	*[▷ 482]*
–	Analog output 1 – 2 low limit	[Lo lim]	[Analog output 1 – 2 low limit]	*[▷ 483]*
–	Analog output 1 – 2 high limit	[Hi lim]	[Analog output 1 – 2 high limit]	*[▷ 484]*
–	Analog output 1 – 2 alarm output	[Alm out]	[Analog output 1 – 2 alarm output]	*[▷ 484]*

Analog output 1 – 2 select

Ⓛ [Detailed setup] ▶ [AO] ▶ [AO1 – 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 293]*
- *Basic setup [▸ 345]*

(Easy configuration wizard can also be used)

Sets the process variables for Analog output 1 – 2.

	Value	Description
–	None [None] [None]	Sets the Analog output 1 – 2 value. The default value for Analog output 1 is Mass flow. None is not available for Analog output 1. The default value for Analog output 2 is Density.
–	Mass flow [Mass] [Mass flow]	
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	
–	Pressure [Pres] [Pressure]	
–	Volume flow [Vol] [Volume flow]	
–	Reference density [Ref dens] [Reference density]	
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
Ⓕ	Concentration [Conc] [Concentration]	

	Value	Description
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the Analog output 1 – 2 value. The default value for Analog output 1 is Mass flow. None is not available for Analog output 1. The default value for Analog output 2 is Density.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Batch [Batch] [Batch]	
Ⓕ	Viscosity [Visc] [Viscosity]	
–	Drive current [Drv curr] [Drive current]	

Analog output 1 – 2 low limit

Ⓛ [Detailed setup] ▶ [AO] ▶ [AO1 - 2] ▶ [Lo lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog outputs] ▶ [Analog output 1 - 2] ▶ [Analog output 1 - 2 low limit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 296]*
- *Basic setup [▸ 346]*

Sets the lower limit of the current for Analog output 1 – 2 during normal operation.

This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 3.8 mA.

	Value	Description
–	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 2.40 mA.

Analog output 1 – 2 high limit

Ⓛ [Detailed setup] ▶ [AO] ▶ [AO1 – 2] ▶ [Hi lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 high limit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 296]*
- *Basic setup [▸ 346]*

Sets the higher limit current of Analog output 1 – 2 during normal operation.

This parameter depends on the parameter of NE43 opt. If NE43 opt is set to NE43, the value of this parameter must be set to 20.50 mA.

	Value	Description
–	Numeric digits	Setting range: 2.4 – 21.6 mA. Default value is 21.60 mA.

Analog output 1 – 2 alarm output

Ⓛ [Detailed setup] ▶ [AO] ▶ [AO1 – 2] ▶ [Alm out]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog outputs] ▶ [Analog output 1 – 2] ▶ [Analog output 1 – 2 alarm output]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 297]*
- *Basic setup [▸ 347]*

Sets the value of the current value for Analog output 1 – 2 during an alarm state.

	Value	Description
–	< 2.4 mA [<2.4mA] [< 2.4 mA]	Sets the value of the Analog output 1 – 2 during an alarm state. Default value is > 21.6 mA.
–	4 mA [4.0mA] [4 mA]	
–	> 21.6 mA [>21.6mA] [> 21.6 mA]	
–	Measured value [Meas val] [Measured value]	
–	Hold [Hold] [Hold]	

NAMUR NE 43 option

NAMUR NE 43 option

Ⓛ [Detailed setup] ▶ [AO] ▶ [NE43 opt]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog outputs] ▶ [NAMUR NE 43 option]

Sets the signal mode of Analog outputs.

	Value	Description
–	Not Namur43 [Not NE43] [Not NAMUR NE 43]	Analog outputs are not in Namur43 mode. Default value.
–	Namur43 [NE43] [NAMUR NE 43]	Analog outputs are in Namur43 mode. Settings must satisfy the following conditions: Analog output 1 – 2 low limit = 3.8 mA Analog output 1 – 2 high limit = 20.5 mA

5.7.4 Pulse/Status outputs

Menu for configuring pulse/status outputs.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Pulse/Status output type	[Pls/Sts type]	[Pulse/Status output type]	*[▸ 485]*
–	Pulse/Status output 1 – 2 mode	[Pls/Sts1 – 2 mode]	[Pulse/Status output 1 – 2 mode]	*[▸ 486]*
–	Pulse output 1 – 2	[Pls out1 – 2]	[Pulse output 1 – 2]	*[▸ 486]*
–	Frequency output 1 – 2	[Freq out1 – 2]	[Frequency output 1 – 2]	*[▸ 495]*
–	Status output 1 – 3	[Sts out1 – 3]	[Status output 1 – 3]	*[▸ 499]*
–	Double pulse output	[Dbl pls out]	[Double pulse output]	*[▸ 502]*

Pulse/Status output type

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls/Sts type]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse/Status output type]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 298]*
- *Basic setup [▸ 348]*

Sets the pulse signal type of the Pulse/Status signal.

When this parameter has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	Single pulse [Sngl pls] [Single pulse]	Do not synchronize. Output 1 – 2 is individual. Default value.

	Value	Description
–	Double pulse [Dbl pls] [Double pulse]	Pulse/status Output 1 – 2 are set to frequency mode and provide a synchronized double pulse signal.

Pulse/Status output 1 – 2 mode

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls/Sts1 – 2 mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse/Status output 1 – 2 mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 299]*
- *Basic setup [▸ 348]*

Sets the pulse signal mode of Pulse/Status output 1 – 2.

If Pulse/Status output 1 – 2 mode has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	No function [No func] [No function]	Pulse signal or status signal is not available. Default value. Output signal level depends on the Status output 1 – 2 active mode.
–	Fixed pulse output [Fix pls out] [Fixed pulse output]	Pulse signal with fixed pulse width, duty ratio changes. Status signal is not available.
–	Frequency output [Freq out] [Frequency output]	Pulse signal with fixed duty ratio, pulse width changes. Status signal is not available.
–	Status output [Sts out] [Status output]	Status signal. Pulse or frequency signal is not available.

Pulse output 1 – 2

Set of menus for configuring the pulse signal. These are available when Fixed pulse output has been selected in the parameter *Pulse/Status output 1 – 2 mode*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Pulse output 1 – 2 select	[Sel]	[Pulse output 1 – 2 select]	*[▸ 487]*
–	Pulse output 1 – 2 unit select	[Unit]	[Pulse output 1 – 2 unit select]	*[▸ 488]*
–	Pulse output 1 – 2 width	[Width]	[Pulse output 1 – 2 width]	*[▸ 491]*
–	Pulse output 1 – 2 rate	[Rate]	[Pulse output 1 – 2 rate]	*[▸ 493]*
–	Pulse output 1 – 2 alarm action	[Action at alm]	[Pulse output 1 – 2 alarm action]	*[▸ 493]*

–	Pulse output 1 – 2 user set alarm value	[User val at alm]	[Pulse output 1 - 2 user set alarm value]	[493]
–	Pulse output 1 – 2 flow direction	[Flow dir]	[Pulse output 1 - 2 flow direction]	[494]
–	Pulse output 1 – 2 active mode	[Act mode]	[Pulse output 1 - 2 active mode]	[494]
–	Pulse/Status output 2 active pulse mode	[Act pls mode]	[Pulse/Status output 2 active pulse mode]	[494]

Pulse output 1 – 2 select

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 - 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [300]*
- *Basic setup [349]*

Assigns a process variable to pulse output 1 – 2.

	Value	Description
–	Mass flow [Mass] [Mass flow]	
–	Volume flow [Vol] [Volume flow]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Energy [Energy] [Energy]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the Pulse output 1 – 2 value. The default value of Pulse output 1 is Mass flow. The default value of Pulse output 2 is Volume flow.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	

Pulse output 1 – 2 unit select

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2] ▶ [Pulse output 1 – 2 unit select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 301]*
- *Basic setup [▸ 350]*

It can be selected and set for the following process variables. The available units change depending on the process variables that are assigned to the output. The default value for Pulse output 1 is kg/P, and Pulse output 2 is cm^3/P.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters* [▸ 809].

"MetTon" is displayed instead of "t" in HART.

	Process variables	Available units
–	For Mass flow: **[Mass]** [Mass flow]	▪ g/pulse ▪ kg/pulse ▪ t/pulse ▪ ton(US)/P ▪ ton(UK)/P ▪ lb/pulse ▪ pulse/g ▪ pulse/kg ▪ pulse/t ▪ P/ton(US) ▪ P/ton(UK) ▪ pulse/lb
–	For Net mass flow 1 – 2: **[Net mass1]** [Net mass flow 1 – 2]	▪ g/pulse ▪ kg/pulse ▪ t/pulse ▪ lb/pulse ▪ pulse/g ▪ pulse/kg ▪ pulse/t ▪ pulse/lb

	Process variables	Available units
–	For Volume flow: [Vol] [Volume flow]	▪ cm^3/pulse ▪ L/pulse ▪ m^3/pulse ▪ gal/pulse ▪ kgal/pulse ▪ Cuft/pulse ▪ bbl/pulse ▪ Impgal/pulse ▪ kImpgal/pulse ▪ pulse/cm^3 ▪ pulse/L ▪ pulse/m^3 ▪ pulse/gal ▪ pulse/kgal ▪ pulse/Cuft ▪ pulse/bbl ▪ pulse/Impgal ▪ pulse/kImpgal
–	For Net volume flow 1 – 2: [Net vol1] [Net volume flow 1 – 2]	▪ cm^3/pulse ▪ L/pulse ▪ m^3/pulse ▪ gal/pulse ▪ kgal/pulse ▪ Cuft/pulse ▪ bbl/pulse ▪ Impgal/pulse ▪ kImpgal/pulse ▪ pulse/cm^3 ▪ pulse/L ▪ pulse/m^3 ▪ pulse/gal ▪ pulse/kgal ▪ pulse/Cuft ▪ pulse/bbl ▪ pulse/Impgal ▪ pulse/kImpgal

	Process variables	Available units
–	For Corrected volume flow: [Corr vol]: [Corrected volume flow]	▪ NmlL/pulse ▪ Nmlm³/pulse ▪ StdL/pulse ▪ Scuft/pulse ▪ Stdm³/pulse ▪ pulse/NmlL ▪ pulse/Nmlm³ ▪ pulse/StdL ▪ pulse/Scuft ▪ pulse/Stdm³
–	For Net corrected volume flow: [Net corr vol] [Net corrected volume flow]	▪ NmlL/pulse ▪ Nmlm³/pulse ▪ StdL/pulse ▪ Scuft/pulse ▪ Stdm³/pulse ▪ pulse/NmlL ▪ pulse/Nmlm³ ▪ pulse/StdL ▪ pulse/Scuft ▪ pulse/Stdm³
–	For Energy: [Energy] [Energy]	▪ MJ/pulse ▪ Btu/pulse ▪ pulse/MJ ▪ pulse/Btu

Pulse output 1 – 2 width

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Width]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2] ▶ [Pulse output 1 – 2 width]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 303]*
- *Basic setup [▸ 353]*

Sets the pulse width, this means the duration of the active state.

	Value	Description
–	0.05 ms [0.05ms] [0.05 ms]	Sets the pulse width. Default value of Pulse output 1 – 2 is 1 ms.
–	0.1 ms [0.1ms] [0.1 ms]	
–	0.5 ms [0.5ms] [0.5 ms]	
–	1 ms [1ms] [1 ms]	
–	5 ms [5ms] [5 ms]	
–	10 ms [10ms] [10 ms]	
–	20 ms [20ms] [20 ms]	
–	33 ms [33ms] [33 ms]	
–	50 ms [50ms] [50 ms]	
–	100 ms [100ms] [100 ms]	
–	200 ms [200ms] [200 ms]	
–	330 ms [330ms] [330 ms]	
–	500 ms [500ms] [500 ms]	
–	1000 ms [1000ms] [1000 ms]	
–	2000 ms [2000ms] [2000 ms]	

Pulse output 1 – 2 rate

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Rate]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2] ▶ [Pulse output 1 – 2 rate]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 305]*
- *Basic setup [▸ 353]*

Parameter for defining the number of units of the assigned process variable for 1 pulse of Pulse output 1 – 2.

	Value	Description
–	Numeric digits	Setting range: 0 – no check. Default value is 1.0. The unit for this value is defined in the parameter Pulse output 1 – 2 unit. This value depends on the parameter of Pulse output 1 – 2 width and on maximum flow.

Pulse output 1 – 2 alarm action

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [Action at alm]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2] ▶ [Pulse output 1 – 2 alarm action]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 354]*

Defines pulse output 1 – 2 when an alarm occurs.

	Value	Description
–	0.0 pulse [0.0pls] [0.0 pulse]	Pulse signal is stopped. Default value.
–	Measured value [Meas val] [Measured value]	Pulse output at measured value.
–	Hold [Hold] [Hold]	Pulse output before an alarm occurs is held.
–	User set value [User set val] [User set value]	Pulse output that is set in the parameter Pulse output 1 – 2 user set alarm value.

Pulse output 1 – 2 user set alarm value

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 – 2] ▶ [User val at alm]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 – 2] ▶ [Pulse output 1 – 2 user set alarm value]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 354]*

Pulse output 1 – 2 user set alarm value sets the frequency value of Fixed pulse when an alarm occurs, if the parameter Pulse output 1 – 2 alarm action is set to User set value.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10000.0 pulses/s. Default value is 0.0 pulse.

Pulse output 1 – 2 flow direction

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 - 2] ▶ [Flow dir]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 flow direction]

If bi-directional mode is active for the selected process value, the parameter setting of Pulse output 1 – 2 flow direction is ignored.

	Value	Description
–	Forward [Forward] [Forward]	Pulse signal is generated when the direction of flow is forward. Pulse is not generated when the flow direction is reverse. Default value.
–	Reverse [Reverse] [Reverse]	Pulse signal is generated when the direction of flow is reverse. Pulse is not generated when the flow direction is forward.

Pulse output 1 – 2 active mode

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Pls out1 - 2] ▶ [Act mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 1 - 2] ▶ [Pulse output 1 - 2 active mode]

Sets the active mode of pulse output 1 – 2.

When *Pulse output 1 – 2 active mode* has just been changed, the output signal of pulse/status is not exact.

	Value	Description
–	Off active [Off act] [Off active]	Off state of pulse signal is defined as the active state.
–	On active [On act] [On active]	On state of pulse signal is defined as the active state. Default value.

Pulse output 2 active pulse mode

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶[Pls out2] ▶ [Act pls mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Pulse output 2] ▶ [Pulse/Status output 2 active pulse mode]

Available when Pulse output2 is Active and there is no pull-up register (non-Pull-up R).

When a magnetic counter is used, this parameter has to be set to "Magnetic counter".

	Value	Description
–	Normal	Default value.

	Value	Description
–	Magnetic counter	Must be selected when magnetic counter is used.

If set to "Magnetic counter", the value of the following parameters is limited as shown in the table below.

Value	Description
Pulse/Status output 2 mode	Frequency and Status out are not selectable
Pulse output 2 active mode	Off active is not selectable
Pulse output 2 width	20ms, 33ms, 50ms, 100ms can be selected

Frequency output 1 – 2

Set of menus for configuring the frequency signals. These are available when Frequency output has been selected in the parameter Pulse/Status output 1 – 2 mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Frequency output 1 – 2 select	[Sel]	[Frequency output 1 – 2 select]	[▸ 495]
–	Maximum frequency 1 – 2	[Max freq]	[Max frequency 1 – 2]	[▸ 497]
–	Minimum frequency 1 – 2	[Min freq]	[Min frequency 1 – 2]	[▸ 497]
–	Frequency output 1 – 2 alarm action	[Action at alm]	[Frequency output 1 – 2 alarm action]	[▸ 498]
–	Frequency output 1 – 2 user set alarm value	[User val at alm]	[Frequency output 1 – 2 user set alarm value]	[▸ 498]

Frequency output 1 – 2 select

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2] ▶ [Frequency output 1 – 2 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 305]*
- *Basic setup [▸ 355]*

Assigns a process variable to Frequency output 1 – 2.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Sets the process variables for Frequency output 1 – 2. The default value of Frequency output 1 is Mass flow. The default value of Frequency output 2 is Density.
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	
–	Pressure [Pres] [Pressure]	
–	Volume flow [Vol] [Volume flow]	
–	Reference density [Ref dens] [Reference density]	
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
Ⓕ	Concentration [Conc] [Concentration]	

	Value	Description
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the process variables for Frequency output 1 – 2. Default value of Frequency output 1 is Mass flow. Default value of Frequency output 2 is Density.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	
–	Drive current [Drv curr] [Drive current]	

Max frequency 1 – 2

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Freq out1 - 2] ▶ [Max freq]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Max frequency 1 - 2]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 307]*
- *Basic setup [▸ 356]*

Sets the frequency value when the process value that is assigned to the Frequency output is the upper range value, 100 %.

	Value	Description
–	Numeric digits	Setting range: 0.0001 – 10000.0 Hz. Default value is 10000.0 Hz.

Min frequency 1 – 2

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Freq out1 - 2] ▶ [Min freq]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 - 2] ▶ [Min frequency 1 - 2]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 307]*

- *Basic setup [▶ 357]*

Sets the frequency value when the process value that is assigned to the Frequency output is the lower range value, 0 %.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10000.0 Hz. Default value is 0.0 Hz.

Frequency output 1 – 2 alarm action

Ⓛ **[Detailed setup] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [Action at alm]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2] ▶ [Pulse output 1 – 2 alarm action]

This parameter can be set in the following menu/menus:

- *Basic setup [▶ 357]*

Sets the frequency output when an alarm occurs.

	Value	Description
–	0.0 Hz **[0.0Hz]** [0.0 Hz]	Frequency becomes 0.0 Hz. Default value.
–	Measured value **[Meas val]** [Measured value]	Frequency at measured value.
–	Hold **[Hold]** [Hold]	Frequency before an alarm occurs is held.
–	User set value **[User set val]** [User set value]	Frequency that is set in the parameter Frequency output 1 – 2 user set alarm value.

Frequency output 1 – 2 user set alarm value

Ⓛ **[Detailed setup] ▶ [Pls/Sts out] ▶ [Freq out1 – 2] ▶ [User val at alm]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Frequency output 1 – 2] ▶ [Frequency output 1 – 2 user set alarm value]

This parameter can be set in the following menu/menus:

- *Basic setup [▶ 357]*

Sets the frequency value when an alarm occurs, if the parameter Frequency output 1 – 2 alarm action has been set to User set value.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 15000.0 Hz Default value is 0.0 Hz.

Status output 1 – 3

Set of menus for configuring Status outputs. These menus are available when Status output has been selected in the parameter *Pulse/Status output 1 – 2 mode*.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Status output 1 – 3 function	[Func]	[Status output 1 - 3 function]	[515]
–	Status output 1 – 3 active mode	[Act mode]	[Status output 1 - 3 active mode]	[515]

Status output 1 – 3 function

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Sts out1 - 3] ▶ [Func]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Status output 1 - 3] ▶ [Status output 1 - 3 function]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [308]*
- *Basic setup [358]*

Set of menus for configuring Status output functions. These menus are available when Status output is selected in the parameter *Pulse/Status output 1 – 2 mode*.

Concentration high low alarm, Net mass flow 1 – 2 high low alarm, Net volume flow 1 – 2 high low alarm and Net corrected volume flow high low alarm can only be selected if the concentration function is available in the device.

	Value	Description
–	Off [Off] [Off]	Not used. Status signal does not become active. Default value.
–	Flow direction [Flow dir] [Flow direction]	The signal becomes inactive when flow direction is forward and active when flow direction is reverse.
–	Total limit 1 – 6 [Total limit1 - 6] [Total limit 1 - 6]	Signal becomes active when the value of Totalizer 1 – 6 exceeds the value of the parameter Total 1 – 6 set point.
–	F category [F] [F category]	Signal becomes active when an alarm that is categorized as F on NE107 occurs.
–	S,C,M category [S,C,M] [S,C,M category]	Signal becomes active when an alarm that is categorized as S, C or M on NE107 occurs.
–	F + S,C,M category [F,S,C,M] [F + S,C,M category]	Signal becomes active when an alarm that is categorized as F, S, C or M on NE107 occurs.
–	Slug detection [Slug] [Slug detection]	Signal becomes active when a Slug detection alarm occurs.

	Value	Description
–	Empty pipe [Empty] [Empty pipe]	Signal becomes active when an Empty pipe alarm occurs.
–	Corrosion detection [Crrsn] [Corrosion detection]	Signal becomes active when a Corrosion detection alarm occurs.
–	Mass flow high low alarm [Mass H/L alm] [Mass flow high low alarm]	Signal becomes active when a Mass flow high or low alarm occurs.
–	Density high low alarm [Dens H/L alm] [Density high low alarm]	Signal becomes active when a Density high or low alarm occurs.
–	Reference density high low alarm [Ref dens H/L alm] [Reference density high low alarm]	Signal becomes active when a Reference density high or low alarm occurs.
–	Relative density high low alarm [Rel dens H/L alm] [Relative density high low alarm]	Signal becomes active when a Relative density high or low alarm occurs.
–	Temperature high low alarm [Temp H/L alm] [Temperature high low alarm]	Signal becomes active when a Temperature high or low alarm occurs.
–	Pressure high low alarm [Pres H/L alm] [Pressure high low alarm]	Signal becomes active when a Pressure high or low alarm occurs.
–	Volume flow high low alarm [Vol H/L alm] [Volume flow high low alarm]	Signal becomes active when a Volume flow high or low alarm occurs.
–	Corrected volume flow high low alarm [Corr vol H/L alm] [Corrected volume flow high low alarm]	Signal becomes active when a Corrected volume flow high or low alarm occurs.

	Value	Description
Ⓕ	Concentration high low alarm [Conc H/L alm] [Concentration high low alarm]	Signal becomes active when a Concentration high or low alarm occurs.
Ⓕ	Net mass flow 1 high low alarm [Net mass1 H/L alm] [Net mass flow 1 high low alarm]	Signal becomes active when a Net mass flow 1 high or low alarm occurs.
Ⓕ	Net mass flow 2 high low alarm [Net mass2 H/L alm] [Net mass flow 2 high low alarm]	Signal becomes active when a Net mass flow 2 high or low alarm occurs.
Ⓕ	Net volume flow 1 high low alarm [Net vol1 H/L alm] [Net volume flow 1 high low alarm]	Signal becomes active when a Net volume flow 1 high or low alarm occurs.
Ⓕ	Net volume flow 2 high low alarm [Net vol2 H/L alm] [Net volume flow 2 high low alarm]	Signal becomes active when a Net volume flow 2 high or low alarm occurs.
Ⓕ	Net corrected net volume flow high low alarm [Net corr vol H/L alm] [Net corrected net volume flow high low alarm]	Signal becomes active when a Corrected net volume flow high or low alarm occurs.
Ⓕ	Batch function [Batch] [Batch function]	Need to be set when a Batch function is used.
Ⓕ	Viscosity high low alarm [Visc H/L alm] [Viscosity high low alarm]	Signal becomes active when a Viscosity high or low alarm occurs.

Status output 1 – 3 active mode

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Sts out1 - 3] ▶ [Act mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Status output 1 - 3] ▶ [Status output 1 - 3 active mode]

Sets the active mode of status output 1 – 3.

When Status output 1 – 3 active mode has just been changed, the Pulse/Status output signal is not exact.

	Value	Description
–	Off active [Off act] [Off active]	The Off state of the status output is defined as active.
–	On active [On act] [On active]	The On state of the status output is defined as active. Default value.

Double pulse output

Menu for configuring the double pulse signal. This menu is available when Double pulse has been selected in the parameter Pulse/Status output type.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Frequency output 1 select	[Sel]	[Frequency output 1 select]	*[▸ 502]*
–	Double pulse phase shift mode	[Phase shift mode]	[Double pulse phase shift mode]	*[▸ 504]*
–	Max frequency 1	[Max freq]	[Max frequency 1]	*[▸ 505]*
–	Min frequency 1	[Min freq]	[Min frequency 1]	*[▸ 505]*
–	Frequency output 1 alarm action	[Action at alm]	[Frequency output 1 alarm action]	*[▸ 505]*
–	Frequency output 1 user set alarm value	[User val at alm]	[Frequency output 1 user set alarm value]	*[▸ 506]*
–	Double pulse rate	[Rate]	[Double pulse rate]	*[▸ 506]*
–	Pulse output 1 unit select	[Unit]	[Pulse output 1 unit select]	*[▸ 507]*

Frequency output 1 select

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 311]*
- *Basic setup [▸ 360]*

Assigns a process variable to double pulse output.

Concentration, Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected, if the concentration function is available on the device.

Viscosity is available only for option S15.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Sets the displayed process variables. Default value is Mass flow.
–	Density [Dens] [Density]	
–	Temperature [Temp] [Temperature]	
–	Pressure [Pres] [Pressure]	
–	Volume flow [Vol] [Volume flow]	
–	Reference density [Ref dens] [Reference density]	Sets the displayed process variables. Default value is Mass flow.
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Concentration [Conc] [Concentration]	
–	Net mass flow 1 [Net mass1] [Net mass flow 1]	
–	Net mass flow 2 [Net mass2] [Net mass flow 2]	

	Value	Description
–	Net volume flow 1 [Net vol1] [Net volume flow 1]	Sets the displayed process variables. Default value is Mass flow.
–	Net volume flow 2 [Net vol2] [Net volume flow 2]	
–	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	
–	Drive current [Drv curr] [Drive current]	

Double pulse phase shift mode

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Phase shift mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Double pulse phase shift mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 312]*
- *Basic setup [▸ 361]*

Sets the pulse shift mode of double pulse.

Directly after changing the shift mode, the output signal of pulse/status is not exact.

	Value	Description
–	0 degrees [0°] [0 deg]	No phase shift between pulse signal 1 and 2.
–	180 degrees [180°] [180 deg]	Phase shift between pulse signal 1 and 2 is 180 degrees.
–	-90 degrees [-90°] [-90 deg]	Pulse 2 signal is shifted -90 degrees from pulse 1 signal.
–	+90 degrees [+90°] [+90 deg]	Pulse 2 signal is shifted +90 degrees from pulse 1 signal.

	Value	Description
–	Quadrature [Quadrature] [Quadrature]	When the flow is forward, pulse 2 signal is shifted +90 degrees from pulse 1 signal. When the flow is reverse, pulse 2 is shifted -90 degrees from pulse 1. Default value.

Max frequency 1

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Max freq]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Max frequency 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [313]*
- *Basic setup [362]*

Sets the frequency value when the process value that is assigned to Double pulse output is the upper range value, 100 %.

	Value	Description
–	Numeric digits	Setting range: 0.0001 – 10000.0 Hz Default value is 10000.0 Hz.

Min frequency 1

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Min freq]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Min frequency 1]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [313]*
- *Basic setup [362]*

Sets the frequency value when the process value that is assigned to Double pulse output is the lower range value, 0 %.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10000.0 Hz. Default value is 0.0 Hz.

Frequency output 1 alarm action

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Action at alm]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 alarm action]

This parameter can be set in the following menu/menus:

Basic setup [362]

Sets the frequency output of double pulse when an alarm occurs.

	Value	Description
–	0.0 Hz [0.0Hz] [0.0 Hz]	Frequency becomes 0.0 Hz. Default value.

	Value	Description
–	Measured value [Meas val] [Measured value]	Frequency at measured value.
–	Hold [Hold] [Hold]	Frequency before an alarm occurs is held.
–	User set value [User set val] [User set value]	Frequency that has been set in the parameter Frequency output 1 – 2 user set alarm value.

Frequency output 1 user set alarm value

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [User val at alm]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Frequency output 1 user set alarm value]

This parameter can be set in the following menu/menus:

Basic setup [▸ 363]

Sets the frequency value of double pulse when an alarm occurs, if User set value has been set in the parameter *Frequency output 1 – 2 alarm action*.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 15000.0 Hz Default value is 0.0 Hz.

Double pulse rate

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Rate]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Double puls rate]

Sets/Shows maximum range for double pulse 50% duty output.When Max frequency 1 range is set or read, then this parameter value is automatically converted to the value based on Pulse output 1 unit select.

	Value	Description
–	Numeric digits	Setting range: more than 0.0 Default value is 1.0 [kg/P]

This parameter is assumed to be set by the following pre-condition. If the following conditions are not fulfilled, the parameter cannot be written or the calculation result might not be correctly indicated:

- Mass flow/Volume flow/Corrected volume flow/Net mass flow1/Net mass flow2/Net volume flow1/Net volume flow2 or Net corrected volume flow is set in Frequency output 1 select
- The LRV of selected process value in Frequency output 1 select is 0 , URV is more than 0 and Min frequency 1 is 0. – (condition a)

- This parameter cannot be written when 0 or less than 0 value is set in this parameter.
- This parameter cannot be written when DensityDensity/Temperature/Pressure/ Reference density/Relative density or Concentration is set in Frequency output 1 select.
- This parameter cannot be written when Frequency output 1 select setting and Pulse output 1 unit select setting have the consistency.
- This parameter value is calculated to regard the condition a) above as fulfilling. Even if the condition a) above is not fulfilled, this parameter is calculated but the calculation result is not correctly indicated.
- When Max frequency 1 is out of range of 0.0001 – 10000 by ths calculation result, this parameter cannot be written and Max frequency 1 and Double pulse rate values are not updated
- When this parameter value is calculated and result is indicated, then Max frequency 1 becomes conversion result from Double pulse rate and Min frequency 1 is set to 0
- When Max frequency 1 is set, this parameter value is automatically calculated and converted based on Pulse output 1 unit select. In addition, when this parameter value is written, then Max frequency 1 is automatically calculated. This calculation is done even if double pulse mode is not selected.

Calculation example

For example, when Pulse output 1 unit select is kg/P and Max frequency 1 is 10000Hz, the following calculation is done automatically:

Mass flow span (Mass flow URV(ex:10t/h) – Mass flow LRV(ex:0t/h)) = 10t/h = 2.77778 kg/s Kg/P = 2.77778 / 10000 = 0.000277778 kg/P is the maximum range.

Pulse output 1 unit select

Ⓛ [Detailed setup] ▶ [Pls/Sts out] ▶ [Dbl pls out] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Pulse/Status outputs] ▶ [Double pulse output] ▶ [Pulse output 1 unit select]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 313]*
- *Basic setup [▸ 362]*

Assigns process variable to pulse output 1.

	Process variables	Available units
–	For Mass flow [Mass] [Mass flow] and Net mass flow 1 – 2 [Net mass1] [Net mass flow 1 - 2]	g/pulse kg/pulse t/pulse ton(US)/P ton(UK)/P lb/pulse pulse/g pulse/kg pulse/t P/ton(US) P/ton(UK) pulse/lb

	Process variables	Available units
–	For Volume flow [Vol] [Volume flow] and Net volume flow 1 – 2 [Net vol1] [Net volume flow 1 - 2]	cm3/pulse L/pulse m3/pulse gal/pulse kgal/pulse Cuft/pulse bbl/pulse Impgal/pulse kImpgal/pulse pulse/cm3 pulse/L pulse/m3 pulse/gal pulse/kgal pulse/Cuft pulse/bbl pulse/Impgal pulse/kImpgal
–	For Corrected volume flow [Corr vol] [Corrected volume flow] and Net corrected volume flow [Net corr vol] [Net corrected volume flow]	NmlL/pulse Nmlm3/pulse StdL/pulse Scuft/pulse Stdm3/pulse pulse/NmlL pulse/Nmlm3 pulse/StdL pulse/Scuft pulse/Stdm3
–	For Energy [Energy] [Energy]	MJ/pulse Btu/pulse pulse/MJ pulse/Btu

The value of this parameter depends on the parameter of the Display unit selection. Depending on the value of the Display unit selection, not all of the values of this parameter may be displayed.

	Liquid gas select		Display unit selection			
Unit	Liquid	Gas	Metric	US	UK	Russia
g/P	√	√	g/P	g/P	g/P	г/имп.
kg/P	√	√	kg/P	kg/P	kg/P	кг/имп.
t/P	√	√	t/P	t/P	t/P	т/имп.
ton(US)/P	√	√	-	ton(US)/P	-	-
ton(UK)/P	√	√	-	-	ton(UK)/P	-

	Liquid gas select		Display unit selection			
lb/P	√	√	-	lb/P	lb/P	фунт/имп.
P/g	√	√	P/g	P/g	P/g	имп./г
P/kg	√	√	P/kg	P/kg	P/kg	имп./кг
P/t	√	√	P/t	P/t	P/t	имп./т
P/ton(US)	√	√	-	P/ton(US)	-	-
P/ton(UK)	√	√	-	-	P/ton(UK)	-
P/lb	√	√	-	P/lb	P/lb	имп./фунт
cm³/P	√	√	cm³/P	cm³/P	cm³/P	см³/имп.
L/P	√	√	L/P	l/P	l/P	л/имп.
m³/P	√	√	m³/P	m³/P	m³/P	м³/имп.
gal/P	√	√	-	gal/P	gal/P	гал/имп.
kgal/P	√	√	-	kgal/P	kgal/P	кгал/имп.
ft³/P	√	√	-	Cuft/P	ft³/P	фут³/имп.
bbl/P	√	√	-	bbl/P	-	bbl/имп.
Impgal/P	√	√	-	Impgal/P	Impgal/P	Impgal/ имп.
kImpgal/P	√	√	-	kImpgal/P	kImpgal/P	kImpgal/ имп.
P/cm³	√	√	P/cm³	P/cm³	P/cm³	имп./см³
P/L	√	√	P/L	P/l	P/l	имп./л
P/m³	√	√	P/m³	P/m³	P/m³	имп./м³
P/gal	√	√	-	P/gal	P/gal	имп./гал
P/kgal	√	√	-	P/kgal	P/kgal	имп./кгал
P/ft³	√	√	-	P/Cuft	P/ft³	имп./фут³
P/bbl	√	√	-	P/bbl	-	имп./bbl
P/Impgal	√	√	-	P/Impgal	P/Impgal	имп./ Impgal
P/kImpgal	√	√	-	P/kImpgal	P/kImpgal	имп./ kImpgal
NL/P	N/A	√	NL/P	Nl/P	Nl/P	Норм.л/ имп.
Nm³/P	N/A	√	Nm³/P	Nm³/P	Nm³/P	Норм.м³/ имп.
SL/P	√	√	SL/P	Sl/P	Sl/P	Ст.л/имп.
Sft³/P	√	√	-	Scuft/P	Sft³/P	Ст.фут³/ имп.
Sm³/P	√	√	Sm³/P	Sm³/P	Sm³/P	Ст.м³/имп.
P/NL	N/A	√	P/NL	P/Nl	P/Nl	имп./ Норм.л
P/Nm³	N/A	√	P/Nm³	P/Nm³	P/Nm³	имп./ Норм.м³
P/SL	√	√	P/SL	P/Sl	P/Sl	имп./Ст.л
P/Sft³	√	√	-	P/Scuft	P/Sft³	имп./ Ст.фут³
P/Sm³	√	√	P/Sm³	P/Sm³	P/Sm³	имп./Ст.м³
MJ/P	√	√	MJ/P	MJ/P	MJ/P	МДж/имп.
Btu/P	√	√	-	Btu/P	Btu/P	БТЕ/имп.
P/MJ	√	√	P/MJ	P/MJ	P/MJ	имп./МДж
P/Btu	√	√	-	P/Btu	P/Btu	имп./БТЕ

5.7.5 HART output

Menu for assigning process variables to HART output parameters.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

PV is...QV is

Ⓗ [Detailed setup] ▶ [HART output] ▶ [PV is...QV is]

This parameter is also available in an additional menu. The values can be set in the following menu:

Process variables [▶ 118]

The value Relative density is available for liquid models only.

The values Concentration, Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected, if the concentration function is available on the device.

The values Batch can only be selected, if the batch function is available on the device.

The values Viscosity can only be selected, if the viscosity is available on the device.

The values TuHC change ratio of inlet stiffness or TuHC change ratio of outlet stiffness can only be selected, if the Tube health check is available on the device.

	Value	Description
Ⓗ	Mass flow [Mass flow]	Measured mass flow value.
Ⓗ	Density [Density]	Measured density value.
Ⓗ	Temperature [Temperature]	Measured temperature value.
Ⓗ	Pressure [Pressure]	Measured pressure value.
Ⓗ	Volume flow [Volume flow]	Measured volume flow value.
Ⓗ	Reference density [Reference density]	Calculated reference density value at reference temperature.
Ⓗ	Relative density [Relative density]	Relative density value, which is calculated from the measured density and the selected unit using the equation.
Ⓗ	Corrected volume flow [Corrected volume flow]	Corrected volume flow, which is calculated from the measured mass flow and the reference density.
Ⓗ	Calorific value [Calorific value]	Calorific fixed value or variable value, if equipped with a function for analog input and Calorific value has been set to Analog input select. Calorific value is not available for PV.
Ⓗ Ⓕ	Concentration [Concentration]	Concentration of process medium as determined by the standard/advanced concentration function.
Ⓗ Ⓕ	Net mass flow 1 [Net mass flow 1]	Net flow as determined from the concentration percentage and total mass flow.
Ⓗ Ⓕ	Net mass flow 2 [Net mass flow 2]	Net flow as determined from the concentration percentage and total mass flow.

	Value	Description
Ⓗ Ⓕ	Net volume flow 1 [Net volume flow 1]	Net flow as determined from the concentration percentage and total volume flow.
Ⓗ Ⓕ	Net volume flow 2 [Net volume flow 2]	Net flow as determined from the concentration percentage and total volume flow.
Ⓗ Ⓕ	Net corrected volume flow [Net corrected volume flow]	Net volume flow at the reference temperature as determined from the concentration percentage, temperature, reference density of product and Net mass flow 1 or Net volume flow 1.
Ⓗ Ⓕ	Viscosity [Visc]	Viscosity value, which is calculated from the delta pressure which is received from external differential pressure instrument via Analog input.
Ⓗ	Velocity [Velocity]	Calculated velocity of fluid inside the measuring tube. Velocity is not available for PV is.
Ⓗ	Totalizer 1 [Totalizer 1]	Calculated totalizer 1. Totalizer 1 is not available for PV is.
Ⓗ	Totalizer 2 [Totalizer 2]	Calculated totalizer 2. Totalizer 2 is not available for PV is.
Ⓗ	Totalizer 3 [Totalizer 3]	Calculated totalizer 3. Totalizer 3 is not available for PV is.
Ⓗ	Totalizer 4 [Totalizer 4]	Calculated totalizer 4. Totalizer 4 is not available for PV is.
Ⓗ	Totalizer 5 [Totalizer 5]	Calculated totalizer 5. Totalizer 5 is not available for PV is.
Ⓗ	Totalizer 6 [Totalizer 6]	Calculated totalizer 6. Totalizer 6 is not available for PV is.
Ⓗ Ⓕ	Batch [Batch]	Calculated batch quantity.
Ⓗ	Drive current [Drv curr]	Measured drive current.
Ⓗ Ⓕ	TuHC change ratio of inlet stiffness [Inlet stiff chg]	Calculated TuHC change ratio of inlet stiffness. This is not available for PV is.
Ⓗ Ⓕ	TuHC change ratio of outlet stiffness [Outlet stiff chg]	Calculated TuHC change ratio of outlet stiffness. This is not available for PV is.

5.7.6 Analog input

Menu for configuring Analog input functions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Analog input function	[Func]	[Analog input function]	[▷ 512]
–	Analog input failure option	[Fail opt]	[Analog input failure option]	[▷ 513]
–	Analog input low limit	[Lo lim]	[Analog input low limit]	[▷ 513]

–	Analog input high limit	[Hi lim]	[Analog input high limit]	[▶ 513]

Analog input function

Ⓛ [Detailed setup] ▶ [AI] ▶ [Func]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog input] ▶ [Analog input function]

This parameter can be set in the following menu/menus:

SIL mode [▶ 584]

Sets the purpose of the Analog input.

	Value	Description
–	None [None] [None]	Do nothing. Default value.
–	Pressure compensation [Pres comp] [Pressure compensation]	Set this value if a pressure sensor is attached to the analog input; used for dynamic pressure compensation.
–	Temperature compensation [Temp comp] [Temperature compensation]	Set this value if an external thermometer is to be used for temperature compensation.
Ⓕ	Sensor pressure alarm [Snsr pres alm] [Sensor pressure alarm]	Set this value if an external pressure sensor is attached to the SITRANS FC to be used for a tube leakage alarm.
Ⓕ	Calorific value [Cal] [Calorific value]	Set this value if an external thermometer is used for the measurement of the calorific value. Used for cooling applications.
Ⓕ	Viscosity delta pressure [Visc.deltaP] [Viscosity delta pressure]	Set this value, if an external differential pressure is used for the Viscosity calculation. It is only available when Viscosity option (S15) is valid.
Ⓕ	Pressure compensation and NOC [Pres comp/NOC] [Pressure compensation and NOC]	An analog input is used as pressure compensation and NOC. It is only available when NOC option (S14) is valid
Ⓕ	Pressure NOC [NOC pres] [Pressure NOC]	An analog input is used as pressure compensation and NOC. It is only available when NOC option (S14) is valid.

Analog input failure option

Ⓛ [Detailed setup] ▶ [AI] ▶ [Fail opt]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog input] ▶ [Analog input failure option]

Sets the value to be used when an Analog input alarm occurs.

	Value	Description
–	Fixed value [Fix val] [Fixed value]	Fixed value that has been defined when the purpose of the Analog input was selected is used.
–	Hold [Hold] [Hold]	Value before Analog input alarm occurred is used. Default value.

Analog input low limit

Ⓛ [Detailed setup] ▶ [AI] ▶ [Lo lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog input] ▶ [Analog input low limit]

Sets the lower limit current during normal operation.

	Value	Description
–	Numeric digits	Setting range: 2.4 mA – 3.8 mA. Default value is 3.60 mA.

Analog input high limit

Ⓛ [Detailed setup] ▶ [AI] ▶ [Hi lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Analog input] ▶ [Analog input high limit]

Sets the higher limit current during normal operations.

	Value	Description
–	Numeric digits	Setting range: 20.5 mA – 21.6 mA Default value is 21.00 mA.

5.7.7 Status input

Menu for configuring Status input functions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Status input function	[Func]	[Status input function]	[▷ 514]
–	Status input active mode	[Act mode]	[Status input active mode]	[▷ 515]

Status input function

Ⓛ [Detailed setup] ▶ [Sts in] ▶ [Func]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Status input] ▶ [Status input function]

This parameter can be set in the following menu/menus:

SIL mode [▶ 585]

Defines the action when the status input signal becomes active.

	Value	Description
–	No function [No func] [No function]	Do nothing. Default value.
–	Autozero [AZ] [Autozero]	Autozero is executed by status input.
–	Total function [Ttl func] [Total function]	Start the function that has been defined in the parameter Total 1 – 6 status input function.
–	0% signal lock [0% lock] [0% signal lock]	Current outputs 1 and 2 are automatically set to 4 mA by status input and cannot be changed. This output takes precedence over output by alarm.
–	Synchronization of clock [Clock sync] [Clock synchronization]	Synchronizes time with internal clock time. If time is less than 29 minutes, 59 seconds, minutes and seconds are reset. Example: 11 hours, 29 minutes, 10 seconds → 11 hours, 00 minutes, 00 seconds 11 hours, 31 minutes, 5 seconds → 12 hours, 00 minutes, 00 seconds
–	Confirm acknowledge [Confirm ack] [Confirm acknowledge]	Acknowledges all applicable events; this means alarm, warning, etc.
Ⓕ	Concentration set select [Conc set sel] [Concentration set select]	Changes the concentration set according to the status of Status input (open or short). The selected set is defined in the parameters Select concentration set status input open and Select concentration set status input short. It is only available when Concentration option is valid
Ⓕ	Batch function [Batch] [Batch function]	This is used for Batch function. Need to set if Status input is used for Batch. It is only available when Batch option (S13) is valid.
Ⓕ	Start one TuHC as interrupt [Start one TuHC] [Start one TuHC as interrupt]	Tube health check can be performed once via status input. It is only available when Tube health check option (S12) is valid.

Status input active mode

Ⓛ [Detailed setup] ▶ [Sts in] ▶ [Act mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Status input] ▶ [Status input active mode]

Sets the status input to active mode.

	Value	Description
–	Open active [Open(Off) act] [Open active]	Open state of status input is defined as active. The time when the status input is opened, the falling edge or open status will be detected.
–	Short active [Short(On) act] [Short active]	Short state of status input is defined as active. The time when the status input is shorted, the rising edge or short status will be detected. Default value.

5.7.8 Totalizer

Menu for configuring totalizer functions.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Totalizer additional parameters	[Ttl add]	[Totalizer additional parameters]	[▷ 515]
–	Totalizer 1 – 6	[Ttl1 – 6]	[Totalizer 1 – 6]	[▷ 516]

Totalizer additional parameters

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl add]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer additional parameters]

Enables or disables the menu for accessing parameters that are located under the Additional function menu of Totalizer.

To access the parameters, this parameter must be set to Apply.

	Value	Description
–	Not apply [Not apply] [Not apply]	Menu for additional parameters of the Totalizer is disabled. Default value.
–	Apply [Apply] [Apply]	The menu is enabled.

Totalizer 1 – 6

Set of menus for configuring the totalizers 1 – 6.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Total 1 – 6 channel	[Channel]	[Total 1 – 6 channel]	[▷ 516]
–	Total 1 – 6 unit	[Unit]	[Total 1 – 6 unit]	[▷ 517]

–	Total 1 – 6 failure option	[Fail opt]	[Total 1 - 6 failure option]	[▸ 518]
–	Total 1 – 6 start/stop	[Start/Stop]	[Total 1 - 6 start/stop]	[▸ 519]
–	Additional function	[Add func]	[Additional function]	[▸ 519]

Total 1 – 6 channel

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 - 6] ▶ [Channel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 - 6] ▶ [Total 1 - 6 channel]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 314]*
- *Basic setup [▸ 363]*

Sets the process value for Total 1 – 6.

Net mass flow 1 – 2, Net volume flow 1 – 2 and Net corrected volume flow can only be selected if the concentration function is available on the device.

	Value	Description
–	Mass flow [Mass] [Mass flow]	Sets the displayed process variables for Total 1 – 6. Default value for Total 1 is Mass flow. Default value for Total 2 is Volume flow. Default value for Total 3 is Corrected volume flow. Default value for Total 4 is Mass flow. Default value for Total 5 is Volume flow. Default value for Total 6 is Corrected volume flow.
–	Volume flow [Vol] [Volume flow]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Energy [Energy] [Energy]	

	Value	Description
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	Sets the displayed process variables for Total 1 – 6. Default value for Total 1 is Mass flow. Default value for Total 2 is Volume flow. Default value for Total 3 is Corrected volume flow. Default value for Total 4 is Mass flow. Default value for Total 5 is Volume flow. Default value for Total 6 is Corrected volume flow.
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
–	Off [Off] [Off]	

Total 1 – 6 unit

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Total 1 – 6 unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 315]*

Sets the unit for Total 1 – 6.

The unit displayed on the LCD may vary depending on the setting of the parameter *Display unit selection*. During HART communication, the actually displayed unit may vary depending on the HART tool. For details, refer to *Units of the parameters [▸ 809]*.

	Value	Description
–	g	Sets the unit for Total 1 – 6 . Default value for Total 1 is kg. Default value for Total 2 is m^3 Default value for Total 3 is m^3 Default value for Total 4 is kg. Default value for Total 5 is m^3. Default value for Total 6 is m^3(standard).
–	kg	
–	t	
–	ton(US)	
–	ton(UK)	
–	lb	
–	cm^3	
–	L	
–	m^3	
–	gal	
–	kgal	
–	ft^3	
–	bbl	
–	Impgal	
–	kImpgal	
–	L(Normal)	
–	m^3(Normal)	
–	L(standard)	
–	ft^3(standard)	
–	MMscuft	
–	m^3(standard)	
–	MJ	
–	Btu	
–	User unit	

Total 1 – 6 failure option

Ⓛ **[Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Fail opt]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Total 1 – 6 failure option]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 316]*
- *Basic setup [▸ 365]*

Defines the behavior of the totalizers when an alarm occurs.

	Value	Description
–	Run **[Run]** [Run]	Totalizer accumulates the assigned process value anyway. Default value.
–	Hold **[Hold]** [Hold]	Totalizer stops accumulating the process value.
–	Last Valid Value **[Last valid val]** [Last valid value]	Totalizer accumulates the value that was measured before the alarm occurred.

Total 1 – 6 start/stop

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Start/Stop]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Total 1 – 6 start/stop]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 317]*
- *Basic setup [▸ 365]*
- *Diag/Service [▸ 172]*

Starts or stops Totalizer 1 – 6 and shows its status.

	Value	Description
–	Stop [Stop] [Stop]	Totalizer 1 – 6 stops accumulation of the assigned process value. When accumulation is stopped, the value is kept.
–	Start [Start] [Start]	Totalizer starts accumulation of assigned process value. If the value is not 0, the accumulation starts from that value.

Additional function

Menu for configuring the Totalizer in detail. The menu is only available when *Process variables additional parameters* has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Total 1 – 6 preset value	[Preset val]	[Total 1 – 6 preset value]	*[▸ 520]*
–	Total 1 – 6 reset/preset	[Reset/Preset]	[Total 1 – 6 reset/preset]	*[▸ 520]*
–	Total 1 – 6 option	[Opt]	[Total 1 – 6 option]	*[▸ 520]*
–	Total 1 – 6 set point	[Set point]	[Total 1 – 6 set point]	*[▸ 522]*
–	Total 1 – 6 user unit	[User unit]	[Total 1 – 6 user unit]	*[▸ 522]*
–	Total 1 – 6 conversion factor	[Conv factor]	[Total 1 – 6 conversion factor]	*[▸ 522]*
–	Total 1 – 6 status input function	[Sts in cfg]	[Total 1 – 6 status input function]	*[▸ 522]*
–	Total 1 – 3 density lower value	[Dens lo lim]	[Total 1 – 3 density lower value]	*[▸ 523]*
–	Total 1 – 3 density upper value	[Dens hi lim]	[Total 1 – 3 density upper value]	*[▸ 523]*
–	Total 1 – 3 temperature lower value	[Temp lo lim]	[Total 1 – 3 temperature lower value]	*[▸ 523]*
–	Total 1 – 3 temperature upper value	[Temp hi lim]	[Total 1 – 3 temperature upper value]	*[▸ 524]*
–	Total density hysteresis	[Dens hys]	[Total density hysteresis]	*[▸ 524]*
–	Total temperature hysteresis	[Temp hys]	[Total temperature hysteresis]	*[▸ 524]*
–	Total 1 – 3 24 hours	[24h]	[Total 1 – 3 24 hours]	*[▸ 525]*

Total 1 – 6 preset value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Preset val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 preset value]

Sets the value of the totalizer when preset has been selected and set in Total 1 – 6 reset/preset.

	Value	Description
–	Numeric digits	Default value is 0.

Total 1 – 6 reset/preset

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Reset/Preset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 reset/preset]

Resets or presets Totalizer.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Description
–	Not Execute [Not exe] [Not Execute]	Do nothing. Default value.
–	Reset [Reset] [Reset]	Resets the value of the totalizer to 0. Value returns automatically to Not Execute after each operation.
–	Preset [Preset] [Preset]	Sets the value of the totalizer to the value defined in the parameter Total 1 – 6 preset value. Value returns automatically to Not Execute after each operation.

Total 1 – 6 option

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Opt]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 option]

Sets the totalization mode of Totalizer 1 – 6.

	Value	Description
–	Balanced [Balanced] [Balanced]	Positive and negative incoming values are added to the total.
–	Absolute [Abs] [Absolute]	Absolute values of positive and negative incoming values are added to the total.
–	Positive only [Positive only] [Positive only]	Default value. Only positive incoming values are added to the total. Negative values are ignored.

	Value	Description
–	Negative only [**Negative only**] [Negative only]	Only negative incoming values are added to the total. Positive values are ignored.
–	Hold [**Hold**] [Hold]	Value of the total is held, not changed.
–	Density (Balanced) [**Dens (Balanced)**] [Density (Balanced)]	Totalization with Balanced is performed only when Density value which is indicated on communication parameter is in the range of between Total density lower value and Total density upper value. This selection is only available for Total 1 – 3.
–	Density (Absolute) [**Dens (Abs)**] [Density (Absolute)]	Totalization with Absolute is performed only when Density value which is indicated on communication parameter is in the range of between Total density lower value and Total density upper value. This selection is only available for Total 1 – 3.
–	Density (Positive only) [**Dens (Positive)**] [Density (Positive only)]	Totalization with Only Positive is performed only when Density value is in the range of between Total density lower value and Total density upper value. This selection is only available for Total 1 – 3.
–	Density (Negative only) [**Dens (Negative)**] [Density (Negative only)]	Totalization with Only Negative is performed only when Density value is in the range of between Total density lower value and Total density upper value. This selection is only available for Total 1 – 3.
–	Density + Temperature (Balanced) [**Dens+Temp (Balanced)**] [Density + Temperature(Balanced)]	Totalization with Balanced is performed only when Density value and Temperature value which are indicated on communication parameters are in the range. The totalization range is set by Total density lower value and Total density upper value for the Density value, and Total temperature lower value and Total temperature upper value for the Temperature value. This selection is only available for Total 1 – 3.
–	Density +Temperature (Absolute) [**Dens+Temp (Abs)**] [Density +Temperature(Absolute)]	Totalization with Absolute is performed only when Density value and Temperature value which are indicated on communication parameters are in the range. The totalization range is set by Total density lower value and Total density upper value for the Density value, and Total temperature lower value and Total temperature upper value for the Temperature value. This selection is only available for Total 1 – 3.
–	Density + Temperature (Positive only) [**Dens+Temp (Positive)**] [Density + Temperature(Positive only)]	Totalization with Only Positive is performed only when Density value and Temperature value which are indicated on communication parameters are in the range. The totalization range is set by Total density lower value and Total density upper value for the Density value, and Total temperature lower value and Total temperature upper value for the Temperature value. This selection is only available for Total 1 – 3.
–	Density + Temperature (Negative only) [**Dens+Temp (Negative)**] [Density + Temperature(Negative only)]	Totalization with Only Negative is performed only when Density value and Temperature value which are indicated on communication parameters are in the range. The totalization range is set by Total density lower value and Total density upper value for the Density value, and Total temperature lower value and Total temperature upper value for the Temperature value. This selection is only available for Total 1 – 3.

Total 1 – 6 set point

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Set point]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1] ▶ ▶ [Additional function] ▶ [Total 1 set point]

Sets the value of Totalizer at which an alarm is generated.

	Value	Description
–	Numeric digits	Default value is 0. If the value is 0, no alarm is ever generated at any value of Totalizer 1 – 6.

Total 1 – 6 user unit

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 user unit]

Sets the user-defined unit for Totalizer 1 – 6.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Total 1 – 6 conversion factor

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 conversion factor]

Sets the conversion factor for the Total 1 – 6 user-defined unit.

	Value	Description
–	Numeric digits	Default value is 1. Totalizer value at user-defined unit = Totalizer n value * Total n conversion factor 1 – 6.

Total 1 – 6 status input function

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Sts in cfg]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total 1 – 6 status input function]

Sets the action of Totalizer when the status of Status input becomes active. To use this function, the parameter Status input function has to be set to Total.

	Value	Description
–	No Function [No func] [No Function]	Do nothing. Default value.
–	Reset [Reset] [Reset]	Reset the value of the totalizer to 0 when Status input becomes active.

	Value	Description
–	Preset [Preset] [Preset]	Set the value of the totalizer to the value defined in the parameter Total 1 – 6 preset value when Status input becomes active.
–	Start/Stop [Start/Stop] [Start/Stop]	Addition starts from the current total value when the status of Status input is active. Addition stops when the status is not active.
–	24hours value update [24h update] [24hours value update]	24 hours value can be manually updated when Status input is active. First 30 minutes are not available after 24 hours value is updated even if status input is active.

Total 1 – 3 Density Lower Value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [Dens lo lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 density lower value]

Setting to perform totalization. This parameter is available when the Total option parameter is set to ”Density(Balanced)”, ”Density(Absolute)”, ”Density(Only positive)” or ”Density(Only negative)”. When Density value which is displayed in communication parameter is between Total density lower value and Total density upper value, totalization is performed.

This function is only available for Total1 – 3.

	Value	Description
–	Numeric digits	Setting range: 0.0 – Default value is 0.8 [kg/L].

Total 1 – 3 Density Upper Value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [Dens hi lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 density upper value]

Setting to perform totalization. This parameter is available when Total option parameter is set to ”Density(Balanced)”, ”Density(Absolute)”, ”Density(Only positive)” or ”Density(Only negative)”. When Density value which is displayed in communication parameter is between Total density lower value and Total density upper value totalization is performed.

This function is only available for Total1 – 3.

	Value	Description
–	Numeric digits	Setting range: 0.0 – Default value is 1.2 [kg/L].

Total 1 – 3 Temperature Lower Value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [Temp lo lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 temperature lower value]

Setting to perform totalization. This parameter is available when Total option parameter is set to ”Density + Temp (Balanced)”, ”Density + Temp (Absolute)”, ”Density + Temp (Only positive)” or ”Density + Temp (Only negative)”. When Density value which is displayed in

communication parameter is between Total density lower value and Total density upper value, and Temperature value which is displayed in communication parameters between Total temperature upper value and Total temperature lower value, totalization is performed.

This function is only available for Total1 – 3.

	Value	Description
–	Numeric digits	Default value is 0 [°C].

Total 1 – 3 Temperature Upper Value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [Temp hi lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 temperature upper value]

Setting to perform totalization. This parameter is available when Total option parameter is set to ”Density + Temp (Balanced)”, ”Density + Temp (Absolute)”, ”Density + Temp (Only positive)” or ”Density + Temp (Only negative)”. When Density value which is displayed in communication parameter is between Total density lower value and Total density upper value, and Temperature value which is displayed in communication parameters between Total temperature upper value and Total temperature lower value, totalization is performed.

This function is only available for Total1 – 3.

	Value	Description
–	Numeric digits	Default value is 100 [°C].

Total Density Hysteresis

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶ [Dens hys]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total density hysteresis]

This parameter is only available for totalizers which is working totalizer function by density range. Available condition is when Density(Balanced), Density(Absolute), Density(Only positive) or Density(Only negative) is selected in Total option.

If the totalizer value goes outside the setting range of Total density lower value - hysteresis (convert % to actual value) and Total density upper value + hysteresis (convert % to actual value), totalization stops until the value returns to lower value or upper value.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 10.0 Default value is 0.1 %.

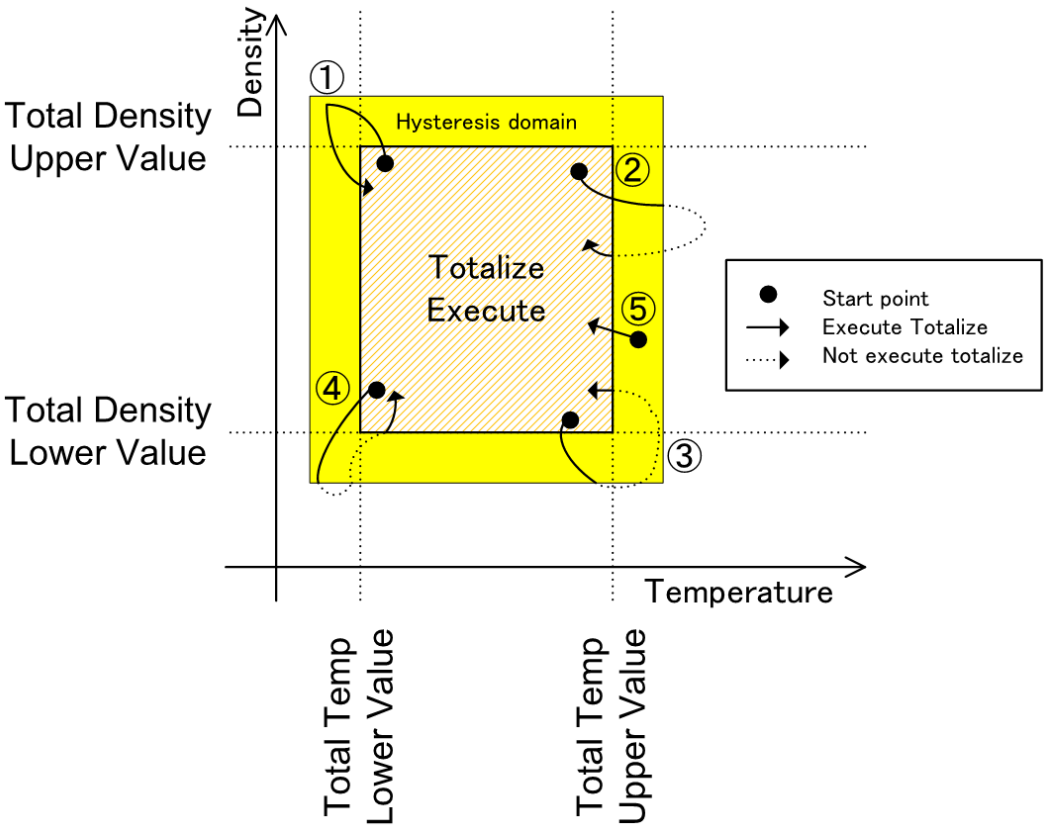
Total Temperature Hysteresis

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 6] ▶ [Add func] ▶[Temp hys]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 6] ▶ [Additional function] ▶ [Total temperature hysteresis]

This parameter is only available for totalizers which is working totalizer function by density and temperature range. Available condition is when Density + Temp (Balanced), Density + Temp (Absolute), Density + Temp (Only positive) or Density + Temp (Only negative) is selected in Total option.

If the totalizer value goes outside the setting range of Total density/temperature lower value - each hysteresis (convert % to actual value) and Total density/temperature upper value + each hysteresis (convert % to actual value), totalization stops until the value returns to lower value or upper value.



	Value	Description
–	Numeric digits	Setting range: 0.0 – 10.0 Default value is 0.1 %.

Total 1 – 3 24 hours

Menu to configure Totalizer for 24 hours in detail. The menu is only available for Totalizer 1 – 3.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Total 1 – 3 24hours value	[24h val]	[Total 1 - 3 24hours value]	[526]
–	Total 1 – 3 24hours start date	[Start date]	[Total 1 - 3 24hours start date]	[526]
–	Total 1 – 3 24hours start time	[Start time]	[Total 1 - 3 24hours start time]	[526]
–	Total 1 – 3 24hours start operation time	[Start op time]	[Total 1 - 3 24hours start operation time]	[526]
–	Total 1 – 3 24hours last update date	[Last date]	[Total 1 - 3 24hours last update date]	[527]
–	Total 1 – 3 24hours last update time	[Last time]	[Total 1 - 3 24hours last update time]	[527]
–	Total 1 – 3 24hours last update operation time	[Last op time]	[Total 1 - 3 24hours last update operation time]	[527]

Total 1 – 3 24hours value

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [24h val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24hours value]

Shows the totalization value every 24 hours after starting totalization. This value is updated every 24 hours. The totalizer value doesn't affect this parameter value. If totalization is stopped before 24hours has passed, this parameter value is NOT updated. In addition, for example, parameter value is indicated when 24hours has passed after starting totalization if totalization is stopped when 30hours has passed. In this case, when totalization is started again, totalization value is updated after 24hours has passed because totalization and time is counted from 0.

	Value	Description
–	Numeric digits	Default value is 0.0 [kg].

Total 1 – 3 24hours start date

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Start date]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24hours start date]

Shows the start date when Total 1 – 3 24hours value is started by starting Total 1 – 3 execution or restarted by the reset/preset function.

	Value	Description
–	Date	Shows the date when the 24hours totalizer was started.

Total 1 – 3 24hours start time

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Start time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24hours start time]

Shows the start time when Total 1 – 3 24hours value is started by starting Total 1 – 3 execution or restarted by reset/preset function.

	Value	Description
–	Time	Shows the time when 24hours totalizer was started.

Total 1 – 3 24hours start operation time

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Start op time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24hours start operation time]

Shows the operation time when Total 1 – 3 24hours value is started by starting Total 1 – 3 execution or restarted by reset/preset function.

	Value	Description
–	Numeric digits	Shows the operation time when the 24hours totalizer was started.

Total 1 – 3 24hours last update date

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Last date]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24 hours last update date]

	Value	Description
–	Date	Shows the date when last 24hours totalizer was updated.

Total 1 – 3 24hours last update time

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Last time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ []

	Value	Description
–	Time	Shows the time when last 24hours totalizer was updated.

Total 1 – 3 24hours last update operation time

Ⓛ [Detailed setup] ▶ [Ttl] ▶ [Ttl1 – 3] ▶ [Add func] ▶ [24h] ▶ [Last op time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Totalizer] ▶ [Totalizer 1 – 3] ▶ [Additional function] ▶ [Total 1 – 3 24 hours] ▶ [Total 1 – 3 24hours last update operation time]

	Value	Description
–	Numeric digits	Default value is 1.

5.7.9 Display

Menu for configuring display or process variables and other information.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Display additional parameters	[Disp add]	[Display additional parameters]	[▷ 527]
Ⓗ	Display unit selection	–	[Display unit selection]	[▷ 528]
–	Display select	[Disp sel]	[Display select]	[▷ 529]
–	Display format	[Disp format]	[Display format]	[▷ 538]
–	Display operation configuration	[Disp op cfg]	[Display operation configuration]	[▷ 551]

Display additional parameters

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp add]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display additional parameters]

Parameter to enable or disable the menu for accessing parameters that are located under the Additional function menu of Display. To access the parameters, this parameter must be set to Apply.

	Value	Description
–	Not apply [Not apply] [Not apply]	Menu for additional parameters of the Display is disabled. Default value.
–	Apply [Apply] [Apply]	The menu is enabled.

Display Unit Selection

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Unit sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display unit selection]

Sets the regional unit set to be used.

When this parameter is changed, the display of some process units that are not supported by the selected unit set turns blank. In that case, the process unit parameters must be reset.

If the SI option has been specified, it is fixed for Japan and cannot be changed. Refer to *Units description [▶ 818]* to confirm the units that are defined in each regional set.

When Display unit selection is changed and then units for Process variables don't meet with selected regional unit, these units are automatically changed to default unit.

When Temperature unit is set to degF and Display unit selection is changed US to Metric, Temperature unit is automatically changed to degC.

	Value	Description
–	Metric [Metric] [Metric]	Metric units. Default value.
–	US [US] [US]	Units mainly used in the USA.
–	UK [UK] [UK]	Units mainly used in the UK.
–	Russia [Russia] [Russia]	Units in Russia. Available only for language package 2.
–	Japan [Japan] [Japan]	Units for Japan to comply with the Japanese measurement law. Available only for language package 1.

Display select

Menu for assigning process variables to be displayed.

Display Measurement Mode

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp sel] ▶ [Meas mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display measurement mode]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup
  - *Display [▸ 529]*
  - *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
–	Normal [Normal] [Normal]	Normal display mode. Default value.
–	Trend online [Trend] [Trend online]	Real-time trend chart of process values that were specified in the parameters, Logging 1 – 4 Select. The trend chart of one of four process values is displayed. By using the Up/Down operation on the Indicator, the process value to be shown as a trend chart can be changed when the Display Scroll parameters are set to Manual.
Ⓕ	Batch control [Batch control] [Batch contol]	Batch specific screen can be displayed on Indicator.

Display Select 1 – 4

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp sel] ▶ [Sel1 – 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display select] ▶ [Display select 1 – 4]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 318]*
- *Basic setup [▸ 366]*

Assigns process variables to display lines 1, 2, 3 and 4 of the LCD display. On display, Display measurement mode can be selected and Batch display select 1 – 4 or Logging select 1 – 4 can be selected based on the selection of Display measurement mode.

	Value	Description
–	None [None] [None]	
–	Mass flow [Mass] [Mass flow]	
–	Density [Dens] [Dens]	
–	Temperature [Temp] [Temp]	
–	Volume flow [Vol] [Vol flo]	
–	Reference density [Ref dens] [Reference density]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
–	Relative density [Rel dens] [Relative density]	
–	Corrected volume flow [Corr vol] [Corrected volume flow]	
–	Pressure [Pres] [Pressure]	
–	Totalizer 1 [Ttl1] [Totalizer 1]	
–	Totalizer 2 [Ttl2] [Totalizer 2]	

	Value	Description
–	Totalizer 3 [Ttl3] [Totalizer 3]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
–	Totalizer 4 [Ttl4] [Totalizer 4]	
–	Totalizer 5 [Ttl5] [Totalizer 5]	
–	Totalizer 6 [Ttl6] [Totalizer 6]	
–	Mass flow % graph [Mass %] [Mass flow % graph]	
–	Volume flow % graph [Vol %] [Volume flow % graph]	
–	Corrected volume flow % graph [Corr vol %] [Corrected volume flow % graph]	
–	Tag [Tag] [Tag]	
–	Long tag [Long tag] [Long tag]	
–	Velocity [Vel] [Velocity]	
Ⓕ	Concentration [Conc] [Concentration]	
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	

	Value	Description
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc] [Viscosity]	
–	Drive current [Drv curr] [Drive current]	
–	24hours totalizer 1 [24h ttl1] [24hours totalizer 1]	Sets Display select 1 – 4. The default value for Display select 1 is Mass flow. None is not available for Display select 1. The default value for Display select 2 is Density. The default value for Display select 3 is Temperature. The default value for Display select 4 is Volume flow.
–	24hours totalizer 2 [24h ttl2] [24hours totalizer 2]	
–	24hours totalizer 3 [24h ttl3] [24hours totalizer 3]	
Ⓕ	Gas void fraction [GVF] [Gas void fraction]	
–	Display unit mass flow dual [Mass flow (dual)] [Display unit mass flow dual]	
–	Display unit density dual [Dens (dual)] [Display unit density dual]	

Batch display select 1 – 4

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp sel] ▶ [Sel1 – 4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display select] ▶ [Batch display select 1 – 4]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 330]*
- *Basic setup [▸ 387]*

Sets Display select for batch, if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode.

	Value	Value description
–	None [None]	Sets Batch display select 1 – 4. The default value for Batch display select 1 is Batch quantity. None is not available for Batch display select 1. The default value for Batch display select 2 is Batch upward value. The default value for Batch display select 3 is Total batch quantity. The default value for Batch display select 4 is Batch counter value.
Ⓕ	Batch quantity [Qty]	
Ⓕ	Batch upwards value [Upward val]	
Ⓕ	Batch downwards value [Dwnward val]	
Ⓕ	Batch total quantity [Ttl qty]	
Ⓕ	Batch counter value [Cnt val]	
Ⓕ	Batch select [Batch sel]	
Ⓕ	Batch variable select [Batch var sel]	
Ⓕ	Compensation value [Comp val]	
Ⓕ	Internal close point [Inter close point]	
Ⓕ	Batch time [Batch time]	
–	Mass flow [Mass]	
–	Density [Dens]	
–	Temperature [Temp]	
–	Volume flow [Vol]	

	Value	Value description
–	Reference density [Ref dens]	
–	Corrected volume flow [Corr vol]	
–	Pressure [Pres]	
–	Tag [Tag]	
–	Long Tag [Long tag]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Additional function

Menu for configuring Display select in detail. The menu is only available when *Display additional parameters* has been set to Apply .

Display Select 5 – 20

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp sel] ▶ [Add func] ▶ [Sel 5 – 20]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display select] ▶ [Display select 5 – 20]

Assigns process variables to display lines 5 – 20 of the LCD display.

	Value	Description
–	None **[None]** [None]	Sets the unit for Display select 5 – 20. Default value for Display select 5 is Reference density. Default value for Display select 6 is Corrected volume flow. Default value for Display select 7 is Pressure. Default value for Display select 8 is Totalizer 1. Default value for Display select 9 is Totalizer 2. Default value for Display select 10 is Totalizer 3. Default value for Display select 11 is Totalizer 4. Default value for Display select 12 is Totalizer 5. Default value for Display select 13 is Totalizer 6. Default value for Display select 14 is Mass flow % graph. Default value for Display select 15 is Volume flow % graph. Default value for Display select 16 is Corrected volume flow % graph. Default value for Display select 17 is Tag. Default value for Display select 18 is Long tag. Default value for Display select 19 is Velocity. Default value for Display select 20 is Drive current. Sets the unit for Display select 5 – 20.
–	Mass flow **[Mass]** [Mass flow]	
–	Density **[Dens]** [Dens]	
–	Temperature **[Temp]** [Temp]	
–	Volume flow **[Vol]** [Vol flo]	
–	Reference density **[Ref dens]** [Reference density]	
–	Relative density **[Rel dens]** [Relative density]	
–	Corrected volume flow **[Corr vol]** [Corrected volume flow]	
–	Pressure **[Pres]** [Pressure]	
–	Totalizer 1 **[Ttl1]** [Totalizer 1]	

	Value	Description
–	Totalizer 2 [Ttl2] [Totalizer 2]	Sets the unit for Display select 5 – 20. Default value for Display select 5 is Reference density. Default value for Display select 6 is Corrected volume flow. Default value for Display select 7 is Pressure. Default value for Display select 8 is Totalizer 1. Default value for Display select 9 is Totalizer 2. Default value for Display select 10 is Totalizer 3. Default value for Display select 11 is Totalizer 4. Default value for Display select 12 is Totalizer 5. Default value for Display select 13 is Totalizer 6. Default value for Display select 14 is Mass flow % graph. Default value for Display select 15 is Volume flow % graph. Default value for Display select 16 is Corrected volume flow % graph. Default value for Display select 17 is Tag. Default value for Display select 18 is Long tag. Default value for Display select 19 is Velocity. Default value for Display select 20 is Drive current. Sets the unit for Display select 5 – 20.
–	Totalizer 3 [Ttl3] [Totalizer 3]	
–	Totalizer 4 [Ttl4] [Totalizer 4]	
–	Totalizer 5 [Ttl5] [Totalizer 5]	
–	Totalizer 6 [Ttl6] [Totalizer 6]	
–	Mass flow % graph [Mass %] [Mass flow % graph]	
–	Volume flow % graph [Vol %] [Volume flow % graph]	
–	Corrected volume flow % graph [Corr vol %] [Corrected volume flow % graph]	
–	Tag [Tag] [Tag]	
–	Long tag [Long tag] [Long tag]	
–	Velocity [Vel] [Velocity]	

	Value	Description
Ⓕ	Concentration [Conc] [Concentration]	Sets the unit for Display select 5 – 20. Default value for Display select 5 is Reference density. Default value for Display select 6 is Corrected volume flow. Default value for Display select 7 is Pressure. Default value for Display select 8 is Totalizer 1. Default value for Display select 9 is Totalizer 2. Default value for Display select 10 is Totalizer 3. Default value for Display select 11 is Totalizer 4. Default value for Display select 12 is Totalizer 5. Default value for Display select 13 is Totalizer 6. Default value for Display select 14 is Mass flow % graph. Default value for Display select 15 is Volume flow % graph. Default value for Display select 16 is Corrected volume flow % graph. Default value for Display select 17 is Tag. Default value for Display select 18 is Long tag. Default value for Display select 19 is Velocity. Default value for Display select 20 is Drive current. Sets the unit for Display select 5 – 20.
Ⓕ	Net mass flow 1 [Net mass1] [Net mass flow 1]	
Ⓕ	Net mass flow 2 [Net mass2] [Net mass flow 2]	
Ⓕ	Net volume flow 1 [Net vol1] [Net volume flow 1]	
Ⓕ	Net volume flow 2 [Net vol2] [Net volume flow 2]	
Ⓕ	Net corrected volume flow [Net corr vol] [Net corrected volume flow]	
Ⓕ	Viscosity [Visc]	
–	Drive current [Drv curr] [Drive current]	
–	24hours totalizer 1 [24h ttl1] [24hours totalizer 1]	
–	24hours totalizer 2 [24h ttl2] [24hours totalizer 2]	
–	24hours totalizer 3 [24h ttl3] [24hours totalizer 3]	

	Value	Description
Ⓕ	Gas void fraction [GVF] [Gas void fraction]	Sets the unit for Display select 5 – 20. Default value for Display select 5 is Reference density. Default value for Display select 6 is Corrected volume flow. Default value for Display select 7 is Pressure. Default value for Display select 8 is Totalizer 1. Default value for Display select 9 is Totalizer 2. Default value for Display select 10 is Totalizer 3. Default value for Display select 11 is Totalizer 4. Default value for Display select 12 is Totalizer 5. Default value for Display select 13 is Totalizer 6. Default value for Display select 14 is Mass flow % graph. Default value for Display select 15 is Volume flow % graph. Default value for Display select 16 is Corrected volume flow % graph. Default value for Display select 17 is Tag. Default value for Display select 18 is Long tag. Default value for Display select 19 is Velocity. Default value for Display select 20 is Drive current. Sets the unit for Display select 5 – 20.
–	Display unit mass flow dual [Mass flow (dual)] [Display unit mass flow dual]	
–	Display unit density dual [Dens (dual)] [Display unit density dual]	

Display format

Menu for configuring the Display format.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Display format mass flow	[Format mass]	[Display format mass flow]	[▸ 538]
–	Display format density	[Format dens]	[Display format density]	[▸ 539]
–	Display format temperature	[Format temp]	[Display format temperature]	[▸ 540]
–	Display format volume flow	[Format vol]	[Display format volume flow]	[▸ 541]
–	Display format total 1 – 3	[Format ttl1 - 3]	[Display format total 1 - 3]	[▸ 544]
–	Additional function	[Add func]	[Additional function]	[▸ 545]

Display format mass flow

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format mass]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Display format mass flow]

Sets the decimal point position for the mass flow value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display format density

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Display format density]

Sets the decimal point position for the density value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.

	Value	Description
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Temperature

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Display format temperature]

Sets the decimal point position for the temperature value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right. Default value.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Volume Flow

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format vol]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Display format volume flow]

Sets the decimal point position for the volume flow value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Pressure

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format pres]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format pressure]

Sets the decimal point position for the pressure value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.

	Value	Description
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Reference Density

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format ref dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format reference density]

Sets the decimal point position for the reference density value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.

	Value	Description
–	5 digit [5digit] [5 digit]	5 digits from right.

Display format relative density

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format rel dens]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format relative density]

Sets decimal point position for relative density value.

If the value cannot be displayed by specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Corrected Volume Flow

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format corr vol]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format corrected volume flow]

Sets the decimal point position for the corrected volume flow value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Total 1 – 3

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format ttl1 - 3]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Display format total 1 - 3]

Sets the decimal point position for total 1 – 3.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.

	Value	Description
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.
–	6 digit [6digit] [6 digit]	6 digits from right.
–	7 digit [7digit] [7 digit]	7 digits from right.

Additional function

Menu for configuring the Display function in detail. The menu is only available when Display additional parameters has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Display format pressure	[Format pres]	[Display format pressure]	[541]
–	Display format reference density	[Format ref dens]	[Display format reference density]	[542]
–	Display format relative density	[Format rel dens]	[Display format relative density]	[543]
–	Display format corrected volume flow	[Format corr vol]	[Display format corrected volume flow]	[543]
Ⓕ	Display format concentration	[Format conc]	[Display format concentration]	[546]
Ⓕ	Display format net mass flow 1 – 2	[Format net mass1]	[Display format net mass flow 1 - 2]	[546]
Ⓕ	Display format net volume flow 1 – 2	[Format net vol1]	[Display format net volume flow 1 - 2]	[547]
Ⓕ	Display format net corrected volume flow	[Format net corr vol]	[Display format net corrected volume flow]	[548]
–	Display format total 4 – 6	[Format ttl 4 - 6]	[Display format total 4 - 6]	[548]
Ⓕ	Display format batch	[Format batch]	[Display format batch]	[549]
Ⓕ	Display format viscosity	[Visc]	[Display format viscosity]	[550]

Display Format Concentration

Ⓛ **[Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Format conc]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format concentration]

Sets the decimal point position for the concentration value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto **[Auto]** [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit **[0digit]** [0 digit]	0 digit from right.
Ⓕ	1 digit **[1digit]** [1 digit]	1 digit from right.
Ⓕ	2 digit **[2digit]** [2 digit]	2 digits from right.
Ⓕ	3 digit **[3digit]** [3 digit]	3 digits from right.
Ⓕ	4 digit **[4digit]** [4 digit]	4 digits from right.
Ⓕ	5 digit **[5digit]** [5 digit]	5 digits from right.

Display Format Net Mass Flow 1 – 2

Ⓛ **[Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Format net mass1 – 2]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format net mass flow 1 – 2]

Sets the decimal point position for net mass 1 – 2 values.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto **[Auto]** [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit **[0digit]** [0 digit]	0 digit from right.

	Value	Description
Ⓕ	1 digit [1digit] [1 digit]	1 digit from right.
Ⓕ	2 digit [2digit] [2 digit]	2 digits from right.
Ⓕ	3 digit [3digit] [3 digit]	3 digits from right.
Ⓕ	4 digit [4digit] [4 digit]	4 digits from right.
Ⓕ	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Net Volume Flow 1 – 2

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Format net vol1 – 2]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format net volume flow 1 – 2]

Sets the decimal point position for the net volume flow 1 – 2 values.

If the value cannot be displayed with specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit [0digit] [0 digit]	0 digit from right.
Ⓕ	1 digit [1digit] [1 digit]	1 digit from right.
Ⓕ	2 digit [2digit] [2 digit]	2 digits from right.
Ⓕ	3 digit [3digit] [3 digit]	3 digits from right.
Ⓕ	4 digit [4digit] [4 digit]	4 digits from right.

	Value	Description
Ⓕ	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Net Corrected Volume Flow

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Format net corr vol]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format net corrected volume flow]

Sets the decimal point position for the net corrected volume flow 1 – 2 values.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit [0digit] [0 digit]	0 digit from right.
Ⓕ	1 digit [1digit] [1 digit]	1 digit from right.
Ⓕ	2 digit [2digit] [2 digit]	2 digits from right.
Ⓕ	3 digit [3digit] [3 digit]	3 digits from right.
Ⓕ	4 digit [4digit] [4 digit]	4 digits from right.
Ⓕ	5 digit [5digit] [5 digit]	5 digits from right.

Display format total 4 – 6

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Format ttl 4 - 6]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format total 4 - 6]

Sets the decimal point position for the total 4 – 6 values.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to the value. Default value.
–	0 digit [0digit] [0 digit]	0 digits from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digits from right.
–	3 digit [3digit] [3 digit]	3 digits from right.
–	4 digit [4digit] [4 digit]	4 digits from right.
–	5 digit [5digit] [5 digit]	5 digits from right.
–	6 digit [6digit] [6 digit]	6 digits from right.
–	7 digit [7digit] [7 digit]	7 digits from right.

Display format batch

Ⓛ	[Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Format batch]
Ⓗ	[Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format batch]

Sets decimal point position for batch value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit [0digit] [0 digit]	0 digit from right.

	Value	Description
Ⓕ	1 digit [1digit] [1 digit]	1 digit from right.
Ⓕ	2 digit [2digit] [2 digit]	2 digits from right.
Ⓕ	3 digit [3digit] [3 digit]	3 digits from right.
Ⓕ	4 digit [4digit] [4 digit]	4 digits from right.
Ⓕ	5 digit [5digit] [5 digit]	5 digits from right.

Display Format Viscosity

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Visc]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display format] ▶ [Additional function] ▶ [Display format viscosity]

Sets decimal point position for the viscosity value.

If the value cannot be displayed with the specified position, the warning Disp Over Wng is generated.

	Value	Description
Ⓕ	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
Ⓕ	0 digit [0digit] [0 digit]	0 digit from right.
Ⓕ	1 digit [1digit] [1 digit]	1 digit from right.
Ⓕ	2 digit [2digit] [2 digit]	2 digits from right.
Ⓕ	3 digit [3digit] [3 digit]	3 digits from right.
Ⓕ	4 digit [4digit] [4 digit]	4 digits from right.

	Value	Description
Ⓕ	5 digit [5digit] [5 digit]	5 digits from right.

Display operation configuration

Menu for configuring the LCD display.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Display contrast	[Contrast]	[Display contrast]	[▶ 551]
–	Display line	[Line]	[Display line]	[▶ 551]
–	Display period	[Period]	[Display period]	[▶ 553]
–	Additional function	[Add func]	[Additional function]	[▶ 553]

Display Contrast

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Contrast]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Display contrast]

Sets the contrast of the LCD.

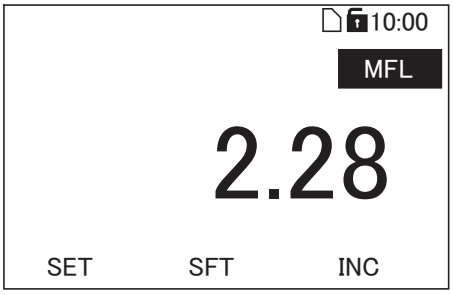
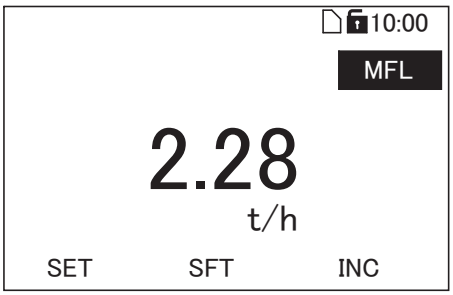
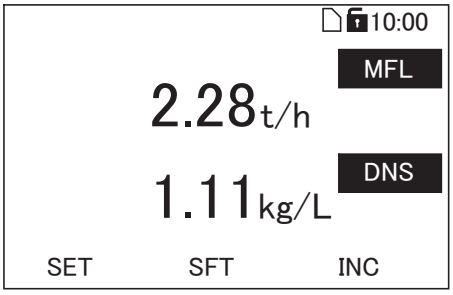
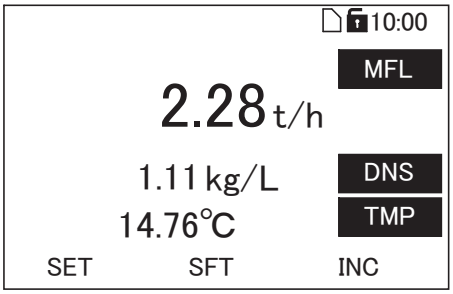
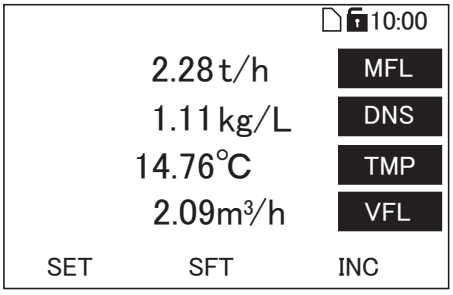
	Value	Description
–	-5	-5 ≡ bright to +5 ≡ dark Default value is 0.
–	-4	
–	-3	
–	-2	
–	-1	
–	0	
–	1	
–	2	
–	3	
–	4	
–	5	

Display Line

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Line]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Display line]

Sets the number of display lines on the LCD.

	Value	Description
–	1line (big) [1line(big)] [1line (big)]	1line display big font, without unit. 
–	1line [1line] [1line]	1line display of value with unit. 
–	2line [2line] [2line]	2line display of values with units. 
–	3line [3line] [3line]	3line display of values with units. 
–	4line [4line] [4line]	4line display of values with units. 

Display Period

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Period]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Display period]

Sets the refresh rate of the display.

	Value	Description
–	0.2s [0.2s] [0.2 s]	Refresh rate is 0.2 seconds.
–	0.4s [0.4s] [0.4 s]	Refresh rate is 0.4 seconds.
–	1.0s [1.0s] [1.0 s]	Refresh rate is 1.0 seconds. Default value.
–	2.0s [2.0s] [2.0 s]	Refresh rate is 2.0 seconds.
–	4.0s [4.0s] [4.0 s]	Refresh rate is 4.0 seconds.
–	8.0s [8.0s] [8.0 s]	Refresh rate is 8.0 seconds.

Additional function

Menu for configuring LCD display in detail. The menu is only available when *Display additional parameters* has been set to Apply.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Display NE 107	[NE107 disp]	[Display NE 107]	[▷ 554]
–	Display alarm	[Alarm disp]	[Display alarm]	[▷ 554]
Ⓗ	IRSW operation	–	[IRSW operation]	[▷ 554]
–	Display scroll	[Scroll]	[Display scroll]	[▷ 554]
–	Display damping	[Disp damp]	[Display damping]	[▷ 555]
–	Display format date	[Date format]	[Display format date]	[▷ 555]
–	Language	[Lang]	[Language]	[▷ 556]
–	Language package	[Lang pack]	[Language package]	[▷ 556]
–	Display unit selection	[Unit sel]	[Display unit selection]	[▷ 556]
–	Display measurement mode	[Meas mode]	[Display measurement mode]	[▷ 557]
–	Trend offline LRV	[Trend offln LRV]	[Trend offline LRV]	[▷ 558]
–	Trend offline URV	[Trend offln URV]	[Trend offline URV]	[▷ 558]
–	Display rotation	[Rotate]	[Display rotation]	[▷ 558]

–	Display inversion	[Inversion]	[Display inversion]	[▶ 559]

Display NE 107

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [NE107 disp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display NE 107]

Sets the NE 107 code in an alarm message.

	Value	Description
–	Normal [Normal] [Normal]	Without NE 107 code in the alarm message. Default value.
–	NE 107 [NE107] [NE 107]	With NE 107 code in the alarm message.

Display Alarm

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Alarm disp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display alarm]

Sets the alarm display on the LCD.

	Value	Description
–	Normal [Normal] [Normal]	Alarm information is displayed on one line at the bottom of the LCD. Default value.
–	Detail [Detail] [Detail]	Alarm information is displayed in the entire LCD display area together with the countermeasure.

IRSW operation

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [IRSW operation]

Sets the IR switch on the Indicator.

	Value	Description
Ⓗ	Enable [Enable]	IR switches on the Indicator are enabled; this means they can be used.
Ⓗ	Inhibit [Inhibit]	IR switches on the Indicator are disabled; this means they cannot be used.

Display Scroll

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Scroll]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display scroll]

Sets the scroll mode of the LCD display line.

	Value	Description
–	Off [Off] [Off]	Scrolling the display line is disabled; this means it is fixed. Default value.
–	Manual [Man] [Manual]	Display line is manually scrolled using IR switches on the Indicator.
–	Auto(2.0s) [Auto(2.0s)] [Auto(2.0s)]	Display line is scrolled up every 2 seconds automatically.
–	Auto(4.0s) [Auto(4.0s)] [Auto(4.0s)]	Display line is scrolled up every 4 seconds automatically.
–	Auto(8.0s) [Auto(8.0s)] [Auto(8.0s)]	Display line is scrolled up every 8 seconds automatically.

Display FTime (damping)

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Disp damp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display damping]

Sets the damping constant for the display. This damping is valid only for the display and not for the output signals or totalizers. The value is the time it takes for this value to become 63.2% of the total amount of change.

	Value	Description
–	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Display Format Date

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp format] ▶ [Add func] ▶ [Date format]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display format date]

Sets format to display date.

	Value	Description
–	MM/DD/YYYY [MM/DD/YYYY] [MM/DD/YYYY]	MM ≡ 2-digit month, DD ≡ 2-digit day, YYYY ≡ 4-digit year. Default value.
–	DD/MM/YYYY [DD/MM/YYYY] [DD/MM/YYYY]	DD ≡ 2-digit day, MM ≡ 2-digit month, YYYY≡ 4-digit year.
–	YYYY/MM/DD [YYYY/MM/DD] [YYYY/MM/DD]	YYYY ≡ 4-digit year, MM ≡ 2-digit month, DD ≡ 2-digit day.

Language

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Lang]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Language]

This parameter can be set in the following menu/menus:

Language [▸ 116]

Only available if the device is equipped with a display.

Sets the language to be used on the LCD display.

	Value	Description
Ⓗ	English [English]	The desired display language can be selected. Available languages depend on country specific delivery: *Delivery to EAEU*: ▪ English ▪ German ▪ Russian ▪ Kazakh ▪ Polish *All others*: ▪ English ▪ French ▪ German ▪ Italian ▪ Spanish ▪ Portuguese ▪ Chinese
Ⓗ	French [French]	
Ⓗ	German [German]	
Ⓗ	Italian [Italian]	
Ⓗ	Spanish [Spanish]	
Ⓗ	Portuguese [Portuguese]	
Ⓗ	Russian [Russian]	
Ⓗ	Kazakh [Kazakh]	
Ⓗ	Chinese [Chinese]	
Ⓗ	Polish [Polish]	

Display Unit Selection

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Unit sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display unit selection]

Sets the regional unit set to be used.

When this parameter is changed, the display of some process units that are not supported by the selected unit set turns blank. In that case, the process unit parameters must be reset.

If the SI option has been specified, it is fixed for Japan and cannot be changed. Refer to *Units description [▸ 818]* to confirm the units that are defined in each regional set.

When Display unit selection is changed and then units for Process variables don't meet with selected regional unit, these units are automatically changed to default unit.

When Temperature unit is set to degF and Display unit selection is changed US to Metric, Temperature unit is automatically changed to degC.

	Value	Description
–	Metric **[Metric]** [Metric]	Metric units. Default value.
–	US **[US]** [US]	Units mainly used in the USA.
–	UK **[UK]** [UK]	Units mainly used in the UK.
–	Russia **[Russia]** [Russia]	Units in Russia. Available only for language package 2.
–	Japan **[Japan]** [Japan]	Units for Japan to comply with the Japanese measurement law. Available only for language package 1.

Display Measurement Mode

Ⓛ **[Detailed setup] ▶ [Disp] ▶ [Disp sel] ▶ [Meas mode]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display measurement mode]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup
  - *Display [▸ 557]*
  - *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
–	Normal **[Normal]** [Normal]	Normal display mode. Default value.
–	Trend online **[Trend]** [Trend online]	Real-time trend chart of process values that were specified in the parameters, Logging 1 – 4 Select. The trend chart of one of four process values is displayed. By using the Up/Down operation on the Indicator, the process value to be shown as a trend chart can be changed when the Display Scroll parameters are set to Manual.

	Value	Description
Ⓕ	Batch control [Batch control] [Batch contol]	Batch specific screen can be displayed on Indicator.

Trend Offline LRV

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Trend offln LRV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Trend offline LRV]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 276]*
- *Detailed Setup [▸ 558]*

Sets the LRV for the trend display of logging data to a microSD card on the LCD of the Indicator.

	Value	Description
–	Numeric digits	Default value is 0.

Trend Offline URV

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Trend offln URV]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Trend offline URV]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 276]*
- *Detailed Setup [▸ 558]*

Sets the URV for the trend display of logging data from the microSD card on the LCD of the Indicator.

	Value	Description
–	Numeric digits	Default value is 10.

Display Rotation

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Rotate]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display rotation]

Sets the vertical configuration (vertical display direction) of the LCD display.

	Value	Description
–	Normal [Normal] [Normal]	Display space close to the Siemens logo is on top and the other side is the bottom of the display. Default value.
–	Reverse [Reverse] [Reverse]	Display space close to the IR switches is at top and the other side is the bottom of the display.

Display Inversion

Ⓛ [Detailed setup] ▶ [Disp] ▶ [Disp op cfg] ▶ [Add func] ▶ [Inversion]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Display] ▶ [Display operation configuration] ▶ [Additional function] ▶ [Display inversion]

Sets the LCD to either normal or inverted display mode.

	Value	Description
–	Normal [Normal] [Normal]	Normal display mode; this means characters/icons are in black. Default value.
–	Invert [Invert] [Invert]	Inverted display mode; this means reverse of normal display mode.

5.7.10 Date/Time

Menu for configuring the date and time on the transmitter.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Current Date	–	[Current Date]	*[▸ 559]*
–	Current Time	–	[Current Time]	*[▸ 559]*
–	Set current date	[Set date]	[Set current date]	*[▸ 560]*
–	Set current time	[Set time]	[Set current time]	*[▸ 560]*

Current Date

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Date/Time] ▶ [Current Date]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 161]*
- *Basic setup [▸ 369]*

Shows the current date on the device.

	Value	Description
–	Date	Shows the actual current date, if the date was set correctly when the transmitter started running.

Current Time

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Date/Time] ▶ [Current Time]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 161]*
- *Basic setup [▸ 370]*

Shows the current time on the device.

	Value	Description
–	Time	Shows the current time, if the time was set correctly when the transmitter started running.

Set current date

Ⓛ [Detailed setup] ▶ [Date/Time] ▶ [Set date]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Date/Time] ▶ [Set current date]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 321]*
- *Basic setup [▷ 370]*

Sets the date.

	Value	Description
–	Date	The date format on the LCD is defined in the parameter Display format date. The format is MM/DD/YYYY. Default value is 01/01/2015.

Set current time

Ⓛ [Detailed setup] ▶ [Date/Time] ▶ [Set time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Date/Time] ▶ [Set current time]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▷ 321]*
- *Basic setup [▷ 370]*

Sets the time.

	Value	Description
–	Time	Time format is hh:mm:ss. Default value is 00:00.00.

5.7.11 User access configuration

Configures user access or the user role.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Write access status	[Write sts]	[Write access status]	*[▷ 560]*
–	Write lock setting	[Write lock set]	[Write lock setting]	*[▷ 561]*
Ⓛ	User role	[User role]	–	*[▷ 561]*
Ⓛ	Change maintenance code	[Chg Mainte]	–	*[▷ 562]*
Ⓛ	Change specialist code	[Chg Special]	–	*[▷ 562]*

Write access status

Ⓛ [Detailed setup] ▶ [Access cfg] ▶ [Write sts]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [User access configuration] ▶ [Write access status]

Shows possible parameter operations when write protect is enabled and status of write protect.

	Value	Description
–	All locked [All locked] [All locked]	Transmitter is read-only and parameter values cannot be changed.
–	Display only [Disp only] [Display only]	Transmitter is read-only and only display-related parameters can be changed.
–	Autozero only [AZ only] [Autozero only]	Transmitter is read-only and only Autozero-related parameters can be changed.
–	Display + Autozero [Disp+AZ] [Display + Autozero]	Transmitter is read-only and display- and Autozero-related parameters can be changed.
–	Not locked [See User role param.] [Not locked]	Transmitter is not read-only.

Write lock setting

Ⓛ [Detailed setup] ▶ [Access cfg] ▶ [Write lock set]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [User access configuration] ▶ [Write lock setting]

This parameter can be set in the following menu/menus:

SIL mode [▶ 590]

Sets possible parameter operations when read-only is enabled.

	Value	Description
–	All locked [All locked] [All locked]	Transmitter is read-only and parameter values cannot be changed. Default value.
–	Display only [Disp only] [Display only]	Transmitter is read-only and only display-related parameters can be changed.
–	Autozero only [AZ only] [Autozero only]	Transmitter is read-only and only Autozero-related parameters can be changed.
–	Display + Autozero [Disp+AZ] [Display + Autozero]	Transmitter is read-only and display- and Autozero-related parameters can be changed.

User role

Ⓛ [Detailed setup] ▶ [Access cfg] ▶ [User role]

Shows the user role for limiting some of the operations available on the Indicator.

Depending on the selected user role, some of the operations on parameters performed by using switches on the Indicator are restricted. However, all parameters can be read independent of this setting. If the transmitter is read-only, restrictions based on the read-only status have priority.

	Value	Description
Ⓛ	Operator [Operator]	Language and display parameters can be used.
Ⓛ	Maintenance [Chg Mainte]	In addition to Operator, Basic Setup and Auto Zero parameters can be used.
Ⓛ	Specialist [Specialist]	All customer parameters can be used.

Change maintenance code

Ⓛ [Detailed setup] ▶ [Access cfg] ▶ [Chg Mainte]

Sets the pass code for setting the parameter User role to Maintenance.

ⓘ The user with this access level may perform an autozero in addition to the configuration of the display.

	Value	Description
Ⓛ	Numeric digits.	Setting range: 0 – 9999 Default value is 0.

Change specialist code

Ⓛ [Detailed setup] ▶ [Access cfg] ▶ [Chg Special]

Sets the pass code for setting the parameter User Role to Specialist.

ⓘ The specialist user has write access to the entire configuration menu of the transmitter.

	Value	Description
Ⓛ	Numeric digits.	Setting range: 0 – 9999 Default value is 0.

5.7.12 Batch function

Batch function configures batching.

The following menus/settings are available:

Batch function is available only for batch option S13.

	Full name	Display name	[HART] name	Page
Ⓕ	Batch mode	[Mode]	[Batch mode]	[▸ 563]
Ⓕ	Batch additional parameters	[Batch add]	[Batch additional parameters]	[▸ 563]
Ⓕ Ⓗ	Batch common	[Batch cmn]	–	[▸ 563]
Ⓕ	Batch No. 1 – 5	[Batch1 - 5]	[Batch No. 1 - 5]	[▸ 565]

Ⓕ Ⓗ	Batch status input/output	[Batch sts in/out]	–	[▸ 573]
Ⓕ Ⓗ	Batch display	[Batch disp]	–	[▸ 574]
Ⓕ	Batch information	[Batch Info]	[Batch information]	[▸ 578]

Batch mode

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch mode]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 322]*
- *Basic setup [▸ 375]*

Activates the Batch function.

	Value	Description
–	No [No]	Default value.
–	Yes [Yes]	

Batch additional parameters

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch add]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch additional parameters]

Batch additional parameters enables or disables the menu for accessing parameters that are located under *Additional function* menu of each Batch function . To access the parameters, this parameter must be set to Apply.

	Value	Description
Ⓕ	Apply [Apply] [Apply]	The menu for Additional parameters of each Batch function is enabled.
Ⓕ	Not Apply [Not apply] [Not Apply]	The menu for Additional parameters of each Batch function is disabled. Default value.

Batch common

Menu for configuring the values of Batch-related common parameters.

The following menus/settings are available:

The following overview shows the selectable settings within the submenu *Batch common*.

	Full name	Display name	[HART] name	Page
Ⓕ	Batch select	[Batch sel]	[Batch select]	[▸ 564]
Ⓕ	Batch up down select	[Up down sel]	[Batch up down select]	[▸ 564]
Ⓕ	Batch start/stop	[Start/Stop]	[Batch start/stop]	[▸ 564]

Ⓕ	Batch reset	[Reset]	[Batch reset]	[▶ 565]

Batch select

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch common] ▶ [Batch select]

This parameter can be set in the following menu/menus:

- *Basic setup [▶ 376]*

Sets the used batch setting in Batch 1 – 5.

	Value	Description
–	Batch 1 [Batch1]	The default value is Batch 1.
	Batch 2 [Batch2]	
	Batch 3 [Batch3]	
	Batch 4 [Batch4]	
–	Batch 5 [Batch5]	

Batch up down select

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Up down sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch common] ▶ [Batch up down select]

Sets the quantity mode whether quantityy value is started from 0 by upqard or from Batch quantity 1 – 5 by downward.

	Value	Description
–	Batch upwards value [Upward val]	The default value is Batch upwards value.
	Batch downwards value [Dwnward val]	

Batch start/stop

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Start/Stop]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch common] ▶ [Batch start/stop]

This parameter can be set in the following menu/menus:

- *Diag/Service [▶ 173]*
- *Basic setup [▶ 377]*

Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
–	Stop [Stop]	The default value is Stop.
–	Start [Start]	
–	Hold [Hold]	
–	Resume [Resume]	

Batch reset

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Reset]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch common] ▶ [Batch reset]

This parameter can be set in the following menu/menus:

- *Basic setup [▷ 377]*

Sets batch operation in Start, Stop, Hold or Resume.

	Value	Description
–	No [No]	The default value is No.
–	Reset [Reset]	

Batch No.1 – 5

Menu for configuring the Batch function.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Batch variable select 1 – 5	[Var sel]	[Batch variable select 1 - 5]	*[▷ 566]*
Ⓕ	Batch quantity 1 – 5	[Qty]	[Batch quantity 1 - 5]	*[▷ 566]*
Ⓕ	Batch 1 – 5 unit	[Unit]	[Batch 1 - 5 unit]	*[▷ 566]*
Ⓕ	Batch primary valve close 1 – 5	[1st valve close]	[Batch primary valve close 1 - 5]	*[▷ 567]*
Ⓕ	Fixed compensation value 1 – 5	[Fix comp val]	[Fixed compensation value 1 - 5]	*[▷ 567]*
Ⓕ	Batch end judgment value 1 – 5	[End judge val]	[Batch end judgment value 1 - 5]	*[▷ 568]*
Ⓕ	Max batch quantity 1 – 5	[Max qty]	[Max batch quantity 1 - 5]	*[▷ 568]*
Ⓕ	Additional function	[Add func]	[Additional function]	*[▷ 568]*

Batch variable select 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Var sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Batch variable select 1 – 5]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 322]*
- *Basic setup [▸ 378]*

Sets the Process variable which is used in Batch function.

	Value	Value description
–	Mass flow [Mass]	The default value is Mass flow.
–	Volume flow [Vol]	
–	Corrected volume flow [Corr vol]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Batch quantity 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Qty1 – 5]

Ⓗ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Batch quantity 1 – 5]

This parameter can be set in the following menu/menus:

- *Easy setup [▸ 325]*
- *Basic setup [▸ 380]*

Sets the quantity for the Batch function.

	Value	Description
–	Numeric digits	Default value is 100.0 kg.

Batch 1 – 5 unit

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Batch 1 – 5 unit]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 324]*
- *Basic setup [▸ 379]*

Sets the unit for Batch.

	Value	Description
–	g	Sets the unit for Batch. The default value is kg.
–	kg	
–	t	
–	ton(US)	
–	ton(UK)	
–	cm^3	
–	L	
–	m^3	
–	gal	
–	kgal	
–	ft^3	
–	bbl	
–	lmpgal	
–	klmpgal	
–	N(normal)	
–	m^3(normal)	
–	L(standard)	
–	ft^3(standard)	
–	Mmscuft	
–	m^3(standard)	
–	User unit	

Batch primary valve close 1 – 5

Ⓛ **[Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Valve1 – 5 close]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Batch primary valve close 1 – 5]

This parameter can be set in the following menu/menus:

- *Basic setup [▸ 380]*

Shows the quantity when the primary valve is closed.

Setting of valve control function is set by the Status output 1 – 3 function.

	Value	Description
–	Numeric digits	Default value is 0.0 kg

Fix compensation value 1 – 5

Ⓛ **[Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Fix comp val]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Fix compensation value 1 – 5]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 325]*
- *Basic setup [▸ 380]*

Sets the leakage compensation value.

Valve is closed when quantity reaches Batch qty - Fix comp val.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Batch end judgment value 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [End judge val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Batch end judgment value 1 – 5]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 326]*
- *Basic setup [▸ 381]*

Sets the judgment value of leakage value. The unit is depend on Process variable which is selected by Batch variable select.

	Value	Description
–	Numeric digits	Default value 5 kg/h.

Max batch quantity 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Max qty]

Ⓗ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Max batch quantity 1 – 5]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 326]*
- *Basic setup [▸ 381]*

Sets threshold value of maximum flow.

When the flow rate for batch operation is bigger than the parameter value, 208:Batch overrung/underrun alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Additional function

Menu for confirming the values of Batch-related No. 1 – 5 additional parameters.

	Full name	Display name	[HART] name	Page
Ⓕ	Batch user unit 1 – 5	[User unit]	[Batch user unit 1 – 5]	*[▸ 569]*
Ⓕ	Batch user unit conversion factor 1 – 5	[Conv factor]	[Batch user unit conversion factor 1 – 5]	*[▸ 569]*
Ⓕ	Batch type select 1 – 5	[Type sel]	[Batch type select 1 – 5]	*[▸ 569]*
Ⓕ	Batch primary valve open 1 – 5	[1st valve open]	[Batch primary valve open 1 – 5]	*[▸ 570]*
Ⓕ	Batch secondary valve open 1 – 5	[2nd valve open]	[Batch secondary valve open 1 – 5]	*[▸ 570]*
Ⓕ	Batch secondary valve close 1 – 5	[2nd valve close]	[Batch secondary valve close 1 – 5]	*[▸ 570]*

Ⓕ	Compensation mode select 1 – 5	[Comp mode sel]	[Compensation mode select 1 - 5]	[▷ 570]
Ⓕ	Averaging data number 1 – 5	[Avg data]	[Averaging data number 1 - 5]	[▷ 571]
Ⓕ	Leakage hysteresis time 1 – 5	[Lkg hys time]	[Leakage hysteresis time 1 - 5]	[▷ 571]
Ⓕ	Max leakage time 1 – 5	[Max lkg time]	[Max leakage time 1 - 5]	[▷ 571]
Ⓕ	Auto compensation 1 – 5	[Auto comp]	[Auto compensation 1 - 5]	[▷ 571]
Ⓕ	Max batch time 1 – 5	[Max time]	[Max batch time 1 - 5]	[▷ 572]
Ⓕ	Min batch quantity 1 – 5	[Min qty]	[Min batch quantity 1 - 5]	[▷ 572]
Ⓕ	Max batch flow 1 – 5	[Max flow]	[Max batch flow 1 - 5]	[▷ 572]
Ⓕ	Progress indication 1 – 5	[Progress]	[Progress indication 1 - 5]	[▷ 573]

Batch user unit 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 - 5] ▶ [Add func] ▶ [User unit]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 - 5] ▶ [Additional function] ▶ [Batch user unit 1 - 5]

Sets the user-defined unit for Batch 1 – 5.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. Default value is blank.

Batch user unit conversion factor 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 - 5] ▶ [Add func] ▶ [Conv factor]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 - 5] ▶ [Additional function] ▶ [Batch user unit conversion factor 1 - 5]

Sets the conversion factor for the Batch 1 – 5 user-defined unit.

	Value	Description
–	Numeric digits	Default value is 1. Batch value at user-defined unit = Batch n value * Batch user unit conversion factor 1 – 5.

Batch type select 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 - 5] ▶ [Add func] ▶ [Type sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 - 5] ▶ [Additional function] ▶ [Batch type select 1 - 5]

Sets the type of Batch in 1 stage batch or 2 stage batch.

	Value	Description
–	1 stage batch [1stage batch]	The default value is 1 stage batch.
–	2 stage batch [301:Mass cfg ERR]	

Batch primary valve open 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [1st valve open]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Batch primary valve open 1 – 5]

Sets the quantity when the primary valve is openend.

Setting of valve control function is set by Status output 1 – 3 function.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Batch secondary valve open 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [2nd valve open]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Batch secondary valve open 1 – 5]

Sets the quantity when the secondary valve is opened.

This parameter is available when 2 stage batch is selected in Batch type select 1 – 5.

Setting valve control function is set by Status output 1 – 3 function.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Batch secondary valve close 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [2nd valve close]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Batch secondary valve close 1 – 5]

Sets the quantity when the secondary valve is closed.

This parameter is available when 2 stage batch is selected in Batch type select 1 – 5.

Setting of valve control function is set by Status output 1 – 3 function.

	Value	Description
–	Numeric digits	Default value is 0.0 kg.

Compensation mode select 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Comp mode sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Compensation mode select 1 – 5]

Sets the mode to calculate leakage value.

	Value	Description
–	Off [Off]	The default value is Off. Mode 1: A leakage value until crossing the first leakage judgment value after valve is closed. Mode 2: A leakage value that it becomes less than the leakage judgment value for leakage hysteresis time after valve is closed. Mode 3: A leakage value until it goes through mode 3 leakage time from the pointt which first-crosses leakage judgment value.
	Mode1 [Mode1]	
	Mode2 [Mode2]	
–	Mode3 [Mode3]	

Averaging data number 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Avg data]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No. 1 – 5] ▶ [Additional function] ▶ [Averaging data number 1 – 5]

Sets the number of data for average value calculation of a leakage value.

This value is used when Calculation mode sel 1 – 5 is set to Select.

If value of this parameter is 2 or less, then average value is calculated using All data.

	Value	Description
–	Numeric digits	Default value is 1.

Leakage hysteresis time 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Lkg hys time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Leakage hysteresis time 1 – 5]

Sets the hysteresis value for leakage when Mode 2 in Compensation mode select 1 – 5 is selected.

	Value	Description
–	Numeric digits	Default value is 0.

Max leakage time 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Max lkg time]

Ⓗ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Max leakage time 1 – 5]

Sets the end judgment value when Mode 3 in Compensation mode select 1 – 5 is selected.

	Value	Description
–	Numeric digits	Default value is 0.

Auto compensation 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Auto comp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Auto compensation 1 – 5]

Sets whether Primary valve close point is automatically corrected or not in internal algorithm.

This setting is available when Mode 1 – 3 is selected in Compensation mode select 1 – 5.

	Value	Description
–	No [No]	The default value is No.
	Yes [Yes]	

Max batch time 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Max time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Max batch time 1 – 5]

Sets threshold value of maximum batch time.

When batch operation time is larger than the parameter value, 207:Batch time exceeded alarm occurs.

If this value is to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0 s.

Min batch quantity 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Min qty]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Min batch quantity 1 – 5]

Sets the threshold value of minimum batch quantity.

When quantity is smaller than the parameter value, 208:Batch overrun/underrun alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0 kg.

Max batch flow 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Max flow]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Max batch flow 1 – 5]

Sets threshold value of maximum flow rate for batch.

When flow rate is larger than the parametr value, 209:Max flow while batching alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0 kg/h.

Progress indication 1 – 5

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Progress]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch No.1 – 5] ▶ [Additional function] ▶ [Progress indication 1 – 5]

Sets threshold value to inform the current quantity of batch

When quantity is larger than the parameter value, 732:Batch progress indication alarm occurs.

If this value is set to 0, this threshold is not active.

	Value	Description
–	Numeric digits	Default value is 0 kg.

Batch status input/output

Menu for confirming the values of Batch-related status input/output parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Batch status output 1 – 3	[Sts out1 – 3]	[Batch status output 1 – 3]	*[▸ 573]*
Ⓕ	Batch status input	[Sts in]	[Batch status input]	*[▸ 574]*

Batch status output 1 – 3

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Sts out1 – 3]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch status input/output] ▶ [Batch status output 1 – 3]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 385]*

Sets the Status output function for Batch.

	Value	Description
–	No function [No func]	The default value is No function.
–	Primary valve control [1st valve ctrl]	
–	Secondary valve control [2nd valve ctrl]	
–	Batch running [Batch run]	
–	Batch ended [Batch end]	

Batch status input

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch1 – 5] ▶ [Add func] ▶ [Sts in]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch status input/output] ▶ [Batch status input]

Set of menus in Batch function.

This paramerter sets the Status input function for Batch.

	Adjustable Value	Value Description
–	No function [No func]	The default value is No function.
–	Batch start/stop [Start/Stop]	
–	Batch hold/resume [Hold/Resume]	
–	Batch reset [Reset]	

Batch display

Menu for confirming the values of Batch-related display parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ Ⓕ	Display measurement mode	–	[Display measurement mode]	*[▸ 574]*
Ⓗ Ⓕ	Batch display select 1 – 4	–	[Batch display select 1 – 4]	*[▸ 575]*
Ⓗ Ⓕ	Display format batch	–	[Display format batch]	*[▸ 577]*

Display measurement mode

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch display] ▶ [Display measure mode]

This parameter can be set in the following menu/menus:

- *Diag/Service [▸ 275]*
- *Easy setup wizard [▸ 329]*
- *Basic setup [▸ 386]*
- Detailed setup
  - *Display [▸ 529]*
  - *Batch function [▸ 574]*

Sets the display mode for logging data on the LCD display of the Indicator.

	Value	Description
Ⓗ	Normal [Normal] [Normal]	Normal display mode. Default value.

	Value	Description
Ⓗ	Trend online [Trend] [Trend online]	Real-time trend chart of process values which were specified in the parameters, Logging 1 – 4 select. The trend chart of one of four process values is displayed. By using Up/Down operation on the Indicator, the process value to be shown as trend chart can be changed when the Display scroll parameters are set to Manual.
Ⓗ	Batch control [Batch control] [Batch control]	Batch specific screen can be displayed on Indicator.

Batch display select 1 – 4

Ⓗ	[Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch display] ▶ [Batch display select 1 - 4]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 330]*
- *Basic setup [▸ 387]*

Sets Display select for batch, if batch variables are shown on Indicator. This is available when Batch control is selected in Display measurement mode.

	Value	Value description
–	None [None]	Sets Batch display select 1 – 4. The default value for Batch display select 1 is Batch quantity. None is not available for Batch display select 1. The default value for Batch display select 2 is Batch upward value. The default value for Batch display select 3 is Total batch quantity. The default value for Batch display select 4 is Batch counter value.
Ⓕ	Batch quantity [Qty]	
Ⓕ	Batch upwards value [Upward val]	
Ⓕ	Batch downwards value [Dwnward val]	
Ⓕ	Batch total quantity [Ttl qty]	
Ⓕ	Batch counter value [Cnt val]	
Ⓕ	Batch select [Batch sel]	
Ⓕ	Batch variable select [Batch var sel]	
Ⓕ	Compensation value [Comp val]	
Ⓕ	Internal close point [Inter close point]	
Ⓕ	Batch time [Batch time]	
–	Mass flow [Mass]	
–	Density [Dens]	
–	Temperature [Temp]	
–	Volume flow [Vol]	

	Value	Value description
–	Reference density [Ref dens]	
–	Corrected volume flow [Corr vol]	
–	Pressure [Pres]	
–	Tag [Tag]	
–	Long Tag [Long tag]	
Ⓕ	Net mass flow 1 [Net mass1]	
Ⓕ	Net mass flow 2 [Net mass2]	
Ⓕ	Net volume flow 1 [Net vol1]	
Ⓕ	Net volume flow 2 [Net vol2]	
Ⓕ	Net corrected volume flow [Net corr vol]	

Display format batch

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch display] ▶ [Display format batch]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 332]*
- *Basic setup [▸ 388]*

Sets the decimal format of batch relevant values which are set in *Display format batch 1 – 4*.

	Value	Description
–	Auto [Auto] [Auto]	Position is automatically adjusted according to value. Default value.
–	0 digit [0digit] [0 digit]	0 digit from right.
–	1 digit [1digit] [1 digit]	1 digit from right.
–	2 digit [2digit] [2 digit]	2 digit from right.

	Value	Description
–	3 digit [3digit] [3 digit]	3 digit from right.
–	4 digit [4digit] [4 digit]	4 digit from right.
–	5 digit [5digit] [5 digit]	5 digit from right.

Batch information

Menu for confirming the values of Batch-related information parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓕ	Batch time	[Batch time]	[Batch time]	[▸ 578]
Ⓕ	Batch upwards value	[Upward val]	[Batch upwards value]	[▸ 578]
Ⓕ	Batch downwards value	[Dwnward val]	[Batch downwards value]	[▸ 579]
Ⓕ	Batch total quantity	[Ttl qty]	[Batch total quantity]	[▸ 579]
Ⓕ	Batch counter value	[Cnt val]	[Batch counter value]	[▸ 579]
Ⓕ	Batch compensation value	[Comp val]	[Batch compensation value]	[▸ 579]
Ⓕ	Batch mode 1 – 3 leakage value	[Mode1 - 3 lkg val]	[Batch mode 1 - 3 leakage value]	[▸ 579]

Batch time

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Batch time]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch time]

Shows the 1 batch time from Batch start.

When batch is started, this value is cleared to 0 and value is fixed when batch is stopped.

	Value	Description
–	Numeric digits.	Default value is 0 s.

Batch upwards value

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Upward val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch upwards value]

Shows the batch quantity for counting up.

When batch is started, this value is cleared to 0.

	Value	Description
–	Numeric digits.	Default value is 0.

Batch downwards value

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Dwnward val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch downwards value]

Shows the batch quantity for counting down.

When batch is started, ths value is set to Batch quantity parameter value.

	Value	Description
–	Numeric digits.	Default value is 0.

Batch total quantity

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Ttl qty]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch total quantity]

Shows the batch total quantity.

Resetting the batch, this value is cleared to 0.

	Value	Description
–	Numeric digits.	Default value is 0.

Batch counter value

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Cnt val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch counter value]

Shows the total number of batch operation.

Resetting the batch, this value is cleared to 0.

	Value	Description
–	Numeric digits.	Default value is 0.

Batch compensation value

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Comp val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch compensation value]

Shows the compensation value which is selected in Mode 1 – 3 of Compensation mode select.

	Value	Description
–	Numeric digits.	Default value is 0.

Batch mode 1 – 3 leakage value

Ⓛ [Detailed setup] ▶ [Batch] ▶ [Batch Info] ▶ [Mode1 – 3 lkg val]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Batch function] ▶ [Batch information] ▶ [Batch mode 1 – 3 leakage value]

Shows the leakage value each mode.

This value is cleared when Batch is started.

	Value	Description
–	Numeric digits.	Default value is 0.

5.7.13 SIL mode

Menu for confirming the values of SIL-related parameters.

SIL mode

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode]

Enables or disables SIL mode. The value of this parameter defines the SIL mode status. Its value and status are shown in the table below.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

	Value	Status
–	5460 [5460] [5460]	Values of parameters that are related to SIL are changed to the recommended values.
–	1333 [1333] [1333]	If the value of this parameter is set to 1333 after 5460, all parameters except for this parameter are write-protected.
–	Other values, except 1333 [Other values, except 1333] [Other values, except 1333]	All parameters are write-enabled.

SIL mode check

Menu for confirming the values of SIL-related parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	Mass flow	[Mass]	–	[580]
Ⓛ	Density	[Dens]	–	[581]
Ⓛ	Temperature	[Temp]	–	[583]
Ⓛ	Other settings	[Other settings]	–	[584]

Mass flow

Menu for configuring the mass flow measurement for SIL mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	Mass flow damping	[Damp]	–	[580]
Ⓛ	Mass flow trim select	[Trim sel]	–	[581]

Mass flow damping

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Mass] ▶ [Damp]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 283]*
- *Basic setup [▸ 338]*
- *Detailed setup [▸ 396]*
- *SIL mode [▸ 580]*

Sets the damping constant for mass flow measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0.0 – 200.0 s. The default value is 3.0 s.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Mass flow trim select

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Mass] ▶ [Trim sel]

Enables or disables the mass flow trim.

	Value	Description
Ⓛ	Inhibit [Inhibit]	Disables mass flow trim.
Ⓛ	Enable [Enable]	Enables mass flow trim.

Density

Menu for configuring the density measurement for SIL mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	Density damping	[Damp]	–	*[▸ 581]*
Ⓛ	Density trim select	[Trim sel]	–	*[▸ 582]*
Ⓛ	Density value select	[Val sel]	–	*[▸ 582]*

Density damping

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Dens] ▶ [Damp]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 285]*
- *Basic setup [▸ 340]*
- *Detailed setup [▸ 401]*
- *SIL mode [▸ 581]*

Sets the damping constant for density measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
–	Numeric digits	Default value is 3.0 s. Setting range: 0.0 – 200.0 s.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 3.0 s.

Density trim select

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Dens] ▶ [Trim sel]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 404]

Enables or disables the density trim.

	Value	Description
Ⓛ	Inhibit [Inhibit]	Disables density trim.
Ⓛ	Enable [Enable]	Enables density trim.

Density value select

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Dens] ▶ [Val sel]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 403]

Sets whether to use a measured density value, a preset fixed density value or a calculated density value.

It is recommended to set either Fixed Value or Calculated value for gas measurement.

	Value	Description
Ⓛ	Measured value [Meas val]	Measured density value is used.
Ⓛ	Fixed value [Fix val]	Preset fixed density value is used.
Ⓛ	Calculated value [Calc val]	Available for gas measurement only and Liquid gas select Liquid gas select *[▸ 606]* must be set to Gas. Calculated value ρ_m is calculated from the following formula. $\rho_m = \rho_{comp} \times \frac{(273.15 + t_{comp})}{(273.15 + t_m)} \times \frac{P_m}{P_{comp}}$ The following parameters have to be appropriately configured to use this function. The pressure value must be the absolute pressure. ▪ ρ_{comp}: Reference density fixed value *[▸ 423]* ▪ t_{comp}: Reference temperature *[▸ 422]* ▪ t_m: Measured temperature of fluid ▪ P_{comp}: Reference pressure (abs) *[▸ 424]* ▪ P_m: Pressure of fluid (abs) – If the Analog input function *[▸ 512]* is set to Pressure compensation and the Absolute/Gauge selection *[▸ 418]* is set to Absolute, this is the measured pressure value of the fluid. – If not, it is the value of the gas density pressure *[▸ 418]*

Temperature

Menu for configuring the temperature measurement for SIL mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	Temperature damping	[Damp]	–	[▸ 583]
Ⓛ	Temperature trim select	[Trim sel]	–	[▸ 583]
Ⓛ	Temperature function select	[Func sel]	–	[▸ 583]

Temperature damping

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Temp] ▶ [Damp]

This parameter can be set in the following menu/menus:

- *Easy setup wizard [▸ 287]*
- *Basic setup [▸ 342]*
- *Detailed Setup [▸ 407]*
- *SIL mode [▸ 583]*

Sets the damping constant for temperature measurement. The value is the time it takes for this value to become 63.2 % of the total amount of change.

	Value	Description
Ⓛ	Numeric digits	Setting range: 0.0 – 200.0 s. Default value is 10.0 s.

Temperature trim select

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Temp] ▶ [Trim sel]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 409]

Enables or disables the temperature trim.

ⓘ The temperature trim function can be used to correct the temperature measurement of the SITRANS FC system by adjusting the offset and the slope of the temperature sensor. It is not recommended that this function be used unless correct measurement across the entire process temperature range can be confirmed. It is not sufficient to prove correct measurement at one temperature or in a very narrow temperature range, unless the process operates exclusively within that range.

	Value	Description
Ⓛ	Inhibit [Inhibit]	Disables temperature trim.
Ⓛ	Enable [Enable]	Enables temperature trim.

Temperature function select

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Temp] ▶ [Func sel]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 407]

Sets whether to use a measured temperature value or a preset fixed temperature value.

If the device is equipped with a function for analog input to a remote terminal and Temperature for compensation is set to analog input, the measured temperature is used for this setting regardless of the analog input.

	Value	Description
Ⓛ	Internal value [Inter val]	Measured temperature value is used.
Ⓛ	Fixed value [Fix val]	Preset fixed temperature value is used, but only if the temperature sensor does not work properly.

Other settings

Menu for configuring other settings for SIL mode.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	Analog input function	[AI func]	–	[▸ 584]
Ⓛ	Status input function	[Sts in func]	–	[▸ 585]
Ⓛ	Process variables simulation select 1	[PV sim sel1]	–	[▸ 586]
Ⓛ	Test mode	[Test mode]	–	[▸ 586]
Ⓛ	Loop current mode	[Loop curr mode]	–	[▸ 587]
Ⓛ	Device behavior maintenance mode	[Bhvr mainte mode]	–	[▸ 587]
Ⓛ	Device behavior temperature alarm	[Bhvr temp]	–	[▸ 587]
Ⓛ	Event setting batch alarm	[Evt batch]	–	[▸ 588]
Ⓛ	Event setting density fixed	[Evt dens fix]	–	[▸ 588]
Ⓛ	Event setting temperature fixed	[Evt temp fix]	–	[▸ 589]
Ⓛ	Event setting process variables trim	[Evt pro var trim]	–	[▸ 589]
Ⓛ	Event setting analog output 1 saturated	[Evt AO1 sat]	–	[▸ 590]
Ⓛ	Write lock setting	[Write lock set]	–	[▸ 590]

Analog input function

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [AI func]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 512]

Sets the purpose of the Analog input.

	Value	Description
Ⓛ	None [None]	Default value.
Ⓛ	Pressure compensation [Pres comp]	Set this value if a pressure sensor is attached to the analog input; used for dynamic pressure compensation.

	Value	Description
Ⓛ	Temperature compensation [Temp comp]	Set this value if an external thermometer is to be used for temperature compensation.
Ⓛ Ⓕ	Sensor pressure alarm [Snsr pres alm]	Set this value if an external pressure sensor is attached to the SITRANS FC and is to be used for the tube leakage alarm.
Ⓛ Ⓕ	Calorific value [Cal]	Set this value if an external thermometer is used for the measurement of the calorific value. Used for cooling applications.
Ⓛ Ⓕ	Viscosity delta pressure [Visc.deltaP]	Set this value if an external differential pressure is used for the Viscosity calculation. It is only available when Viscosity option (S15) is valid.
Ⓛ Ⓕ	Pressure compensation and NOC [Pres comp/NOC]	An analog input is used as pressure compensation and NOC. It is only available when NOC option (S14) is valid
Ⓛ Ⓕ	Pressure NOC [NOC pres]	An analog input is used as pressure NOC. It is only available when NOC option (S14) is valid

Status input function

Ⓛ	[Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Sts in func]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 514]

Defines the action when the status input signal becomes active.

	Value	Description
Ⓛ	No function [No func]	Do nothing. Default value.
Ⓛ	Autozero [AZ]	Autozero is executed by the status input.
Ⓛ	Total function [Ttl func]	Start the function that has been defined in the parameter [Sts in func].
Ⓛ	0% signal lock [0% lock]	Current output 1 and 2 are automatically set to 4 mA by the status input and cannot be changed. This output takes precedence over output by alarm.
Ⓛ	Clock synchronizes [Clock sync]	Synchronizes time with internal clock time. If time is less than 29 minutes, 59 seconds, minutes and seconds are reset. Example: 11 hours, 29 minutes, 10 seconds → 11 hours, 00 minutes, 00 seconds 11 hours, 31 minutes, 5 seconds → 12 hours, 00 minutes, 00 seconds xx minutes, xx seconds → 00 minutes, 00 seconds
Ⓛ	Confirm acknowledge [Confirm ack]	Acknowledges all applicable events; this means alarm, warning, etc.

	Value	Description
Ⓛ	Concentration set select [Conc set sel] [Concentration set select]	Changes the concentration set according to the status of Status input (open or short). The selected set is defined in the parameters Select concentration set status input open and Select concentration set status input short. It is only available when Concentration option is valid.
Ⓛ Ⓕ	Batch function [Batch] [Batch function]	This is used for Batch function. Need to set if Status input is used for Batch. It is only available when Batch option (S13) is valid.
Ⓛ Ⓕ	Start one TuHC as interrupt [Start one TuHC] [Start one TuHC as interrupt]	Tube health check can be performed once via status input. It is only available when Tube health check option (S12) is valid.

Process variables simulation select 1

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [PV sim sel1]

This parameter can be set in the following menu/menus:

Diag/Service [▸ 197]

Enables simulation mode for standard process variables.

	Value	Description
Ⓛ	Mass flow [Mass]	Via HART communication, simulation is enabled by setting the bit on appropriate process variable. Via LCD display, the corresponding variables must be selected. Simulation is disabled by setting bits to off. Simulation is automatically disabled after the time defined in the parameter *Test auto release time [▸ 164]* elapses.
Ⓛ	Density [Dens]	
Ⓛ	Temperature [Temp]	
Ⓛ	Pressure [Pres]	
Ⓛ	Calorific value [Cal]	
Ⓛ	Volume flow [Vol]	
Ⓛ	Reference density [Ref dens]	
Ⓛ	Relative density [Rel dens]	
Ⓛ	Corrected volume flow [Corr vol]	

Test mode

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Test mode]

This parameter can be set in the following menu/menus:

Diag/Service [▸ 162]

Enables or disables output testing of IO signals, loop test.

	Value	Description
Ⓛ	On [On]	Enables output test mode. For the duration of the test mode, output signals are output from IO terminals of the transmitter according to the parameter value in Analog output 1 – 2 test. Measured value is not output during test mode.
Ⓛ	Off [Off]	Default value. Disables output test mode. If the time specified in Test auto release time [Auto rel time] has elapsed, test mode is disabled automatically and the parameter value returns to Off.

Loop current mode

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Loop curr mode]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 614]

Enables or disables loop current mode.

If loop current mode is enabled, 4 – 20 mA analog signal output is enabled. Only one unit can be used per loop.

	Value	Description
Ⓛ	Enabled [Enable]	Loop current mode is enabled. 4 – 20 mA analog signal output mode.
Ⓛ	Disabled [Disable]	Loop current mode is disabled. 4 mA DC fixed mode

Device behavior maintenance mode

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Bhvr mainte mode]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▸ 245]

Defines the device behavior when the following warning occurs:

909:Maintenance Mode Running
[909:Mainte mode]

	Value	Description
Ⓛ	Continue [Cont]	Continues operation. Default value.
Ⓛ	Hold [Hold]	When this alarm event occurs, device outputs go to defined outputs in each alarm output setting.

Device behavior temperature alarm

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Bhvr temp]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▸ 205]

Defines the device behavior when one or more of the following alarms occur:

- 107: Temperature range violation
  107:Temp range FAIL
- 108: Temperature sensor failure
  108:Temp snsr FAIL

	Value	Description
Ⓛ	Soft Burnout [Soft burn out]	When this alarm event occurs, device outputs go into predefined error states. Default value.
Ⓛ	Alarm Out [Alm out]	The alarm event causes the alarm to be displayed.
Ⓛ	Continue [Cont]	Continues operation.

Event setting batch alarm

Ⓛ [Diag/Service] ▶ [Alm/Evt bhvr set] ▶ [Pro alm] ▶ [Batch] ▶ [Evt batch]

Ⓗ [Maintenance root menu] ▶ [Alarm/Event behavior settings] ▶ [Process alarms] ▶ [Batch] ▶ [Event setting batch alarm]

Event setting batch alarm defines the event action when one or more of the following alarms occur:

- 207: Batch Time Exceeded
  207:Batch time over
- 208: Batch Overrun/Underrun
  208:Batch overrun
- 209: Max Flow While Batching
  209:Max flow batch

	Value	Value description
–	Ignore [Ignore] [Ignore]	Event does not have any effect. Default value.
–	History only [Hist only] [History only]	Predefined Event is recorded in the device history.
–	Generate [Generate] [Generate]	An alarm is generated by event. Default value.
–	Acknowledge [Ack] [Acknowledget]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function.
–	Monitor [Monitor] [Monitor]	Diagnostics data is logged when the event occurs.
–	Monitor + Acknowledge [Monitor+ack] [Monitor + Acknowledge]	An alarm is generated by the event that must be confirmed by the user, using the Alarm/Event acknowledge function, and diagnostics data is logged when the event occurs.

Event setting density fixed

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Evt dens fix]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▶ 233]

Defines the device behavior when the following warning occurs:

703: Density fixed
[703:Dens fix]

	Value	Description
Ⓛ	Ignore [Ignore]	Event does not have any effect.
Ⓛ	History only [Hist only]	Event is recorded in the device history.
Ⓛ	Generate [Generate]	An alarm is generated by the event. Default value.
Ⓛ	Acknowledge [Ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function.
Ⓛ	Monitor [Monitor]	Diagnostics data is logged when the event occurs.
Ⓛ	Monitor + Acknowledge [Monitor+ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function, and diagnostics data is logged when the event occurs.

Event setting temperature fixed

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Evt temp fix]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▶ 589]

Defines the device behavior when the following warning occurs:

704:Temperature Fixed
[704:Temp fix]

	Value	Description
Ⓛ	Ignore [Ignore]	Event does not have any effect.
Ⓛ	History only [Hist only]	Event is recorded in the device history.
Ⓛ	Generate [Generate]	An alarm is generated by the event. Default value.
Ⓛ	Acknowledge [Ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function.
Ⓛ	Monitor [Monitor]	Diagnostics data is logged when the event occurs.
Ⓛ	Monitor + Acknowledge [Monitor+ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function, and diagnostics data is logged when the event occurs.

Event setting process variables trim

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Evt pro var trim]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▶ 236]

Defines the device behavior when the following warning occurs:

715: Process variable trimming
[715:Pro var trim]

	Value	Description
Ⓛ	Ignore [Ignore]	Event does not have any effect.
Ⓛ	History only [Hist only]	Event is recorded in the device history.
Ⓛ	Generate [Generate]	An alarm is generated by the event. Default value.
Ⓛ	Acknowledge [Ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function.
Ⓛ	Monitor [Monitor]	Diagnostics data is logged when the event occurs.
Ⓛ	Monitor + Acknowledge [Monitor+ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function, and diagnostics data is logged when the event occurs.

Event setting analog output 1 saturated

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Evt AO1 sat]

This parameter can be set in the following menu/menus:

Alarm/Event behavior settings [▸ 238]

Defines the device behavior when the following warning occurs:

716: Analog output 1 saturated
716:AO1 saturte

	Value	Description
Ⓛ	Ignore [Ignore]	Event does not have any effect.
Ⓛ	History only [Hist only]	Event is recorded in the device history.
Ⓛ	Generate [Generate]	An alarm is generated by the event. Default value.
Ⓛ	Acknowledge [Ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function.
Ⓛ	Monitor [Monitor]	Diagnostics data is logged when the event occurs.
Ⓛ	Monitor + Acknowledge [Monitor+ack]	An alarm is generated by the event; that alarm needs to be confirmed by the user using the Alarm acknowledge function, and diagnostics data is logged when the event occurs.

Write lock setting

Ⓛ [Detailed setup] ▶ [SIL mode] ▶ [SIL mode chk] ▶ [Other settings] ▶ [Write lock set]

This parameter can be set in the following menu/menus:

Detailed setup [▸ 561]

Sets possible parameter operations when read-only is enabled.

	Value	Description
Ⓛ	All locked [All locked]	Transmitter is read-only and parameter values cannot be changed. Default value.
Ⓛ	Display only [Disp only]	Transmitter is read-only and only display-related parameters can be changed.
Ⓛ	Autozero only [AZ only]	Transmitter is read-only and only Autozero-related parameters can be changed.
Ⓛ	Display + Autozero [Disp+AZ]	Transmitter is read-only, and display- and Autozero-related parameters can be changed.

5.7.14 Proving

Configures automatically some parameters related to Proving.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Auto proving setting	[Auto prove]	[Auto proving setting]	[▷ 591]

Proving

Ⓛ [Detailed setup] ▶ [Proving] ▶ [Auto prove]

Ⓗ [Detailed setup] ▶ [Proving] ▶ [Auto proving setting]

Sets automatically parameter setting commands to use for proving. When proving, it's very important to read related process variables with fast access and disable related damping value. To easily set these parameters at one time, the following parameters are set when this parameter is set to Execute.

- Mass flow damping: 0sec
- Density damping: 0sec
- Volume flow damping: 0sec
- Pulse/Status output 1 select: Frequency output
- Max frequency 1: 10000Hz
- Min frequency 1: 0Hz

When Restore is selected, these parameters return to the value before doing "Execute".

	Value	Description
–	Not execute [Not exe] [Not execute]	Automatic parameter setting for proving is not executed.
–	Execute [Exe] [Execute]	Automatic parameter setting for proving is executed. After executing, this value is automatically set to Not execute.
–	Restore [Restore] [Restore]	Automatic parameter setting for proving is restored before executing Proving. After restoring, this value is automatically set to Not execute.

5.7.15 Sensor constants

Menu for defining sensor constants.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Mass flow	[Mass]	[Mass flow]	[▸ 592]
–	Density	[Dens]	[Density]	[▸ 594]

Mass flow

Menu for defining sensor constants for mass flow measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	SK20	[SK20]	[SK20]	[▸ 592]
–	SK20 reverse	[SK20 reverse]	[SK20 reverse]	[▸ 592]
–	SKT	[SKT]	[SKT]	[▸ 592]
–	SKTK	[SKTK]	[SKTK]	[▸ 593]
–	Qmax	[Qmax]	[Qmax]	[▸ 593]
–	Qnom	[Qnom]	[Qnom]	[▸ 593]
Ⓗ	SKT1	–	[SKT1]	[▸ 593]
Ⓗ	SKT2	–	[SKT2]	[▸ 593]
Ⓗ	SKT3	–	[SKT3]	[▸ 593]

SK20

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [SK20]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SK20]

Sets the sensor value for mass flow measurement.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

SK20 Reverse

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [SK20 reverse]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SK20 reverse]

Sets the sensor value for reverse mass flow measurement.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

SKT

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [SKT]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SKT]

Sets the sensor value for a temperature coefficient.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

SKTK

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [SKTK]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SKTK]

Sets the sensor value for a second-order temperature coefficient.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

Qmax

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [Qmax]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [Qmax]

Shows the upper sensor limit.

	Value	Description
–	Numeric digits	Default value depends on the sensor model.

Qnom

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Mass] ▶ [Qnom]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [Qnom]

Shows the water flow rate at about 1 bar pressure drop.

	Value	Description
–	Numeric digits	Default value depends on the sensor model.

SKT1

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SKT1]

Sets the temperature coefficient 1 of sensor constant.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

SKT2

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SKT2]

Sets the temperature coefficient 2 of sensor constant.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

SKT3

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Mass flow] ▶ [SKT3]

Sets the temperature coefficient 3 of sensor constant.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

Density

Menu for defining sensor constants for density measurement.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	KD	[KD]	[KD]	[594]
–	FL20	[FL20]	[FL20]	[594]
–	FTC1	[FTC1]	[FTC1]	[594]
–	FTCK	[FTCK]	[FTCK]	[594]
Ⓗ	FT1	–	[FT1]	[595]
Ⓗ	FT2	–	[FT2]	[595]
Ⓗ	FT3	–	[FT3]	[595]

KD

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Dens] ▶ [KD]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [KD]

Sets the sensor value for the compensation coefficient for density.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

FL20

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Dens] ▶ [FL20]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FL20]

Sets the sensor value for the resonance frequency of the measuring tube.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

FTC1

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Dens] ▶ [FTC1]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FTC1]

Sets the sensor value for the linear temperature compensation coefficient for the resonance frequency of the measuring tube.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

FTCK

Ⓛ [Detailed setup] ▶ [Snsr cnst] ▶ [Dens] ▶ [FTCK]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FTCK]

Sets the sensor value for the quadratic temperature compensation coefficient for the resonance frequency of the measuring tube.

	Value	Description
–	Numeric digits	Default value depends on model and sensor size.

FT1

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FT1]

Sets the temperature coefficient 1 of frequency.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

FT2

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FT2]

Sets the temperature coefficient 2 of frequency.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

FT3

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Sensor constants] ▶ [Density] ▶ [FT3]

Sets the temperature coefficient 3 of frequency.

	Value	Description
Ⓗ	Numeric digits	Default value depends on model and sensor size.

5.7.16 Compensation

Menu for defining compensation.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Gas	[Gas]	[Gas]	[▷ 595]
Ⓗ	Reynolds number	–	[Reynolds number]	[▷ 597]

Gas

Menu for defining compensation for gas.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Sound velocity at reference temperature	[Snd vel]	[Sound velocity at reference temperature]	[▷ 596]
–	Reference temperature for sound velocity	[Snd vel Ref Temp]	[Reference temperature for sound velocity]	[▷ 596]
–	Sound velocity temperature coefficient	[Snd vel Temp Coeff]	[Sound velocity temperature coefficient]	[▷ 596]

Sound velocity at reference temperature

Ⓛ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Snd vel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Sound velocity at reference temperature]

Sets the sound velocity at reference temperature for the gas compensation.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0 - no check. Default value is 450 m/s (Methane).

Tab. 34: Examples for sound velocity as below

Gas	Sound velocity at reference temperature	Reference temperature
Methane	430 m/s	0 °C
Hydrogen	1260 m/s	0 °C

Reference temperature for sound velocity

Ⓛ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Snd vel Ref Temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Reference temperature for sound velocity]

Sets the reference temperature for sound velocity.

	Value	Description
Ⓗ	Numeric digits	Default value is 20 degC.

See examples for reference temperature at sound velocity parameter.

Sound velocity temperature coefficient

Ⓛ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Snd vel Temp Coeff]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Gas] ▶ [Sound velocity temperature coefficient]

Sets the sound velocity temperature coefficient.

	Value	Description
Ⓗ	Numeric digits	Default value is 0.

Parameter setting has direct impact onto mass flow measurement. Wrong values can lead to measurement failure.

Temperature coefficient can be calculated approximately with two measurement points with following formula:

$$\alpha = \frac{c_2 - c_1}{c_1 \times (T_2 - T_1)}$$

c_1	Sound velocity [m/s] at T_1
c_2	Sound velocity [m/s] at T_2
α	Sound velocity temperature coefficient [1/K]
T_1	Temperature point 1 [°C]
T_2	Temperature point 2 [°C]

Tab. 35: Examples for temperature coefficient

Gas	Sound velocity at reference temperature (c_1)	Reference temperature (T_1)	Sound velocity at designed temperature (c_2)	Designed Temperature (T_2)	Temperature coefficient (α)
Methane	430 m/s	0 °C	461 m/s	40 °C	0.001
Hydrogen	1260 m/s	0 °C	1349 m/s	40 °C	0.001

Reynolds number

Menu for defining compensation for Reynolds number. These parameters are available when set to ON at the factory.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓗ	Viscosity fixed value	–	[Viscosity fixed value]	[597]
Ⓗ	Viscosity value select	–	[Viscosity value select]	[597]
Ⓗ	Re compensation viscosity value	–	[Re compensation viscosity value]	[598]
Ⓗ	Re compensation viscosity unit	–	[Re compensation viscosity unit]	[598]
Ⓗ	Fluid constant	–	[VK0]	[598]
Ⓗ	Viscosity temperature coefficient 1	–	[VKT1]	[598]
Ⓗ	Viscosity temperature coefficient 2	–	[VKT2]	[599]

Viscosity fixed value

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [Viscosity fixed value]

Sets the viscosity fixed value. If fixed value is selected with viscosity value select, this parameter will be used in the calculation of Reynolds number compensation.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0 - no check. Default value is 0.

Viscosity value select

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [Viscosity value select]

Selects the viscosity value to use for Reynolds number compensation.

	Value	Description
Ⓗ	Fixed value	Use viscosity fixed value for Reynolds number compensation.
Ⓗ	Calculated value (ASTM)	Value calculated from the ASTM D341 method is used for Reynolds number compensation. Default value.
Ⓗ	Measured value	Use measured viscosity value for Reynolds number compensation.

Re compensation viscosity value

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [Re compensation viscosity value]

Shows the viscosity value used by Reynolds number compensation.

	Value	Description
Ⓗ	Numeric digits	Shows the viscosity value used by Reynolds number compensation.

Re compensation viscosity unit

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [Re compensation viscosity unit]

Sets the re compensation viscosity unit.

	Value	Description
Ⓗ	mPas	Sets the viscosity unit for re compensation viscosity value. Default value is mPas.
Ⓗ	Pas	
Ⓗ	cP	
Ⓗ	Ns/m^2	
Ⓗ	kg/ms	
Ⓗ	cSt	
Ⓗ	St	
Ⓗ	mm^2/s	
Ⓗ	cm^2/s	
Ⓗ	dm^2/s	
Ⓗ	m^2/s	

Fluid constant

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [VK0]

Sets the fluid constant. This parameter is used in ASTM D341 calculation.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0 - no check. Default value is 0.7.

Default value for fluid constant complies to hydrocarbons according to ASTM D341.

When Reynolds compensation coefficients are set enabling compensation function, fluid constant, viscosity temperature coefficient 1 and 2 default value setting cover water characteristics from 2..40 °C.

Viscosity temperature coefficient 1

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [VKT1]

Sets the viscosity temperature coefficient 1. This parameter is used in ASTM D341 calculation.

	Value	Description
Ⓗ	Numeric digits	Default value is 19.149.

When Reynolds compensation coefficients are set enabling compensation function, fluid constant, viscosity temperature coefficient 1 and 2 default value setting cover water characteristics from 2..40 °C.

Viscosity temperature coefficient 2

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Compensation] ▶ [Reynolds number] ▶ [VKT2]

Sets the viscosity temperature coefficient 2. This parameter is used in ASTM D341 calculation.

	Value	Description
Ⓗ	Numeric digits	Default value is 8.025.

When Reynolds compensation coefficients are set enabling compensation function, fluid constant, viscosity temperature coefficient 1 and 2 default value setting cover water characteristics from 2..40 °C.

5.7.17 Device information

Menu for showing transmitter information.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Order information	[Order info]	[Order information]	[▷ 599]
–	Capability information	[Cpblty info]	[Capability information]	[▷ 610]
–	Version/Number information	[Ver/Num info]	[Version/Number information]	[▷ 611]
–	[HART]-specific information	[HART info]	[HART specific information]	[▷ 613]

Order information

Menu for showing order information.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Tag	[Tag]	[Tag]	[▷ 600]
–	Long tag	[Long tag]	[Long tag]	[▷ 600]
–	Order code 1	[Order code 1]	[Order code 1]	[▷ 600]
–	Order code 2	[Order code 2]	[Order code 2]	[▷ 601]
–	Order code 3	[Order code 3]	[Order code 3]	[▷ 601]
–	Release date	[Rls date]	[Release date]	[▷ 601]
–	Transmitter type	[Trsmtr type]	[Transmitter type]	[▷ 601]
–	IO type	[IO type]	[IO type]	[▷ 602]
–	Terminal state 1	[Term state1]	[Terminal state 1]	[▷ 603]
–	Terminal state 2	[Term state2]	[Terminal state 2]	[▷ 603]
–	Terminal state 3	[Term state3]	[Terminal state 3]	[▷ 604]
–	Terminal state 4	[Term state4]	[Terminal state 4]	[▷ 604]
–	Display installation	[Disp install]	[Display installation]	[▷ 605]
–	Liquid gas select	[Liq gas sel]	[Liquid gas select]	[▷ 606]
–	Concentration measurement select	[Conc sel]	[Concentration measurement select]	[▷ 606]
–	Function option code	[Func opt code]	[Function option code]	[▷ 607]
–	Function option status	[Func opt sts]	[Function option status]	[▷ 607]

–	Extra number 1	[Extra1]	[Extra number 1]	[608]
–	Extra number 2	[Extra2]	[Extra number 2]	[608]
–	SI option	[SI opt]	[SI option]	[609]

Tag

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Tag]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Tag]

Sets the tag number of the device.

	Value	Description
–	ASCII characters	Maximum length is 8 characters. @, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, [, \,], ^, _, SP, !, ", #, $, %, &, ', (, (, *, +, ,, -, ., /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, :, ;, <, =, >, ?

Long Tag

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Long tag]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Long tag]

Sets the long tag number of the transmitter.

	Value	Description
–	ASCII characters	Maximum length is 32 characters.

Indicator Software Revision

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Ind soft rev]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Indicator software revision]

Shows the software revision of the indicator firmware.

	Value	Description
–	ASCII characters.	Indicator software revision

Order Code 1

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Order code 1]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Order code 1]

Shows the order code of the product. The order code is divided into 3 parts because of its length. This is the 1st part of the order code.

Do not change this parameter.

	Value	Description
–	ASCII characters	32 characters max.

Order Code 2

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Order code 2]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Order code 2]

Shows the order code of the product. The order code is divided into 3 parts because of its length. This is the 2nd part of the order code.

Do not change this parameter.

	Value	Description
–	ASCII characters	32 characters max.

Order Code 3

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Order code 3]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Order code 3]

Show the order code of the product. The order code is divided into 3 parts because of its length. This is the 3rd part of the order code.

Do not change this parameter.

	Value	Description
–	ASCII characters	32 characters max.

Release date

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Rls date]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Release date]

Shows the date when the transmitter was shipped from the factory.

	Value	Description
Ⓛ	Numeric digits	Date format depends on *Display format date* Display format date.
Ⓗ	Numeric digits	Date format is MM/DD/YYYY.

Transmitter Type

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Trsmtr type]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Transmitter type]

Shows the transmitter type.

	Value	Description
–	SITRANS FCT020 [SITRANS FCT020] [SITRANS FCT020]	SITRANS FCT020 transmitter.

	Value	Description
–	SITRANS FCT040 [SITRANS FCT040] [SITRANS FCT040]	SITRANS FCT040 transmitter.

IO type

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [IO type]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [IO type]

Shows the IO type of the transmitter.

	Value	Description
–	E06+F11 [E06+F11] [E06+F11]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : None (Not used) Terminal state 4 : None (Not used)
–	E06+F22 [E06+F22] [E06+F22]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Pulse/Status output (Passive) Terminal state 4 : Analog output (Active)
–	E06+F23 [E06+F23] [E06+F23]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Analog output (Active)
–	E06+F12 [E06+F12] [E06+F12]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status output (Passive) Terminal state 4 : Pulse/Status output (Passive)
–	E06+F13 [E06+F13] [E06+F13]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Pulse/Status output (Passive)
–	E06+F21 [E06+F21] [E06+F21]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Pulse/Status output (Active, Inner pull-up R)
–	E06+F20 [E06+F20] [E06+F20]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Pulse/Status output (Active, No pull-up R)
–	E06+F16 [E06+F16] [E06+F16]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : Analog input (Active)
–	E06+F14 [E06+F14] [E06+F14]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Pulse/Status output (Passive) Terminal state 4 : Analog input (Active)
–	E06+F18 [E06+F18] [E06+F18]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Analog input (Active)

	Value	Description
–	E06+F17 [E06+F17] [E06+F17]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : Analog input (Passive)
–	E06+F15 [E06+F15] [E06+F15]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Pulse/Status output (Passive) Terminal state 4 : Analog input (Passive)
–	E06+F19 [E06+F19] [E06+F19]	Terminal state 1 : Analog output + HART (Active) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Status input (Voltagefree) Terminal state 4 : Analog input (Passive)
–	E07+F01 [E07+F01] [E07+F01]	Terminal state 1 : Analog output + HART (Passive) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : None (Not used)
–	E07+F02 [E07+F02] [E07+F02]	Terminal state 1 : Analog output + HART (Passive) Terminal state 2 : Pulse/Status output (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : Pulse/Status output (Passive)
–	E07+F03 [E07+F03] [E07+F03]	Terminal state 1 : Analog output + HART (Passive) Terminal state 2 : NM (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : None (Not used)
–	E07+F04 [E07+F04] [E07+F04]	Terminal state 1 : Analog output + HART (Passive) Terminal state 2 : NM (Passive) Terminal state 3 : Analog output (Passive) Terminal state 4 : NM (Passive)

Terminal state 1

Ⓛ **[Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Term state1]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Terminal state 1]

Shows the assignment of IO terminal 1.

	Value	Description
–	Analog output + HART (Active) **[AO+HART(act)]** [Analog output + HART (Active)]	Analog output with HART communication superimposed. No external power supply necessary.
–	Analog output + HART (Passive) **[AO+HART(pas)]** [Analog output + HART (Passive)]	Analog output with HART communication superimposed. External power supply necessary. Only for intrinsically safe application.

Terminal state 2

Ⓛ **[Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Term state2]**

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Terminal state 2]

Shows the assignment of IO terminal 2.

	Value	Description
–	Pulse/Status output (Passive) [Pls/Sts(pas)] [Pulse/Status output (Passive)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. External power supply necessary. Also for intrinsically safe application.
–	NM (Passive) [NM(pas)] [NM (Passive)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. Pulses according to the NAMUR NE43 level. External power supply necessary. Only for intrinsically safe application.

Terminal state 3

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Term state3]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Terminal state 3]

Shows the assignment of IO terminal 3. The value can be one of the following:

	Value	Description
–	Pulse/Status output (Passive) [Pls/Sts(pas)] [Pulse/Status output (Passive)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. External power supply necessary.
–	Status input (Voltage-free) [Sts in(volt-free)] [Status input (Voltage-free)]	Status input operating without voltage. No external power supply necessary.
–	Status output (Passive) [Sts(pas)] [Status output (Passive)]	Status output to indicate the level of events or alarms. External power supply necessary.
–	Analog output (Passive) [AO(pas)] [Analog output (Passive)]	Analog output without HART communication. External power supply necessary. Also for intrinsically safe application.
–	None (Not used) [None] [None]	No output selected on terminal 3.

Terminal state 4

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Term state4]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Terminal state 4]

Shows the assignment of IO terminal 4.

	Value	Description
–	Analog output (Active) [AO(act)] [Analog output (Active)]	Analog output without HART communication. No external power supply necessary.
–	Pulse/Status output (Passive) [Pls/Sts(pas)] [Pulse/Status output (Passive)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. External power supply necessary. Also for intrinsically safe application.
–	Pulse/Status output (Active, No pull-up R) [Pls/Sts act,no p-up] [Pulse/Status output (Active, No pull-up R)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. Open collector output. No external power supply necessary.
–	Pulse/Status output (Active, Inner pull-up R) [Pls/Sts act,p-up] [Pulse/Status output (Active, Inner pull-up R)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. No external power supply necessary.
–	Analog input (Active) [Iin(act)] [Analog input (Active)]	Analog input without HART communication. No external power supply necessary.
–	Analog input (Passive) [Iin(pas)] [Analog input (Passive)]	Analog input without HART communication. External power supply necessary.
–	NM(Passive) [NM(pas)] [NM(Passive)]	Pulse/Status output up to a frequency of 10000 Hz or pulse sequence of up to 10000 p/s. Pulses according to the NAMUR NE43 level. External power supply necessary. Only for intrinsically safe application 2.
–	None (Not used) [None] [None (Not used)]	No output selected on terminal 4.

Display Installation

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Disp install]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Display installation]

Shows whether or not the transmitter has an LCD display.

	Value	Description
–	No Display [No disp] [No Display]	The transmitter does not have an LCD display.
–	With Display [With disp] [With Display]	The transmitter has an LCD display.

Liquid Gas Select

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Liq gas sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Liquid gas select]

Sets the fluid type.

	Value	Description
–	Liquid [Liquid] [Liquid]	Fluid to be measured is liquid. Selectable units for corrected volume flow are all standard units.
–	Gas [Gas] [Gas]	Fluid to be measured is gas. Selectable units for corrected volume flow are all standard units and normal units. Switching from gas to liquid is not possible if normal unit is used (e.g., m³/h(Normal), m³(Normal), Nml Cum/P).

Concentration Measurement Select

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Conc sel]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Concentration measurement select]

Shows the type of concentration measurement that is possible.

	Value	Description
–	Inhibit [Inhibit] [Inhibit]	Concentration measurement is not available.
–	Standard [Std] [Standard]	Standard concentration measurement is available.
–	Advanced [Adv] [Advanced]	Advanced concentration measurement is available.
–	Net oil computing API [NOC] [Net oil computing API]	Net Oil Computing is available.

	Value	Description
–	Net oil computing API and GVF [NOC GVF] [Net oil computing API and GVF]	Net Oil Computing and GVF are available.

Function Option Code

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Func opt code]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Function option code]

Shows available options on the transmitter.

	Value	Description
–	Tube Health Check [Tube health chk] [Tube Health Check]	Tube Health Check is available.
–	Batch function [Batch] [Batch function]	Batch function is available.
–	Analog Input Calorific value [Cal via AI] [Analog input Calorific value]	Analog Input Calorific value is available.
–	Viscosity [Visc] [Viscosity]	Viscosity is available.

Function Option Status

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Func opt sts]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Function option status]

Shows the option that is available or activated on the transmitter.

	Value	Description
–	Tube Health Check [Tube health chk] [Tube Health Check]	Tube Health Check is available.
–	Batch function [Batch] [Batch function]	Batch function is available.

	Value	Description
–	Analog Input Calorific Value [Cal via AI] [Analog input calorific value]	Analog Input Calorific Value is available.
–	Viscosity [Visc] [Viscosity]	Viscosity is available.
–	Concentration Standard [Conc std] [Concentration standard]	Standard concentration measurement is available.
–	Concentration Advanced [Conc adv] [Concentration advanced]	Advanced concentration measurement is available.
–	Net oil computing API [NOC API] [Net oil computing API]	Net Oil Computing is available.
–	Net oil computing API and GVF [NOC API GVF] [Net oil computing API and GVF]	Net Oil Computing and GVF are available.

Extra Number 1

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Extra1]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Extra number 1]

Shows the identification number of a special specification, if the transmitter has a special or customized specification.

	Value	Description
–	ASCII characters	Extra number.

Extra Number 2

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [Extra2]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [Extra number 2]

Shows the identification number of a special specification, if the transmitter has a special or customized specification.

	Value	Description
–	ASCII characters	Extra number.

SI option

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Order info] ▶ [SI opt]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Order information] ▶ [SI option]

Shows whether or not the configuration for unit display complies with Japanese measurement law.

	Value	Description
–	On [On] [On]	Units comply with Japanese measurement law.
–	Off [Off] [Off]	General configuration.

Capability information

Menu for showing the physical capabilities of the sensor.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Max permissible temperature	[Max permit temp]	[Max permissible temperature]	[▸ 610]
–	Max permissible pressure	[Max permit pres]	[Max permissible pressure]	[▸ 610]
–	Temperature lower limit	[Temp lo lim]	[Temperature lower limit]	[▸ 610]
–	Temperature upper limit	[Temp hi lim]	[Temperature upper limit]	[▸ 610]

Max Permissible Temperature

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Cpblty info] ▶ [Max permit temp]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Capability information] ▶ [Max permissible temperature]

Shows the maximum temperature as required by the PED (Pressure Equipment Directive).

	Value	Description
–	Numeric digits	Unit is °C.

Max Permissible Pressure

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Cpblty info] ▶ [Max permit pres]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Capability information] ▶ [Max permissible pressure]

Shows the maximum pressure as required by the PED (Pressure Equipment Directive).

	Value	Description
–	Numeric digits	Unit is bar.

Temperature Lower Limit

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Cpblty info] ▶ [Temp lo lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Capability information] ▶ [Temperature lower limit]

Shows the lower limit of the temperature measurement.

	Value	Description
–	Numeric digits	Unit depends on the selection in *Temperature unit* [▸ 405].

Temperature Upper Limit

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Cpblty info] ▶ [Temp hi lim]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Capability information] ▶ [Temperature upper limit]

Shows the upper limit of the temperature measurement.

	Value	Description
–	Numeric digits	Unit depends on the selection in *Temperature unit* [▸ 405].

Version/Number information

Menu for showing firmware and hardware revision information.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Sensor serial number	[Snsr serial]	[Sensor serial number]	[▷ 611]
–	Complete device serial number	[Cmplt ser num]	[Complete device serial number]	[▷ 611]
–	Transmitter spare serial number	[Trsmtr spare ser num]	[Transmitter spare serial number]	[▷ 612]
–	Sensor spare serial number	[Snsr spare ser num]	[Sensor spare serial number]	[▷ 612]
–	Main software revision	[Main soft rev]	[Main software revision]	[▷ 612]
–	Sensor software revision	[Snsr soft rev]	[Sensor software revision]	[▷ 612]
–	Indicator software revision	[Ind soft rev]	[Indicator software revision]	[▷ 612]
–	Hardware revision	[Hard rev]	[Hardware revision]	[▷ 613]
–	Device ID	[Dev id]	[Dev ID]	[▷ 613]

Sensor Serial Number

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Snsr serial]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Sensor serial number]

Shows the serial number of the sensor.

ⓘ Do not change this parameter.

	Value	Description
–	ASCII characters.	Sensor serial number

Complete device serial number

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Cmplt ser num]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Complete device serial number]

Shows the original serial number of the device that is not a spare transmitter and is combined with the sensor.

	Value	Description
–	ASCII characters.	Complete device serial number

Transmitter Spare Serial Number

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Trsmtr spare ser num]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Transmitter spare serial number]

Shows the serial number of the spare transmitter. When the transmitter is exchanged, this parameter should be appropriately written with the transmitter serial number that is exchanged.

	Value	Description
–	ASCII characters.	Transmitter spare serial number

Sensor Spare Serial Number

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Snsr spare ser num]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Sensor spare serial number]

Shows the serial number of the spare sensor. When sensor is exchanged, this parameter should be appropriately written with the sensor serial number that is exchanged.

	Value	Description
–	ASCII characters.	Sensor spare serial number

Main Software Revision

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Main soft rev]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Main software revision]

Shows the software revision of the main software.

	Value	Description
–	ASCII characters.	Main software revision

Sensor Software Revision

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Snsr soft rev]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Sensor software revision]

Shows the software revision of the firmware for the sensor.

	Value	Description
–	ASCII characters.	Sensor software revision

Indicator Software Revision

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Ind soft rev]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Indicator software revision]

Shows the software revision of the indicator firmware.

	Value	Description
–	ASCII characters.	Indicator software revision

Hardware Revision

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Hard rev]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Hardware revision]

Shows the revision of the hardware.

	Value	Description
–	ASCII characters.	Hardware revision

Device ID

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [Ver/Num info] ▶ [Dev id]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [Version/Number information] ▶ [Dev ID]

Shows the ID number of the transmitter.

	Value	Description
–	Numeric digits	Device ID

HART specific information

Menu for HART parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Polling address	[Poll addr]	[Poll addr]	[▷ 614]
–	Loop current mode	[Loop curr mode]	[Loop current mode]	[▷ 614]
–	Number of request preambles	[Num req preams]	[Num req preams]	[▷ 614]
–	Number of response preambles	[Num resp preams]	[Num resp preams]	[▷ 615]
Ⓗ	Manufacturer	–	[Manufacturer]	[▷ 615]
Ⓗ	Model	–	[Model]	[▷ 615]
Ⓗ	Date	–	[Date]	[▷ 615]
Ⓗ	Descriptor	–	[Descriptor]	[▷ 615]
Ⓗ	Message	–	[Message]	[▷ 616]
Ⓗ	Distributor	–	[Distributor]	[▷ 616]
Ⓗ	Final assembly number	–	[Final asmbly num]	[▷ 616]
Ⓗ	Maximum number of device variables	–	[Max dev vars]	[▷ 616]
Ⓗ	Device profile	–	[Device profile]	[▷ 616]
Ⓗ	Universal command revision	–	[Universal rev]	[▷ 617]
Ⓗ	Field device revision	–	[Fld dev rev]	[▷ 617]
Ⓗ	Software revision	–	[Software rev]	[▷ 617]
Ⓗ	Hardware revision	–	[Hardware rev]	[▷ 617]
Ⓗ	Configuration change counter	–	[Configuration change counter]	[▷ 617]

Polling address

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [HART info] ▶ [Poll addr]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Poll addr]

Sets the number for identification of the transmitter in multi-drop communication mode.

This number is required when multi-drop mode is used. In this mode several transmitters can be connected to a single communication transmission line. The transmitter address must be set to a number from 1 to 63 before starting multi-drop communication.

If 2 or more devices are set to the same polling address in multi-drop mode, these devices cannot be used

	Value	Description
–	Numeric digits	Setting range: 1 – 63. Default value is 0.

Loop current mode

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [HART info] ▶ [Loop curr mode]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Loop current mode]

This parameter can be set in the following menu/menus:

SIL mode [▶ 587]

Enables or disables loop current mode.

If loop current mode is enabled, 4 – 20 mA analog signal output is enabled. Only one unit can be used per loop.

	Value	Description
–	Enabled [Enable] [Enabled]	Loop current mode is enabled. 4 – 20 mA analog signal output mode.
–	Disabled [Disable] [Disabled]	Loop current mode is disabled. 4 mA DC fixed mode.

Number request preambles

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [HART info] ▶ [Num req preams]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Num req preams]

Shows the preamble of a request. For details, refer to the HART specification.

	Value	Description
–	Quantity	Numeric digits. Setting range: 5 – 20. Default value is 5.

Number response preambles

Ⓛ [Detailed setup] ▶ [Dev info] ▶ [HART info] ▶ [Num resp preams]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Num resp preams]

Sets the preamble of a response. For details, refer to the HART specification.

	Value	Description
–	Number	Numeric digits. Setting range: 5 – 20.

Manufacturer

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Manufacturer]

Shows the manufacturer. For details, refer to the HART specification.

	Value	Description
Ⓗ	Siemens [Siemens] [Siemens]	It shows the manufacturer's name as a read-only parameter.

Model

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Model]

Shows the name of the model. For details, refer to the HART specification.

	Value	Description
Ⓗ	SITRANS FC [SITRANS FC] [SITRANS FC]	It shows the model name as a read-only parameter.

Date

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Date]

Shows date information. For details, refer to the HART specification.

	Value	Description
Ⓗ	Date	It shows a date as a user memo. For example, the format [MM/DD/YYYY] displays it as the Month/Day/Year in DTM of Pactware.

Descriptor

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Descriptor]

Shows descriptive information, such as a memo, comment, etc. For details, refer to the HART specification.

	Value	Description
Ⓗ	ASCII characters	Maximum length is 16 characters and usable characters are restricted in the same manner as Tag. For example, lower case letters are not allowed. Refer to the description of Tag.

Message

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Message]

Shows a message, such as a memo, etc. For details, refer to the HART specification.

	Value	Description
Ⓗ	ASCII characters	Maximum length is 32 characters and usable characters are restricted in the same manner as Tag. For example, lower case letters are not allowed. Refer to the description of Tag.

Distributor

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Distributor]

Shows the distributor. For details, refer to the HART specification.

	Value	Description
Ⓗ	Siemens [Siemens] [Siemens]	It shows the distributor's name as a read-only parameter.

Final assembly number

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Final asmbly num]

Shows the final assembly number as a user memo. For details, refer to the HART specification.

	Value	Description
Ⓗ	Numeric digits	Setting range: 0 – 16777215.

Maximum number of device variables

Ⓗ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Max dev vars]

Shows the maximum number of transmitter variables. For details, refer to the HART specification.

	Value	Description
Ⓗ	Quantity	It shows the maximum number of device variables as a read-only parameter.

Device profile

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Device profile]

Shows the code for the device profile. For details, refer to the HART specification.

	Value	Description
Ⓗ	Process automation device [**Process automation device**] [Process automation device]	It shows device profile information as a read-only parameter.

Universal command revision

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Universal rev]

Shows the universal command revision that is, the HART protocol revision. For details, refer to the HART specification.

	Value	Description
Ⓗ	Numeric digits	It shows the universal command revision as a read-only parameter.

Field device revision

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Fld dev rev]

Shows the HART device revision. For details, refer to the HART specification.

	Value	Description
Ⓗ	Quantity	It shows the HART device revision as a read-only parameter.

Software revision

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Software rev]

Shows the software revision. For details, refer to the HART specification.

	Value	Description
Ⓗ	Numeric digits	It shows the software revision as a read-only parameter.

Hardware revision

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Hardware rev]

Shows the hardware revision. For details, refer to the HART specification.

	Value	Description
Ⓗ	Numeric digits	It shows the hardware revision as a read-only parameter.

Configuration change counter

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Device information] ▶ [HART specific information] ▶ [Configuration change counter]

Shows the change counter for configuration relevant parameters.

	Value	Description
–	Quantity	Numeric digits

5.7.18 Burst/Event notification

Menu for configuring the HART Burst/Event notification.

When burst mode is used, the device continuously can send the data like PV and HART alarms.

The following menus/settings are available:

	Full name	Display name	HART name	Page
Ⓗ	HART burst/event parameters	–	[HART burst/event parameters]	[▶ 618]
Ⓗ	stop Burst	–	[stop Burst]	[▶ 618]
Ⓗ	Easy Burst Setup	–	[Easy Burst Setup]	[▶ 618]

Ⓗ	Detailed Burst Setup	–	[Detailed Burst Setup]	[▸ 619]
Ⓗ	Event Setup	–	[Event Setup]	[▸ 620]

HART burst/event parameters

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [HART burst/event parameters]

Enables or disables the menu for accessing parameters that are located under the menu Burst/Event notification. To access the parameters, this parameter must be set to Apply.

	Value	Description
–	Not apply **[Apply]** [Not apply]	The menu for parameters of Burst/Event notification is disabled. Default value.
–	Apply **[Not apply]** [Apply]	The menu for parameters of Burst/Event notification is enabled.

stop Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [stop Burst]

Burst is stopped.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

Easy Burst Setup

set Easy Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [set Easy Burst]

This function sends only one parameter continuously.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

stop Easy Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [stop Easy Burst]

This function stops Easy burst.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

BM0 Burst mode

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [BM0 Burst mode]

This function shows the Burst mode of Burst mode 0(BM0).

For details, refer to the HART specification.

BM0 Burst command

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [BM0 Burst command]

This function shows the Burst command of Burst mode 0(BM0)

For details, refer to the HART specification.

BM0 SLOT0 – 3

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [BM0 SLOT0 – 3]

This function shows the Burst variable code of BM0 SLOT0 – 3 (BM0).

For details, refer to the HART specification.

Detailed Burst Setup

set Detailed Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [Detailed Burst Setup] ▶ [set Detailed Burst]

This function sends up to 3 parameters with various conditions.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

stop Detailed Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [Detailed Burst Setup] ▶ [stop Detailed Burst]

This function stops Detailed Burst.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

This menu shows the Burst mode 1 – 2(BM1 – 2) parameter setting as follows. The following parameters are set by set Detailed Burst method.

- BM1 – 2 Burst mode
- BM1 – 2 Burst command
- BM1 – 2 SLOT0
- BM1 – 2 SLOT1
- BM1 – 2 SLOT2
- BM1 – 2 SLOT3
- BM1 – 2 SLOT4
- BM1 – 2 SLOT5
- BM1 – 2 SLOT6
- BM1 – 2 SLOT7
- BM1 – 2 Update period
- BM1 – 2 Max update
- BM1 – 2 Burst trigger mode
- BM1 – 2 Burst trigger class
- BM1 – 2 Burst trigger unit
- BM1 – 2 Burst trigger level

For details, refer to the HART specification.

Event Setup

set Event

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [Event Setup] ▶ [set Event]

This function sets the relevant parameters for Event Notification.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

stop Event

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [Event Setup] ▶ [stop Event]

This function stops the Event Notification.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

stop Detailed Burst

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Burst/Event notification] ▶ [Event Setup] ▶ [acknowledge Event]

This function performs the event acknowledge of HART alarms for the Event Notification.

If accessed via HART communication, each item that is set to gather information is set and controlled via an interactive user interface called Method.

For details, refer to the HART specification.

This menu shows the parameter setting for Event notification as follows. The following parameters are set by set set Event.

- Event notification control
- Event notification retry time
- Max update time
- Event debounce interval
- Event Status
- Time first unack event triggered
- Device Status Mask
- Ext dev status Mask
- Device Diagnostic Status0 Mask
- Device Diagnostic Status1 Mask
- Status group 0 Mask
- Status group 1 Mask
- Status group 2 Mask
- Status group 3 Mask
- Status group 4 Mask
- Status group 5 Mask
- Status group 14 Mask
- Status group 15 Mask
- Status group 16 Mask
- Status group 17 Mask
- Status group 18 Mask

- Status group 19 Mask
- Status group 20 Mask
- Status group 21 Mask
- Status group 22 Mask
- Status group 23 Mask

For details, refer to the HART specification.

5.7.19 Write protect

There are two types of write protection: one is set by hardware switches (located in two separate places, see Operating Instructions) and the other one is set by software parameters. Parameters can only be set if both types of write protection (hardware and software) are switched off.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Write protect	[Protect]	[Write protect]	[▷ 621]
–	New password	[New pwd]	[New password]	[▷ 621]
–	Enable write 10 min	[Enable 10min]	[Enable write 10min]	[▷ 622]
–	Software seal	[Soft seal]	[Software seal]	[▷ 622]

Write protect

Ⓛ [Detailed setup] ▶ [Protect] ▶ [Protect]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Write protect] ▶ [Write protect]

Sets the write protection status.

	Value	Description
–	Yes [Yes] [Yes]	Write protection is enabled, the parameters of the device cannot be changed.
–	No [No] [No]	Write protection is disabled, the parameters of the device can be changed.

New password

Ⓛ [Detailed setup] ▶ [Protect] ▶ [New pwd]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Write protect] ▶ [New password]

Enables or disables the write protection function and allows for setting a new password to cancel write protection.

	Value	Description
–	Alphanumeric digits	Sets new password. Maximum length is 8 digits.
–	8 blank spaces	Disables write protection.

Enable write 10 min

Ⓛ [Detailed setup] ▶ [Protect] ▶ [Enable 10min]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Write protect] ▶ [Enable 10min]

Cancels the write protection temporarily for 10 minutes by entering the password set previously. Parameters can be changed during that time.

	Value	Description
–	Alphanumeric digits	Password as previously set. Maximum length is 8 digits.

Software seal

Ⓛ [Detailed setup] ▶ [Protect] ▶ [Soft seal]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Write protect] ▶ [Software seal]

Shows what kind of password is set.

	Value	Description
–	Break [Break] [Break]	Protect is canceled by the wild-card password, that is 8 blank spaces.
–	Keep [Keep] [Keep]	Setting reverts to Keep if the protection is canceled by a new password.

5.7.20 Others

Menu for other parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
–	Signal gain	[Signal gain]	[Signal gain]	[▸ 622]
–	Memo 1	[Memo1]	[Memo 1]	[▸ 623]
–	Memo 2	[Memo2]	[Memo 2]	[▸ 623]
–	Memo 3	[Memo3]	[Memo 3]	[▸ 623]
–	Configuration change counter	[Cfg cnt]	[Configuration change counter]	[▸ 623]

Signal Gain

Ⓛ [Detailed setup] ▶ [Others] ▶ [Signal gain]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Others] ▶ [Signal gain]

Sets the signal gain of the sensor signal. It can be selected and set according to the following values.

Ask Siemens for advice before changing this parameter.

	Value	Description
–	Gain1 [Gain1] [Gain 1]	Tubes oscillation amplitude 100%.
–	Gain2 [Gain2] [Gain 2]	Tubes oscillation amplitude about 60%.
–	Gain3 [Gain3] [Gain 3]	Tubes oscillation amplitude about 30%.
–	Gain4 [Gain4] [Gain 4]	Tubes oscillation amplitude about 15%.

Memo 1

Ⓛ [Detailed setup] ▶ [Others] ▶ [Memo1]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Others] ▶ [Memo 1]

Sets a general purpose memo.

	Value	Description
–	ASCII characters	Maximum length is 16 ASCII characters.

Memo 2

Ⓛ [Detailed setup] ▶ [Others] ▶ [Memo2]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Others] ▶ [Memo 2]

Sets a general purpose memo.

	Value	Description
–	ASCII characters	Maximum length is 16 ASCII characters.

Memo 3

Ⓛ [Detailed setup] ▶ [Others] ▶ [Memo3]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Others] ▶ [Memo 3]

Sets a general purpose memo.

	Value	Description
–	ASCII characters	Maximum length is 16 ASCII characters.

Configuration change counter

Ⓛ [Detailed setup] ▶ [Others] ▶ [Cfg cnt]

Ⓗ [Device root menu] ▶ [Detailed setup] ▶ [Others] ▶ [Configuration change counter]

Shows the change counter for configuration relevant parameters.

	Value	Description
–	Quantity	Numeric digits.

5.8 microSD

Menu for microSD card parameters.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	microSD contents	[Contents]	–	[624]
Ⓛ	microSD unmount	[Unmount]	–	[624]
Ⓛ	microSD format	[Format]	–	[624]
Ⓛ	microSD property	[Property]	–	[625]
Ⓛ	microSD file name	[File name]	–	[624]

Target mode

Ⓛ [Detailed setup] ▶ [microSD] ▶ [Target mode]

Target mode sets the Target mode for Physical Block, All Transducer Block and All Function Blocks. Many parameters cannot be written when Target mode is set to Auto.

	Display parameter	Description
–	Auto	Operation is Auto mode.
–	O/S	Operation is out of service mode.

microSD contents

Ⓛ [microSD] ▶ [Contents]

Shows the names of the files in the "Siemens" folder on the microSD card.

	Value	Description
–	ASCII characters	The file name is shown.

microSD unmount

Ⓛ [microSD] ▶ [Unmount]

Sets unmounting of the microSD card.

	Value	Description
–	Cancel [Cancel]	microSD unmounting will be canceled.
–	Execute [Execute]	microSD unmounting will be executed.

microSD format

Ⓛ [microSD] ▶ [Format]

Sets the formatting of the microSD card.

	Value	Description
–	Cancel [Cancel]	microSD formatting will be canceled.
–	Execute [Execute]	microSD formatting will be executed.

microSD file name

Ⓛ [microSD] ▶ [File name]

Shows the file name of each extension.

	Value	Description
–	*.EVT [*.EVT]	Event file name
–	*.TRD [*.TRD]	Logging file name
–	*.PAR [*.PAR]	Backup file name
–	*.MON [*.MON]	Monitoring file name

5.8.1 microSD property

Menu for microSD card properties.

The following menus/settings are available:

	Full name	Display name	[HART] name	Page
Ⓛ	microSD total space	[Total space]	–	[▷ 625]
Ⓛ	microSD available space	[Available space]	–	[▷ 625]
Ⓛ	microSD file system	[File system]	–	[▷ 625]

microSD total space

Ⓛ [microSD] ▶ [Property] ▶ [Total space]

Shows the total space of the microSD card.

	Value	Description
–	Numeric digits	Total space on microSD card (GB).

microSD available space

Ⓛ [microSD] ▶ [Property] ▶ [Available space]

Shows the available space on the microSD card.

	Value	Description
–	Numeric digits	Available space on microSD card (GB).

microSD file system

Ⓛ [microSD] ▶ [Property] ▶ [File system]

Shows the file system of the microSD card.

	Value	Description
–	Unknown [Unknown]	File system type is unknown.
–	FAT12 [FAT12]	File system type is FAT12.
–	FAT16 [FAT16]	File system type is FAT16.
–	FAT32 [FAT32]	File system type is FAT32.
–	exFAT [exFAT]	File system type is exFAT.

6 Troubleshooting

If the cause of a fault is unknown, the Siemens service should be contacted. See contact details on the back page of this manual.

For additional information about NE107 classification, see *Possible events and related settings and behavior [▶ 73]*

System alarms

Alarm no.	Cause	Remedy
101	Frequency failure. Sensor (resonance/drive) frequency abnormality.	a) Check connection to sensor.
102	Signal failure. Phase difference abnormal.	a) Reduce flow. b) Check connection to sensor.
103	Pick off 1 short partly. Sensor 1 signal line short.	a) Check connection to sensor.
104	Pick off 1 or driver circuit failure. Sensor 1 or drive current circuit abnormal.	a) Check connection to sensor.
105	Pick off 2 short partly. Sensor 2 error.	a) Check connection to sensor.
106	Pick off 2 signal failure. Sensor 2 signal line short.	a) Check connection to sensor.
107	Temperature range violation. Measured temperature error.	a) Adjust temperature. b) Check connection to sensor.
108	Temperature sensor failure.	a) Adjust temperature. b) Check connection to sensor.
121	Main board CPU failure.	a) Contact Siemens service. See contact details on the back page of this manual.
122	Main board EEPROM failure. Non-volatile memory failure.	a) Contact Siemens service. See contact details on the back page of this manual.
123	Parameter restore incomplete. Data restore failure.	a) Retry parameter restore.
124	Sensor board hardware failure.	a) Contact Siemens service. See contact details on the back page of this manual.
125	Sensor board and mainboard mismatch.	a) Contact Siemens service. See contact details on the back page of this manual.
126	Sensor communication error. Poor communication between sensor board and main board.	a) Contact Siemens service. See contact details on the back page of this manual.
127	Option board hardware failure.	a) Contact Siemens service. See contact details on the back page of this manual.
128	Option board EEPROM failure. Option board non-volatile memory failure.	a) Contact Siemens service. See contact details on the back page of this manual.
129	Option Board mismatch. Mismatch of board settings and factory settings or option board failure.	a) Return settings to factory settings.
130	Indicator board hardware failure.	a) Contact Siemens service. See contact details on the back page of this manual.
131	Indicator board EEPROM failure. Indicator non-volatile memory failure.	a) Contact Siemens service. See contact details on the back page of this manual.

Alarm no.	Cause	Remedy
132	LCD driver failure. Display circuit failure.	a) Contact Siemens service. See contact details on the back page of this manual.
133	Indicator board and mainboard mismatch.	a) Contact Siemens service. See contact details on the back page of this manual.
134	Indicator communication error. Poor communication between display and main board.	a) Check connection of display.
135	microSD card failure.	a) Change microSD card *[▸ 20]*.

Process alarms

Alarm no.	Cause	Remedy
201	Slug detection. Multiphase flow detection.	a) Reduce gas bubbles in process.
202	Empty pipe detection.	a) Fill pipe.
203	Corrosion detection.	a) Replace sensor.
204	Autozero assessment multiphase. Zero adjustment and multiphase flow detection.	a) Stop multiphase flow. b) Fill pipe. c) Reduce gas bubbles in process. d) Perform zero adjustment again *[▸ 166]*
205	Autozero assessment flow.	a) Check valve. b) Check flow. c) Check vibration. d) Check density. e) Check electrical connections. f) Perform zero adjustment again *[▸ 166]*
206	Autozero assessment temperature. Zero adjustment and unstable flow.	a) Stabilize process temperature. b) Perform zero adjustment again *[▸ 166]*.
207	Batch time exceeded	a) Check the Batch process such as flow rat or valve. b) Change the Max batch time 1 – 5 to appropriate batch time if no batch process problem was found.
208	Batch overrun/underrun	a) Check and Change the Batch compensation quantity. b) Change the Min batch time 1 – 5 or Max batch quantity if batch compensation quantity is no problem.
209	Max flow while batching	a) Check and Change the flow rate. b) Change the Max flow time 1 – 5 to appropriate threshold if appropriate flow rate.
210	Oil density calculation	a) Check temperature or pressure value.
211	Water density calculation failure	a) Check temperature or salinity value.
212	NOC calculation failure	a) Check Oil density or water density.
221	Analog input failure. Analog current input has exceeded measurement level.	a) Check analog current input cable connection. b) Check connected device. c) Change alarm level *[▸ 484]*.

Alarm no.	Cause	Remedy
222	Mass flow HH/LL alarm. Mass flow has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 175].
223	Density HH/LL alarm. Density has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 176].
224	Temperature HH/LL alarm. Temperature has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 178].
225	Pressure HH/LL alarm. Pressure has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 181].
226	Volume flow HH/LL alarm. Volume flow has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 179].
227	Corrected volume flow HH/LL alarm. Corrected volume flow has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 185].
228	Concentration HH/LL alarm. Concentration has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 187].
229	Net mass flow 1 HH/LL alarm. Net mass flow 1 has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 189].
230	Net mass flow 2 HH/LL alarm. Net mass flow 2 has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 189].
231	Net volume flow 1 HH/LL alarm. Net volume flow 1 has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 191].
232	Net volume flow 2 HH/LL alarm. Net volume flow 2 has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 191].
233	Net corrected volume flow HH/LL alarm. Net corrected volume flow has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 192].
234	Relative density HH/LL alarm. Relative density has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 184].
235	Reference density HH/LL alarm. Reference density has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 182].
236	Viscosity HH/LL alarm. Viscosity has exceeded hi-hi or low-low limit.	a) Check process. b) Change HH/LL alarm setting [▸ 194].
241	Totalizer 1 threshold value exceeded.	a) Change totalizer 1 threshold. b) Check or reset totalizer 1 value [▸ 172].
242	Totalizer 2 threshold value exceeded.	a) Change totalizer 2 threshold. b) Check or reset totalizer 2 value [▸ 172].
243	Totalizer 3 threshold value exceeded.	a) Change totalizer 3 threshold. b) Check or reset totalizer 3 value [▸ 172].
244	Totalizer 4 threshold value exceeded.	a) Change totalizer 4 threshold. b) Check or reset totalizer 4 value [▸ 172].
245	Totalizer 5 threshold value exceeded.	a) Change totalizer 5 threshold. b) Check or reset totalizer 5 value [▸ 172].

Alarm no.	Cause	Remedy
246	Totalizer 6 threshold value exceeded.	a) Change totalizer 6 threshold. b) Check or reset totalizer 6 value *[▸ 172]*.

Setting alarms

Alarm no.	Cause	Remedy
301	Mass flow configuration error.	a) Change mass flow parameter setting *[▸ 394]*. b) Check parameter setting of the following parameters: Mass flow LRV, Mass flow URV, Mass flow bi-directional mode, Mass flow low cut, Alarm hysteresis, Mass flow low alarm, Mass flow high alarm, Mass flow low low alarm, Mass flow high high alarm, Mass flow units, SI option.
302	Density configuration error.	a) Change density parameter setting *[▸ 399]*. b) Check parameter setting of the following parameters: Density LRV, Density URV, Density low cut, Alarm hysteresis, Density low alarm, Density high alarm, Density low low alarm, Density high high alarm, Liquid gas select, Density value select, Density units, SI option.
303	Temperature configuration error.	a) Change temperature parameter setting *[▸ 405]*. b) Check parameter setting of the following parameters: Temperature LRV, Temperature URV, Temperature upper limit, Temperature lower limit, Alarm hysteresis, Temperature low alarm, Temperature high alarm, Temperature low low alarm, Temperature high high alarm, Temperature unit, SI option.
304	Analog input temperature configuration error.	a) Change analog input temperature parameter setting *[▸ 407]*. b) Check parameter setting of the following parameters: Analog input temperature LRV, Analog input temperature URV, Analog input temperature unit, SI option.
305	Pressure configuration error.	a) Change pressure parameter setting *[▸ 415]*. b) Check parameter setting of the following parameters: Pressure LRV, Pressure URV, Alarm hysteresis, Pressure low alarm, Pressure high alarm, Pressure low low alarm, Pressure high high alarm, Pressure units, SI option.
306	Analog input pressure configuration error.	a) Change analog input pressure parameter setting *[▸ 417]*. b) Check parameter setting of the following parameters: Analog input pressure LRV, Analog input pressure URV, Analog input pressure units, SI option.

Alarm no.	Cause	Remedy
307	Volume flow configuration error.	a) Change volume flow parameter setting *[▸ 410]*. b) Check parameter setting of the following parameters: Volume flow LRV, Volume flow URV, Volume flow bi-directional mode, Alarm hysteresis, Volume flow low alarm, Volume flow high alarm, Volume flow low low alarm, Volume flow high high alarm Volume flow units, SI option.
308	Reference density configuration error.	a) Change reference density parameter setting *[▸ 420]*. b) Check parameter setting of the following parameters: Reference density LRV, Reference density URV, Reference density low cut, Liquid gas select, Reference density value selection, Temperature coefficient A, Temperature coefficient B, Alarm hysteresis, Reference density low alarm, Reference density high alarm, Reference density low low alarm, Reference density high high alarm.
309	Relative density configuration error.	a) Change relative density parameter setting *[▸ 425]*. b) Check parameter setting of the following parameters: Relative density LRV, Relative density URV, Alarm hysteresis, Relative density low alarm, Relative density high alarm, Relative density low low alarm, Relative density high high alarm, Relative density indication/ equation select, Relative density reference select, Reference density value selection, Reference temperature.
310	Corrected volume flow configuration error.	a) Change corrected volume flow parameter setting *[▸ 429]*. b) Check parameter setting of the following parameters: Corrected volume flow LRV, Corrected volume flow URV, Corrected volume flow bi-directional mode, Alarm hysteresis, Corrected volume flow low alarm, Corrected volume flow high alarm, Corrected volume flow low low alarm, Corrected volume flow high high alarm, Corrected volume flow units, SI option.
311	Calorific value configuration error.	a) Change calorific value parameter setting *[▸ 433]*. b) Check parameter setting of the following parameters: Calorific unit, SI option.
312	Analog input calorific value configuration error.	a) Change analog input calorific value parameter setting *[▸ 435]*. b) Check parameter setting of the following parameters: Analog input calorific LRV, Analog input calorific URV, Analog input calorific unit, SI option.

Alarm no.	Cause	Remedy
313	Concentration configuration error.	a) Change concentration parameter setting *[▸ 436]*. b) Check parameter setting of the following parameters: Concentration measurement LRV set 1 – 4, Concentration measurement URV set 1 – 4, Alarm hysteresis, Concentration measurement low alarm set 1 – 4, Concentration measurement high alarm set 1 – 4, Concentration measurement low low alarm set 1 – 4, Concentration measurement high high alarm set 1 – 4, Concentration measurement unit set 1 – 4.
314	Net mass flow 1 configuration error.	a) Change net mass flow 1 parameter setting *[▸ 462]*. b) Check parameter setting of the following parameters: Net mass flow 1 LRV, Net mass flow 1 URV, Net mass flow 1 bi-directional mode, Net mass flow 1 low cut Alarm hysteresis, Net mass flow 1 low alarm, Net mass flow 1 high alarm, Net mass flow 1 low low alarm, Net mass flow 1 high high alarm Net mass flow 1 units, SI option.
315	Net mass flow 2 configuration error.	a) Change net mass flow 2 parameter setting *[▸ 462]*. b) Check parameter setting of the following parameters: Net mass flow 1 LRV, Net mass flow 1 URV, Net mass flow 1 bi-directional mode, Net mass flow 1 low cut Alarm hysteresis, Net mass flow 1 low alarm, Net mass flow 1 high alarm, Net mass flow 1 low low alarm, Net mass flow 1 high high alarm Net mass flow 1 units, SI option.
316	Net volume flow 1 configuration error.	a) Change net volume flow 1 parameter setting *[▸ 467]*. b) Check parameter setting of the following parameters: Net volume flow 1 LRV, Net volume flow 1 URV, Net volume flow 1 bi-directional mode, Alarm hysteresis, Net volume flow 1 low alarm, Net volume flow 1 high alarm, Net volume flow 1 low low alarm, Net volume flow 1 high high alarm Net volume flow 1 units, SI option.
317	Net volume flow 2 configuration error.	a) Change net volume flow 2 parameter setting *[▸ 467]*. b) Check parameter setting of the following parameters: Net volume flow 2 LRV, Net volume flow 2 URV, Net volume flow 2 bi-directional mode, Alarm hysteresis, Net volume flow 2 low alarm, Net volume flow 2 high alarm, Net volume flow 2 low low alarm, Net volume flow 2 high high alarm Net volume flow 2 units, SI option.

Alarm no.	Cause	Remedy
318	Net corrected volume flow configuration error.	a) Change net corrected volume flow parameter setting *[▸ 472]*. b) Check parameter setting of the following parameters: Net corrected volume flow LRV, Net corrected volume flow URV, Net corrected volume flow bi-directional mode, Alarm hysteresis, Net corrected volume flow low alarm, Net corrected volume flow high alarm, Net corrected volume flow low low alarm, Net corrected volume flow high high alarm, Net corrected volume flow units, SI option.
319	Velocity configuration error.	a) Change velocity parameter setting *[▸ 436]*. b) Check parameter setting of the following parameters: Velocity unit, SI option.
320	Viscosity configuration error	a) Change viscosity parameter setting Viscosity. b) Check parameter setting of the following parameters: Viscosity LRV, Viscosity URV, Alarm hysteresis, Viscosity low alarm, Viscosity high alarm, Viscosity low low alarm, Viscosity high high alarm, Viscosity units, SI option
321	Analog output 1 configuration error.	a) Change Analog output 1 parameter setting *[▸ 481]*. b) Check parameter setting of the following parameters: Analog out 1 select, Analog out 1 low limit, Analog out 1 high limit, NAMUR NE 43 option, Analog out 1 alarm out
322	Analog output 2 configuration error.	a) Change analog output 2 parameter setting *[▸ 481]*. b) Check parameter setting of the following parameters: Analog out 2 select, Analog out 2 low limit, Analog out 2 high limit, NAMUR NE 43 option, Analog out 2 alarm out.
323	Pulse output 1 configuration error.	a) Change pulse output 1 parameter setting *[▸ 486]*. b) Check parameter setting of the following parameters: Pulse out 1 select, Pulse out 1 unit select, SI option, Pulse out 1 flow direction, URV/LRV parameters which are assigned for Pulse out 1 select, Pulse out 1 width.
324	Frequency output 1 configuration error.	a) Change Frequency output 1 parameter setting *[▸ 495]*. b) Check parameter setting of the following parameters: Frequency out 1 select, Option function code, Max frequency 1, Min frequency 1.

Alarm no.	Cause	Remedy
325	Status output 1 configuration error.	a) Change status output 1 parameter setting *[▸ 499]*. b) Check parameter setting of the following parameters: Option function code, Status out 1 function.
326	Pulse output 2 configuration error.	a) Change pulse output 2 parameter setting *[▸ 486]*. b) Check parameter setting of the following parameters: Pulse out 2 select, Pulse out 2 unit select, SI option, Pulse/Status output 2 active pulse mode, IO type, Pulse out 2 flow direction, URV/LRV parameters which are assigned for Pulse out 2 select, Pulse out 2 width, Pulse out 2 active mode.
327	Frequency output 2 configuration error.	a) Change Frequency output 2 parameter setting *[▸ 495]*. b) Check parameter setting of the following parameters: Frequency out 2 select, Option function code, Max frequency 2, Min frequency 2.
328	Status output 2 configuration error.	a) Change status output 2 parameter setting *[▸ 499]*. b) Check parameter setting of the following parameters: Option function code, Status out 2 function.
329	Pulse/Status output 2 mode configuration error.	a) Change pulse/status output 2 mode parameter setting *[▸ 486]*. b) Check parameter setting of the following parameters: Pulse status out 2 active pulse mode, Pulse Status out 2 output mode, IO type.
330	Double pulse configuration error.	a) Change double pulse output parameter setting *[▸ 502]*. b) Check parameter setting of the following parameters: Frequency out 1 select, Option function code, Max frequency 1, Min frequency 1.
331	Status output 3 configuration error.	a) Change status output 3 parameter setting *[▸ 499]*. b) Check parameter setting of the following parameters: Option function code, Status out 3 function.
332	Status input configuration error.	a) Change status input parameter setting *[▸ 513]*. b) Check parameter setting of the following parameters: Status input function, Option function code.
333	Analog input configuration error.	a) Change analog input parameter setting *[▸ 511]*. b) Check parameter setting of the following parameters: Analog input function, Option function code.

Alarm no.	Cause	Remedy
335	Totalizer 1 configuration error.	a) Change totalizer 1 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 1 channel, Total 1 unit, SI option.
336	Totalizer 2 configuration error.	a) Change totalizer 2 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 2 channel, Total 2 unit, SI option.
337	Totalizer 3 configuration error.	a) Change totalizer 3 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 3 channel, Total 3 unit, SI option.
338	Totalizer 4 configuration error.	a) Change totalizer 4 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 4 channel, Total 4 unit, SI option.
339	Totalizer 5 configuration error.	a) Change totalizer 5 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 5 channel, Total 5 unit, SI option.
340	Totalizer 6 configuration error.	a) Change totalizer 6 parameter setting *[▸ 515]*. b) Check parameter setting of the following parameters: Total 6 channel, Total 6 unit, SI option.
341	Batch configuration error	a) Check the Status output/input settings. b) Check the Batch 1 – 5 variable select and the unit. c) Check the Batch type select 1 – 5, IO type and Batch status output 1 – 3. d) Check the Primary/Secondary valve open/close and Batch quantity. e) Check the leakage, quantity and time related to Batch.
342	Data logging not started	a) Insert microSD card.
343	Option function mismatch	a) Change option setting.

Warnings

Alarm no.	Cause	Remedy
701	Analog output 1 fixed.	a) Check test mode *[▸ 161]*. b) Check HART loop current mode *[▸ 614]*. c) Check Analog output 1 selection *[▸ 482]*. d) Check simulation *[▸ 197]*. e) Check alarm status *[▸ 481]*.

Alarm no.	Cause	Remedy
702	Analog output 2 fixed.	a) Check test mode [▸ 161]. b) Check Analog output 2 selection [▸ 482]. c) Check simulation [▸ 197]. d) Check alarm status [▸ 481].
703	Density fixed.	a) Set density parameter to measured value [▸ 403].
704	Temperature fixed.	a) Set temperature parameter to measured value [▸ 407].
705	Pressure fixed.	a) Set pressure parameter to measured value.
706	Reference density fixed.	a) Set reference density parameter to measured value [▸ 423].
707	Calorific value fixed	a) Set calorific value parameter to measured value.
708	Process variable simulation in progress.	a) Check simulation [▸ 197].
709	Analog output simulation in progress.	a) Check simulation [▸ 197].
710	Pulse output simulation in progress.	a) Check simulation [▸ 197].
711	Status output simulation in progress.	a) Check simulation [▸ 197].
715	Process variable trimming.	a) Check gain/offset of the corresponding process variable [▸ 393].
716	Analog output 1 saturated.	a) Check setting and process value output to Analog output 1 [▸ 481].
717	Analog output 2 saturated.	a) Check setting and process value output to analog output 2 [▸ 481].
718	Pulse output 1 saturated.	a) Check setting and process value output to pulse output 1 [▸ 486].
719	Pulse output 2 saturated.	a) Check setting and process value output to pulse output 2 [▸ 486].
720	Double pulse output saturated.	a) Check setting and process value output to double pulse output [▸ 502].
721	Autozero running. Zero adjustment in progress.	a) Wait until zero adjustment has completed.
722	Tube health check diagnostics execution error.	a) Check diagnostic setting and operating procedure [▸ 255]. b) Retry diagnosis.
723	Date and time not set.	a) Set date and time [▸ 559].
724	Display over warning. The number of digits that can be displayed has been exceeded.	a) Check display format parameter [▸ 527].
725	microSD card size warning. Remaining space on memory card has exceeded the threshold value.	a) Free up microSD card memory [▸ 20].
726	microSD card mismatch. Unexpected microSD card type is in use.	a) Change microSD card [▸ 20].
728	microSD card removal procedure error.	a) Remove microSD card properly [▸ 20].

Alarm no.	Cause	Remedy
729	Parameter backup incomplete.	a) Retry parameter backup *[▸ 277]*. b) Change microSD card *[▸ 20]*.
730	Parameter restore in progress.	a) Wait until parameter restore has completed.
732	Batch progress indication	a) Confirm whether Batching is finished or not. Change the Progress Indication 1 – 5 value to appropriate threshold if continue.
733	Viscosity not calculated	a) Check the delta pressure value which is received from external device via Analog input. b) Check process.
734	Viscosity not reliable	a) Check the delta pressure value which is received from external device via Analog input. b) Check process.
735	Autozero warning.	a) Check the environment and retry Autozero.
901	Device configuration locked.	
902	Device configuration not locked.	
903	Parameter backup running.	
904	Data logging running.	
905	Tube Health Check running.	
906	Batch running	
907	Batch hold	
908	SIL mode active.	
909	Maintenance in progress.	

7 Appendix

7.1 Firmware change log

Hardware Revision	Main Software Revision	Sensor Software Revision	Indicator Software Revision	Changes
S1.01	R1.01.02	R1.01.03	R1.01.01	Initial release
S1.01	R2.01.01	R1.01.03	R2.01.01	Addition/Change for some languages on indicator.
S1.01	R2.01.01	R1.01.03	R2.01.02	Some Japanese labels have changed on indicator.
S1.01	R3.01.01	R1.01.04	R3.01.02	Addition of Batch/ Viscosity/NOC/ Total24hoursfunction s. Improvement of some existing functions.
S1.01	R4.01.01	R1.01.04	R4.01.01 R4.01.02	Addition of compensation functions. Improvement of some existing functions.

7.2 Parameter list

The following shows the parameter list.

Tab. 36: Explanation of the column "Read/Write" (R/W)

Abbreviation	Description
R	Read only
R/W(CO)	Read and write always
R/W(CO)d	Read always, write operator and display only
R/W(CO)a	Read always, write operator and autozero only
R/W(C1)	Read always, write maintenance
R/W(C2)	Read always, write specialist

Tab. 37: Parameter list

Parameter	Data Form	Data Range	Unit	R/W
Sensor max temperature	Value		[Temperatur e unit]	R
Autozero value	Evalue		[Mass flow unit]	R
Autozero standard deviation	Evalue		[Mass flow unit]	R
Resonance frequency	Value		Hz	R
Phase difference	Value		mrad	R
Drive gain	Value		A/V	R
Drive current	Value		mAp-p	R

Parameter	Data Form	Data Range	Unit	R/W
Function option status	BitEnum	0x0001: Tube Health Check 0x0002: Batch function 0x0004: Tube leakage detection 0x0008: Analog input calorific value 0x0010: Viscosity 0x0020: Concentration standard 0x0040: Concentration advanced 0x0080: Net oil computing API 0x0100: Net oil computing API and GVF 0x0200: Reserved 0x0400: Reserved 0x0800: Reserved 0x1000: Reserved 0x2000: Reserved 0x4000: Reserved 0x8000: Reserved		R
Terminal state 1	Enum	0: Analog output + HART (Active) 1: Analog output + HART (Passive) 2: None		R
Terminal state 2	Enum	0: Pulse/Status output (Passive) 1: NM (Passive) 2: None		R
Terminal state 3	Enum	0: Pulse/Status output (Passive) 1: Status input (Voltage-free) 2: Status output (Passive) 3: Analog output (Passive) 4: None 5: Modbus(GND, (-)only)		R
Terminal state 4	Enum	0: Analog output (Active) 1: Pulse/Status output (Passive) 2: Pulse/Status output (Active, No pull-up R) 3: Pulse/Status output (Active, Inner pull-up R) 4: Analog input (Active) 5: Analog input (Passive) 6: NM(Passive) 7: None 8: Modbus		R
Selected concentration set	Enum	0: Set 1 1: Set 2 2: Set 3 3: Set 4		R
Oil density	Value		[Density unit]	R
Water density	Value		[Density unit]	R
Mass concentration value	Value		%	R

Parameter	Data Form	Data Range	Unit	R/W
Volume concentration value	Value		Vol %	R
Water cut value	Value		Vol %	R
Gas void fraction	Value		Vol %	R
Current thermal expansion factor	Value			R
Current K0 coefficient	Value			R
Current K1 coefficient	Value			R
Current K2 coefficient	Value			R
Total 1 24hours start date	Date			R
Total 1 24hours start time	Time			R
Total 1 24hours start operation time	ASCII			R
Total 1 24hours last update date	Date			R
Total 1 24hours last update time	Time			R
Total 1 24hours last update operation time	ASCII			R
Total 1 24hours value	Value		[Total 1 unit]	R
Total 2 24hours start date	Date			R
Total 2 24hours start time	Time			R
Total 2 24hours start operation time	ASCII			R
Total 2 24hours last update date	Date			R
Total 2 24hours last update time	Time			R
Total 2 24hours last update operation time	ASCII			R
Total 2 24hours value	Value		[Total 2 unit]	R
Total 3 24hours start date	Date			R
Total 3 24hours start time	Time			R
Total 3 24hours start operation time	ASCII			R
Total 3 24hours last update date	Date			R
Total 3 24hours last update time	Time			R
Total 3 24hours last update operation time	ASCII			R
Total 3 24hours value	Value		[Total 3 unit]	R
Analog input percent	Value		%	R
Analog input current	Value		mA	R
Burn out	Enum	0: High 1: Low		R
Analog output 1 percent	Value		%	R
Analog output 1 current	Value		mA	R
Analog output 2 percent	Value		%	R
Analog output 2 current	Value		mA	R

Parameter	Data Form	Data Range	Unit	R/W
Status input state	Enum	0: Open 1: Short		R
Max transmitter temperature	Value		[Temperature unit]	R
Language package	Enum	0: Package 1 1: Package 2 2: Package 3		R
Device address	Value			R
Batch time	Value		s	R
Batch mode 1 leakage value	Value			R
Batch mode 2 leakage value	Value			R
Batch mode 3 leakage value	Value			R
Batch total quantity	Value			R
Batch counter value	Value			R
Batch upwards value	Value			R
Batch downwards value	Value			R
Batch compensation value	Value			R
Batch primary valve close 1	Value		[Batch unit 1]	R
Batch primary valve close 2	Value		[Batch unit 2]	R
Batch primary valve close 3	Value		[Batch unit 3]	R
Batch primary valve close 4	Value		[Batch unit 4]	R
Batch primary valve close 5	Value		[Batch unit 5]	R
Write access status	Enum	0: All locked 1: Display only 2: Autozero only 3: Display + Autozero 4: Not locked		R
Total health result	Enum	0: Good (with TuHC and No critical failure) 1: Good (No critical failure) 2: Warning 3: Bad 4: Start-up		R
Logging start time	Time			R
Event no 1	Value			R
Event contents 1	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 1 operation time	ASCII			R
Event 1 date	Date			R
Event 1 time	Time			R
Event 1 mass flow last 1	Value		[Mass flow unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Event 1 mass flow last 2	Value		[Mass flow unit]	R
Event 1 mass flow last 3	Value		[Mass flow unit]	R
Event 1 mass flow after 1	Value		[Mass flow unit]	R
Event 1 mass flow after 2	Value		[Mass flow unit]	R
Event 1 mass flow after 3	Value		[Mass flow unit]	R
Event 1 resonance frequency last 1	Value		Hz	R
Event 1 resonance frequency last 2	Value		Hz	R
Event 1 resonance frequency last 3	Value		Hz	R
Event 1 resonance frequency after 1	Value		Hz	R
Event 1 resonance frequency after 2	Value		Hz	R
Event 1 resonance frequency after 3	Value		Hz	R
Event 1 temperature last 1	Value		[Temperature unit]	R
Event 1 temperature last 2	Value		[Temperature unit]	R
Event 1 temperature last 3	Value		[Temperature unit]	R
Event 1 temperature after 1	Value		[Temperature unit]	R
Event 1 temperature after 2	Value		[Temperature unit]	R
Event 1 temperature after 3	Value		[Temperature unit]	R
Event 1 pressure last 1	Value		[Pressure unit]	R
Event 1 pressure last 2	Value		[Pressure unit]	R
Event 1 pressure last 3	Value		[Pressure unit]	R
Event 1 pressure after 1	Value		[Pressure unit]	R
Event 1 pressure after 2	Value		[Pressure unit]	R
Event 1 pressure after 3	Value		[Pressure unit]	R
Event 1 net mass flow 1 last 1	Value		[Net mass flow 1 unit]	R
Event 1 net mass flow 1 last 2	Value		[Net mass flow 1 unit]	R
Event 1 net mass flow 1 last 3	Value		[Net mass flow 1 unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Event 1 net mass flow 1 after 1	Value		[Net mass flow 1 unit]	R
Event 1 net mass flow 1 after 2	Value		[Net mass flow 1 unit]	R
Event 1 net mass flow 1 after 3	Value		[Net mass flow 1 unit]	R
Event 1 net volume flow 1 last 1	Value		[Net volume flow 1 unit]	R
Event 1 net volume flow 1 last 2	Value		[Net volume flow 1 unit]	R
Event 1 net volume flow 1 last 3	Value		[Net volume flow 1 unit]	R
Event 1 net volume flow 1 after 1	Value		[Net volume flow 1 unit]	R
Event 1 net volume flow 1 after 2	Value		[Net volume flow 1 unit]	R
Event 1 net volume flow 1 after 3	Value		[Net volume flow 1 unit]	R
Event 1 concentration last 1	Value			R
Event 1 concentration last 2	Value			R
Event 1 concentration last 3	Value			R
Event 1 concentration after 1	Value			R
Event 1 concentration after 2	Value			R
Event 1 concentration after 3	Value			R
Event 1 phase difference last 1	Value		mrad	R
Event 1 phase difference last 2	Value		mrad	R
Event 1 phase difference last 3	Value		mrad	R
Event 1 phase difference after 1	Value		mrad	R
Event 1 phase difference after 2	Value		mrad	R
Event 1 phase difference after 3	Value		mrad	R
Event 1 drive gain last 1	Value		A/V	R
Event 1 drive gain last 2	Value		A/V	R
Event 1 drive gain last 3	Value		A/V	R
Event 1 drive gain after 1	Value		A/V	R
Event 1 drive gain after 2	Value		A/V	R
Event 1 drive gain after 3	Value		A/V	R
Event 1 drive current last 1	Value		mAp-p	R
Event 1 drive current last 2	Value		mAp-p	R

Parameter	Data Form	Data Range	Unit	R/W
Event 1 drive current last 3	Value		mAp-p	R
Event 1 drive current after 1	Value		mAp-p	R
Event 1 drive current after 2	Value		mAp-p	R
Event 1 drive current after 3	Value		mAp-p	R
Event 1 density last 1	Value		[Density unit]	R
Event 1 density last 2	Value		[Density unit]	R
Event 1 density last 3	Value		[Density unit]	R
Event 1 density after 1	Value		[Density unit]	R
Event 1 density after 2	Value		[Density unit]	R
Event 1 density after 3	Value		[Density unit]	R
Event 1 transmitter temperature last 1	Value		[Temperature unit]	R
Event 1 transmitter temperature last 2	Value		[Temperature unit]	R
Event 1 transmitter temperature last 3	Value		[Temperature unit]	R
Event 1 transmitter temperature after 1	Value		[Temperature unit]	R
Event 1 transmitter temperature after 2	Value		[Temperature unit]	R
Event 1 transmitter temperature after 3	Value		[Temperature unit]	R
Autozero value 1	Value		[Mass flow unit]	R
Autozero standard deviation 1	Value		[Mass flow unit]	R
Autozero density 1	Value		[Density unit]	R
Autozero temperature 1	Value		[Temperature unit]	R
Autozero drive current 1	Value		mAp-p	R
Autozero resonance frequency 1	Value		Hz	R
Autozero pressure 1	Value		[Pressure unit]	R
Sensor max temperature 1	Value		[Temperature unit]	R
Event no 2	Value			R
Event contents 2	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 2 operation time	ASCII			R
Event 2 date	Date			R

Parameter	Data Form	Data Range	Unit	R/W
Event 2 time	Time			R
Event 2 mass flow last 1	Value		[Mass flow unit]	R
Event 2 mass flow last 2	Value		[Mass flow unit]	R
Event 2 mass flow last 3	Value		[Mass flow unit]	R
Event 2 mass flow after 1	Value		[Mass flow unit]	R
Event 2 mass flow after 2	Value		[Mass flow unit]	R
Event 2 mass flow after 3	Value		[Mass flow unit]	R
Event 2 resonance frequency last 1	Value		Hz	R
Event 2 resonance frequency last 2	Value		Hz	R
Event 2 resonance frequency last 3	Value		Hz	R
Event 2 resonance frequency after 1	Value		Hz	R
Event 2 resonance frequency after 2	Value		Hz	R
Event 2 resonance frequency after 3	Value		Hz	R
Event 2 temperature last 1	Value		[Temperature unit]	R
Event 2 temperature last 2	Value		[Temperature unit]	R
Event 2 temperature last 3	Value		[Temperature unit]	R
Event 2 temperature after 1	Value		[Temperature unit]	R
Event 2 temperature after 2	Value		[Temperature unit]	R
Event 2 temperature after 3	Value		[Temperature unit]	R
Event 2 pressure last 1	Value		[Pressure unit]	R
Event 2 pressure last 2	Value		[Pressure unit]	R
Event 2 pressure last 3	Value		[Pressure unit]	R
Event 2 pressure after 1	Value		[Pressure unit]	R
Event 2 pressure after 2	Value		[Pressure unit]	R
Event 2 pressure after 3	Value		[Pressure unit]	R
Event 2 net mass flow 1 last 1	Value		[Net mass flow 1 unit]	R
Event 2 net mass flow 1 last 2	Value		[Net mass flow 1 unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Event 2 net mass flow 1 last 3	Value		[Net mass flow 1 unit]	R
Event 2 net mass flow 1 after 1	Value		[Net mass flow 1 unit]	R
Event 2 net mass flow 1 after 2	Value		[Net mass flow 1 unit]	R
Event 2 net mass flow 1 after 3	Value		[Net mass flow 1 unit]	R
Event 2 net volume flow 1 last 1	Value		[Net volume flow 1 unit]	R
Event 2 net volume flow 1 last 2	Value		[Net volume flow 1 unit]	R
Event 2 net volume flow 1 last 3	Value		[Net volume flow 1 unit]	R
Event 2 net volume flow 1 after 1	Value		[Net volume flow 1 unit]	R
Event 2 net volume flow 1 after 2	Value		[Net volume flow 1 unit]	R
Event 2 net volume flow 1 after 3	Value		[Net volume flow 1 unit]	R
Event 2 concentration last 1	Value			R
Event 2 concentration last 2	Value			R
Event 2 concentration last 3	Value			R
Event 2 concentration after 1	Value			R
Event 2 concentration after 2	Value			R
Event 2 concentration after 3	Value			R
Event 2 phase difference last 1	Value		mrad	R
Event 2 phase difference last 2	Value		mrad	R
Event 2 phase difference last 3	Value		mrad	R
Event 2 phase difference after 1	Value		mrad	R
Event 2 phase difference after 2	Value		mrad	R
Event 2 phase difference after 3	Value		mrad	R
Event 2 drive gain last 1	Value		A/V	R
Event 2 drive gain last 2	Value		A/V	R
Event 2 drive gain last 3	Value		A/V	R
Event 2 drive gain after 1	Value		A/V	R
Event 2 drive gain after 2	Value		A/V	R
Event 2 drive gain after 3	Value		A/V	R
Event 2 drive current last 1	Value		mAp-p	R

Parameter	Data Form	Data Range	Unit	R/W
Event 2 drive current last 2	Value		mAp-p	R
Event 2 drive current last 3	Value		mAp-p	R
Event 2 drive current after 1	Value		mAp-p	R
Event 2 drive current after 2	Value		mAp-p	R
Event 2 drive current after 3	Value		mAp-p	R
Event 2 density last 1	Value		[Density unit]	R
Event 2 density last 2	Value		[Density unit]	R
Event 2 density last 3	Value		[Density unit]	R
Event 2 density after 1	Value		[Density unit]	R
Event 2 density after 2	Value		[Density unit]	R
Event 2 density after 3	Value		[Density unit]	R
Event 2 transmitter temperature last 1	Value		[Temperature unit]	R
Event 2 transmitter temperature last 2	Value		[Temperature unit]	R
Event 2 transmitter temperature last 3	Value		[Temperature unit]	R
Event 2 transmitter temperature after 1	Value		[Temperature unit]	R
Event 2 transmitter temperature after 2	Value		[Temperature unit]	R
Event 2 transmitter temperature after 3	Value		[Temperature unit]	R
Autozero value 2	Value		[Mass flow unit]	R
Autozero standard deviation 2	Value		[Mass flow unit]	R
Autozero density 2	Value		[Density unit]	R
Autozero temperature 2	Value		[Temperature unit]	R
Autozero drive current 2	Value		mAp-p	R
Autozero resonance frequency 2	Value		Hz	R
Autozero pressure 2	Value		[Pressure unit]	R
Sensor max temperature 2	Value		[Temperature unit]	R
Event no 3	Value			R
Event contents 3	Enum	0: Event clear 1: Event set 2: Acknowledge		R

Parameter	Data Form	Data Range	Unit	R/W
Event 3 operation time	ASCII			R
Event 3 date	Date			R
Event 3 time	Time			R
Event 3 mass flow last 1	Value		[Mass flow unit]	R
Event 3 mass flow last 2	Value		[Mass flow unit]	R
Event 3 mass flow last 3	Value		[Mass flow unit]	R
Event 3 mass flow after 1	Value		[Mass flow unit]	R
Event 3 mass flow after 2	Value		[Mass flow unit]	R
Event 3 mass flow after 3	Value		[Mass flow unit]	R
Event 3 resonance frequency last 1	Value		Hz	R
Event 3 resonance frequency last 2	Value		Hz	R
Event 3 resonance frequency last 3	Value		Hz	R
Event 3 resonance frequency after 1	Value		Hz	R
Event 3 resonance frequency after 2	Value		Hz	R
Event 3 resonance frequency after 3	Value		Hz	R
Event 3 temperature last 1	Value		[Temperature unit]	R
Event 3 temperature last 2	Value		[Temperature unit]	R
Event 3 temperature last 3	Value		[Temperature unit]	R
Event 3 temperature after 1	Value		[Temperature unit]	R
Event 3 temperature after 2	Value		[Temperature unit]	R
Event 3 temperature after 3	Value		[Temperature unit]	R
Event 3 pressure last 1	Value		[Pressure unit]	R
Event 3 pressure last 2	Value		[Pressure unit]	R
Event 3 pressure last 3	Value		[Pressure unit]	R
Event 3 pressure after 1	Value		[Pressure unit]	R
Event 3 pressure after 2	Value		[Pressure unit]	R
Event 3 pressure after 3	Value		[Pressure unit]	R
Event 3 net mass flow 1 last 1	Value		[Net mass flow 1 unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Event 3 net mass flow 1 last 2	Value		[Net mass flow 1 unit]	R
Event 3 net mass flow 1 last 3	Value		[Net mass flow 1 unit]	R
Event 3 net mass flow 1 after 1	Value		[Net mass flow 1 unit]	R
Event 3 net mass flow 1 after 2	Value		[Net mass flow 1 unit]	R
Event 3 net mass flow 1 after 3	Value		[Net mass flow 1 unit]	R
Event 3 net volume flow 1 last 1	Value		[Net volume flow 1 unit]	R
Event 3 net volume flow 1 last 2	Value		[Net volume flow 1 unit]	R
Event 3 net volume flow 1 last 3	Value		[Net volume flow 1 unit]	R
Event 3 net volume flow 1 after 1	Value		[Net volume flow 1 unit]	R
Event 3 net volume flow 1 after 2	Value		[Net volume flow 1 unit]	R
Event 3 net volume flow 1 after 3	Value		[Net volume flow 1 unit]	R
Event 3 concentration last 1	Value			R
Event 3 concentration last 2	Value			R
Event 3 concentration last 3	Value			R
Event 3 concentration after 1	Value			R
Event 3 concentration after 2	Value			R
Event 3 concentration after 3	Value			R
Event 3 phase difference last 1	Value		mrad	R
Event 3 phase difference last 2	Value		mrad	R
Event 3 phase difference last 3	Value		mrad	R
Event 3 phase difference after 1	Value		mrad	R
Event 3 phase difference after 2	Value		mrad	R
Event 3 phase difference after 3	Value		mrad	R
Event 3 drive gain last 1	Value		A/V	R
Event 3 drive gain last 2	Value		A/V	R
Event 3 drive gain last 3	Value		A/V	R
Event 3 drive gain after 1	Value		A/V	R
Event 3 drive gain after 2	Value		A/V	R
Event 3 drive gain after 3	Value		A/V	R

Parameter	Data Form	Data Range	Unit	R/W
Event 3 drive current last 1	Value		mAp-p	R
Event 3 drive current last 2	Value		mAp-p	R
Event 3 drive current last 3	Value		mAp-p	R
Event 3 drive current after 1	Value		mAp-p	R
Event 3 drive current after 2	Value		mAp-p	R
Event 3 drive current after 3	Value		mAp-p	R
Event 3 density last 1	Value		[Density unit]	R
Event 3 density last 2	Value		[Density unit]	R
Event 3 density last 3	Value		[Density unit]	R
Event 3 density after 1	Value		[Density unit]	R
Event 3 density after 2	Value		[Density unit]	R
Event 3 density after 3	Value		[Density unit]	R
Event 3 transmitter temperature last 1	Value		[Temperature unit]	R
Event 3 transmitter temperature last 2	Value		[Temperature unit]	R
Event 3 transmitter temperature last 3	Value		[Temperature unit]	R
Event 3 transmitter temperature after 1	Value		[Temperature unit]	R
Event 3 transmitter temperature after 2	Value		[Temperature unit]	R
Event 3 transmitter temperature after 3	Value		[Temperature unit]	R
Autozero value 3	Value		[Mass flow unit]	R
Autozero standard deviation 3	Value		[Mass flow unit]	R
Autozero density 3	Value		[Density unit]	R
Autozero temperature 3	Value		[Temperature unit]	R
Autozero drive current 3	Value		mAp-p	R
Autozero resonance frequency 3	Value		Hz	R
Autozero pressure 3	Value		[Pressure unit]	R
Sensor max temperature 3	Value		[Temperature unit]	R
Event no 4	Value			R

Parameter	Data Form	Data Range	Unit	R/W
Event contents 4	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 4 operation time	ASCII			R
Event 4 date	Date			R
Event 4 time	Time			R
Event 4 mass flow last 1	Value		[Mass flow unit]	R
Event 4 mass flow last 2	Value		[Mass flow unit]	R
Event 4 mass flow last 3	Value		[Mass flow unit]	R
Event 4 mass flow after 1	Value		[Mass flow unit]	R
Event 4 mass flow after 2	Value		[Mass flow unit]	R
Event 4 mass flow after 3	Value		[Mass flow unit]	R
Event 4 resonance frequency last 1	Value		Hz	R
Event 4 resonance frequency last 2	Value		Hz	R
Event 4 resonance frequency last 3	Value		Hz	R
Event 4 resonance frequency after 1	Value		Hz	R
Event 4 resonance frequency after 2	Value		Hz	R
Event 4 resonance frequency after 3	Value		Hz	R
Event 4 temperature last 1	Value		[Temperature unit]	R
Event 4 temperature last 2	Value		[Temperature unit]	R
Event 4 temperature last 3	Value		[Temperature unit]	R
Event 4 temperature after 1	Value		[Temperature unit]	R
Event 4 temperature after 2	Value		[Temperature unit]	R
Event 4 temperature after 3	Value		[Temperature unit]	R
Event 4 pressure last 1	Value		[Pressure unit]	R
Event 4 pressure last 2	Value		[Pressure unit]	R
Event 4 pressure last 3	Value		[Pressure unit]	R
Event 4 pressure after 1	Value		[Pressure unit]	R
Event 4 pressure after 2	Value		[Pressure unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Event 4 pressure after 3	Value		[Pressure unit]	R
Event 4 net mass flow 1 last 1	Value		[Net mass flow 1 unit]	R
Event 4 net mass flow 1 last 2	Value		[Net mass flow 1 unit]	R
Event 4 net mass flow 1 last 3	Value		[Net mass flow 1 unit]	R
Event 4 net mass flow 1 after 1	Value		[Net mass flow 1 unit]	R
Event 4 net mass flow 1 after 2	Value		[Net mass flow 1 unit]	R
Event 4 net mass flow 1 after 3	Value		[Net mass flow 1 unit]	R
Event 4 net volume flow 1 last 1	Value		[Net volume flow 1 unit]	R
Event 4 net volume flow 1 last 2	Value		[Net volume flow 1 unit]	R
Event 4 net volume flow 1 last 3	Value		[Net volume flow 1 unit]	R
Event 4 net volume flow 1 after 1	Value		[Net volume flow 1 unit]	R
Event 4 net volume flow 1 after 2	Value		[Net volume flow 1 unit]	R
Event 4 net volume flow 1 after 3	Value		[Net volume flow 1 unit]	R
Event 4 concentration last 1	Value			R
Event 4 concentration last 2	Value			R
Event 4 concentration last 3	Value			R
Event 4 concentration after 1	Value			R
Event 4 concentration after 2	Value			R
Event 4 concentration after 3	Value			R
Event 4 phase difference last 1	Value		mrad	R
Event 4 phase difference last 2	Value		mrad	R
Event 4 phase difference last 3	Value		mrad	R
Event 4 phase difference after 1	Value		mrad	R
Event 4 phase difference after 2	Value		mrad	R
Event 4 phase difference after 3	Value		mrad	R
Event 4 drive gain last 1	Value		A/V	R
Event 4 drive gain last 2	Value		A/V	R
Event 4 drive gain last 3	Value		A/V	R

Parameter	Data Form	Data Range	Unit	R/W
Event 4 drive gain after 1	Value		A/V	R
Event 4 drive gain after 2	Value		A/V	R
Event 4 drive gain after 3	Value		A/V	R
Event 4 drive current last 1	Value		mAp-p	R
Event 4 drive current last 2	Value		mAp-p	R
Event 4 drive current last 3	Value		mAp-p	R
Event 4 drive current after 1	Value		mAp-p	R
Event 4 drive current after 2	Value		mAp-p	R
Event 4 drive current after 3	Value		mAp-p	R
Event 4 density last 1	Value		[Density unit]	R
Event 4 density last 2	Value		[Density unit]	R
Event 4 density last 3	Value		[Density unit]	R
Event 4 density after 1	Value		[Density unit]	R
Event 4 density after 2	Value		[Density unit]	R
Event 4 density after 3	Value		[Density unit]	R
Event 4 transmitter temperature last 1	Value		[Temperature unit]	R
Event 4 transmitter temperature last 2	Value		[Temperature unit]	R
Event 4 transmitter temperature last 3	Value		[Temperature unit]	R
Event 4 transmitter temperature after 1	Value		[Temperature unit]	R
Event 4 transmitter temperature after 2	Value		[Temperature unit]	R
Event 4 transmitter temperature after 3	Value		[Temperature unit]	R
Autozero value 4	Value		[Mass flow unit]	R
Autozero standard deviation 4	Value		[Mass flow unit]	R
Autozero density 4	Value		[Density unit]	R
Autozero temperature 4	Value		[Temperature unit]	R
Autozero drive current 4	Value		mAp-p	R
Autozero resonance frequency 4	Value		Hz	R
Autozero pressure 4	Value		[Pressure unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Sensor max temperature 4	Value		[Temperature unit]	R
Event no 5	Value			R
Event contents 5	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 5 operation time	ASCII			R
Event 5 date	Date			R
Event 5 time	Time			R
Event no 6	Value			R
Event contents 6	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 6 operation time	ASCII			R
Event 6 date	Date			R
Event 6 time	Time			R
Event no 7	Value			R
Event contents 7	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 7 operation time	ASCII			R
Event 7 date	Date			R
Event 7 time	Time			R
Event no 8	Value			R
Event contents 8	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 8 operation time	ASCII			R
Event 8 date	Date			R
Event 8 time	Time			R
Event no 9	Value			R
Event contents 9	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 9 operation time	ASCII			R
Event 9 date	Date			R
Event 9 time	Time			R
Event no 10	Value			R
Event contents 10	Enum	0: Event clear 1: Event set 2: Acknowledge		R
Event 10 operation time	ASCII			R
Event 10 date	Date			R
Event 10 time	Time			R

Parameter	Data Form	Data Range	Unit	R/W
System alarm status 0	BitEnum	0x0001: 101:Resonance frequency failure 0x0002: 102:Signal failure 0x0004: 103:Pick off 1 failure 0x0008: 104:Pick off 1 failure 0x0010: 106:Pick off 2 failure 0x0020: 105:Pick off 2 failure 0x0040: 107:Temperature range failure 0x0080: 108:Temperature sensor failure		R
System alarm status 1	BitEnum	0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
System alarm status 2	BitEnum	0x0001: 121:Main board CPU failure 0x0002: 122:Main board EEPROM failure 0x0004: 123:Parameter restore incomplete 0x0008: 124:Sensor board failure 0x0010: 125:Sensor board mismatch 0x0020: 126:Sensor communication error 0x0040: 127:Option board failure 0x0080: 128:Option board EEPROM failure		R
System alarm status 3	BitEnum	0x0001: 129:Option board mismatch 0x0002: 130:Indicator board failure 0x0004: 131:Indicator board EEPROM failure 0x0008: 132:LCD driver failure 0x0010: 133:Indicator board mismatch 0x0020: 134:Indicator communication error 0x0040: 135:microSD failure 0x0080: Reserved		R
System alarm status 4	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R

Parameter	Data Form	Data Range	Unit	R/W
Process alarm status 0	BitEnum	0x0001: 201:Slug detection 0x0002: 202:Empty pipe detection 0x0004: 203:Corrosion detection 0x0008: 204:Autozero judgment multiphase 0x0010: 205:Autozero judgment flow 0x0020: 206:Autozero judgment temperature 0x0040: Reserved 0x0080: Reserved		R
Process alarm status 1	BitEnum	0x0001: 207:Batch time exceeded 0x0002: 208:Batch overrun/ underrun 0x0004: 209:Max flow while batching 0x0008: 210:Oil density calculation failure 0x0010: 211:Water density calculation failure 0x0020: 212:NOC calculation failure 0x0040: Reserved 0x0080: Reserved		R
Process alarm status 2	BitEnum	0x0001: 221:Analog input failure 0x0002: 222:Mass flow high high low low alarm 0x0004: 223:Density high high low low alarm 0x0008: 224:Temperature high high low low alarm 0x0010: 225:Pressure high high low low alarm 0x0020: 226:Volume flow high high low low alarm 0x0040: 227:Corrected volume flow high high low low alarm 0x0080: 228:Concentration high high low low alarm		R

Parameter	Data Form	Data Range	Unit	R/W
Process alarm status 3	BitEnum	0x0001: 229:Net mass flow 1 high high low low alarm 0x0002: 230:Net mass flow 2 high high low low alarm 0x0004: 231:Net volume flow 1 high high low low alarm 0x0008: 232:Net volume flow 2 high high low low alarm 0x0010: 233:Net corrected volume flow high high low low alarm 0x0020: 234:Relative density high high low low alarm 0x0040: 235:Reference density high high low low alarm 0x0080: 236:Viscosity high high low low alarm		R
Process alarm status 4	BitEnum	0x0001: 241:Totalizer 1 threshold exceeded 0x0002: 242:Totalizer 2 threshold exceeded 0x0004: 243:Totalizer 3 threshold exceeded 0x0008: 244:Totalizer 4 threshold exceeded 0x0010: 245:Totalizer 5 threshold exceeded 0x0020: 246:Totalizer 6 threshold exceeded 0x0040: Reserved 0x0080: Reserved		R
Process alarm status 5	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Setting alarm status 0	BitEnum	0x0001: 301:Mass flow configuration error 0x0002: 302:Density configuration error 0x0004: 303:Temperature configuration error 0x0008: 304:Analog input temperature configuration error 0x0010: 305:Pressure configuration error 0x0020: 306:Analog input pressure configuration error 0x0040: 307:Volume flow configuration error 0x0080: 308:Reference density configuration error		R

Parameter	Data Form	Data Range	Unit	R/W
Setting alarm status 1	BitEnum	0x0001: 309:Relative density configuration error 0x0002: 310:Corrected volume flow configuration error 0x0004: 311:Calorific value configuration error 0x0008: 312:Analog input calorific value configuration error 0x0010: 313:Concentration configuration error 0x0020: 314:Net mass flow 1 configuration error 0x0040: 315:Net mass flow 2 configuration error 0x0080: 316:Net volume flow 1 configuration error		R
Setting alarm status 2	BitEnum	0x0001: 317:Net volume flow 2 configuration error 0x0002: 318:Net corrected volume flow configuration error 0x0004: 319:Velocity configuration error 0x0008: 320:Viscosity configuration error 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Setting alarm status 3	BitEnum	0x0001: 321:Analog output 1 configuration error 0x0002: 322:Analog output 2 configuration error 0x0004: 323:Pulse output 1 configuration error 0x0008: 324:Frequency output 1 configuration error 0x0010: 325:Status output 1 configuration error 0x0020: 326:Pulse output 2 configuration error 0x0040: 327:Frequency output 2 configuration error 0x0080: 328:Status output 2 configuration error		R

Parameter	Data Form	Data Range	Unit	R/W
Setting alarm status 4	BitEnum	0x0001: 329:Pulse/Status output 2 mode configuration error 0x0002: 330:Double pulse output configuration error 0x0004: 331:Status output 3 configuration error 0x0008: 332:Status input configuration error 0x0010: 333:Analog input configuration error 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Setting alarm status 5	BitEnum	0x0001: 335:Totalizer 1 configuration error 0x0002: 336:Totalizer 2 configuration error 0x0004: 337:Totalizer 3 configuration error 0x0008: 338:Totalizer 4 configuration error 0x0010: 339:Totalizer 5 configuration error 0x0020: 340:Totalizer 6 configuration error 0x0040: 341:Batch configuration error 0x0080: 342:Data logging not started		R
Setting alarm status 6	BitEnum	0x0001: 343:Option function mismatch 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Setting alarm status 7	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R

Parameter	Data Form	Data Range	Unit	R/W
Warning status 0	BitEnum	0x0001: 701:Analog output 1 fixed 0x0002: 702:Analog output 2 fixed 0x0004: 703:Density fixed 0x0008: 704:Temperature fixed 0x0010: 705:Pressure fixed 0x0020: 706:Reference density fixed 0x0040: 707:Calorific value fixed 0x0080: 708:Process variable simulation		R
Warning status 1	BitEnum	0x0001: 709:Analog output simulation 0x0002: 710:Pulse output simulation 0x0004: 711:Status output simulation 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: 715:Process variable trimming 0x0080: 716:Analog output 1 saturated		R
Warning status 2	BitEnum	0x0001: 717:Analog output 2 saturated 0x0002: 718:Pulse output 1 saturated 0x0004: 719:Pulse output 2 saturated 0x0008: 720:Double pulse output saturated 0x0010: 721:Autozero running 0x0020: 722:Tube Health Check execution error 0x0040: 723:Date/Time not set 0x0080: 724:Display over warning		R
Warning status 3	BitEnum	0x0001: 725:microSD card size warning 0x0002: 726:microSD card mismatch 0x0004: Reserved 0x0008: 728:microSD card removal procedure error 0x0010: 729:Parameter backup incomplete 0x0020: 730:Parameter restore running 0x0040: Reserved 0x0080: 732:Batch progress indication		R

Parameter	Data Form	Data Range	Unit	R/W
Warning status 4	BitEnum	0x0001: 733:Viscosity not calculated 0x0002: 734:Viscosity not reliable 0x0004: 735:Autozero warning 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Warning status 5	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Information status 0	BitEnum	0x0001: 901:Device configuration locked 0x0002: 902:Device configuration not locked 0x0004: 903:Parameter backup running 0x0008: 904:Data logging running 0x0010: 905:Tube Health Check running 0x0020: 906:Batch running 0x0040: 907:Batch hold 0x0080: 908:SIL mode active		R
Information status 1	BitEnum	0x0001: 909:Maintenance mode running 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Information status 2	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Mass flow	Value		[Mass flow unit]	R
Density	Value		[Density unit]	R
Temperature	Value		[Temperature unit]	R
Pressure	Value		[Pressure unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Volume flow	Value		[Volume flow unit]	R
Reference density	Value		[Density unit]	R
Relative density	Value			R
Corrected volume flow	Value		[Corrected volume flow unit]	R
Calorific value	Value		[Calorific unit]	R
Concentration	Value			R
Net mass flow 1	Value		[Net mass flow 1 unit]	R
Net mass flow 2	Value		[Net mass flow 2 unit]	R
Net volume flow 1	Value		[Net volume flow 1 unit]	R
Net volume flow 2	Value		[Net volume flow 2 unit]	R
Net corrected volume flow	Value		[Net corrected volume flow unit]	R
Viscosity	Value		[Viscosity unit]	R
Velocity	Value		[Velocity unit]	R
Totalizer 1	Value		[Total 1 unit]	R
Totalizer 2	Value		[Total 2 unit]	R
Totalizer 3	Value		[Total 3 unit]	R
Totalizer 4	Value		[Total 4 unit]	R
Totalizer 5	Value		[Total 5 unit]	R
Totalizer 6	Value		[Total 6 unit]	R
Batch	Value			R
Transmitter temperature	Value		[Temperature unit]	R
Main software revision	ASCII			R
Sensor software revision	ASCII			R
Indicator software revision	ASCII			R
Operation time	ASCII			R
Mass flow data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Density data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Temperature data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R

Parameter	Data Form	Data Range	Unit	R/W
Pressure data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Calorific data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Volume flow data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Reference density data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Relative density data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Corrected volume flow data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Concentration data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Net mass flow 1 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Net mass flow 2 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Net volume flow 1 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Net volume flow 2 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Net corrected volume flow data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Viscosity data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Batch data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R

Parameter	Data Form	Data Range	Unit	R/W
Totalizer 1 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Totalizer 2 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Totalizer 3 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Totalizer 4 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Totalizer 5 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Totalizer 6 data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Mass flow limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Density limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Temperature limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Pressure limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Calorific limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Volume flow limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Reference density limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Relative density limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R

Parameter	Data Form	Data Range	Unit	R/W
Corrected volume flow limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Concentration limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Net mass flow 1 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Net mass flow 2 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Net volume flow 1 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Net volume flow 2 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Net corrected volume flow limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Viscosity limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Batch limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Totalizer 1 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Totalizer 2 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Totalizer 3 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Totalizer 4 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Totalizer 5 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R

Parameter	Data Form	Data Range	Unit	R/W
Totalizer 6 limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Configuration change counter	Value			R
Status group 0	BitEnum	0x0001: 101:Resonance frequency failure 0x0002: 102:Signal failure 0x0004: 103,4:Pick off 1 failure 0x0008: 105,6:Pick off 2 failure 0x0010: 107,8:Temperature failure 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Status group 1	BitEnum	0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: 121,22:Main board failure		R
Status group 2	BitEnum	0x0001: 123:Parameter restore incomplete 0x0002: 124,25:Sensor board failure 0x0004: 126:Sensor communication error 0x0008: 127-29:Option board failure 0x0010: 130-32:Indicator board failure 0x0020: 133:Indicator board mismatch 0x0040: 134:Indicator communication error 0x0080: 135:microSD failure		R
Status group 3	BitEnum	0x0001: 201:Slug detection 0x0002: 202:Empty pipe detection 0x0004: 203:Corrosion detection 0x0008: 204-06:Autozero failure 0x0010: 207-09:Batch failure 0x0020: 210-12:NOC failure 0x0040: Reserved 0x0080: Reserved		R

Parameter	Data Form	Data Range	Unit	R/W
Status group 4	BitEnum	0x0001: 221:Analog input failure 0x0002: 222:Mass flow high high low low alarm 0x0004: 223:Density high high low low alarm 0x0008: 224:Temperature high high low low alarm 0x0010: 225:Pressure high high low low alarm 0x0020: 226:Volume flow high high low low alarm 0x0040: 227:Corrected volume flow high high low low alarm 0x0080: 228:Concentration high high low low alarm		R
Status group 5	BitEnum	0x0001: 229:Net mass flow 1 high high low low alarm 0x0002: 230:Net mass flow 2 high high low low alarm 0x0004: 231:Net volume flow 1 high high low low alarm 0x0008: 232:Net volume flow 2 high high low low alarm 0x0010: 233:Net corrected volume flow high high low low alarm 0x0020: 234:Relative density high high low low alarm 0x0040: 235:Reference density high high low low alarm 0x0080: 236:Viscosity high high low low alarm		R
Status group 14	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: 241:Totalizer 1 threshold exceeded 0x0008: 242:Totalizer 2 threshold exceeded 0x0010: 243:Totalizer 3 threshold exceeded 0x0020: 244:Totalizer 4 threshold exceeded 0x0040: 245:Totalizer 5 threshold exceeded 0x0080: 246:Totalizer 6 threshold exceeded		R

Parameter	Data Form	Data Range	Unit	R/W
Status group 15	BitEnum	0x0001: 301-20:Process variables configuration error 0x0002: 321:Analog output 1 configuration error 0x0004: 322:Analog output 2 configuration error 0x0008: 323-25:Pulse/Status output 1 configuration error 0x0010: 326-29:Pulse/Status output 2 configuration error 0x0020: 330:Double pulse output configuration error 0x0040: 331:Status output 3 configuration error 0x0080: 332:Status input configuration error		R
Status group 16	BitEnum	0x0001: 333:Analog input configuration error 0x0002: Reserved 0x0004: 335-40:Totalizer configuration error 0x0008: 341:Batch configuration error 0x0010: 342:Data logging not started 0x0020: 343:Option function mismatch 0x0040: Reserved 0x0080: Reserved		R
Status group 17	BitEnum	0x0001: 701:Analog output 1 fixed 0x0002: 702:Analog output 2 fixed 0x0004: 703:Density fixed 0x0008: 704:Temperature fixed 0x0010: 705:Pressure fixed 0x0020: 706:Reference density fixed 0x0040: 707:Calorific value fixed 0x0080: 708:Process variable simulation		R
Status group 18	BitEnum	0x0001: 709:Analog output simulation 0x0002: 710:Pulse output simulation 0x0004: 711:Status output simulation 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: 715:Process variable trimming 0x0080: 716:Analog output 1 saturated		R

Parameter	Data Form	Data Range	Unit	R/W
Status group 19	BitEnum	0x0001: 717:Analog output 2 saturated 0x0002: 718:Pulse output 1 saturated 0x0004: 719:Pulse output 2 saturated 0x0008: 720:Double pulse output saturated 0x0010: 721:Autozero running 0x0020: 722:Tube Health Check execution error 0x0040: 723:Date/Time not set 0x0080: 724:Display over warning		R
Status group 20	BitEnum	0x0001: 725:microSD card size warning 0x0002: 726:microSD card mismatch 0x0004: Reserved 0x0008: 728:microSD card removal procedure error 0x0010: 729:Parameter backup incomplete 0x0020: 730:Parameter restore running 0x0040: Reserved 0x0080: 732:Batch progress indication		R
Status group 21	BitEnum	0x0001: 733,34:Viscosity warning 0x0002: 735:Autozero warning 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Status group 22	BitEnum	0x0001: 901:Device configuration locked 0x0002: 902:Device configuration not locked 0x0004: 903:Parameter backup running 0x0008: 904:Data logging running 0x0010: 905:Tube Health Check running 0x0020: 906:Batch running 0x0040: 907:Batch hold 0x0080: 908:SIL mode active		R

Parameter	Data Form	Data Range	Unit	R/W
Status group 23	BitEnum	0x0001: 909:Maintenance mode running 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Status group 24	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Current date	Date			R
Current time	Time			R
Write protect	Enum	0: No 1: Yes		R
Software seal	Enum	0: Break 1: Keep		R
TuHC health result	Enum	0: Not execute 1: Warning 2: Error 3: OK		R
TuHC progress percentage	Value		%	R
TuHC test counter	Value			R
TuHC alarm	Enum	0: No error 1: S1 amplitude is zero at AGC 2: S2 amplitude is zero at AGC 3: Drive current is zero at AGC 4: Drive gain is zero at AGC 5: Amplitude is zero at fixed drive gain 6: No reference data 7: Different sensor parameters to reference 8: Unable to copy bad result to reference 9: Next test was started to copy reference 10: Parameter error		R

Parameter	Data Form	Data Range	Unit	R/W
TuHC warning	BitEnum	0x0001: Suspicious test 0x0002: Unstable condition at AGC1 & AGC2 0x0004: Unstable condition at test & reference 0x0008: Fluctuation of condition at AGC1 0x0010: Change threshold level 0x0020: Temperature or Pressure is out of range 0x0040: Fluctuation of condition at scan 0x0080: No cross thresholds 0x0100: Deviation of slope 0x0200: Unstable condition at AGC1 & scan 0x0400: Skip test 0x0800: Slope control error 0x1000: Amplitude is out of limit 0x2000: Data trans error 0x4000: Calculation error 0x8000: Reserved		R
TuHC result flag	BitEnum	0x0001: Change of inlet stiffness is over threshold 0x0002: Change of outlet stiffness is over threshold 0x0004: Suspicious test (continue test) 0x0008: Skip test (continue test) 0x0010: Stop test 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
TuHC change ratio of inlet stiffness	Value		%	R
TuHC change ratio of outlet stiffness	Value		%	R
TuHC date at start	Date			R
TuHC time at start	Time			R
TuHC operation time at start	Value		min	R
Test mode	Enum	0: Off 1: On		R/W(C1)
Test mode all clear	Enum	0: Not execute 1: Execute		R/W(C1)
Analog output 1 test	Value		mA	R/W(C1)
AO 1 trim 4mA	Value		mA	R/W(C1)
AO 1 trim 20mA	Value		mA	R/W(C1)
Analog output 2 test	Value		mA	R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
AO 2 trim 4mA	Value		mA	R/W(C1)
AO 2 trim 20mA	Value		mA	R/W(C1)
Frequency output 1 test	Value		Hz	R/W(C1)
Frequency output 2 test	Value		Hz	R/W(C1)
Double pulse output test	Value		Hz	R/W(C1)
Status output 1 test	Enum	0: Open(Off) 1: Closed(On) 2: Test exit		R/W(C1)
Status output 2 test	Enum	0: Open(Off) 1: Closed(On) 2: Test exit		R/W(C1)
Status output 3 test	Enum	0: Open(Off) 1: Closed(On) 2: Test exit		R/W(C1)
Test auto release time	Enum	0: 10min 1: 30min 2: 60min 3: 3hour 4: 6hour 5: 12hour		R/W(C1)
AI trim 4mA	Value		mA	R/W(C1)
AI trim 20mA	Value		mA	R/W(C1)
Trim who	ASCII			R/W(C1)
Trim date	Date			R/W(C1)
Trim location	ASCII			R/W(C1)
Trim description	ASCII			R/W(C1)
Temperature lower limit	Value		[Temperature unit]	R
Temperature upper limit	Value		[Temperature unit]	R
Autozero execute	Enum	0: Not execute 1: Execute		R/W(C0)a
Autozero time	Value		s	R/W(C0)a
Clear autozero failure	Enum	0: Not execute 1: Execute		R/W(C0)a
Autozero failure detection	Enum	0: Off 1: On		R/W(C2)
Signal gain	Enum	0: Gain 1 1: Gain 2 2: Gain 3 3: Gain 4		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Qmax	Value		[Mass flow unit]	R
Qnom	Value		[Mass flow unit]	R
SK20	Value		MHz*kg/h	R/ W(C2)
SK20 reverse	Value		MHz*kg/h	R/ W(C2)
SKT	Evalue		1/K	R/ W(C2)
SKTK	Evalue		1/K2	R/ W(C2)
FTC1	Evalue		1/K	R/ W(C2)
FTCK	Evalue		1/K2	R/ W(C2)
KD	Value		kg/L	R/ W(C2)
FL20	Value		Hz	R/ W(C2)
Density offset orientation	Evalue		[Density unit]	R/ W(C1)
Installation orientation	Enum	0: Vertical 1: Horizontal bend down 2: Horizontal bend up		R/ W(C1)
Order code 1	ASCII			R/ W(C2)
Order code 2	ASCII			R/ W(C2)
Order code 3	ASCII			R/ W(C2)
Transmitter type	Enum	0: SITRANS FCT020 1: SITRANS FCT040		R

Parameter	Data Form	Data Range	Unit	R/W
IO type	Enum	0: None 1: E06+F11 2: E06+F22 3: E06+F23 4: E06+F12 5: E06+F13 6: E06+F21 7: E06+F20 8: E06+F16 9: E06+F14 10: E06+F18 11: E06+F17 12: E06+F15 13: E06+F19 14: E07+F01 15: E07+F02 16: E07+F03 17: E07+F04 18: Reserved 19: Reserved 20: E14+F31 21: E14+F33 22: E14+F32 23: E14+F35 24: E14+F36 25: E14+F37 26: E14+F34		R
Display installation	Enum	0: No display 1: With display		R/W(C2)
Liquid gas select	Enum	0: Liquid 1: Gas		R/W(C2)
Concentration measurement select	Enum	0: Inhibit 1: Standard 2: Advanced 3: Net oil computing API 4: Net oil computing API and GVF		R
Function option code	BitEnum	0x0001: Tube Health Check 0x0002: Batch function 0x0004: Tube leakage detection 0x0008: Analog input calorific value 0x0010: Viscosity 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved 0x0100: Reserved 0x0200: Reserved 0x0400: Reserved 0x0800: Reserved 0x1000: Reserved 0x2000: Reserved 0x4000: Reserved 0x8000: Reserved		R
Sensor serial number	ASCII			R/W(C2)
Mass flow trim select	Enum	0: Inhibit 1: Enable		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Mass flow trim offset	Evalue		[Mass flow unit]	R/W(C2)
Mass flow trim gain	Value			R/W(C2)
Mass flow damping	Value		s	R/W(C1)
Mass flow damping pulse/total	Value		s	R/W(C2)
Mass flow lowcut	Value		[Mass flow unit]	R/W(C2)
Mass flow LRV	Value		[Mass flow unit]	R/W(C1)
Mass flow URV	Value		[Mass flow unit]	R/W(C1)
Mass flow low alarm	Value		[Mass flow unit]	R/W(C2)
Mass flow high alarm	Value		[Mass flow unit]	R/W(C2)
Mass flow low low alarm	Value		[Mass flow unit]	R/W(C2)
Mass flow high high alarm	Value		[Mass flow unit]	R/W(C2)
Mass flow unit	Enum	70: g/s 71: g/min 72: g/h 73: kg/s 74: kg/min 75: kg/h 76: kg/d 77: t/min 78: t/h 79: t/d 84: ton(US)/min 85: ton(US)/h 86: ton(US)/d 240: ton(UK)/min 87: ton(UK)/h 88: ton(UK)/d 80: lb/s 81: lb/min 82: lb/h 83: lb/d 249: User unit		R/W(C1)
Mass flow user unit	ASCII			R/W(C2)
Mass flow bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Mass flow user unit conversion factor	Value		1/(kg/h)	R/W(C2)
Density trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Density trim offset	Evalue		[Density unit]	R/W(C2)
Density trim gain	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Density damping	Value		s	R/W(C1)
Density lowcut	Value		[Density unit]	R/W(C2)
Density LRV	Value		[Density unit]	R/W(C1)
Density URV	Value		[Density unit]	R/W(C1)
Density low alarm	Value		[Density unit]	R/W(C2)
Density high alarm	Value		[Density unit]	R/W(C2)
Density low low alarm	Value		[Density unit]	R/W(C2)
Density high high alarm	Value		[Density unit]	R/W(C2)
Density unit	Enum	95: g/mL 96: kg/L 244: kg/cm3 245: kg/dm3 92: kg/m3 93: lb/gal 94: lb/ft3 91: g/cm3 246: g/cc 97: g/L 249: User unit		R/W(C1)
Density user unit	ASCII			R/W(C2)
Density user unit conversion factor	Value		1/(kg/L)	R/W(C2)
Density fixed value	Value		[Density unit]	R/W(C2)
Density value select	Enum	0: Measured value 1: Fixed value 2: Calculated value		R/W(C2)
Temperature trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Temperature trim offset	Evalue		[Temperature unit]	R/W(C2)
Temperature trim gain	Value			R/W(C2)
Temperature damping	Value		s	R/W(C1)
Temperature LRV	Value		[Temperature unit]	R/W(C1)
Temperature URV	Value		[Temperature unit]	R/W(C1)
Temperature low alarm	Value		[Temperature unit]	R/W(C2)
Temperature high alarm	Value		[Temperature unit]	R/W(C2)
Temperature low low alarm	Value		[Temperature unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Temperature high high alarm	Value		[Temperature unit]	R/W(C2)
Temperature unit	Enum	32: degC 33: degF 34: degR 35: K		R/W(C1)
Temperature fixed value	Value		[Temperature unit]	R/W(C2)
Temperature function select	Enum	0: Internal value 1: Fixed value		R/W(C2)
Analog input temperature unit	Enum	32: degC 33: degF 34: degR 35: K		R/W(C2)
Analog input temperature LRV	Value		[Analog input temperature unit]	R/W(C2)
Analog input temperature URV	Value		[Analog input temperature unit]	R/W(C2)
Pressure trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Pressure trim offset	Evalue		[Pressure unit]	R/W(C2)
Pressure trim gain	Value			R/W(C2)
Pressure damping	Value		s	R/W(C2)
Pressure LRV	Value		[Pressure unit]	R/W(C2)
Pressure URV	Value		[Pressure unit]	R/W(C2)
Pressure low alarm	Value		[Pressure unit]	R/W(C2)
Pressure high alarm	Value		[Pressure unit]	R/W(C2)
Pressure low low alarm	Value		[Pressure unit]	R/W(C2)
Pressure high high alarm	Value		[Pressure unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Pressure unit	Enum	1: inH2O(68degF) 2: inHg 3: ftH2O(68degF) 4: mmH2O(68degF) 5: mmHg 6: psi 7: bar 8: mbar 9: g/cm2 10: kg/cm2 11: Pa 12: kPa 13: torr 14: atm 237: MPa 238: inH2O 239: mmH2O 177: ftH2O 174: hPa		R/W(C2)
Pressure fixed value	Value		[Pressure unit]	R/W(C1)
Gas density pressure	Value		[Pressure unit]	R/W(C2)
Absolute/Gauge select	Enum	0: Absolute 1: Gauge		R/W(C2)
Analog input pressure unit	Enum	1: inH2O(68degF) 2: inHg 3: ftH2O(68degF) 4: mmH2O(68degF) 5: mmHg 6: psi 7: bar 8: mbar 9: g/cm2 10: kg/cm2 11: Pa 12: kPa 13: torr 14: atm 237: MPa 238: inH2O 239: mmH2O 177: ftH2O 174: hPa		R/W(C2)
Analog input pressure LRV	Value		[Analog input pressure unit]	R/W(C2)
Analog input pressure URV	Value		[Analog input pressure unit]	R/W(C2)
Volume flow trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Volume flow trim offset	Evalue		[Volume flow unit]	R/W(C2)
Volume flow trim gain	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Volume flow damping	Value		s	R/W(C1)
Volume flow damping pulse/total	Value		s	R/W(C2)
Volume flow lowcut	Value		[Volume flow unit]	R/W(C2)
Volume flow LRV	Value		[Volume flow unit]	R/W(C1)
Volume flow URV	Value		[Volume flow unit]	R/W(C1)
Volume flow low alarm	Value		[Volume flow unit]	R/W(C2)
Volume flow high alarm	Value		[Volume flow unit]	R/W(C2)
Volume flow low low alarm	Value		[Volume flow unit]	R/W(C2)
Volume flow high high alarm	Value		[Volume flow unit]	R/W(C2)
Volume flow unit	Enum	240: cm3/s 241: cm3/min 242: cm3/h 24: L/s 17: L/min 138: L/h 177: L/d 28: m3/s 131: m3/min 19: m3/h 29: m3/d 22: gal/s 16: gal/min 136: gal/h 235: gal/d 26: ft3/s 15: ft3/min 130: ft3/h 27: ft3/d 132: bbl/s 133: bbl/min 134: bbl/h 135: bbl/d 137: Impgal/s 18: Impgal/min 30: Impgal/h 31: Impgal/d 249: User unit		R/W(C1)
Volume flow user unit	ASCII			R/W(C2)
Volume flow bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Volume flow user unit conversion factor	Value		1/(m3/h)	R/W(C2)
Reference temperature	Value		[Temperature unit]	R/W(C2)
Reference pressure	Value		[Pressure unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Temperature coeff A	Evalue		[1/ Temperature unit]	R/ W(C2)
Temperature coeff B	Evalue		[1/ Temperature unit^2]	R/ W(C2)
Reference density trim select	Enum	0: Inhibit 1: Enable		R/ W(C2)
Reference density trim offset	Evalue		[Density unit]	R/ W(C2)
Reference density trim gain	Value			R/ W(C2)
Reference density damping	Value		s	R/ W(C2)
Reference density lowcut	Value		[Density unit]	R/ W(C2)
Reference density LRV	Value		[Density unit]	R/ W(C2)
Reference density URV	Value		[Density unit]	R/ W(C2)
Reference density low alarm	Value		[Density unit]	R/ W(C2)
Reference density high alarm	Value		[Density unit]	R/ W(C2)
Reference density low low alarm	Value		[Density unit]	R/ W(C2)
Reference density high high alarm	Value		[Density unit]	R/ W(C2)
Reference density fixed value	Value		[Density unit]	R/ W(C2)
Reference density value select	Enum	0: Measured value 1: Fixed value		R/ W(C2)
Relative density reference select	Enum	0: Actual density 1: Reference density		R/ W(C2)
Relative density indication/equation select	Enum	0: No function 1: SG 4degC 2: SG 15degC 3: SG 20degC 4: SG 60degF 5: degAPI 6: degBaum hv 7: degBaum lt 8: Bh 9: Bl 10: degSake		R/ W(C2)
Relative density trim select	Enum	0: Inhibit 1: Enable		R/ W(C2)
Relative density trim offset	Evalue			R/ W(C2)
Relative density trim gain	Value			R/ W(C2)
Relative density damping	Value		s	R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Relative density LRV	Value			R/W(C2)
Relative density URV	Value			R/W(C2)
Relative density low alarm	Value			R/W(C2)
Relative density high alarm	Value			R/W(C2)
Relative density low low alarm	Value			R/W(C2)
Relative density high high alarm	Value			R/W(C2)
Corrected volume flow trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Corrected volume flow trim offset	Evalue		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow trim gain	Value			R/W(C2)
Corrected volume flow damping	Value		s	R/W(C2)
Corrected volume flow damping pulse/total	Value		s	R/W(C2)
Corrected volume flow lowcut	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow LRV	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow URV	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow low alarm	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow high alarm	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow low low alarm	Value		[Corrected volume flow unit]	R/W(C2)
Corrected volume flow high high alarm	Value		[Corrected volume flow unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Corrected volume flow unit	Enum	176: NL/s 175: NL/min 122: NL/h 174: NL/d 183: Nm3/s 182: Nm3/min 121: Nm3/h 181: Nm3/d 180: SL/s 179: SL/min 178: SL/h 177: SL/d 186: Sft3/s 123: Sft3/min 185: Sft3/h 184: Sft3/d 190: Sm3/s 189: Sm3/min 188: Sm3/h 187: Sm3/d 240: MMSft3/h 241: MMSft3/d 249: User unit		R/W(C2)
Corrected volume flow user unit	ASCII			R/W(C2)
Corrected volume flow bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Corrected volume flow user unit conversion factor	Value		1/(Sm3/h)	R/W(C2)
Calorific damping	Value		s	R/W(C2)
Calorific unit	Enum	240: MJ/kg 241: Btu/lb 242: MJ/m3 243: Btu/gal 244: MJ/Nm3 245: Btu/Sft3		R/W(C2)
Calorific fixed value	Value		[Calorific unit]	R/W(C2)
Analog input calorific unit	Enum	240: MJ/kg 241: Btu/lb 242: MJ/m3 243: Btu/gal 244: MJ/Nm3 245: Btu/Sft3		R/W(C2)
Analog input calorific LRV	Value		[Analog input calorific unit]	R/W(C2)
Analog input calorific URV	Value		[Analog input calorific unit]	R/W(C2)
Select concentration set	Enum	0: Manual 1: Status input		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Select concentration set manual	Enum	0: Set 1 1: Set 2 2: Set 3 3: Set 4		R/W(C2)
Select concentration set status input short	Enum	0: Set 1 1: Set 2 2: Set 3 3: Set 4		R/W(C2)
Select concentration set status input open	Enum	0: Set 1 1: Set 2 2: Set 3 3: Set 4		R/W(C2)
Concentration trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Concentration trim offset	Evalue			R/W(C2)
Concentration trim gain	Value			R/W(C2)
Concentration damping	Value		s	R/W(C2)
Concentration temperature set 1 number	Value			R/W(C2)
Concentration temperature 1 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 1 set 1	Value			R/W(C2)
Concentration B 1 set 1	Value			R/W(C2)
Concentration C 1 set 1	Value			R/W(C2)
Concentration D 1 set 1	Value			R/W(C2)
Concentration temperature 2 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 2 set 1	Value			R/W(C2)
Concentration B 2 set 1	Value			R/W(C2)
Concentration C 2 set 1	Value			R/W(C2)
Concentration D 2 set 1	Value			R/W(C2)
Concentration temperature 3 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 3 set 1	Value			R/W(C2)
Concentration B 3 set 1	Value			R/W(C2)
Concentration C 3 set 1	Value			R/W(C2)
Concentration D 3 set 1	Value			R/W(C2)
Concentration temperature 4 set 1	Value		[Temperature unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration A 4 set 1	Value			R/W(C2)
Concentration B 4 set 1	Value			R/W(C2)
Concentration C 4 set 1	Value			R/W(C2)
Concentration D 4 set 1	Value			R/W(C2)
Concentration temperature 5 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 5 set 1	Value			R/W(C2)
Concentration B 5 set 1	Value			R/W(C2)
Concentration C 5 set 1	Value			R/W(C2)
Concentration D 5 set 1	Value			R/W(C2)
Concentration temperature 6 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 6 set 1	Value			R/W(C2)
Concentration B 6 set 1	Value			R/W(C2)
Concentration C 6 set 1	Value			R/W(C2)
Concentration D 6 set 1	Value			R/W(C2)
Concentration temperature 7 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 7 set 1	Value			R/W(C2)
Concentration B 7 set 1	Value			R/W(C2)
Concentration C 7 set 1	Value			R/W(C2)
Concentration D 7 set 1	Value			R/W(C2)
Concentration temperature 8 set 1	Value		[Temperature unit]	R/W(C2)
Concentration A 8 set 1	Value			R/W(C2)
Concentration B 8 set 1	Value			R/W(C2)
Concentration C 8 set 1	Value			R/W(C2)
Concentration D 8 set 1	Value			R/W(C2)
Concentration temperature set 2 number	Value			R/W(C2)
Concentration temperature 1 set 2	Value		[Temperature unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration A 1 set 2	Value			R/W(C2)
Concentration B 1 set 2	Value			R/W(C2)
Concentration C 1 set 2	Value			R/W(C2)
Concentration D 1 set 2	Value			R/W(C2)
Concentration temperature 2 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 2 set 2	Value			R/W(C2)
Concentration B 2 set 2	Value			R/W(C2)
Concentration C 2 set 2	Value			R/W(C2)
Concentration D 2 set 2	Value			R/W(C2)
Concentration temperature 3 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 3 set 2	Value			R/W(C2)
Concentration B 3 set 2	Value			R/W(C2)
Concentration C 3 set 2	Value			R/W(C2)
Concentration D 3 set 2	Value			R/W(C2)
Concentration temperature 4 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 4 set 2	Value			R/W(C2)
Concentration B 4 set 2	Value			R/W(C2)
Concentration C 4 set 2	Value			R/W(C2)
Concentration D 4 set 2	Value			R/W(C2)
Concentration temperature 5 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 5 set 2	Value			R/W(C2)
Concentration B 5 set 2	Value			R/W(C2)
Concentration C 5 set 2	Value			R/W(C2)
Concentration D 5 set 2	Value			R/W(C2)
Concentration temperature 6 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 6 set 2	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration B 6 set 2	Value			R/W(C2)
Concentration C 6 set 2	Value			R/W(C2)
Concentration D 6 set 2	Value			R/W(C2)
Concentration temperature 7 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 7 set 2	Value			R/W(C2)
Concentration B 7 set 2	Value			R/W(C2)
Concentration C 7 set 2	Value			R/W(C2)
Concentration D 7 set 2	Value			R/W(C2)
Concentration temperature 8 set 2	Value		[Temperature unit]	R/W(C2)
Concentration A 8 set 2	Value			R/W(C2)
Concentration B 8 set 2	Value			R/W(C2)
Concentration C 8 set 2	Value			R/W(C2)
Concentration D 8 set 2	Value			R/W(C2)
Concentration temperature set 3 number	Value			R/W(C2)
Concentration temperature 1 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 1 set 3	Value			R/W(C2)
Concentration B 1 set 3	Value			R/W(C2)
Concentration C 1 set 3	Value			R/W(C2)
Concentration D 1 set 3	Value			R/W(C2)
Concentration temperature 2 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 2 set 3	Value			R/W(C2)
Concentration B 2 set 3	Value			R/W(C2)
Concentration C 2 set 3	Value			R/W(C2)
Concentration D 2 set 3	Value			R/W(C2)
Concentration temperature 3 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 3 set 3	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration B 3 set 3	Value			R/W(C2)
Concentration C 3 set 3	Value			R/W(C2)
Concentration D 3 set 3	Value			R/W(C2)
Concentration temperature 4 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 4 set 3	Value			R/W(C2)
Concentration B 4 set 3	Value			R/W(C2)
Concentration C 4 set 3	Value			R/W(C2)
Concentration D 4 set 3	Value			R/W(C2)
Concentration temperature 5 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 5 set 3	Value			R/W(C2)
Concentration B 5 set 3	Value			R/W(C2)
Concentration C 5 set 3	Value			R/W(C2)
Concentration D 5 set 3	Value			R/W(C2)
Concentration temperature 6 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 6 set 3	Value			R/W(C2)
Concentration B 6 set 3	Value			R/W(C2)
Concentration C 6 set 3	Value			R/W(C2)
Concentration D 6 set 3	Value			R/W(C2)
Concentration temperature 7 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 7 set 3	Value			R/W(C2)
Concentration B 7 set 3	Value			R/W(C2)
Concentration C 7 set 3	Value			R/W(C2)
Concentration D 7 set 3	Value			R/W(C2)
Concentration temperature 8 set 3	Value		[Temperature unit]	R/W(C2)
Concentration A 8 set 3	Value			R/W(C2)
Concentration B 8 set 3	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration C 8 set 3	Value			R/W(C2)
Concentration D 8 set 3	Value			R/W(C2)
Concentration temperature set 4 number	Value			R/W(C2)
Concentration temperature 1 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 1 set 4	Value			R/W(C2)
Concentration B 1 set 4	Value			R/W(C2)
Concentration C 1 set 4	Value			R/W(C2)
Concentration D 1 set 4	Value			R/W(C2)
Concentration temperature 2 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 2 set 4	Value			R/W(C2)
Concentration B 2 set 4	Value			R/W(C2)
Concentration C 2 set 4	Value			R/W(C2)
Concentration D 2 set 4	Value			R/W(C2)
Concentration temperature 3 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 3 set 4	Value			R/W(C2)
Concentration B 3 set 4	Value			R/W(C2)
Concentration C 3 set 4	Value			R/W(C2)
Concentration D 3 set 4	Value			R/W(C2)
Concentration temperature 4 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 4 set 4	Value			R/W(C2)
Concentration B 4 set 4	Value			R/W(C2)
Concentration C 4 set 4	Value			R/W(C2)
Concentration D 4 set 4	Value			R/W(C2)
Concentration temperature 5 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 5 set 4	Value			R/W(C2)
Concentration B 5 set 4	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration C 5 set 4	Value			R/W(C2)
Concentration D 5 set 4	Value			R/W(C2)
Concentration temperature 6 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 6 set 4	Value			R/W(C2)
Concentration B 6 set 4	Value			R/W(C2)
Concentration C 6 set 4	Value			R/W(C2)
Concentration D 6 set 4	Value			R/W(C2)
Concentration temperature 7 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 7 set 4	Value			R/W(C2)
Concentration B 7 set 4	Value			R/W(C2)
Concentration C 7 set 4	Value			R/W(C2)
Concentration D 7 set 4	Value			R/W(C2)
Concentration temperature 8 set 4	Value		[Temperature unit]	R/W(C2)
Concentration A 8 set 4	Value			R/W(C2)
Concentration B 8 set 4	Value			R/W(C2)
Concentration C 8 set 4	Value			R/W(C2)
Concentration D 8 set 4	Value			R/W(C2)
Concentration reference temperature set 1	Value		[Temperature unit]	R/W(C2)
Concentration reference density carrier set 1	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A carrier set 1	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B carrier set 1	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference density product set 1	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A product set 1	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B product set 1	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference temperature set 2	Value		[Temperature unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration reference density carrier set 2	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A carrier set 2	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B carrier set 2	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference density product set 2	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A product set 2	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B product set 2	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference temperature set 3	Value		[Temperature unit]	R/W(C2)
Concentration reference density carrier set 3	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A carrier set 3	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B carrier set 3	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference density product set 3	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A product set 3	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B product set 3	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference temperature set 4	Value		[Temperature unit]	R/W(C2)
Concentration reference density carrier set 4	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A carrier set 4	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B carrier set 4	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration reference density product set 4	Value		[Density unit]	R/W(C2)
Concentration temperature coeff A product set 4	Evalue		[1/Temperature unit]	R/W(C2)
Concentration temperature coeff B product set 4	Evalue		[1/Temperature unit^2]	R/W(C2)
Concentration select	Enum	0: Concentration(mass) 1: Concentration(volume) 2: Water cut		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
GVF select	Enum	0: Disable 1: Enable		R/W(C2)
NOC density hysteresis	Evalue		[Density unit]	R/W(C2)
GVF density hysteresis	Evalue		[Density unit]	R/W(C2)
NOC pressure fixed value	Value		[Pressure unit]	R/W(C2)
Reference oil density set 1	Value		[Density unit]	R/W(C2)
Reference water density set 1	Value		[Density unit]	R/W(C2)
Oil density calculator set 1	Enum	0: Off 1: Crude oil 2: Products 3: Lubricating oil 4: Fixed thermal exp factor 5: Other		R/W(C2)
Thermal expansion factor set 1	Value			R/W(C2)
K0 coefficient set 1	Value			R/W(C2)
K1 coefficient set 1	Value			R/W(C2)
K2 coefficient set 1	Value			R/W(C2)
Water density calculator set 1	Enum	0: SMOW 1: UNESCO1980 2: Fresh water 3: Produced water 4: Brine water 5: STD formula		R/W(C2)
Water density UNESCO1980 set 1	Enum	0: SMOW 1: VSMOW		R/W(C2)
Reference temperature set 1	Value		[Temperature unit]	R/W(C2)
Salinity ppt set 1	Value		ppt	R/W(C2)
Salinity fixed value set 1	Value		%	R/W(C2)
Reference oil density set 2	Value		[Density unit]	R/W(C2)
Reference water density set 2	Value		[Density unit]	R/W(C2)
Oil density calculator set 2	Enum	0: Off 1: Crude oil 2: Products 3: Lubricating oil 4: Fixed thermal exp factor 5: Other		R/W(C2)
Thermal expansion factor set 2	Value			R/W(C2)
K0 coefficient set 2	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
K1 coefficient set 2	Value			R/W(C2)
K2 coefficient set 2	Value			R/W(C2)
Water density calculator set 2	Enum	0: SMOW 1: UNESCO1980 2: Fresh water 3: Produced water 4: Brine water 5: STD formula		R/W(C2)
Water density UNESCO1980 set 2	Enum	0: SMOW 1: VSMOW		R/W(C2)
Reference temperature set 2	Value		[Temperature unit]	R/W(C2)
Salinity ppt set 2	Value		ppt	R/W(C2)
Salinity fixed value set 2	Value		%	R/W(C2)
Reference oil density set 3	Value		[Density unit]	R/W(C2)
Reference water density set 3	Value		[Density unit]	R/W(C2)
Oil density calculator set 3	Enum	0: Off 1: Crude oil 2: Products 3: Lubricating oil 4: Fixed thermal exp factor 5: Other		R/W(C2)
Thermal expansion factor set 3	Value			R/W(C2)
K0 coefficient set 3	Value			R/W(C2)
K1 coefficient set 3	Value			R/W(C2)
K2 coefficient set 3	Value			R/W(C2)
Water density calculator set 3	Enum	0: SMOW 1: UNESCO1980 2: Fresh water 3: Produced water 4: Brine water 5: STD formula		R/W(C2)
Water density UNESCO1980 set 3	Enum	0: SMOW 1: VSMOW		R/W(C2)
Reference temperature set 3	Value		[Temperature unit]	R/W(C2)
Salinity ppt set 3	Value		ppt	R/W(C2)
Salinity fixed value set 3	Value		%	R/W(C2)
Reference oil density set 4	Value		[Density unit]	R/W(C2)
Reference water density set 4	Value		[Density unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Oil density calculator set 4	Enum	0: Off 1: Crude oil 2: Products 3: Lubricating oil 4: Fixed thermal exp factor 5: Other		R/W(C2)
Thermal expansion factor set 4	Value			R/W(C2)
K0 coefficient set 4	Value			R/W(C2)
K1 coefficient set 4	Value			R/W(C2)
K2 coefficient set 4	Value			R/W(C2)
Water density calculator set 4	Enum	0: SMOW 1: UNESCO1980 2: Fresh water 3: Produced water 4: Brine water 5: STD formula		R/W(C2)
Water density UNESCO1980 set 4	Enum	0: SMOW 1: VSMOW		R/W(C2)
Reference temperature set 4	Value		[Temperature unit]	R/W(C2)
Salinity ppt set 4	Value		ppt	R/W(C2)
Salinity fixed value set 4	Value		%	R/W(C2)
Concentration name set 1	ASCII			R/W(C2)
Concentration measurement unit set 1	Enum	101: degBrix 105: Wt% sol 106: Vol% sol 57: Wt % 149: Vol % 240: Wt % User unit 241: Vol % User unit		R/W(C2)
Concentration measurement user unit set 1	ASCII			R/W(C2)
Concentration measurement LRV set 1	Value		[Concentration measurement unit set 1]	R/W(C2)
Concentration measurement URV set 1	Value		[Concentration measurement unit set 1]	R/W(C2)
Concentration measurement low alarm set 1	Value		[Concentration measurement unit set 1]	R/W(C2)
Concentration measurement high alarm set 1	Value		[Concentration measurement unit set 1]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration measurement low low alarm set 1	Value		[Concentration measurement unit set 1]	R/W(C2)
Concentration measurement high high alarm set 1	Value		[Concentration measurement unit set 1]	R/W(C2)
Concentration name set 2	ASCII			R/W(C2)
Concentration measurement unit set 2	Enum	101: degBrix 105: Wt% sol 106: Vol% sol 57: Wt % 149: Vol % 240: Wt % User unit 241: Vol % User unit		R/W(C2)
Concentration measurement user unit set 2	ASCII			R/W(C2)
Concentration measurement LRV set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration measurement URV set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration measurement low alarm set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration measurement high alarm set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration measurement low low alarm set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration measurement high high alarm set 2	Value		[Concentration measurement unit set 2]	R/W(C2)
Concentration name set 3	ASCII			R/W(C2)
Concentration measurement unit set 3	Enum	101: degBrix 105: Wt% sol 106: Vol% sol 57: Wt % 149: Vol % 240: Wt % User unit 241: Vol % User unit		R/W(C2)
Concentration measurement user unit set 3	ASCII			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration measurement LRV set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration measurement URV set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration measurement low alarm set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration measurement high alarm set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration measurement low low alarm set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration measurement high high alarm set 3	Value		[Concentration measurement unit set 3]	R/W(C2)
Concentration name set 4	ASCII			R/W(C2)
Concentration measurement unit set 4	Enum	101: degBrix 105: Wt% sol 106: Vol% sol 57: Wt % 149: Vol % 240: Wt % User unit 241: Vol % User unit		R/W(C2)
Concentration measurement user unit set 4	ASCII			R/W(C2)
Concentration measurement LRV set 4	Value		[Concentration measurement unit set 4]	R/W(C2)
Concentration measurement URV set 4	Value		[Concentration measurement unit set 4]	R/W(C2)
Concentration measurement low alarm set 4	Value		[Concentration measurement unit set 4]	R/W(C2)
Concentration measurement high alarm set 4	Value		[Concentration measurement unit set 4]	R/W(C2)
Concentration measurement low low alarm set 4	Value		[Concentration measurement unit set 4]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Concentration measurement high high alarm set 4	Value		[Concentration measurement unit set 4]	R/W(C2)
Net mass flow 1 trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Net mass flow 1 trim offset	Evalue		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 trim gain	Value			R/W(C2)
Net mass flow 1 damping	Value		s	R/W(C2)
Net mass flow 1 damping pulse/total	Value		s	R/W(C2)
Net mass flow 1 lowcut	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 LRV	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 URV	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 low alarm	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 high alarm	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 low low alarm	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 high high alarm	Value		[Net mass flow 1 unit]	R/W(C2)
Net mass flow 1 unit	Enum	70: g/s 71: g/min 72: g/h 73: kg/s 74: kg/min 75: kg/h 76: kg/d 77: t/min 78: t/h 79: t/d 84: ton(US)/min 85: ton(US)/h 86: ton(US)/d 240: ton(UK)/min 87: ton(UK)/h 88: ton(UK)/d 80: lb/s 81: lb/min 82: lb/h 83: lb/d 249: User unit		R/W(C2)
Net mass flow 1 user unit	ASCII			R/W(C2)
Net mass flow 1 bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Net mass flow 1 user unit conversion factor	Value		1/(kg/h)	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net mass flow 2 trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Net mass flow 2 trim offset	Evalue		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 trim gain	Value			R/W(C2)
Net mass flow 2 damping	Value		s	R/W(C2)
Net mass flow 2 damping pulse/total	Value		s	R/W(C2)
Net mass flow 2 lowcut	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 LRV	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 URV	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 low alarm	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 high alarm	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 low low alarm	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 high high alarm	Value		[Net mass flow 2 unit]	R/W(C2)
Net mass flow 2 unit	Enum	70: g/s 71: g/min 72: g/h 73: kg/s 74: kg/min 75: kg/h 76: kg/d 77: t/min 78: t/h 79: t/d 84: ton(US)/min 85: ton(US)/h 86: ton(US)/d 240: ton(UK)/min 87: ton(UK)/h 88: ton(UK)/d 80: lb/s 81: lb/min 82: lb/h 83: lb/d 249: User unit		R/W(C2)
Net mass flow 2 user unit	ASCII			R/W(C2)
Net mass flow 2 bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Net mass flow 2 user unit conversion factor	Value		1/(kg/h)	R/W(C2)
Net volume flow 1 trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Net volume flow 1 trim offset	Evalue		[Net volume flow 1 unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net volume flow 1 trim gain	Value			R/W(C2)
Net volume flow 1 damping	Value		s	R/W(C2)
Net volume flow 1 damping pulse/total	Value		s	R/W(C2)
Net volume flow 1 lowcut	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 LRV	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 URV	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 low alarm	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 high alarm	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 low low alarm	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 high high alarm	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 1 unit	Enum	240: cm3/s 241: cm3/min 242: cm3/h 24: L/s 17: L/min 138: L/h 177: L/d 28: m3/s 131: m3/min 19: m3/h 29: m3/d 22: gal/s 16: gal/min 136: gal/h 235: gal/d 26: ft3/s 15: ft3/min 130: ft3/h 27: ft3/d 132: bbl/s 133: bbl/min 134: bbl/h 135: bbl/d 137: Impgal/s 18: Impgal/min 30: Impgal/h 31: Impgal/d 249: User unit		R/W(C2)
Net volume flow 1 user unit	ASCII			R/W(C2)
Net volume flow 1 bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Net volume flow 1 user unit conversion factor	Value		1/(m3/h)	R/W(C2)
Net volume flow 2 trim select	Enum	0: Inhibit 1: Enable		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net volume flow 2 trim offset	Evalue		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 trim gain	Value			R/W(C2)
Net volume flow 2 damping	Value		s	R/W(C2)
Net volume flow 2 damping pulse/total	Value		s	R/W(C2)
Net volume flow 2 lowcut	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 LRV	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 URV	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 low alarm	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 high alarm	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 low low alarm	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 high high alarm	Value		[Net volume flow 2 unit]	R/W(C2)
Net volume flow 2 unit	Enum	240: cm3/s 241: cm3/min 242: cm3/h 24: L/s 17: L/min 138: L/h 177: L/d 28: m3/s 131: m3/min 19: m3/h 29: m3/d 22: gal/s 16: gal/min 136: gal/h 235: gal/d 26: ft3/s 15: ft3/min 130: ft3/h 27: ft3/d 132: bbl/s 133: bbl/min 134: bbl/h 135: bbl/d 137: Impgal/s 18: Impgal/min 30: Impgal/h 31: Impgal/d 249: User unit		R/W(C2)
Net volume flow 2 user unit	ASCII			R/W(C2)
Net volume flow 2 bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Net volume flow 2 user unit conversion factor	Value		1/(m3/h)	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net corrected volume flow trim select	Enum	0: Inhibit 1: Enable		R/W(C2)
Net corrected volume flow trim offset	Evalue		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow trim gain	Value			R/W(C2)
Net corrected volume flow damping	Value		s	R/W(C2)
Net corrected volume flow damping pulse/total	Value		s	R/W(C2)
Net corrected volume flow lowcut	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow LRV	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow URV	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow low alarm	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow high alarm	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow low low alarm	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow high high alarm	Value		[Net corrected volume flow unit]	R/W(C2)
Net corrected volume flow unit	Enum	180: SL/s 179: SL/min 178: SL/h 177: SL/d 186: Sft3/s 123: Sft3/min 185: Sft3/h 184: Sft3/d 190: Sm3/s 189: Sm3/min 188: Sm3/h 187: Sm3/d 240: MMSft3/h 241: MMSft3/d 249: User unit		R/W(C2)
Net corrected volume flow user unit	ASCII			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net corrected volume flow bi-directional mode	Enum	0: Not active 1: Active		R/W(C2)
Net corrected volume flow user unit conversion factor	Value		1/(Sm3/h)	R/W(C2)
Flow direction	Enum	0: Forward 1: Reverse		R/W(C1)
Total density hysteresis	Value		%	R/W(C2)
Alarm hysteresis	Value		%	R/W(C1)
Total 1 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C1)
Total 1 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Total 1 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold 5: Density (Balanced) 6: Density (Absolute) 7: Density (Positive only) 8: Density (Negative only) 9: Density + Temperature (Balanced) 10: Density + Temperature (Absolute) 11: Density + Temperature (Positive only) 12: Density + Temperature (Negative only)		R/W(C2)
Total 1 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C1)
Total 1 set point	Value		[Total 1 unit]	R/W(C2)
Total 1 user unit	ASCII			R/W(C2)
Total 1 conversion factor	Value			R/W(C2)
Total 1 preset value	Value		[Total 1 unit]	R/W(C1)
Total 1 start/stop	Enum	0: Stop 1: Start		R/W(C1)
Total 1 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C1)
Total 1 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop 4: 24hours value update		R/W(C2)
Total 1 density lower value	Value		[Density unit]	R/W(C2)
Total 1 density upper value	Value		[Density unit]	R/W(C2)
Total 24hours value manual setting	Enum	0: Inhibit 1: Enable		R/W(C2)
Total 24hours value manual update	BitEnum	0x0001: Total 1 execute 0x0002: Total 2 execute 0x0004: Total 3 execute 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 2 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C1)
Total 2 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: klmpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C1)
Total 2 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold 5: Density (Balanced) 6: Density (Absolute) 7: Density (Positive only) 8: Density (Negative only) 9: Density + Temperature (Balanced) 10: Density + Temperature (Absolute) 11: Density + Temperature (Positive only) 12: Density + Temperature (Negative only)		R/W(C2)
Total 2 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C1)
Total 2 set point	Value		[Total 2 unit]	R/W(C2)
Total 2 user unit	ASCII			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 2 conversion factor	Value			R/W(C2)
Total 2 preset value	Value		[Total 2 unit]	R/W(C1)
Total 2 start/stop	Enum	0: Stop 1: Start		R/W(C1)
Total 2 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C1)
Total 2 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop 4: 24hours value update		R/W(C2)
Total 2 density lower value	Value		[Density unit]	R/W(C2)
Total 2 density upper value	Value		[Density unit]	R/W(C2)
Total 3 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C1)
Total 3 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Total 3 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold 5: Density (Balanced) 6: Density (Absolute) 7: Density (Positive only) 8: Density (Negative only) 9: Density + Temperature (Balanced) 10: Density + Temperature (Absolute) 11: Density + Temperature (Positive only) 12: Density + Temperature (Negative only)		R/W(C2)
Total 3 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C1)
Total 3 set point	Value		[Total 3 unit]	R/W(C2)
Total 3 user unit	ASCII			R/W(C2)
Total 3 conversion factor	Value			R/W(C2)
Total 3 preset value	Value		[Total 3 unit]	R/W(C1)
Total 3 start/stop	Enum	0: Stop 1: Start		R/W(C1)
Total 3 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C1)
Total 3 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop 4: 24hours value update		R/W(C2)
Total 3 density lower value	Value		[Density unit]	R/W(C2)
Total 3 density upper value	Value		[Density unit]	R/W(C2)
Total 4 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 4 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C2)
Total 4 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold		R/W(C2)
Total 4 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C2)
Total 4 set point	Value		[Total 4 unit]	R/W(C2)
Total 4 user unit	ASCII			R/W(C2)
Total 4 conversion factor	Value			R/W(C2)
Total 4 preset value	Value		[Total 4 unit]	R/W(C2)
Total 4 start/stop	Enum	0: Stop 1: Start		R/W(C2)
Total 4 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C2)
Total 4 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 5 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C2)
Total 5 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: klmpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C2)
Total 5 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold		R/W(C2)
Total 5 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C2)
Total 5 set point	Value		[Total 5 unit]	R/W(C2)
Total 5 user unit	ASCII			R/W(C2)
Total 5 conversion factor	Value			R/W(C2)
Total 5 preset value	Value		[Total 5 unit]	R/W(C2)
Total 5 start/stop	Enum	0: Stop 1: Start		R/W(C2)
Total 5 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 5 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop		R/W(C2)
Total 6 channel	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow 9: Off		R/W(C2)
Total 6 unit	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 164: MJ 165: Btu 249: User unit		R/W(C2)
Total 6 option	Enum	0: Balanced 1: Absolute 2: Positive only 3: Negative only 4: Hold		R/W(C2)
Total 6 failure option	Enum	0: Run 1: Hold 2: Last valid value		R/W(C2)
Total 6 set point	Value		[Total 6 unit]	R/W(C2)
Total 6 user unit	ASCII			R/W(C2)
Total 6 conversion factor	Value			R/W(C2)
Total 6 preset value	Value		[Total 6 unit]	R/W(C2)
Total 6 start/stop	Enum	0: Stop 1: Start		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Total 6 reset/preset	Enum	0: Not execute 1: Reset 2: Preset		R/W(C2)
Total 6 status input function	Enum	0: No function 1: Reset 2: Preset 3: Start/stop		R/W(C2)
Analog input function	Enum	0: None 1: Pressure compensation 2: Temperature compensation 3: Sensor pressure alarm 4: Calorific value 5: Viscosity delta pressure 6: Pressure compensation and NOC 7: Pressure NOC		R/W(C2)
Analog input failure option	Enum	0: Fixed value 1: Hold		R/W(C2)
Analog input low limit	Value		mA	R/W(C2)
Analog input high limit	Value		mA	R/W(C2)
NAMUR NE 43 option	Enum	0: Not NAMUR NE 43 1: NAMUR NE 43		R/W(C2)
Analog output 1 low limit	Value		mA	R/W(C1)
Analog output 1 high limit	Value		mA	R/W(C1)
Analog output 1 select	Enum	1: Mass flow 2: Density 3: Temperature 4: Pressure 5: Volume flow 6: Reference density 7: Relative density 8: Corrected volume flow 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Batch 16: Viscosity 17: Drive current		R/W(C1)
Analog output 1 alarm output	Enum	0: < 2.4 mA 1: 4 mA 2: > 21.6 mA 3: Measured value 4: Hold		R/W(C1)
Analog output 2 low limit	Value		mA	R/W(C1)
Analog output 2 high limit	Value		mA	R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Analog output 2 select	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Pressure 5: Volume flow 6: Reference density 7: Relative density 8: Corrected volume flow 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Batch 16: Viscosity 17: Drive current		R/W(C1)
Analog output 2 alarm output	Enum	0: < 2.4 mA 1: 4 mA 2: > 21.6 mA 3: Measured value 4: Hold		R/W(C1)
Pulse/Status output type	Enum	0: Single pulse 1: Double pulse		R/W(C1)
Pulse/Status output 1 mode	Enum	0: No function 1: Fixed pulse output 2: Frequency output 3: Status output		R/W(C1)
Pulse output 1 select	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow		R/W(C1)
Pulse output 1 flow direction	Enum	0: Forward 1: Reverse		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Pulse output 1 unit select	Enum	0: g/P 1: kg/P 2: t/P 40: ton(US)/P 41: ton(UK)/P 3: lb/P 4: P/g 5: P/kg 6: P/t 42: P/ton(US) 43: P/ton(UK) 7: P/lb 8: cm3/P 9: L/P 10: m3/P 11: gal/P 12: kgal/P 13: ft3/P 14: bbl/P 15: Impgal/P 16: kImpgal/P 17: P/cm3 18: P/L 19: P/m3 20: P/gal 21: P/kgal 22: P/ft3 23: P/bbl 24: P/Impgal 25: P/kImpgal 26: NL/P 27: Nm3/P 28: SL/P 29: Sft3/P 30: Sm3/P 31: P/NL 32: P/Nm3 33: P/SL 34: P/Sft3 35: P/Sm3 36: MJ/P 37: Btu/P 38: P/MJ 39: P/Btu		R/W(C1)
Pulse output 1 active mode	Enum	0: Off active 1: On active		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Pulse output 1 width	Enum	0: 0.05ms 1: 0.1ms 2: 0.5ms 3: 1ms 4: 5ms 5: 10ms 6: 20ms 7: 33ms 8: 50ms 9: 100ms 10: 200ms 11: 330ms 12: 500ms 13: 1000ms 14: 2000ms		R/W(C1)
Pulse output 1 alarm action	Enum	0: 0.0pulse 1: Measured value 2: Hold 3: User set value		R/W(C1)
Pulse output 1 rate	Value		[Pulse output 1 unit select]	R/W(C1)
Pulse output 1 user set alarm value	Value		PPS	R/W(C1)
Frequency output 1 select	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Concentration 9: Net mass flow 1 10: Net mass flow 2 11: Net volume flow 1 12: Net volume flow 2 13: Net corrected volume flow 14: Viscosity 15: Drive current		R/W(C1)
Frequency output 1 alarm action	Enum	0: 0.0Hz 1: Measured value 2: Hold 3: User set value		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Status output 1 function	Enum	0: Off 1: Flow direction 2: Total limit 1 3: Total limit 2 4: Total limit 3 5: Total limit 4 6: Total limit 5 7: Total limit 6 8: F category 9: S,C,M category 10: F + S,C,M category 11: Slug detection 12: Empty pipe 13: Corrosion detection 14: Mass flow high low alarm 15: Density high low alarm 16: Reference density high low alarm 17: Relative density high low alarm 18: Temperature high low alarm 19: Pressure high low alarm 20: Volume flow high low alarm 21: Corrected volume flow high low alarm 22: Concentration high low alarm 23: Net mass flow 1 high low alarm 24: Net mass flow 2 high low alarm 25: Net volume flow 1 high low alarm 26: Net volume flow 2 high low alarm 27: Net corrected volume flow high low alarm 28: Batch function 29: Viscosity high low alarm		R/W(C1)
Max frequency 1	Value		Hz	R/W(C1)
Min frequency 1	Value		Hz	R/W(C1)
Frequency output 1 user set alarm value	Value		Hz	R/W(C1)
Status output 1 active mode	Enum	0: Off active 1: On active		R/W(C2)
Pulse/Status output 2 active pulse mode	Enum	0: Normal 1: Magnetic counter		R/W(C2)
Pulse/Status output 2 mode	Enum	0: No function 1: Fixed pulse output 2: Frequency output 3: Status output		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Pulse output 2 select	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Energy 4: Net mass flow 1 5: Net mass flow 2 6: Net volume flow 1 7: Net volume flow 2 8: Net corrected volume flow		R/W(C1)
Pulse output 2 flow direction	Enum	0: Forward 1: Reverse		R/W(C2)
Pulse output 2 unit select	Enum	0: g/P 1: kg/P 2: t/P 40: ton(US)/P 41: ton(UK)/P 3: lb/P 4: P/g 5: P/kg 6: P/t 42: P/ton(US) 43: P/ton(UK) 7: P/lb 8: cm3/P 9: L/P 10: m3/P 11: gal/P 12: kgal/P 13: ft3/P 14: bbl/P 15: Impgal/P 16: kImpgal/P 17: P/cm3 18: P/L 19: P/m3 20: P/gal 21: P/kgal 22: P/ft3 23: P/bbl 24: P/Impgal 25: P/kImpgal 26: NL/P 27: Nm3/P 28: SL/P 29: Sft3/P 30: Sm3/P 31: P/NL 32: P/Nm3 33: P/SL 34: P/Sft3 35: P/Sm3 36: MJ/P 37: Btu/P 38: P/MJ 39: P/Btu		R/W(C1)
Pulse output 2 active mode	Enum	0: Off active 1: On active		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Pulse output 2 width	Enum	0: 0.05ms 1: 0.1ms 2: 0.5ms 3: 1ms 4: 5ms 5: 10ms 6: 20ms 7: 33ms 8: 50ms 9: 100ms 10: 200ms 11: 330ms 12: 500ms 13: 1000ms 14: 2000ms		R/W(C1)
Pulse output 2 alarm action	Enum	0: 0.0pulse 1: Measured value 2: Hold 3: User set value		R/W(C1)
Pulse output 2 rate	Value		[Pulse output 2 unit select]	R/W(C1)
Pulse output 2 user set alarm value	Value		PPS	R/W(C1)
Frequency output 2 select	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Concentration 9: Net mass flow 1 10: Net mass flow 2 11: Net volume flow 1 12: Net volume flow 2 13: Net corrected volume flow 14: Viscosity 15: Drive current		R/W(C1)
Frequency output 2 alarm action	Enum	0: 0.0Hz 1: Measured value 2: Hold 3: User set value		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Status output 2 function	Enum	0: Off 1: Flow direction 2: Total limit 1 3: Total limit 2 4: Total limit 3 5: Total limit 4 6: Total limit 5 7: Total limit 6 8: F category 9: S,C,M category 10: F + S,C,M category 11: Slug detection 12: Empty pipe 13: Corrosion detection 14: Mass flow high low alarm 15: Density high low alarm 16: Reference density high low alarm 17: Relative density high low alarm 18: Temperature high low alarm 19: Pressure high low alarm 20: Volume flow high low alarm 21: Corrected volume flow high low alarm 22: Concentration high low alarm 23: Net mass flow 1 high low alarm 24: Net mass flow 2 high low alarm 25: Net volume flow 1 high low alarm 26: Net volume flow 2 high low alarm 27: Net corrected volume flow high low alarm 28: Batch function 29: Viscosity high low alarm		R/W(C1)
Max Frequency 2	Value		Hz	R/W(C1)
Min Frequency 2	Value		Hz	R/W(C1)
Frequency output 2 user set alarm value	Value		Hz	R/W(C1)
Status output 2 active mode	Enum	0: Off active 1: On active		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Status output 3 function	Enum	0: Off 1: Flow direction 2: Total limit 1 3: Total limit 2 4: Total limit 3 5: Total limit 4 6: Total limit 5 7: Total limit 6 8: F category 9: S,C,M category 10: F + S,C,M category 11: Slug detection 12: Empty pipe 13: Corrosion detection 14: Mass flow high low alarm 15: Density high low alarm 16: Reference density high low alarm 17: Relative density high low alarm 18: Temperature high low alarm 19: Pressure high low alarm 20: Volume flow high low alarm 21: Corrected volume flow high low alarm 22: Concentration high low alarm 23: Net mass flow 1 high low alarm 24: Net mass flow 2 high low alarm 25: Net volume flow 1 high low alarm 26: Net volume flow 2 high low alarm 27: Net corrected volume flow high low alarm 28: Batch function 29: Viscosity high low alarm		R/W(C1)
Status output 3 active mode	Enum	0: Off active 1: On active		R/W(C2)
Double pulse phase shift mode	Enum	0: 0 deg 1: 180 deg 2: -90 deg 3: +90 deg 4: Quadrature		R/W(C1)
Double pulse rate	Evalue		[Pulse output 1 unit select]	R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Status input function	Enum	0: No function 1: Autozero 2: Total function 3: 0% signal lock 4: Clock synchronization 5: Confirm acknowledge 6: Concentration set select 7: Batch function 8: Start one TuHC as interrupt		R/W(C2)
Status input active mode	Enum	0: Open active 1: Short active		R/W(C2)
After slug mass flow	Enum	0: Measured value 1: Hold 2: Fixed value		R/W(C2)
After slug density	Enum	0: Measured value 1: Hold 2: Fixed value		R/W(C2)
After slug mass flow fixed value	Value		[Mass flow unit]	R/W(C2)
After slug density fixed value	Value		[Density unit]	R/W(C2)
Average start time	Value		s	R/W(C2)
Average end time	Value		s	R/W(C2)
After empty pipe	Enum	0: 0% 1: Measured value 2: Hold		R/W(C2)
Slug detection level	Value		mAp-p	R/W(C2)
Slug hysteresis	Value		%	R/W(C2)
Slug alarm delay	Value		s	R/W(C2)
Drive current damping	Value		s	R/W(C2)
Empty pipe criteria	Value		[Density unit]	R/W(C2)
Empty pipe alarm delay	Value		min	R/W(C2)
Corrosion criteria	Value		[Density unit]	R/W(C2)
Corrosion damping	Value		h	R/W(C2)
Tube leakage criteria	Value		[Pressure unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Language	Enum	0: English 1: French 2: German 3: Italian 4: Spanish 5: Portuguese 6: Russian 7: Kazakh 8: Chinese 9: Japanese 10: Polish		R/ W(C0)d
Display unit selection	Enum	0: Metric 1: US 2: UK 3: Russia 4: Japan		R/ W(C0)d
Display select 1	Enum	1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/ W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 2	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 3	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 4	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 5	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 6	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 7	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 8	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 9	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 10	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 11	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 12	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 13	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 14	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 15	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 16	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 17	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 18	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 19	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display select 20	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Pressure 9: Totalizer 1 10: Totalizer 2 11: Totalizer 3 12: Totalizer 4 13: Totalizer 5 14: Totalizer 6 15: Mass flow % graph 16: Volume flow % graph 17: Corrected volume flow % graph 18: Tag 19: Long tag 20: Velocity 21: Concentration 22: Net mass flow 1 23: Net mass flow 2 24: Net volume flow 1 25: Net volume flow 2 26: Net corrected volume flow 34: Viscosity 27: Drive current 28: 24hours totalizer 1 29: 24hours totalizer 2 30: 24hours totalizer 3 31: Gas void fraction 32: Mass flow dual 33: Density dual		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Batch display select 1	Enum	1: Batch quantity 2: Batch upwards value 3: Batch downwards value 4: Batch total quantity 5: Batch counter value 6: Batch select 7: Batch variable select 8: Compensation value 9: Internal close point 10: Internal close time 11: Batch time 12: Mass flow 13: Density 14: Temperature 15: Volume flow 16: Reference density 17: Corrected volume flow 18: Pressure 19: Tag 20: Long Tag 21: Net mass flow 1 22: Net mass flow 2 23: Net volume flow 1 24: Net volume flow 2 25: Net corrected volume flow		R/W(C0)d
Batch display select 2	Enum	0: None 1: Batch quantity 2: Batch upwards value 3: Batch downwards value 4: Batch total quantity 5: Batch counter value 6: Batch select 7: Batch variable select 8: Compensation value 9: Internal close point 10: Internal close time 11: Batch time 12: Mass flow 13: Density 14: Temperature 15: Volume flow 16: Reference density 17: Corrected volume flow 18: Pressure 19: Tag 20: Long Tag 21: Net mass flow 1 22: Net mass flow 2 23: Net volume flow 1 24: Net volume flow 2 25: Net corrected volume flow		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Batch display select 3	Enum	0: None 1: Batch quantity 2: Batch upwards value 3: Batch downwards value 4: Batch total quantity 5: Batch counter value 6: Batch select 7: Batch variable select 8: Compensation value 9: Internal close point 10: Internal close time 11: Batch time 12: Mass flow 13: Density 14: Temperature 15: Volume flow 16: Reference density 17: Corrected volume flow 18: Pressure 19: Tag 20: Long Tag 21: Net mass flow 1 22: Net mass flow 2 23: Net volume flow 1 24: Net volume flow 2 25: Net corrected volume flow		R/ W(C0)d
Batch display select 4	Enum	0: None 1: Batch quantity 2: Batch upwards value 3: Batch downwards value 4: Batch total quantity 5: Batch counter value 6: Batch select 7: Batch variable select 8: Compensation value 9: Internal close point 10: Internal close time 11: Batch time 12: Mass flow 13: Density 14: Temperature 15: Volume flow 16: Reference density 17: Corrected volume flow 18: Pressure 19: Tag 20: Long Tag 21: Net mass flow 1 22: Net mass flow 2 23: Net volume flow 1 24: Net volume flow 2 25: Net corrected volume flow		R/ W(C0)d
Display damping	Value		s	R/ W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display contrast	Enum	0: -5 1: -4 2: -3 3: -2 4: -1 5: 0 6: 1 7: 2 8: 3 9: 4 10: 5		R/ W(C0)d
Display period	Enum	0: 0.2s 1: 0.4s 2: 1.0s 3: 2.0s 4: 4.0s 5: 8.0s		R/ W(C0)d
Display format date	Enum	0: MM/DD/YYYY 1: DD/MM/YYYY 2: YYYY/MM/DD		R/ W(C0)d
Display line	Enum	0: 1line (big) 1: 1line 2: 2line 3: 3line 4: 4line		R/ W(C0)d
Display scroll	Enum	0: Off 1: Manual 2: Auto (2.0s) 3: Auto (4.0s) 4: Auto (8.0s)		R/ W(C0)d
Display measurement mode	Enum	0: Normal 1: Trend online 2: Batch control		R/ W(C2)
Display alarm	Enum	0: Normal 1: Detail		R/ W(C0)d
Display NE 107	Enum	0: Normal 1: NE 107		R/ W(C0)d
Display total health result	Enum	0: Off 1: On		R/ W(C0)d
LCD test	Enum	0: Not execute 1: Execute 2: Show pattern 1 3: Show pattern 2 4: Show pattern 3 5: Show pattern 4		R/ W(C0)
Squawk	Enum	0: Off 1: On 2: Squawk once		R/ W(C0)
IRSW operation	Enum	0: Inhibit 1: Enable		R/ W(C0)d
Display rotation	Enum	0: Normal 1: Reverse		R/ W(C0)d
Display inversion	Enum	0: Normal 1: Invert		R/ W(C0)d
Trend offline LRV	Value			R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Trend offline URV	Value			R/ W(C2)
Display unit mass flow dual	Enum	70: g/s 71: g/min 72: g/h 73: kg/s 74: kg/min 75: kg/h 76: kg/d 77: t/min 78: t/h 79: t/d 84: ton(US)/min 85: ton(US)/h 86: ton(US)/d 240: ton(UK)/min 87: ton(UK)/h 88: ton(UK)/d 80: lb/s 81: lb/min 82: lb/h 83: lb/d 249: User unit		R/ W(C0)d
Display unit density dual	Enum	95: g/mL 96: kg/L 244: kg/cm3 245: kg/dm3 92: kg/m3 93: lb/gal 94: lb/ft3 91: g/cm3 246: g/cc 97: g/L 249: User unit		R/ W(C0)d
Display format mass flow	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/ W(C0)d
Display format density	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/ W(C0)d
Display format temperature	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/ W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display format pressure	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format volume flow	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format reference density	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format relative density	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format corrected volume flow	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format concentration	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format net mass flow 1	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format net mass flow 2	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display format net volume flow 1	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format net volume flow 2	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format net corrected volume flow	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format viscosity	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/W(C0)d
Display format total 1	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/W(C0)d
Display format total 2	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/W(C0)d
Display format total 3	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/W(C0)d

Parameter	Data Form	Data Range	Unit	R/W
Display format total 4	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/ W(C0)d
Display format total 5	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/ W(C0)d
Display format total 6	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit 7: 6digit 8: 7digit		R/ W(C0)d
Display format batch	Enum	0: Auto 1: 0digit 2: 1digit 3: 2digit 4: 3digit 5: 4digit 6: 5digit		R/ W(C0)d
SI option	Enum	0: Off 1: On		R
Auto proving setting	Enum	0: Not execute 1: Execute 2: Restore		R/ W(C1)
Viscosity trim select	Enum	0: Inhibit 1: Enable		R/ W(C2)
Viscosity trim offset	Evalue		[Viscosity unit]	R/ W(C2)
Viscosity trim gain	Value			R/ W(C2)
Viscosity damping	Value		s	R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Viscosity unit	Enum	240: mPas 170: Pas 55: cP 241: Ns/m2 242: kg/ms 234: User unit (dynamic) 54: cSt 235: St 237: mm2/s 236: cm2/s 238: dm2/s 239: m2/s 249: User unit (kinematic)		R/W(C2)
Viscosity user unit dynamic	ASCII			R/W(C2)
Viscosity user unit kinematic	ASCII			R/W(C2)
Viscosity user unit dynamic conversion factor	Value		1/mPas	R/W(C2)
Viscosity user unit kinematic conversion factor	Value		1/cSt	R/W(C2)
Viscosity LRV	Value		[Viscosity unit]	R/W(C2)
Viscosity URV	Value		[Viscosity unit]	R/W(C2)
Viscosity low alarm	Value		[Viscosity unit]	R/W(C2)
Viscosity high alarm	Value		[Viscosity unit]	R/W(C2)
Viscosity low low alarm	Value		[Viscosity unit]	R/W(C2)
Viscosity high high alarm	Value		[Viscosity unit]	R/W(C2)
Device behavior temperature alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior indicator alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior slug detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior empty pipe detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior corrosion detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior autozero alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior batch alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Device behavior analog input alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior mass flow high high low low alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior density high high low low alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior temperature high high low low alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior pressure high high low low alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior total 1 threshold exceed	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior mass flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior density configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior temperature configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior pressure configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior volume flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior reference density configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior relative density configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior corrected volume flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior calorific value configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior concentration configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior net mass flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior net volume flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Device behavior net corrected volume flow configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior viscosity configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior analog output 1 configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior analog output 2 configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior pulse/status output 1 configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior pulse/status output 2 configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior double pulse configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior status output 3 configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior status input configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior analog input configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior total configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior batch configuration error	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Device behavior maintenance mode	Enum	0: Hold 1: Continue		R/W(C2)
Device behavior batch warning	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Acknowledge behavior slug detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Acknowledge behavior empty pipe detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Acknowledge behavior corrosion detection	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)
Acknowledge behavior batch alarm	Enum	0: Software burn out 1: Alarm output 2: Continue		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Acknowledge behavior analog output 1 saturated	Enum	0: Software burn out 1: Alarm output 2: Continue		R/ W(C2)
Acknowledge behavior analog output 2 saturated	Enum	0: Software burn out 1: Alarm output 2: Continue		R/ W(C2)
Acknowledge behavior pulse status output 1 saturated	Enum	0: Software burn out 1: Alarm output 2: Continue		R/ W(C2)
Acknowledge behavior pulse status output 2 saturated	Enum	0: Software burn out 1: Alarm output 2: Continue		R/ W(C2)
Acknowledge behavior double pulse out saturated	Enum	0: Software burn out 1: Alarm output 2: Continue		R/ W(C2)
Event setting slug detection	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting empty pipe detection	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting corrosion detection	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting batch alarm	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting density fixed	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting temperature fixed	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting pressure fixed	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Event setting reference density fixed	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting calorific value fixed	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting process variables trim	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting analog output 1 saturated	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting analog output 2 saturated	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting pulse status output 1 saturated	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting pulse status output 2 saturated	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting double pulse output saturated	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)
Event setting date/time not set	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Event setting device configuration locked	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Event setting device configuration not locked	Enum	0: Ignore 1: History only 2: Generate 3: Acknowledge 4: Monitor 5: Monitor + Acknowledge		R/ W(C2)
Batch mode	Enum	0: No 1: Yes		R/ W(C1)
Batch select	Enum	0: Batch 1 1: Batch 2 2: Batch 3 3: Batch 4 4: Batch 5		R/ W(C1)
Batch start/stop	Enum	0: Stop 1: Start 2: Hold 3: Resume		R/ W(C1)
Batch reset	Enum	0: No 1: Reset		R/ W(C1)
Batch up down select	Enum	0: Batch upwards value 1: Batch downwards value		R/ W(C2)
Batch status input	Enum	0: No function 1: Batch start/stop 2: Batch hold/resume 3: Batch reset		R/ W(C2)
Batch status output 1	Enum	0: No function 1: Primary valve control 2: Secondary valve control 3: Batch running 4: Batch ended		R/ W(C1)
Batch status output 2	Enum	0: No function 1: Primary valve control 2: Secondary valve control 3: Batch running 4: Batch ended		R/ W(C2)
Batch status output 3	Enum	0: No function 1: Primary valve control 2: Secondary valve control 3: Batch running 4: Batch ended		R/ W(C2)
Batch type select 1	Enum	0: 1 stage batch 1: 2 stage batch		R/ W(C2)
Batch variable select 1	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Net mass flow 1 4: Net mass flow 2 5: Net volume flow 1 6: Net volume flow 2 7: Net corrected volume flow		R/ W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Batch unit 1	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 249: User unit		R/W(C1)
Batch quantity 1	Value		[Batch unit 1]	R/W(C1)
Batch primary valve open 1	Value		[Batch unit 1]	R/W(C2)
Batch secondary valve open 1	Value		[Batch unit 1]	R/W(C2)
Batch secondary valve close 1	Value		[Batch unit 1]	R/W(C2)
Max batch time 1	Value		s	R/W(C2)
Max batch flow 1	Value			R/W(C2)
Batch user unit 1	ASCII			R/W(C2)
Batch user unit conversion factor 1	Value			R/W(C2)
Batch end judgment value 1	Value			R/W(C1)
Fixed compensation value 1	Value		[Batch unit 1]	R/W(C1)
Compensation mode select 1	Enum	0: Off 1: Mode 1 2: Mode 2 3: Mode 3		R/W(C2)
Calculation mode sel 1	Enum	0: All 1: Select		R/W(C2)
Averaging data number 1	Value			R/W(C2)
Auto compensation 1	Enum	0: No 1: Yes		R/W(C2)
Leakage hysteresis time 1	Value		s	R/W(C2)
Max leakage time 1	Value		s	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Min batch quantity 1	Value		[Batch unit 1]	R/W(C2)
Max batch quantity 1	Value		[Batch unit 1]	R/W(C1)
Progress indication 1	Value		[Batch unit 1]	R/W(C2)
Batch type select 2	Enum	0: 1 stage batch 1: 2 stage batch		R/W(C2)
Batch variable select 2	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Net mass flow 1 4: Net mass flow 2 5: Net volume flow 1 6: Net volume flow 2 7: Net corrected volume flow		R/W(C1)
Batch unit 2	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 249: User unit		R/W(C1)
Batch quantity 2	Value		[Batch unit 2]	R/W(C1)
Batch primary valve open 2	Value		[Batch unit 2]	R/W(C2)
Batch secondary valve open 2	Value		[Batch unit 2]	R/W(C2)
Batch secondary valve close 2	Value		[Batch unit 2]	R/W(C2)
Max batch time 2	Value		s	R/W(C2)
Max batch flow 2	Value			R/W(C2)
Batch user unit 2	ASCII			R/W(C2)
Batch user unit conversion factor 2	Value			R/W(C2)
Batch end judgment value 2	Value			R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Fixed compensation value 2	Value		[Batch unit 2]	R/W(C1)
Compensation mode select 2	Enum	0: Off 1: Mode 1 2: Mode 2 3: Mode 3		R/W(C2)
Calculation mode sel 2	Enum	0: All 1: Select		R/W(C2)
Averaging data number 2	Value			R/W(C2)
Auto compensation 2	Enum	0: No 1: Yes		R/W(C2)
Leakage hysteresis time 2	Value		s	R/W(C2)
Max leakage time 2	Value		s	R/W(C2)
Min batch quantity 2	Value		[Batch unit 2]	R/W(C2)
Max batch quantity 2	Value		[Batch unit 2]	R/W(C1)
Progress indication 2	Value		[Batch unit 2]	R/W(C2)
Batch type select 3	Enum	0: 1 stage batch 1: 2 stage batch		R/W(C2)
Batch variable select 3	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Net mass flow 1 4: Net mass flow 2 5: Net volume flow 1 6: Net volume flow 2 7: Net corrected volume flow		R/W(C1)
Batch unit 3	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 249: User unit		R/W(C1)
Batch quantity 3	Value		[Batch unit 3]	R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Batch primary valve open 3	Value		[Batch unit 3]	R/W(C2)
Batch secondary valve open 3	Value		[Batch unit 3]	R/W(C2)
Batch secondary valve close 3	Value		[Batch unit 3]	R/W(C2)
Max batch time 3	Value		s	R/W(C2)
Max batch flow 3	Value			R/W(C2)
Batch user unit 3	ASCII			R/W(C2)
Batch user unit conversion factor 3	Value			R/W(C2)
Batch end judgment value 3	Value			R/W(C1)
Fixed compensation value 3	Value		[Batch unit 3]	R/W(C1)
Compensation mode select 3	Enum	0: Off 1: Mode 1 2: Mode 2 3: Mode 3		R/W(C2)
Calculation mode sel 3	Enum	0: All 1: Select		R/W(C2)
Averaging data number 3	Value			R/W(C2)
Auto compensation 3	Enum	0: No 1: Yes		R/W(C2)
Leakage hysteresis time 3	Value		s	R/W(C2)
Max leakage time 3	Value		s	R/W(C2)
Min batch quantity 3	Value		[Batch unit 3]	R/W(C2)
Max batch quantity 3	Value		[Batch unit 3]	R/W(C1)
Progress indication 3	Value		[Batch unit 3]	R/W(C2)
Batch type select 4	Enum	0: 1 stage batch 1: 2 stage batch		R/W(C2)
Batch variable select 4	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Net mass flow 1 4: Net mass flow 2 5: Net volume flow 1 6: Net volume flow 2 7: Net corrected volume flow		R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Batch unit 4	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 249: User unit		R/W(C1)
Batch quantity 4	Value		[Batch unit 4]	R/W(C1)
Batch primary valve open 4	Value		[Batch unit 4]	R/W(C2)
Batch secondary valve open 4	Value		[Batch unit 4]	R/W(C2)
Batch secondary valve close 4	Value		[Batch unit 4]	R/W(C2)
Max batch time 4	Value		s	R/W(C2)
Max batch flow 4	Value			R/W(C2)
Batch user unit 4	ASCII			R/W(C2)
Batch user unit conversion factor 4	Value			R/W(C2)
Batch end judgment value 4	Value			R/W(C1)
Fixed compensation value 4	Value		[Batch unit 4]	R/W(C1)
Compensation mode select 4	Enum	0: Off 1: Mode 1 2: Mode 2 3: Mode 3		R/W(C2)
Calculation mode sel 4	Enum	0: All 1: Select		R/W(C2)
Averaging data number 4	Value			R/W(C2)
Auto compensation 4	Enum	0: No 1: Yes		R/W(C2)
Leakage hysteresis time 4	Value		s	R/W(C2)
Max leakage time 4	Value		s	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Min batch quantity 4	Value		[Batch unit 4]	R/W(C2)
Max batch quantity 4	Value		[Batch unit 4]	R/W(C1)
Progress indication 4	Value		[Batch unit 4]	R/W(C2)
Batch type select 5	Enum	0: 1 stage batch 1: 2 stage batch		R/W(C2)
Batch variable select 5	Enum	0: Mass flow 1: Volume flow 2: Corrected volume flow 3: Net mass flow 1 4: Net mass flow 2 5: Net volume flow 1 6: Net volume flow 2 7: Net corrected volume flow		R/W(C1)
Batch unit 5	Enum	60: g 61: kg 62: t 64: ton(US) 65: ton(UK) 63: lb 240: cm3 41: L 43: m3 40: gal 241: kgal 112: ft3 46: bbl 42: Impgal 242: kImpgal 167: NL 166: Nm3 171: SL 168: Sft3 243: MMSft3 172: Sm3 249: User unit		R/W(C1)
Batch quantity 5	Value		[Batch unit 5]	R/W(C1)
Batch primary valve open 5	Value		[Batch unit 5]	R/W(C2)
Batch secondary valve open 5	Value		[Batch unit 5]	R/W(C2)
Batch secondary valve close 5	Value		[Batch unit 5]	R/W(C2)
Max batch time 5	Value		s	R/W(C2)
Max batch flow 5	Value			R/W(C2)
Batch user unit 5	ASCII			R/W(C2)
Batch user unit conversion factor 5	Value			R/W(C2)
Batch end judgment value 5	Value			R/W(C1)

Parameter	Data Form	Data Range	Unit	R/W
Fixed compensation value 5	Value		[Batch unit 5]	R/W(C1)
Compensation mode select 5	Enum	0: Off 1: Mode 1 2: Mode 2 3: Mode 3		R/W(C2)
Calculation mode sel 5	Enum	0: All 1: Select		R/W(C2)
Averaging data number 5	Value			R/W(C2)
Auto compensation 5	Enum	0: No 1: Yes		R/W(C2)
Leakage hysteresis time 5	Value		s	R/W(C2)
Max leakage time 5	Value		s	R/W(C2)
Min batch quantity 5	Value		[Batch unit 5]	R/W(C2)
Max batch quantity 5	Value		[Batch unit 5]	R/W(C1)
Progress indication 5	Value		[Batch unit 5]	R/W(C2)
Event acknowledge	Enum	0: Unacknowledged 1: Acknowledged		R/W(C0)
Event file name	ASCII			R/W(C2)
Monitor file name	ASCII			R/W(C2)
User role	Enum	0: None 1: Operator 2: Maintenance 3: Specialist 4: Service 5: Factory		R/W(C0)
Maintenance code	Value			R/W(C0)
Specialist code	Value			R/W(C0)
Change maintenance code	Value			R/W(C1)
Change specialist code	Value			R/W(C2)
Write lock setting	Enum	0: All locked 1: Display only 2: Autozero only 3: Display + Autozero		R/W(C2)
SIL mode	Value			R/W(C2)
Clear event history	Enum	0: Not execute 1: Execute		R/W(C2)
Process variables additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Totalizer additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)

Parameter	Data Form	Data Range	Unit	R/W
Display additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Alarm/Event additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Alarm/Event history additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
HART burst/event parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Double pulse additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Standard diagnostics additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Tube health check additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Batch additional parameters	Enum	0: Not apply 1: Apply		R/W(C0)
Logging file name	ASCII			R/W(C2)
Logging interval time	Enum	0: 1s 1: 10s 2: 30s 3: 1min 4: 5min 5: 30min 6: 60min		R/W(C2)
Logging 1 select	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Pressure 6: Concentration 7: Net mass flow 1 8: Net volume flow 1 16: Viscosity 9: Phase difference 10: Resonance frequency 11: Drive gain 12: Drive current 15: Transmitter temperature		R/W(C2)
Logging execute	Enum	0: Not execute 1: Execute 2: Execute with monitor event		R/W(C2)
Logging start date	Date			R/W(C2)
Logging end time	Enum	0: 10min 1: 30min 2: 60min 3: 3hour 4: 12hour 5: 24hour 6: 72hour 7: 240hour 8: 720hour		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Logging 2 select	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Pressure 6: Concentration 7: Net mass flow 1 8: Net volume flow 1 16: Viscosity 9: Phase difference 10: Resonance frequency 11: Drive gain 12: Drive current 15: Transmitter temperature		R/W(C2)
Logging 3 select	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Pressure 6: Concentration 7: Net mass flow 1 8: Net volume flow 1 16: Viscosity 9: Phase difference 10: Resonance frequency 11: Drive gain 12: Drive current 15: Transmitter temperature		R/W(C2)
Logging 4 select	Enum	0: None 1: Mass flow 2: Density 3: Temperature 4: Volume flow 5: Pressure 6: Concentration 7: Net mass flow 1 8: Net volume flow 1 16: Viscosity 9: Phase difference 10: Resonance frequency 11: Drive gain 12: Drive current 15: Transmitter temperature		R/W(C2)
Drive current URV	Value		mAp-p	R/W(C2)
Drive current LRV	Value		mAp-p	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Process variables simulation select 1	BitEnum	0x0001: Mass flow 0x0002: Density 0x0004: Temperature 0x0008: Pressure 0x0010: Calorific value 0x0020: Volume flow 0x0040: Reference density 0x0080: Relative density 0x0100: Corrected volume flow 0x0200: Reserved 0x0400: Reserved 0x0800: Reserved 0x1000: Reserved 0x2000: Reserved 0x4000: Reserved 0x8000: Reserved		R/W(C1)
Process variables simulation select 2	BitEnum	0x0001: Concentration 0x0002: Net mass flow 1 0x0004: Net mass flow 2 0x0008: Net volume flow 1 0x0010: Net volume flow 2 0x0020: Net corrected volume flow 0x0040: Viscosity 0x0080: Reserved 0x0100: Reserved 0x0200: Reserved 0x0400: Reserved 0x0800: Reserved 0x1000: Reserved 0x2000: Reserved 0x4000: Reserved 0x8000: Reserved		R/W(C1)
Mass flow simulation value	Value		[Mass flow unit]	R/W(C1)
Density simulation value	Value		[Density unit]	R/W(C1)
Temperature simulation value	Value		[Temperature unit]	R/W(C1)
Pressure simulation value	Value		[Pressure unit]	R/W(C2)
Calorific simulation value	Value		[Calorific unit]	R/W(C2)
Volume flow simulation value	Value		[Volume flow unit]	R/W(C1)
Reference density simulation value	Value		[Density unit]	R/W(C2)
Relative density simulation value	Value			R/W(C2)
Corrected volume flow simulation value	Value		[Corrected volume flow unit]	R/W(C2)
Concentration simulation value	Value			R/W(C2)
Net mass flow 1 simulation value	Value		[Net mass flow 1 unit]	R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Net mass flow 2 simulation value	Value		[Net mass flow 2 unit]	R/W(C2)
Net volume flow 1 simulation value	Value		[Net volume flow 1 unit]	R/W(C2)
Net volume flow 2 simulation value	Value		[Net volume flow 2 unit]	R/W(C2)
Net corrected volume flow simulation value	Value		[Net corrected volume flow unit]	R/W(C2)
Viscosity simulation value	Value		[Viscosity unit]	R/W(C2)
Clear D/A trim 1	Enum	0: Not execute 1: Execute		R/W(C1)
Clear D/A trim 2	Enum	0: Not execute 1: Execute		R/W(C1)
Clear AI trim	Enum	0: Not execute 1: Execute		R/W(C1)
Clear autozero	Enum	0: Not execute 1: Execute		R/W(C0)a
Complete device serial number	ASCII			R
Transmitter spare serial number	ASCII			R
Sensor spare serial number	ASCII			R
Extra number 1	ASCII			R
Extra number 2	ASCII			R
Release date	Date			R
Hardware revision	ASCII			R
Device ID	Value			R
Memo 1	ASCII			R/W(C1)
Memo 2	ASCII			R/W(C1)
Memo 3	ASCII			R/W(C1)
Tag	Packed ASCII			R/W(C2)
Polling address	Value			R/W(C2)
Loop current mode	Enum	0: Disable 1: Enable		R/W(C2)
Number response preambles	Value			R/W(C2)
Device reset	Enum	0: Not execute 1: Execute		R/W(C2)
Long tag	Latin-1			R/W(C2)
Reset NE 107 map	Enum	0: Not execute 1: Execute		R/W(C2)
Velocity unit	Enum	21: m/s 20: ft/s		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Max permissible temperature	Value		degC	R
Max permissible pressure	Value		bar	R
Last calibration date 1	Date			R/ W(C1)
Last calibration date 2	Date			R/ W(C1)
Last calibration date 3	Date			R/ W(C1)
Last calibration date 4	Date			R/ W(C1)
Last calibration date 5	Date			R/ W(C1)
Next calibration date	Date			R/ W(C1)
Last calibration information 1	ASCII			R/ W(C1)
Last calibration information 2	ASCII			R/ W(C1)
Last calibration information 3	ASCII			R/ W(C1)
Last calibration information 4	ASCII			R/ W(C1)
Last calibration information 5	ASCII			R/ W(C1)
Factory backup name	ASCII			R
Factory backup date	Date			R
Backup file name	ASCII			R/ W(C2)
User configuration backup name 1	ASCII			R/ W(C2)
User configuration backup date 1	Date			R/ W(C2)
User configuration backup name 2	ASCII			R/ W(C2)
User configuration backup date 2	Date			R/ W(C2)
User configuration backup name 3	ASCII			R/ W(C2)
User configuration backup date 3	Date			R/ W(C2)
User configuration backup	Enum	0: Not execute 1: Store to 1 2: Store to 2 3: Store to 3 4: Store to microSD 5: Store from 1 to microSD 6: Store from 2 to microSD 7: Store from 3 to microSD		R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Restoration	Enum	0: Not execute 1: Duplicate user configuration 1 2: Duplicate user configuration 2 3: Duplicate user configuration 3 4: Duplicate from microSD 5: Restore user configuration 1 6: Restore user configuration 2 7: Restore user configuration 3 8: Restore from microSD 9: Restore factory default 10: Download sensor constant from user configuration 1 11: Download sensor constant from microSD		R/W(C2)
Set current date	Date			R/W(C1)
Set current time	Time			R/W(C1)
Key code	Value			R/W(C0)
New password	ASCII			R/W(C1)
Enable write 10min	ASCII			R/W(C0)
TuHC enable	Enum	0: Not running 1: Start Tube Health Check 2: Take Reference 3: AGC Test 4: Copy current result to reference 5: Copy reference from shipment to test 6: Initialize result and flags 7: Initialize counter 8: Initialize coeff for FDG 9: Clear reference 10: Clear all history 11: Start one TuHC as interrupt		R/W(C2)
TuHC continue interval	Value		min	R/W(C2)
TuHC continue number	Value			R/W(C2)
TuHC stiffness change limit	Value		%	R/W(C2)
TuHC reference number copy from	Enum	0: Test 1: Air 2: Water		R/W(C2)
TuHC retry number	Value			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
TuHC retry interval	Value		min	R/W(C2)
TuHC setting retry	Enum	0: No retry 1: Retry when skip test 2: Retry when suspicious test 3: Retry by force		R/W(C2)
TuHC magnet temperature selection	Enum	0: Use temperature on sensor 1: Compensate with fixed temperature 2: Compensate with indicator temperature 3: Compensate with transmitter temperature		R/W(C2)
TuHC fixed temperature	Value		degC	R/W(C2)
TuHC temperature ratio for magnet 1	Value			R/W(C2)
TuHC temperature ratio for magnet 2	Value			R/W(C2)
TuHC date at reference 1	Date			R
TuHC time at reference 1	Time			R
TuHC operation time at reference 1	Value		min	R
TuHC temperature at reference 1	Value		degC	R
TuHC mass flow at reference 1	Value		kg/h	R
TuHC density at reference 1	Value		kg/L	R
PV	Value		[PV units]	R
PV % range	Value		%	R
SV	Value		[SV units]	R
TV	Value		[TV units]	R
QV	Value		[QV units]	R
PV is	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 23: Batch 24: Drive current		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
SV is	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 25: TuHC change ratio of inlet stiffness 26: TuHC change ratio of outlet stiffness		R/W(C2)
TV is	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 25: TuHC change ratio of inlet stiffness 26: TuHC change ratio of outlet stiffness		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
QV is	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 25: TuHC change ratio of inlet stiffness 26: TuHC change ratio of outlet stiffness		R/ W(C2)
PV data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
PV limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
SV data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
SV limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
TV data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
TV limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
QV data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R

Parameter	Data Form	Data Range	Unit	R/W
QV limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Velocity data quality	Enum	0: Bad 64: Poor accuracy 128: Manual / Fixed 255: Good		R
Velocity limit status	Enum	0: Not limited 16: Low limited 32: High limited 48: Constant		R
Device status	BitEnum	0x01: Primary Variable Out of Limits 0x02: Non-Primary Variable Out of Limits 0x04: Loop Current Saturated 0x08: Loop Current Fixed 0x10: More Status Available 0x20: Cold Start 0x40: Configuration Changed 0x80: Device Malfunction		R
Ext dev status	BitEnum	0x01: Maintenance required 0x02: Device variable alert 0x04: Critical Power Failure 0x08: Failure 0x10: Out of Specification 0x20: Function Check		R
Device Diagnostic Status 0	BitEnum	0x01: Simulation active 0x02: Non-Volatile memory error 0x04: Volatile memory error 0x08: Watchdog reset executed 0x10: Voltage conditions out of range 0x20: Environmental conditions out of range 0x40: Electronic Failure 0x80: Device Configuration Locked		R
Device Diagnostic Status 1	BitEnum	0x01: Status Simulation Active 0x02: Discrete Variable Simulation Active 0x04: Event Notification Overflow		R
AO saturated	BitEnum	0x01: Secondary Analog Channel Saturated 0x02: Tertiary Analog Channel Saturated 0x04: Quaternary Analog Channel Saturated 0x08: Quinary Analog Channel Saturated		R

Parameter	Data Form	Data Range	Unit	R/W
I/O and Subdevice Status	BitEnum	0x01: Sub-Device List Changed. 0x02: Duplicate Master Detected. 0x04: Sub-Device Mismatch. 0x08: Sub-Devices with Duplicate IDs Found. 0x10: Stale Data Notice.		R
WirelessHART Status	BitEnum	0x01: Capacity Denied 0x04: Bandwidth Allocation Pending 0x08: Block Transfer Pending 0x10: Radio Failure		R
AO fixed	BitEnum	0x01: Secondary Analog Channel Fixed 0x02: Tertiary Analog Channel Fixed 0x04: Quaternary Analog Channel Fixed 0x08: Quinary Analog Channel Fixed		R
Primary Variable Out of Limits.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Non-Primary Variable Out of Limits.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Loop Current Saturated.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Loop Current Fixed.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
More Status Available.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Cold Start.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Configuration Changed.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Device Malfunction.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
101:Resonance frequency failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
102:Signal failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
103,4:Pick off 1 failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
105,6:Pick off 2 failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
107,8:Temperature failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
109:Tube leakage detection	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
121,22:Main board failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
123:Parameter restore incomplete	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
124,25:Sensor board failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
126:Sensor communication error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
127-29:Option board failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
130-32:Indicator board failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
133:Indicator board mismatch	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
134:Indicator communication error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
135:microSD failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
201:Slug detection	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
202:Empty pipe detection	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
203:Corrosion detection	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
204-06:Autozero failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
207-09:Batch failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
210-12:NOC failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
221:Analog input failure	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
222:Mass flow high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
223:Density high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
224:Temperature high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
225:Pressure high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
226:Volume flow high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
227:Corrected volume flow high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
228:Concentration high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
229:Net mass flow 1 high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
230:Net mass flow 2 high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
231:Net volume flow 1 high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
232:Net volume flow 2 high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
233:Corrected net volume flow high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
234:Relative density high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
235:Reference density high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
236:Viscosity high high low low alarm	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Maintenance Required.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Device Variable Alert.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Critical Power Failure.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Failure.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Out of Specification.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Function Check.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Device Variable Simulation Active.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Non-Volatile Memory Defect.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Volatile Memory Defect.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Watchdog Reset Executed.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Power Supply Conditions Out of Range.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Environmental Conditions Out of Range.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Electronic Defect.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Device Configuration Locked.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Status Simulation Active.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Discrete Variable Simulation Active.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Event Notification Overflow.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Analog Channel 1.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 2.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 3.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 4.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Sub-Device List Changed.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Duplicate Master Detected.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Sub-Device Mismatch.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Sub-Devices with Duplicate IDs Found.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Stale Data Notice.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Capacity Denied.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Bandwidth allocation pending.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Block Transfer Pending.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Radio Failure.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 1.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 2.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 3.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Analog Channel 4.	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
241:Totalizer 1 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
242:Totalizer 2 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
243:Totalizer 3 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
244:Totalizer 4 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
245:Totalizer 5 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
246:Totalizer 6 threshold exceeded	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
301-20:Process variable configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
321:Analog output 1 configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
322:Analog output 2 configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
323-25:Pulse/Status output 1 configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
326-29:Pulse/Status output 2 configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
330:Double pulse output configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
331:Status output 3 configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
332:Status input configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
333:Analog input configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
335-40:Totalizer configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
341:Batch configuration error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
342:Data logging not started	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
343:Option function mismatch	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
701:Analog output 1 fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
702:Analog output 2 fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
703:Density fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
704:Temperature fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
705:Pressure fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
706:Reference density fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
707:Calorific value fixed	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
708:Process variable simulation	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
709:Analog output simulation	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
710:Pulse output simulation	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
711:Status output simulation	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
715:Process variable trimming	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
716:Analog output 1 saturated	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
717:Analog output 2 saturated	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
718:Pulse output 1 saturated	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
719:Pulse output 2 saturated	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
720:Double pulse output saturated	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
721:Autozero running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
722:Tube Health Check execution error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
723:Date/Time not set	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
724:Display over warning	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
725:microSD card size warning	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
726:microSD card mismatch	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
728:microSD card removal procedure error	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
729:Parameter backup incomplete	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
730:Parameter restore running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
732:Batch progress indication	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
733,34:Viscosity warning	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
735:Autozero warning	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
901:Device configuration locked	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
902:Device configuration not locked	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
903:Parameter backup running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
904:Data logging running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
905:Tube Health Check running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
906:Batch running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
907:Batch hold	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
908:SIL mode active	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
909:Maintenance mode running	Enum	0: No Effect. 1: Maintenance Required (M) 3: Failure (F) 4: Out of Specification (S) 5: Function Check (C)		R/W(C2)
Device status	BitEnum	0x01: Primary Variable Out of Limits 0x02: Non-Primary Variable Out of Limits 0x04: Loop Current Saturated 0x08: Loop Current Fixed 0x10: More Status Available 0x20: Cold Start 0x40: Configuration Changed 0x80: Device Malfunction		R/W(C2)
Ext dev status	BitEnum	0x01: Maintenance required 0x02: Device variable alert 0x04: Critical Power Failure 0x08: Failure 0x10: Out of Specification 0x20: Function Check		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Device Diagnostic Status 0	BitEnum	0x01: Simulation active 0x02: Non-Volatile memory error 0x04: Volatile memory error 0x08: Watchdog reset executed 0x10: Voltage conditions out of range 0x20: Environmental conditions out of range 0x40: Electronic Failure 0x80: Device Configuration Locked		R/W(C2)
Device Diagnostic Status 1	BitEnum	0x01: Status Simulation Active 0x02: Discrete Variable Simulation Active 0x04: Event Notification Overflow		R/W(C2)
AO saturated	BitEnum	0x01: Secondary Analog Channel Saturated 0x02: Tertiary Analog Channel Saturated 0x04: Quaternary Analog Channel Saturated 0x08: Quinary Analog Channel Saturated		R/W(C2)
I/O and Subdevice Status	BitEnum	0x01: Sub-Device List Changed. 0x02: Duplicate Master Detected. 0x04: Sub-Device Mismatch. 0x08: Sub-Devices with Duplicate IDs Found. 0x10: Stale Data Notice.		R/W(C2)
WirelessHART Status	BitEnum	0x01: Capacity Denied 0x04: Bandwidth Allocation Pending 0x08: Block Transfer Pending 0x10: Radio Failure		R/W(C2)
AO fixed	BitEnum	0x01: Secondary Analog Channel Fixed 0x02: Tertiary Analog Channel Fixed 0x04: Quaternary Analog Channel Fixed 0x08: Quinary Analog Channel Fixed		R/W(C2)
Num resp preams	Value			R/W(C2)
Manufacturer	Enum	0x37: Siemens		R
Model	Enum	0x3760: SITRANS FC		R
Date	Date			R/W(C2)
Descriptor	Packed ASCII			R/W(C2)
Message	Packed ASCII			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Distributor	Enum	0x37: Siemens		R
Final assy number	Value			R/ W(C2)
Max dev vars	Value			R
Device profile	Enum	1: Process automation device		R
Universal rev	Value			R
Fld dev rev	Value			R
Software rev	Value			R
Hardware rev	Value			R
BM0 Burst mode	Value	0: Off 1: Wired HART Enabled		R/ W(C2)
BM0 Burst command	Enum	0: PV 1: Loop Current and Percent Range 2: PV, SV, TV, QV 3: Device Variable 4: Device Variable with Status 5: Additional Device Status		R/ W(C2)
BM0 SLOT0	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM0 SLOT1	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM0 SLOT2	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM0 SLOT3	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)
BM1 Burst mode	Value	0: Off 1: Wired HART Enabled		R/W(C2)
BM1 Burst command	Enum	0: PV 1: Loop Current and Percent Range 2: PV, SV, TV, QV 3: Device Variable 4: Device Variable with Status 5: Additional Device Status		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT0	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT1	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT2	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT3	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT4	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT5	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT6	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 SLOT7	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/ W(C2)
BM1 Update period	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/ W(C2)
BM1 Max update peirod	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/ W(C2)
BM1 Burst trigger mode	Enum	0: Continuous 1: Window 2: Rising 3: Falling 4: On-change		R/ W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM1 Burst trigger class	Enum	64: Temperature 65: Pressure 66: Volumetric Flow 67: Velocity 68: Volume 71: Mass 72: Mass Flow 73: Mass Per Volume 74: Viscosity 77: Energy 84: Current 90: Concentration 0: Device Variable Not Classified		R/W(C2)
BM1 Burst trigger unit	Enum	* depend on process variables unit		R/W(C2)
BM1 Burst trigger level	Value		[BM1 Burst trigger unit]	R/W(C2)
BM2 Burst mode	Value	0: Off 1: Wired HART Enabled		R/W(C2)
BM2 Burst command	Enum	0: PV 1: Loop Current and Percent Range 2: PV, SV, TV, QV 3: Device Variable 4: Device Variable with Status 5: Additional Device Status		R/W(C2)
BM2 SLOT0	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT1	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT2	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT3	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT4	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT5	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT6	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 SLOT7	Enum	0: Mass flow 1: Density 2: Temperature 3: Pressure 4: Volume flow 5: Reference density 6: Relative density 7: Corrected volume flow 8: Calorific value 9: Concentration 10: Net mass flow 1 11: Net mass flow 2 12: Net volume flow 1 13: Net volume flow 2 14: Net corrected volume flow 15: Viscosity 16: Velocity 17: Totalizer 1 18: Totalizer 2 19: Totalizer 3 20: Totalizer 4 21: Totalizer 5 22: Totalizer 6 23: Batch 24: Drive current 244: Percent Range 245: Loop Current 246: PV 247: SV 248: TV 249: QV 250: Not used		R/W(C2)
BM2 Update period	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/W(C2)
BM2 Max update peirod	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/W(C2)
BM2 Burst trigger mode	Enum	0: Continuous 1: Window 2: Rising 3: Falling 4: On-change		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
BM2 Burst trigger class	Enum	64: Temperature 65: Pressure 66: Volumetric Flow 67: Velocity 68: Volume 71: Mass 72: Mass Flow 73: Mass Per Volume 74: Viscosity 77: Energy 84: Current 90: Concentration 0: Device Variable Not Classified		R/W(C2)
BM2 Burst trigger unit	Enum	* depend on process variables unit		R/W(C2)
BM2 Burst trigger level	Value		[BM1 Burst trigger unit]	R/W(C2)
Event notification control	Enum	0: Off 1: Enable event notification on token-passing data link layer		R/W(C2)
Event notification retry time	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/W(C2)
Max update time	Value	0.5 1 2 4 8 16 32 60-3600(Any value)		R/W(C2)
Event debounce interval	Value	0.5 1 2 4 8 16 32 60-3600(Any value) 0(No De-bounce)		R/W(C2)
Event Status	BitEnum	0x01: Configuration changed event pending 0x02: Device status event pending 0x04: More status available event pending		R/W(C2)
Time first unack event triggered	Time			R

Parameter	Data Form	Data Range	Unit	R/W
Device Status Mask	BitEnum	0x01: Primary Variable Out of Limits 0x02: Non-Primary Variable Out of Limits 0x04: Loop Current Saturated 0x08: Loop Current Fixed 0x10: More Status Available 0x20: Cold Start 0x40: Configuration Changed 0x80: Device Malfunction		R/W(C2)
Ext dev status Mask	BitEnum	0x01: Maintenance required 0x02: Device variable alert 0x04: Critical Power Failure 0x08: Failure 0x10: Out of Specification 0x20: Function Check		R/W(C2)
Device Diagnostic Status0 Mask	BitEnum	0x01: Simulation active 0x02: Non-Volatile memory error 0x04: Volatile memory error 0x08: Watchdog reset executed 0x10: Voltage conditions out of range 0x20: Environmental conditions out of range 0x40: Electronic Failure 0x80: Device Configuration Locked		R/W(C2)
Device Diagnostic Status1 Mask	BitEnum	0x01: Status Simulation Active 0x02: Discrete Variable Simulation Active 0x04: Event Notification Overflow		R/W(C2)
Status group 0 Mask	BitEnum	0x0001: 101:Resonance frequency failure 0x0002: 102:Signal failure 0x0004: 103,4:Pick off 1 failure 0x0008: 105,6:Pick off 2 failure 0x0010: 107,8:Temperature failure 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R/W(C2)
Status group 1 Mask	BitEnum	0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: 121,22:Main board failure		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Status group 2 Mask	BitEnum	0x0001: 123:Parameter restore incomplete 0x0002: 124,25:Sensor board failure 0x0004: 126:Sensor communication error 0x0008: 127-29:Option board failure 0x0010: 130-32:Indicator board failure 0x0020: 133:Indicator board mismatch 0x0040: 134:Indicator communication error 0x0080: 135:microSD failure		R/W(C2)
Status group 3 Mask	BitEnum	0x0001: 201:Slug detection 0x0002: 202:Empty pipe detection 0x0004: 203:Corrosion detection 0x0008: 204-06:Autozero failure 0x0010: 207-09:Batch failure 0x0020: 210-12:NOC failure 0x0040: Reserved 0x0080: Reserved		R/W(C2)
Status group 4 Mask	BitEnum	0x0001: 221:Analog input failure 0x0002: 222:Mass flow high high low low alarm 0x0004: 223:Density high high low low alarm 0x0008: 224:Temperature high high low low alarm 0x0010: 225:Pressure high high low low alarm 0x0020: 226:Volume flow high high low low alarm 0x0040: 227:Corrected volume flow high high low low alarm 0x0080: 228:Concentration high high low low alarm		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Status group 5 Mask	BitEnum	0x0001: 229:Net mass flow 1 high high low low alarm 0x0002: 230:Net mass flow 2 high high low low alarm 0x0004: 231:Net volume flow 1 high high low low alarm 0x0008: 232:Net volume flow 2 high high low low alarm 0x0010: 233:Net corrected volume flow high high low low alarm 0x0020: 234:Relative density high high low low alarm 0x0040: 235:Reference density high high low low alarm 0x0080: 236:Viscosity high high low low alarm		R/W(C2)
Status group 14 Mask	BitEnum	0x0001: Reserved 0x0002: Reserved 0x0004: 241:Totalizer 1 threshold exceeded 0x0008: 242:Totalizer 2 threshold exceeded 0x0010: 243:Totalizer 3 threshold exceeded 0x0020: 244:Totalizer 4 threshold exceeded 0x0040: 245:Totalizer 5 threshold exceeded 0x0080: 246:Totalizer 6 threshold exceeded		R/W(C2)
Status group 15 Mask	BitEnum	0x0001: 301-20:Process variables configuration error 0x0002: 321:Analog output 1 configuration error 0x0004: 322:Analog output 2 configuration error 0x0008: 323-25:Pulse/Status output 1 configuration error 0x0010: 326-29:Pulse/Status output 2 configuration error 0x0020: 330:Double pulse output configuration error 0x0040: 331:Status output 3 configuration error 0x0080: 332:Status input configuration error		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Status group 16 Mask	BitEnum	0x0001: 333:Analog input configuration error 0x0002: Reserved 0x0004: 335-40:Totalizer configuration error 0x0008: 341:Batch configuration error 0x0010: 342:Data logging not started 0x0020: 343:Option function mismatch 0x0040: Reserved 0x0080: Reserved		R/W(C2)
Status group 17 Mask	BitEnum	0x0001: 701:Analog output 1 fixed 0x0002: 702:Analog output 2 fixed 0x0004: 703:Density fixed 0x0008: 704:Temperature fixed 0x0010: 705:Pressure fixed 0x0020: 706:Reference density fixed 0x0040: 707:Calorific value fixed 0x0080: 708:Process variable simulation		R/W(C2)
Status group 18 Mask	BitEnum	0x0001: 709:Analog output simulation 0x0002: 710:Pulse output simulation 0x0004: 711:Status output simulation 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: 715:Process variable trimming 0x0080: 716:Analog output 1 saturated		R/W(C2)
Status group 19 Mask	BitEnum	0x0001: 717:Analog output 2 saturated 0x0002: 718:Pulse output 1 saturated 0x0004: 719:Pulse output 2 saturated 0x0008: 720:Double pulse output saturated 0x0010: 721:Autozero running 0x0020: 722:Tube Health Check execution error 0x0040: 723:Date/Time not set 0x0080: 724:Display over warning		R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Status group 20 Mask	BitEnum	0x0001: 725:microSD card size warning 0x0002: 726:microSD card mismatch 0x0004: Reserved 0x0008: 728:microSD card removal procedure error 0x0010: 729:Parameter backup incomplete 0x0020: 730:Parameter restore running 0x0040: Reserved 0x0080: 732:Batch progress indication		R/W(C2)
Status group 21 Mask	BitEnum	0x0001: 733,34:Viscosity warning 0x0002: 735:Autozero warning 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R/W(C2)
Status group 22 Mask	BitEnum	0x0001: 901:Device configuration locked 0x0002: 902:Device configuration not locked 0x0004: 903:Parameter backup running 0x0008: 904:Data logging running 0x0010: 905:Tube Health Check running 0x0020: 906:Batch running 0x0040: 907:Batch hold 0x0080: 908:SIL mode active		R/W(C2)
Status group 23 Mask	BitEnum	0x0001: 909:Maintenance mode running 0x0002: Reserved 0x0004: Reserved 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R/W(C2)
SKT1	Evalue			R/W(C2)
SKT2	Evalue			R/W(C2)
SKT3	Evalue			R/W(C2)
FT1	Evalue			R/W(C2)
FT2	Evalue			R/W(C2)
FT3	Evalue			R/W(C2)

Parameter	Data Form	Data Range	Unit	R/W
Sound velocity at reference temperature	Evalue		m/s	R/W(C2)
Reference temperature for sound velocity	Evalue		degC	R/W(C2)
Sound velocity temperature coefficient	Evalue		m/(s*K)	R/W(C2)
VK0	Evalue		cSt	R/W(C2)
VKT1	Evalue			R/W(C2)
VKT2	Evalue			R/W(C2)
Process variable compensation	BitEnum	0x0001: Gas flow compensation 0x0002: Temperature compensation 0x0004: Reynolds compensation 0x0008: Reserved 0x0010: Reserved 0x0020: Reserved 0x0040: Reserved 0x0080: Reserved		R
Total temperature hysteresis	Value		%	R/W(C2)
Total 1 temperature lower value	Value		[Temperature unit]	R/W(C2)
Total 1 temperature upper value	Value		[Temperature unit]	R/W(C2)
Total 2 temperature lower value	Value		[Temperature unit]	R/W(C2)
Total 2 temperature upper value	Value		[Temperature unit]	R/W(C2)
Total 3 temperature lower value	Value		[Temperature unit]	R/W(C2)
Total 3 temperature upper value	Value		[Temperature unit]	R/W(C2)
Viscosity fixed value	Value		[Re compensation viscosity unit]	R/W(C2)
Viscosity value select	Enum	0: Fixed value 1: Calculated value (ASTM) 2: Measured value		R/W(C2)
Re compensation viscosity value	Value		[Re compensation viscosity unit]	R

Parameter	Data Form	Data Range	Unit	R/W
Re compensation viscosity unit	Enum	0: mPas 1: Pas 2: cP 3: Ns/m^2 4: kg/ms 8: cSt 6: St 9: mm^2/s 7: cm^2/s 10: dm^2/s 11: m^2/s		R/ W(C2)

7.3 Units of the parameters

The following tables show the available units sorted by parameters. The available units depend on the value chosen under Display unit selection.

Mass flow unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g/s	g/s	✓	✓	g/s	g/s	g/s	г/с
g/min	g/min	✓	✓	g/min	g/min	g/min	г/мин
g/h	g/h	✓	✓	g/h	g/h	g/h	г/ч
kg/s	kg/s	✓	✓	kg/s	kg/s	kg/s	кг/с
kg/min	kg/min	✓	✓	kg/min	kg/min	kg/min	кг/мин
kg/h	kg/h	✓	✓	kg/h	kg/h	kg/h	кг/ч
kg/d	kg/d	✓	✓	kg/d	kg/d	kg/d	кг/сут
t/min	t/min	✓	✓	t/min		t/min	т/мин
t/h	t/h	✓	✓	t/h		t/h	т/ч
t/d	t/d	✓	✓	t/d		t/d	т/сут
ton(US)/ min	t/min	✓	✓		t/min		
ton(US)/h	t/h	✓	✓		t/h		
ton(US)/d	t/d	✓	✓		t/d		
ton(UK)/ min	t/min	✓	✓			t/min	
ton(UK)/h	t/h	✓	✓			t/h	
ton(UK)/d	t/d	✓	✓			t/d	
lb/s	lb/s	✓	✓		lb/s	lb/s	фунт/с
lb/min	lb/min	✓	✓		lb/min	lb/min	фунт/мин
lb/h	lb/h	✓	✓		lb/h	lb/h	фунт/ч
lb/d	lb/d	✓	✓		lb/d	lb/d	фунт/сут

Net mass flow 1 – 2 unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g/s	g/s	✓	N/A	g/s	g/s	g/s	г/с
g/min	g/min	✓	N/A	g/min	g/min	g/min	г/мин
g/h	g/h	✓	N/A	g/h	g/h	g/h	г/ч
kg/s	kg/s	✓	N/A	kg/s	kg/s	kg/s	кг/с
kg/min	kg/min	✓	N/A	kg/min	kg/min	kg/min	кг/мин
kg/h	kg/h	✓	N/A	kg/h	kg/h	kg/h	кг/ч

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
kg/d	kg/d	✓	N/A	kg/d	kg/d	kg/d	кг/сут
t/min	t/min	✓	N/A	t/min		t/min	т/мин
t/h	t/h	✓	N/A	t/h		t/h	т/ч
t/d	t/d	✓	N/A	t/d		t/d	т/сут
ton(US)/ min	t/min	✓	✓		t/min		
ton(US)/h	t/h	✓	✓		t/h		
ton(US)/d	t/d	✓	✓		t/d		
ton(UK)/ min	t/min	✓	✓			t/min	
ton(UK)/h	t/h	✓	✓			t/h	
ton(UK)/d	t/d	✓	✓			t/d	
lb/s	lb/s	✓	N/A		lb/s	lb/s	фунт/с
lb/min	lb/min	✓	N/A		lb/min	lb/min	фунт/мин
lb/h	lb/h	✓	N/A		lb/h	lb/h	фунт/ч
lb/d	lb/d	✓	N/A		lb/d	lb/d	фунт/сут

Density unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g/mL	g/mL	✓	✓	g/mL	g/mL	g/mL	г/мл
kg/L	kg/L	✓	✓	kg/L	kg/L	kg/L	кг/л
kg/cm³	kg/cm³	✓	✓	kg/cm³	kg/cm³	kg/cm³	kg/cm³
kg/dm³	kg/dm³	✓	✓	kg/dm³	kg/dm³	kg/dm³	kg/dm³
kg/m³	kg/m³	✓	✓	kg/m³	kg/m³	kg/m³	кг/м³
lb/gal	lb/gal	✓	✓		lb/gal	lb/gal	фунт/гал
lb/ft³	lb/ft³	✓	✓		lb/Cuft	lb/ft³	фунт/ фут³
g/cm³	g/cm³	✓	✓	g/cm³	g/cm³	g/cm³	г/см³
g/cc	g/cc	✓	✓		g/cc		
g/L	g/L	✓	✓	g/L	g/l	g/l	г/л

Temperature unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
degC	°C	✓	✓	°C	°C	°C	°C
degF	°F	✓	✓		°F	°F	°F
degR	°R	✓	✓		°R	°R	°R
K	K	✓	✓	K	K	K	K

Analog input pressure unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	**Liquid**	**Gas**	Metric	US	UK	Russia
inH2O @68degF	inH2O	✓	✓		inH2O	inH2O	дюйм вод.ст.
inHg	inHg	✓	✓		inHg	inHg	дюйм рт.ст.
ftH2O @68degF	ftH2O	✓	✓		ftH2O	ftH2O	фут вод.ст.
mmH2O @68degF	mmH2O	✓	✓		mmH2O	mmH2O	мм вод.ст.

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	**Liquid**	**Gas**	Metric	US	UK	Russia
mmHg	mmHg	✓	✓	mmHg	mmHg	mmHg	мм рт.ст.
psi	psi	✓	✓		psi	psi	psi
bar	bar	✓	✓	bar	bar	bar	бар
mbar	mbar	✓	✓	mbar	mbar	mbar	мбар
g/cm²	g/cm²	✓	✓	g/cm²	g/cm²	g/cm²	г/см²
kg/cm²	kg/cm²	✓	✓	kg/cm²	kg/cm²	kg/cm²	кг/см²
Pa	Pa	✓	✓	Pa	Pa	Pa	Па
kPa	kPa	✓	✓	kPa	kPa	kPa	кПа
torr	torr	✓	✓		torr	torr	торр
atm	atm	✓	✓		atm	atm	атм
MPa	MPa	✓	✓	MPa	MPa	MPa	МПа
InH2O	inH2O	✓	✓		inH2O	inH2O	дюйм вод.ст.
mmH2O	mmH2O	✓	✓		mmH2O	mmH2O	мм вод.ст.
ftH2O	ftH2O	✓	✓		ftH2O	ftH2O	фут вод.ст.
hPa	hPa	✓	✓	hPa	hPa	hPa	ГПа

Volume flow unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
cm³/s	cm³/s	✓	✓	cm³/s	cc/s	cm³/s	см³/с
cm³/min	cm³/min	✓	✓	cm³/min	cc/min	cm³/min	см³/мин
cm³/h	cm³/h	✓	✓	cm³/h	cc/h	cm³/h	см³/ч
L/s	L/s	✓	✓	L/s	l/s	l/s	л/с
L/min	L/min	✓	✓	L/min	l/min	l/min	л/мин
L/h	L/h	✓	✓	L/h	l/h	l/h	л/ч
L/d	L/d	✓	✓	L/d	l/d	l/d	л/сут
m³/s	m³/s	✓	✓	m³/s	m³/s	m³/s	м³/с
m³/min	m³/min	✓	✓	m³/min	m³/min	m³/min	м³/мин
m³/h	m³/h	✓	✓	m³/h	m³/h	m³/h	м³/ч
m³/d	m³/d	✓	✓	m³/d	m³/d	m³/d	м³/сут
gal/s	gal/s	✓	✓		gal/s	gal/s	гал/с
gal/min	gal/min	✓	✓		gal/min	gal/min	гал/мин
gal/h	gal/h	✓	✓		gal/h	gal/h	гал/ч
gal/d	gal/d	✓	✓		gal/d	gal/d	гал/сут
ft³/s	ft³/s	✓	✓		Cuft/s	ft³/s	фут³/с
ft³/min	ft³/min	✓	✓		Cuft/min	ft³/min	фут³/мин
ft³/h	ft³/h	✓	✓		Cuft/h	ft³/h	фут³/ч
ft³/d	ft³/d	✓	✓		Cuft/d	ft³/d	фут³/сут
bbl/s	bbl/s	✓	✓		bbl/s		bbl/с
bbl/min	bbl/min	✓	✓		bbl/min		bbl/мин
bbl/h	bbl/h	✓	✓		bbl/h		bbl/ч
bbl/d	bbl/d	✓	✓		bbl/d		bbl/сут
Impgal/s	Impgal/s	✓	✓		Impgal/s	Impgal/s	Impgal/с
Impgal/ min	Impgal/ min	✓	✓		Impgal/mi	Impgal/mi	Impgal/ми
Impgal/h	Impgal/h	✓	✓		Impgal/h	Impgal/h	Impgal/ч

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
Impgal/d	Impgal/d	✓	✓		Impgal/d	Impgal/d	Impgal/сут

Net volume flow 1 – 2 unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
cm³/s	cm³/s	✓	N/A	cm³/s	cc/s	cm³/s	см³/с
cm³/min	cm³/min	✓	N/A	cm³/min	cc/min	cm³/min	см³/мин
cm³/h	cm³/h	✓	N/A	cm³/h	cc/h	cm³/h	см³/ч
L/s	L/s	✓	N/A	L/s	l/s	l/s	л/с
L/min	L/min	✓	N/A	L/min	l/min	l/min	л/мин
L/h	L/h	✓	N/A	L/h	l/h	l/h	л/ч
L/d	L/d	✓	N/A	L/d	l/d	l/d	л/сут
m³/s	m³/s	✓	N/A	m³/s	m³/s	m³/s	м³/с
m³/min	m³/min	✓	N/A	m³/min	m³/min	m³/min	м³/мин
m³/h	m³/h	✓	N/A	m³/h	m³/h	m³/h	м³/ч
m³/d	m³/d	✓	N/A	m³/d	m³/d	m³/d	м³/сут
gal/s	gal/s	✓	N/A		gal/s	gal/s	гал/с
gal/min	gal/min	✓	N/A		gal/min	gal/min	гал/мин
gal/h	gal/h	✓	N/A		gal/h	gal/h	гал/ч
gal/d	gal/d	✓	N/A		gal/d	gal/d	гал/сут
ft³/s	ft³/s	✓	N/A		Cuft/s	ft³/s	фут³/с
ft³/min	ft³/min	✓	N/A		Cuft/min	ft³/min	фут³/мин
ft³/h	ft³/h	✓	N/A		Cuft/h	ft³/h	фут³/ч
ft³/d	ft³/d	✓	N/A		Cuft/d	ft³/d	фут³/сут
bbl/s	bbl/s	✓	N/A		bbl/s		bbl/с
bbl/min	bbl/min	✓	N/A		bbl/min		bbl/мин
bbl/h	bbl/h	✓	N/A		bbl/h		bbl/ч
bbl/d	bbl/d	✓	N/A		bbl/d		bbl/сут
Impgal/s	Impgal/s	✓	N/A		Impgal/s	Impgal/s	Impgal/с
Impgal/min	Impgal/min	✓	N/A		Impgal/mi	Impgal/mi	Impgal/ми
Impgal/h	Impgal/h	✓	N/A		Impgal/h	Impgal/h	Impgal/ч
Impgal/d	Impgal/d	✓	N/A		Impgal/d	Impgal/d	Impgal/сут

Relative density indication / equation select

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
SG 4degC	(no unit)	✓	N/A	SG 4°C	SG 4°C	SG 4°C	SG 4°C
SG 15degC	(no unit)	✓	N/A	SG 15°C	SG 15°C	SG 15°C	SG 15°C
SG 20degC	(no unit)	✓	N/A	SG 20°C	SG 20°C	SG 20°C	SG 20°C
SG 60degF	(no unit)	✓	N/A		SG 60°F	SG 60°F	SG 60°F
degAPI	°API	✓	N/A	°API	°API	°API	°API
degBaum hv	°Bé hv	✓	N/A	°Bé hv	°Bé hv	°Bé hv	°Bé >

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
degBaum lt	°Bé lt	✓	N/A	°Bé lt	°Bé lt	°Bé lt	°Bé <
Bh	Bh	✓	N/A	Bh	Bh	Bh	Bh
Bl	Bl	✓	N/A	Bl	Bl	Bl	Bl
°Sake	°Sake	✓	N/A				

Corrected volume flow unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
L/s(normal)	NL/s	N/A	✓	NL/s	Nl/s	Nl/s	Н.л/с
L/min(normal)	NL/min	N/A	✓	NL/min	Nl/min	Nl/min	Н.л/мин
L/h(normal)	NL/h	N/A	✓	NL/h	Nl/h	Nl/h	Н.л/ч
L/d(normal)	NL/d	N/A	✓	NL/d	Nl/d	Nl/d	Н.л/сут
m³/s(normal)	Nm³/s	N/A	✓	Nm³/s	Nm³/s	Nm³/s	Н.м³/с
m³/min(normal)	Nm³/min	N/A	✓	Nm³/min	Nm³/min	Nm³/min	Н.м³/мин
m³/h(normal)	Nm³/h	N/A	✓	Nm³/h	Nm³/h	Nm³/h	Н.м³/ч
m³/d(normal)	Nm³/d	N/A	✓	Nm³/d	Nm³/d	Nm³/d	Н.м³/сут
L/s(standard)	SL/s	✓	✓	SL/s	Sl/s	Sl/s	Ст.л/с
L/min(standard)	SL/min	✓	✓	SL/min	Sl/min	Sl/min	Ст.л/мин
L/h(standard)	SL/h	✓	✓	SL/h	Sl/h	Sl/h	Ст.л/ч
L/d(standard)	SL/d	✓	✓	SL/d	Sl/d	Sl/d	Ст.л/сут
ft³/s(standard)	Sft³/s	✓	✓		SCFS	Sft³/s	Ст.фут³/с
ft³/min(standard)	Sft³/min	✓	✓		SCFM	Sft³/min	Ст.фут³/мин
ft³/h(standard)	Sft³/h	✓	✓		SCFH	Sft³/h	Ст.фут³/ч
ft³/d(standard)	Sft³/d	✓	✓		SCFD	Sft³/d	Ст.фут³/сут
m³/s(standard)	Sm³/s	✓	✓	Sm³/s	Sm³/s	Sm³/s	Ст.м³/с

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
m³/min(standard)	Sm³/min	✓	✓	Sm³/min	Sm³/min	Sm³/min	Ст.м³/мин
m³/h(standard)	Sm³/h	✓	✓	Sm³/h	Sm³/h	Sm³/h	Ст.м³/ч
m³/d(standard)	Sm³/d	✓	✓	Sm³/d	Sm³/d	Sm³/d	Ст.м³/сут
MMSft³/h	MMSft³/h	✓	✓		mmscfh	MMSft³/h	
MMSft³/d	MMSft³/d	✓	✓		mmscfd	MMSft³/h	

Net corrected volume flow unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
L/s(standard)	SL/s	✓	N/A	SL/s	Sl/s	Sl/s	Ст.л/с
L/min(standard)	SL/min	✓	N/A	SL/min	Sl/min	Sl/min	Ст.л/мин
L/h(standard)	SL/h	✓	N/A	SL/h	SIL/h	SIL/h	Ст.л/ч
L/d(standard)	SL/d	✓	N/A	SL/d	Sl/d	Sl/d	Ст.л/сут
ft³/s(standard)	Sft³/s	✓	N/A		SCFS	Sft³/s	Ст.фут³/с
ft³/min(standard)	Sft³/min	✓	N/A		SCFM	Sft³/min	Ст.фут³/мин
ft³/h(standard)	Sft³/h	✓	N/A		SCFH	Sft³/h	Ст.фут³/ч
ft³/d(standard)	Sft³/d	✓	N/A		SCFD	Sft³/d	Ст.фут³/сут
m³/s(standard)	Sm³/s	✓	N/A	Sm³/s	Sm³/s	Sm³/s	Ст.м³/с
m³/min(standard)	Sm³/min	✓	N/A	Sm³/min	Sm³/min	Sm³/min	Ст.м³/мин
m³/h(standard)	Sm³/h	✓	N/A	Sm³/h	Sm³/h	Sm³/h	Ст.м³/ч
m³/d(standard)	Sm³/d	✓	N/A	Sm³/d	Sm³/d	Sm³/d	Ст.м³/сут
MMSft³/h	MMSft³/h	✓	✓		mmscfh	MMSft³/h	
MMSft³/d	MMSft³/d	✓	✓		mmscfd	MMSft³/h	

Concentration measurement unit set 1 – 4

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
degBrix	°Brix	✓	N/A	°Brix	°Brix	°Brix	°Brix
% sol-wt	Wt% sol	✓	N/A		Wt% sol	Wt% sol	Масса-% раст
% sol-vol	Vol% sol	✓	N/A		Vol% sol	Vol% sol	Объем-% раст
%	Wt%	✓	N/A	Wt%	Wt%	Wt%	Масса-%
Vol%	Vol%	✓	N/A	Vol%	Vol%	Vol%	Объем-%

Calorific unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
MJ/kg	MJ/kg	✓	✓	MJ/kg	MJ/kg	MJ/kg	МДж/кг
Btu/lb	Btu/lb	✓	✓		Btu/lb	Btu/lb	БТЕ/фунт
MJ/Cum	MJ/m³	✓	✓	MJ/m³	MJ/m³	MJ/m³	МДж/м³
Btu/gal	Btu/gal	✓	✓		Btu/gal	Btu/gal	БТЕ/гал
MJ/ NmlCum	MJ/Nm³	N/A	✓	MJ/Nm³	MJ/Nm³	MJ/Nm³	МДж/ Норм.м³
Btu/ Stdcuft	Btu/Sft³	✓	✓		Btu/Sft³	Btu/Sft³	БТЕ/ ст.фут³

Total 1 – 6 unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g	g	✓	✓	g	g	g	г
kg	kg	✓	✓	kg	kg	kg	кг
t	t	✓	✓	t	t	t	т
ton(US)	t	✓	✓		t		
ton(UK)	t	✓	✓			t	
lb	lb	✓	✓		lb	lb	фунт
cm³	cm³	✓	✓	cm³	cm³	cm³	см³
L	L	✓	✓	L	l	l	л
m³	m³	✓	✓	m³	m³	m³	м³
gal	gal	✓	✓		gal	gal	гал
kgal	kgal	✓	✓		kgal	kgal	кгал
ft³	ft³	✓	✓		Cuft	ft³	фут³
bbl	bbl	✓	✓		bbl		bbl
Impgal	Impgal	✓	✓		Impgal	Impgal	Impgal
kImpgal	kImpgal	✓	✓		kImpgal	kImpgal	kImpgal
L(normal)	NL	N/A	✓	NL	Nl	Nl	Норм.л
m³(normal)	Nm³	N/A	✓	Nm³	Nm³	Nm³	Норм.м³
L(standard)	SL	✓	✓	SL	Sl	Sl	Ст.л
ft³(standard)	Sft³	✓	✓		Scuft	Sft³	Ст.фут³
MMscuft	MSft³	✓	✓		MMscuft	MSft³	Млн.Ст.фут³
m³(standard)	Sm³	✓	✓	Sm³	Sm³	Sm³	Ст.м³
MJ	MJ	✓	✓	MJ	MJ	MJ	МДж
Btu	Btu	✓	✓		Btu	Btu	БТЕ

Pulse output 1 – 2 unit select

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g/P	g/P	✓	✓	g/P	g/P	g/P	г/имп.
kg/P	kg/P	✓	✓	kg/P	kg/P	kg/P	кг/имп.
MetTon/P	t/P	✓	✓	t/P	t/P	t/P	т/имп.
ton(US)/P	t/P	✓	✓		t/P		
ton(UK)/P	t/P	✓	✓			t/P	
lb/P	lb/P	✓	✓		lb/P	lb/P	фунт/ имп.
P/g	P/g	✓	✓	P/g	P/g	P/g	имп./г
P/kg	P/kg	✓	✓	P/kg	P/kg	P/kg	имп./кг
P/MetTon	P/t	✓	✓	P/t	P/t	P/t	имп./т
P/ton(US)	P/t	✓	✓		P/t		
P/ton(UK)	P/t	✓	✓			P/t	
P/lb	P/lb	✓	✓		P/lb	P/lb	имп./ фунт
cm³/P	cm³/P	✓	✓	cm³/P	cm³/P	cm³/P	см³/имп.
L/P	L/P	✓	✓	L/P	l/P	l/P	л/имп.
m³/P	m³/P	✓	✓	m³/P	m³/P	m³/P	м³/имп.
gal/P	gal/P	✓	✓		gal/P	gal/P	гал/имп.
kgal/P	kgal/P	✓	✓		kgal/P	kgal/P	кгал/имп.
ft³/P	ft³/P	✓	✓		Cuft/P	ft³/P	фут³/имп.
bbl/P	bbl/P	✓	✓		bbl/P		bbl/имп.
Impgal/P	Impgal/P	✓	✓		Impgal/P	Impgal/P	Impgal/ имп.
kImpgal/P	kImpgal/P	✓	✓		kImpgal/P	kImpgal/P	кImpgal/ имп.
P/Cucm	P/cm³	✓	✓		P/cm³	P/cm³	имп./см³
P/L	P/L	✓	✓		P/l	P/l	имп./л
P/Cum	P/m³	✓	✓		P/m³	P/m³	имп./м³
P/gal	P/gal	✓	✓		P/gal	P/gal	имп./гал
P/kgal	P/kgal	✓	✓		P/kgal	P/kgal	имп./кгал
P/Cuft	P/ft³	✓	✓		P/Cuft	P/ft³	имп./фут³
P/bbl	P/bbl	✓	✓		P/bbl		имп./bbl
P/Impgal	P/Impgal	✓	✓		P/Impgal	P/Impgal	имп./ Impgal
P/kImpgal	P/kImpgal	✓	✓		P/kImpgal	P/kImpgal	имп./ кImpgal
Nml L/P	NL/P	N/A	✓	NL/P	Nl/P	Nl/P	Норм.л/ имп.
NmlCum/ P	Nm³/P	N/A	✓	Nm³/P	Nm³/P	Nm³/P	Норм.м³/ имп.
Std L/P	SL/P	✓	✓	SL/P	Sl/P	Sl/P	Ст.л/имп.
StdCuft/P	Sft³/P	✓	✓		Scuft/P	Sft³/P	Ст.фут³/ имп.
StdCum/P	Sm³/P	✓	✓	Sm³/P	Sm³/P	Sm³/P	Ст.м³/ имп.
P/Nml L	P/NL	N/A	✓	P/NL	P/Nl	P/Nl	имп./ Норм.л
P/ NmlCum	P/Nm³	N/A	✓	P/Nm³	P/Nm³	P/Nm³	имп./ Норм.м³
P/Std L	P/SL	✓	✓	P/SL	P/Sl	P/Sl	имп./Ст.л

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
P/StdCuft	P/Sft³	✓	✓		P/Scuft	P/Sft³	имп./ Ст.фут³
P/StdCum	P/Sm³	✓	✓	P/Sm³	P/Sm³	P/Sm³	имп./ Ст.м³
MJ/P	MJ/P	✓	✓	MJ/P	MJ/P	MJ/P	МДж/имп.
Btu/P	Btu/P	✓	✓		Btu/P	Btu/P	БТЕ/имп.
P/MJ	P/MJ	✓	✓	P/MJ	P/MJ	P/MJ	имп./МДж
P/Btu	P/Btu	✓	✓		P/Btu	P/Btu	имп./БТЕ

Velocity unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
m/s	m/s	✓	✓	m/s	m/s	m/s	м/с
ft/s	ft/s	✓	✓		ft/s	ft/s	фут/с

Batch unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
g	g	✓	✓	g	g	g	г
kg	kg	✓	✓	kg	kg	kg	кг
t	t	✓	✓	t	t	t	т
ton(US)	t	✓	✓		t		
ton(UK)	t	✓	✓			t	
lb	lb	✓	✓		lb	lb	фунт
cm³	cm³	✓	✓	cm³	cm³	cm³	см³
L	L	✓	✓	L	l	l	л
m³	m³	✓	✓	m³	m³	m³	м³
gal	gal	✓	✓		gal	gal	гал
kgal	kgal	✓	✓		kgal	kgal	кгал
ft³	ft³	✓	✓		Cuft	ft³	фут³
bbl	bbl	✓	✓		bbl		bbl
Impgal	Impgal	✓	✓		Impgal	Impgal	Impgal
kImpgal	kImpgal	✓	✓		kImpgal	kImpgal	kImpgal
L(normal)	NL	N/A	✓	NL	Nl	Nl	Норм.л
m³(normal)	Nm³	N/A	✓	Nm³	Nm³	Nm³	Норм.м³
L(standard)	SL	✓	✓	SL	Sl	Sl	Ст.л
ft³(standard)	Sft³	✓	✓		Scuft	Sft³	Ст.фут³
MMscuft	MSft³	✓	✓		MMscuft	MSft³	Млн.Ст.фут³
m³(standard)	Sm³	✓	✓	Sm³	Sm³	Sm³	Ст.м³

Viscosity unit

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
mPas	mPas	✓	N/A	mPas	mPas	mPas	mPas
Pas	Pas	✓	N/A	Pas	Pas	Pas	Pas
cP	cP	✓	N/A	cP	cP	cP	

Display of unit		Liquid gas select		Display unit selection			
Pactware	Indicator	Liquid	Gas	Metric	US	UK	Russia
Ns/m²	Ns/m²	✓	N/A	Ns/m²	Ns/m²	Ns/m²	Ns/m²
kg/ms	kg/ms	✓	N/A	kg/ms	kg/ms	kg/ms	
cSt	cSt	✓	N/A	cSt	cSt	cSt	
St	St	✓	N/A	St	St	St	St
mm²/s	mm²/s	✓	N/A	mm²/s	mm²/s	mm²/s	мм²
cm²/s	cm²/s	✓	N/A	cm²/s	cm²/s	cm²/s	см²
dm²/s	dm²/s	✓	N/A	dm²/s	dm²/s	dm²/s	dm²/s
m²/s	m²/s	✓	N/A	m²/s	m²/s	m²/s	м²

7.4 Units description

The following table shows the available units with their description in alphabetical order:

Value	Name / Description
°API	°API units are used for quantifying the mass densities of mineral oils. °API = 141.5 / SG (60/60 °F) - 131.5 Dimensionless
atm	Atmospheres
bar	Bars
bbl/d	Barrels per day
bbl/h	Barrels per hour
bbl/min	Barrels per minute
bbl/pulse	Barrels per pulse
bbl/s	Barrels per second
Bé hv	°Baumé heavy is used for liquids heavier than water °Bé hv = 145 - 145 / (SG (60/60 °F)) Dimensionless
Bh	°Baumé heavy for JIS Z 8804:2012 Bh = 144.3 - 144.3 / (SG (15 / 4 °C)) Dimensionless
Bé lt	°Baumé light °Bé lt = 140 / (SG (60 / 60 °F)) - 130 Dimensionless
Bl	°Baumé light for JIS Z 8804:2012 Bl = 144.3 / (SG (15 / 4 °C)) - 134.3
bbl	Barrels
bbl/d	Barrels per day
bbl/h	Barrels per hour
bbl/min	Barrels per minute
bbl/s	Barrels per second
°Brix	Degree brix
Btu	British thermal unit
Btu/d	British thermal unit per day
Btu/h	British thermal unit per hour
Btu/min	British thermal unit per minute
Btu/pulse	British thermal unit per pulse

Value	Name / Description
Btu/s	British thermal unit per second
BTU/scuft	British thermal unit per standard cubic foot
cm^2/s	Square centimeter per second
cm^3	Cubic centimeters
cm^3/h	Cubic centimeters per hour
cm^3/min	Cubic centimeters per minute
$cm^3/pulse$	Cubic centimeters per pulse
cm^3/s	Cubic centimeters per second
cP	Centipoise
cSt	Centistokes
dm^2/s	Square decimeter per second
degC	Degrees Celsius
degF	Degrees Fahrenheit
degR	Degrees Rankine
ft^3	Cubic feet
ft^3/d	Cubic feet per day
ft^3/h	Cubic feet per hour
ft^3/min	Cubic feet per minute
$ft^3/pulse$	Cubic feet per pulse
ft^3/s	Cubic feet per second
ftH2O@4degC	Feet of water at 4 degrees Celsius
ftH2O@68degF	Feet of water at 68 degrees Fahrenheit
ft/s	Feet per second
g	Grams
gal	Gallons
gal/d	Gallons per day
gal/h	Gallons per hour
gal/min	Gallons per minute
gal/pulse	Gallons per pulse
gal/s	Gallons per second
g/cc	Gram per cc
g/cm^2	Grams per square centimeter
g/cm^3	Grams per cubic centimeter
g/h	Grams per hour
g/L	Grams per liter
g/min	Grams per minute
g/mL	Grams per milliliter
g/s	Grams per second
hPa	Hectopascals
Impgal	Imperial gallons
Impgal/d	Imperial gallons per day
Impgal/h	Imperial gallons per hour
Impgal/min	Imperial gallons per minute
Impgal/s	Imperial gallons per second
Impgal/pulse	Imperial gallons per pulse
inH2O@4degC	Inches of water at 4 degrees Celsius
inH2O@68degF	Inches of water at 68 degrees Fahrenheit
inHg	Inches of mercury at 0 degrees Celsius

Value	Name / Description
K	Kelvin
kg	Kilograms
kgal	Kilo gallons
kgal/pulse	Kilo gallons per pulse
kg/cm^2	Kilograms per square centimeter
kg/cm^3	Kilogram per cubic centimeters
kg/d	Kilograms per day
kg/dm^3	Kilogram per cubic decimeters
kg/h	Kilograms per hour
kg/L	Kilograms per liter
kg/m^3	Kilograms per cubic meter
kg/min	Kilograms per minute
Kg/ms	Kilograms per meter second
kg/s	Kilograms per second
kImpgal	Kilo imperial gallons
kImpgal/pulse	Kilo imperial gallons per pulse
kPa	Kilo pascals
L	Liters
lb	Pounds
lb/gal	Pounds per gallon
lb/ft^3	Pounds per cubic foot
L/d	Liters per day
L/h	Liters per hour
L/min	Liters per minute
L/pulse	Liters per pulse
L/s	Liters per second
lb/d	Pounds per day
lb/h	Pounds per hour
lb/min	Pounds per minute
lb/s	Pounds per second
l/s	Liters per second
m^2/s	Square meter per second
m^3	Cubic meters
m^3/d	Cubic meters per day
m^3/h	Cubic meters per hour
m^3/min	Cubic meters per minute
m^3/s	Cubic meters per second
m^3/pulse	Cubic meters per pulse
mbar	Millibars
MetTon	Metric tons
MetTon/d	Metric tons per day
MetTon/h	Metric tons per hour
MetTon/min	Metric tons per minute
MJ	Mega joules
MJ/d	Mega joules per day
MJ/h	Mega joules per hour
MJ/kg	Mega joules per kilogram

Value	Name / Description
MJ/m³	Mega joules per normal cubic meter MJ/m³ ≡ N
MJ/min	Mega joules per minute
MJ/pulse	Mega joules per pulse
MJ/s	Mega joules per second
mmH2O@4degC	Millimeters of water at 4 degrees Celsius
mmH2O@68degF	Millimeters of water at 68 degrees Fahrenheit
mmHg	Millimeters of mercury at 0 degrees Fahrenheit
MMsft³	Million standard cubic feet
mm²/s	Square millimeter per second
MPa	Megapascals
m/s	Meters per second
NmlL	Normal liters
NmlL/d	Normal liters per day
NmlL/h	Normal liters per hour
NmlL/min	Normal liters per minute
NmlL/pulse	Normal liters per pulse
NmlL/s	Normal liters per second
Nmlm³	Normal cubic meters
Nmlm³/d	Normal cubic meters per day
Nmlm³/h	Normal cubic meters per hour
Nmlm³/min	Normal cubic meters per minute
Nmlm³/pulse	Normal cubic meters per pulse
Nmlm³/s	Normal cubic meters per second
NS/m²	Newton second per square meter
Pa	Pascals
Pas	Pascal
Pa-s	Pascal second
psi	Pounds per square inch
pulse/bbl	Pulse per barrel
pulse/Btu	Pulse per British thermal unit
pulse/cm³	Pulse per cubic centimeter
pulse/ft³	Pulse per cubic foot
pulse/gal	Pulse per gallon
pulse/kgal	Pulse per kilo gallon
pulse/kImpgal	Pulse per kilo imperial gallon
pulse/L	Pulse per liter
pulse/m³	Pulse per cubic meter
pulse/MJ	Pulse per mega joule
pulse/NmlL	Pulse per normal liter
pulse/Nmlm³	Pulse per normal meter
pulse/Sft³	Pulse per standard cubic foot
pulse/StdL	Pulse per standard liter
pulse/Stdm³	Pulse per standard cubic meter
pulse/Impgal	Pulse per imperial gallon
°Sake	°Sake units are used for quantifying the mass densities of sake. °Sake = 1443 / (SG (15 / 4 °C)) - 1443 Dimensionless

Value	Name / Description
SG 4 °C	SG 4 °C Specific gravity Specific gravity relative to 4 °C water. Dimensionless
SG 15 °C	SG 15 °C Specific gravity Specific gravity relative to 15 °C water. Dimensionless
SG 20 °C	SG 20 °C Specific gravity Specific gravity relative to 20 °C water. Dimensionless
SG 60 °F	SG 60 °F Specific gravity Specific gravity relative to 60 °F (15.56 °C) water. Dimensionless
$Stdft^3$	Standard cubic feet
$Stdft^3/d$	Standard cubic feet per day
$Stdft^3/h$	Standard cubic feet per hour
$Stdft^3/min$	Standard cubic feet per minute
$Sft^3/pulse$	Standard cubic feet per pulse
St	Stokes
$Stdft^3/s$	Standard cubic feet per second
StdL	Standard liters
StdL/d	Standard liters per day
StdL/h	Standard liters per hour
StdL/min	Standard liters per minute
StdL/pulse	Standard liters per pulse
StdL/s	Standard liters per second
$Stdm^3$	Standard cubic meters
$Stdm^3/d$	Standard cubic meters per day
$Stdm^3/h$	Standard cubic meters per hour
$Stdm^3/min$	Standard cubic meters per minute
$Stdm^3/pulse$	Standard cubic meters per pulse
$Stdm^3/s$	Standard cubic meters per second
t	Tons
ton(US)	Tons for US
ton(UK)	Tons for UK
torr	Torrs
User-defined unit	SITRANS FC allows the display of values in custom user-defined units. Maximum length is 8 ASCII characters.
Vol %	Volume percent
Vol % sol	Percent solids per volume
% (Wt-%)	Weight percent
Wt -% sol	Percent solids per weight

7.5 Parameter IDs

The following table shows the parameter IDs for write operations. Parameter IDs which are not shown in the following table are not stored on the microSD even if the parameter is written.

ID	Parameter
30020	Test mode
30021	Test mode all clear
30022	Analog output 1 test
30023	AO 1 trim 4mA
30024	AO 1 trim 20mA
30025	Analog output 2 test
30026	AO 2 trim 4mA
30027	AO 2 trim 20mA
30028	Frequency output 1 test
30029	Frequency output 2 test
30030	Double pulse output test
30031	Status output 1 test
30032	Status output 2 test
30033	Status output 3 test
30034	Test auto release time
30036	AI trim 4mA
30037	AI trim 20mA
30038	Trim who
30039	Trim date
30040	Trim location
30041	Trim description
30190	Autozero execute
30191	Autozero time
32490	Clear autozero failure
8013	Autozero failure detection
30350	Signal gain
30402	SK20
30403	SK20 reverse
1067	SKT
1068	SKTK
30404	FTC1
30405	FTCK
30406	KD
30407	FL20
1078	Density offset orientation
30408	Installation orientation
30460	Order code 1
30461	Order code 2
30462	Order code 3
30465	Display installation
30466	Liquid gas select
30469	Sensor serial number
30520	Mass flow trim select

ID	Parameter
30521	Mass flow trim offset
30522	Mass flow trim gain
30523	Mass flow damping
30524	Mass flow damping pulse/total
30525	Mass flow lowcut
30526	Mass flow LRV
30527	Mass flow URV
30528	Mass flow low alarm
30529	Mass flow high alarm
30530	Mass flow low low alarm
30531	Mass flow high high alarm
30532	Mass flow unit
30533	Mass flow user unit
30534	Mass flow bi-directional mode
30535	Mass flow user unit conversion factor
30550	Density trim select
30551	Density trim offset
30552	Density trim gain
30553	Density damping
30554	Density lowcut
30555	Density LRV
30556	Density URV
30557	Density low alarm
30558	Density high alarm
30559	Density low low alarm
30560	Density high high alarm
30561	Density unit
30562	Density user unit
30563	Density user unit conversion factor
30564	Density fixed value
30565	Density value select
30580	Temperature trim select
30581	Temperature trim offset
30582	Temperature trim gain
30583	Temperature damping
30584	Temperature LRV
30585	Temperature URV
30586	Temperature low alarm
30587	Temperature high alarm
30588	Temperature low low alarm
30589	Temperature high high alarm
30590	Temperature unit
30591	Temperature fixed value
30592	Temperature function select
30610	Analog input temperature unit
30611	Analog input temperature LRV
30612	Analog input temperature URV
30630	Pressure trim select

ID	Parameter
30631	Pressure trim offset
30632	Pressure trim gain
30633	Pressure damping
30634	Pressure LRV
30635	Pressure URV
30636	Pressure low alarm
30637	Pressure high alarm
30638	Pressure low low alarm
30639	Pressure high high alarm
30640	Pressure unit
30641	Pressure fixed value
1089	Gas density pressure
30642	Absolute/Gauge select
30660	Analog input pressure unit
30661	Analog input pressure LRV
30662	Analog input pressure URV
30680	Volume flow trim select
30681	Volume flow trim offset
30682	Volume flow trim gain
30683	Volume flow damping
30684	Volume flow damping pulse/total
30685	Volume flow lowcut
30686	Volume flow LRV
30687	Volume flow URV
30688	Volume flow low alarm
30689	Volume flow high alarm
30690	Volume flow low low alarm
30691	Volume flow high high alarm
30692	Volume flow unit
30693	Volume flow user unit
30694	Volume flow bi-directional mode
30695	Volume flow user unit conversion factor
30710	Reference temperature
1090	Reference pressure
30711	Temperature coeff A
30712	Temperature coeff B
30730	Reference density trim select
30731	Reference density trim offset
30732	Reference density trim gain
30733	Reference density damping
30734	Reference density lowcut
30735	Reference density LRV
30736	Reference density URV
30737	Reference density low alarm
30738	Reference density high alarm
30739	Reference density low low alarm
30740	Reference density high high alarm
30741	Reference density fixed value

ID	Parameter
30742	Reference density value select
30760	Relative density reference select
30761	Relative density indication/equation select
30780	Relative density trim select
30781	Relative density trim offset
30782	Relative density trim gain
32590	Relative density damping
30783	Relative density LRV
30784	Relative density URV
30785	Relative density low alarm
30786	Relative density high alarm
30787	Relative density low low alarm
30788	Relative density high high alarm
30800	Corrected volume flow trim select
30801	Corrected volume flow trim offset
30802	Corrected volume flow trim gain
30803	Corrected volume flow damping
30804	Corrected volume flow damping pulse/total
30805	Corrected volume flow lowcut
30806	Corrected volume flow LRV
30807	Corrected volume flow URV
30808	Corrected volume flow low alarm
30809	Corrected volume flow high alarm
30810	Corrected volume flow low low alarm
30811	Corrected volume flow high high alarm
30812	Corrected volume flow unit
30813	Corrected volume flow user unit
30814	Corrected volume flow bi-directional mode
30815	Corrected volume flow user unit conversion factor
30830	Calorific damping
1091	Calorific unit
30832	Calorific fixed value
30850	Analog input calorific unit
30851	Analog input calorific LRV
30852	Analog input calorific URV
30870	Select concentration set
30871	Select concentration set manual
1092	Select concentration set status input short
1093	Select concentration set status input open
30872	Concentration trim select
30873	Concentration trim offset
30874	Concentration trim gain
30875	Concentration damping
30890	Concentration temperature set 1 number
30891	Concentration temperature 1 set 1
30892	Concentration A 1 set 1
30893	Concentration B 1 set 1
30894	Concentration C 1 set 1

ID	Parameter
30895	Concentration D 1 set 1
30896	Concentration temperature 2 set 1
30897	Concentration A 2 set 1
30898	Concentration B 2 set 1
30899	Concentration C 2 set 1
30900	Concentration D 2 set 1
30901	Concentration temperature 3 set 1
30902	Concentration A 3 set 1
30903	Concentration B 3 set 1
30904	Concentration C 3 set 1
30905	Concentration D 3 set 1
30906	Concentration temperature 4 set 1
30907	Concentration A 4 set 1
30908	Concentration B 4 set 1
30909	Concentration C 4 set 1
30910	Concentration D 4 set 1
30911	Concentration temperature 5 set 1
30912	Concentration A 5 set 1
30913	Concentration B 5 set 1
30914	Concentration C 5 set 1
30915	Concentration D 5 set 1
30916	Concentration temperature 6 set 1
30917	Concentration A 6 set 1
30918	Concentration B 6 set 1
30919	Concentration C 6 set 1
30920	Concentration D 6 set 1
30921	Concentration temperature 7 set 1
30922	Concentration A 7 set 1
30923	Concentration B 7 set 1
30924	Concentration C 7 set 1
30925	Concentration D 7 set 1
30926	Concentration temperature 8 set 1
30927	Concentration A 8 set 1
30928	Concentration B 8 set 1
30929	Concentration C 8 set 1
30930	Concentration D 8 set 1
30931	Concentration temperature set 2 number
30932	Concentration temperature 1 set 2
30933	Concentration A 1 set 2
30934	Concentration B 1 set 2
30935	Concentration C 1 set 2
30936	Concentration D 1 set 2
30937	Concentration temperature 2 set 2
30938	Concentration A 2 set 2
30939	Concentration B 2 set 2
30940	Concentration C 2 set 2
30941	Concentration D 2 set 2
30942	Concentration temperature 3 set 2

ID	Parameter
30943	Concentration A 3 set 2
30944	Concentration B 3 set 2
30945	Concentration C 3 set 2
30946	Concentration D 3 set 2
30947	Concentration temperature 4 set 2
30948	Concentration A 4 set 2
30949	Concentration B 4 set 2
30950	Concentration C 4 set 2
30951	Concentration D 4 set 2
30952	Concentration temperature 5 set 2
30953	Concentration A 5 set 2
30954	Concentration B 5 set 2
30955	Concentration C 5 set 2
30956	Concentration D 5 set 2
30957	Concentration temperature 6 set 2
30958	Concentration A 6 set 2
30959	Concentration B 6 set 2
30960	Concentration C 6 set 2
30961	Concentration D 6 set 2
30962	Concentration temperature 7 set 2
30963	Concentration A 7 set 2
30964	Concentration B 7 set 2
30965	Concentration C 7 set 2
30966	Concentration D 7 set 2
30967	Concentration temperature 8 set 2
30968	Concentration A 8 set 2
30969	Concentration B 8 set 2
30970	Concentration C 8 set 2
30971	Concentration D 8 set 2
30972	Concentration temperature set 3 number
30973	Concentration temperature 1 set 3
30974	Concentration A 1 set 3
30975	Concentration B 1 set 3
30976	Concentration C 1 set 3
30977	Concentration D 1 set 3
30978	Concentration temperature 2 set 3
30979	Concentration A 2 set 3
30980	Concentration B 2 set 3
30981	Concentration C 2 set 3
30982	Concentration D 2 set 3
30983	Concentration temperature 3 set 3
30984	Concentration A 3 set 3
30985	Concentration B 3 set 3
30986	Concentration C 3 set 3
30987	Concentration D 3 set 3
30988	Concentration temperature 4 set 3
30989	Concentration A 4 set 3
30990	Concentration B 4 set 3

ID	Parameter
30991	Concentration C 4 set 3
30992	Concentration D 4 set 3
30993	Concentration temperature 5 set 3
30994	Concentration A 5 set 3
30995	Concentration B 5 set 3
30996	Concentration C 5 set 3
30997	Concentration D 5 set 3
30998	Concentration temperature 6 set 3
30999	Concentration A 6 set 3
31000	Concentration B 6 set 3
31001	Concentration C 6 set 3
31002	Concentration D 6 set 3
31003	Concentration temperature 7 set 3
31004	Concentration A 7 set 3
31005	Concentration B 7 set 3
31006	Concentration C 7 set 3
31007	Concentration D 7 set 3
31008	Concentration temperature 8 set 3
31009	Concentration A 8 set 3
31010	Concentration B 8 set 3
31011	Concentration C 8 set 3
31012	Concentration D 8 set 3
31013	Concentration temperature set 4 number
31014	Concentration temperature 1 set 4
31015	Concentration A 1 set 4
31016	Concentration B 1 set 4
31017	Concentration C 1 set 4
31018	Concentration D 1 set 4
31019	Concentration temperature 2 set 4
31020	Concentration A 2 set 4
31021	Concentration B 2 set 4
31022	Concentration C 2 set 4
31023	Concentration D 2 set 4
31024	Concentration temperature 3 set 4
31025	Concentration A 3 set 4
31026	Concentration B 3 set 4
31027	Concentration C 3 set 4
31028	Concentration D 3 set 4
31029	Concentration temperature 4 set 4
31030	Concentration A 4 set 4
31031	Concentration B 4 set 4
31032	Concentration C 4 set 4
31033	Concentration D 4 set 4
31034	Concentration temperature 5 set 4
31035	Concentration A 5 set 4
31036	Concentration B 5 set 4
31037	Concentration C 5 set 4
31038	Concentration D 5 set 4

ID	Parameter
31039	Concentration temperature 6 set 4
31040	Concentration A 6 set 4
31041	Concentration B 6 set 4
31042	Concentration C 6 set 4
31043	Concentration D 6 set 4
31044	Concentration temperature 7 set 4
31045	Concentration A 7 set 4
31046	Concentration B 7 set 4
31047	Concentration C 7 set 4
31048	Concentration D 7 set 4
31049	Concentration temperature 8 set 4
31050	Concentration A 8 set 4
31051	Concentration B 8 set 4
31052	Concentration C 8 set 4
31053	Concentration D 8 set 4
31070	Concentration reference temperature set 1
31071	Concentration reference density carrier set 1
31072	Concentration temperature coeff A carrier set 1
31073	Concentration temperature coeff B carrier set 1
31074	Concentration reference density product set 1
31075	Concentration temperature coeff A product set 1
31076	Concentration temperature coeff B product set 1
31077	Concentration reference temperature set 2
31078	Concentration reference density carrier set 2
31079	Concentration temperature coeff A carrier set 2
31080	Concentration temperature coeff B carrier set 2
31081	Concentration reference density product set 2
31082	Concentration temperature coeff A product set 2
31083	Concentration temperature coeff B product set 2
31084	Concentration reference temperature set 3
31085	Concentration reference density carrier set 3
31086	Concentration temperature coeff A carrier set 3
31087	Concentration temperature coeff B carrier set 3
31088	Concentration reference density product set 3
31089	Concentration temperature coeff A product set 3
31090	Concentration temperature coeff B product set 3
31091	Concentration reference temperature set 4
31092	Concentration reference density carrier set 4
31093	Concentration temperature coeff A carrier set 4
31094	Concentration temperature coeff B carrier set 4
31095	Concentration reference density product set 4
31096	Concentration temperature coeff A product set 4
31097	Concentration temperature coeff B product set 4
3628	Concentration select
3629	GVF select
3630	Water cut is measured
4149	NOC density hysteresis
3631	GVF density hysteresis

ID	Parameter
3632	Calculated density select
3633	NOC pressure fixed value
3634	Reference oil density set 1
3635	Reference water density set 1
3636	Oil density calculator set 1
3637	Thermal expansion factor set 1
3638	K0 coefficient set 1
3639	K1 coefficient set 1
3640	K2 coefficient set 1
3641	Water density calculator set 1
3642	Water density UNESCO1980 set 1
3643	Reference temperature set 1
3644	Salinity ppt set 1
3645	Salinity fixed value set 1
3646	Reference oil density set 2
3647	Reference water density set 2
3648	Oil density calculator set 2
3649	Thermal expansion factor set 2
3650	K0 coefficient set 2
3651	K1 coefficient set 2
3652	K2 coefficient set 2
3653	Water density calculator set 2
3654	Water density UNESCO1980 set 2
3655	Reference temperature set 2
3656	Salinity ppt set 2
3657	Salinity fixed value set 2
3658	Reference oil density set 3
3659	Reference water density set 3
3660	Oil density calculator set 3
3661	Thermal expansion factor set 3
3662	K0 coefficient set 3
3663	K1 coefficient set 3
3664	K2 coefficient set 3
3665	Water density calculator set 3
3666	Water density UNESCO1980 set 3
3667	Reference temperature set 3
3668	Salinity ppt set 3
3669	Salinity fixed value set 3
3670	Reference oil density set 4
3671	Reference water density set 4
3672	Oil density calculator set 4
3673	Thermal expansion factor set 4
3674	K0 coefficient set 4
3675	K1 coefficient set 4
3676	K2 coefficient set 4
3677	Water density calculator set 4
3678	Water density UNESCO1980 set 4
3679	Reference temperature set 4

ID	Parameter
3680	Salinity ppt set 4
3681	Salinity fixed value set 4
31110	Concentration name set 1
31111	Concentration measurement unit set 1
31112	Concentration measurement user unit set 1
31113	Concentration measurement LRV set 1
31114	Concentration measurement URV set 1
31115	Concentration measurement low alarm set 1
31116	Concentration measurement high alarm set 1
31117	Concentration measurement low low alarm set 1
31118	Concentration measurement high high alarm set 1
31119	Concentration name set 2
31120	Concentration measurement unit set 2
31121	Concentration measurement user unit set 2
31122	Concentration measurement LRV set 2
31123	Concentration measurement URV set 2
31124	Concentration measurement low alarm set 2
31125	Concentration measurement high alarm set 2
31126	Concentration measurement low low alarm set 2
31127	Concentration measurement high high alarm set 2
31128	Concentration name set 3
31129	Concentration measurement unit set 3
31130	Concentration measurement user unit set 3
31131	Concentration measurement LRV set 3
31132	Concentration measurement URV set 3
31133	Concentration measurement low alarm set 3
31134	Concentration measurement high alarm set 3
31135	Concentration measurement low low alarm set 3
31136	Concentration measurement high high alarm set 3
31137	Concentration name set 4
31138	Concentration measurement unit set 4
31139	Concentration measurement user unit set 4
31140	Concentration measurement LRV set 4
31141	Concentration measurement URV set 4
31142	Concentration measurement low alarm set 4
31143	Concentration measurement high alarm set 4
31144	Concentration measurement low low alarm set 4
31145	Concentration measurement high high alarm set 4
31160	Net mass flow 1 trim select
31161	Net mass flow 1 trim offset
31162	Net mass flow 1 trim gain
31163	Net mass flow 1 damping
31164	Net mass flow 1 damping pulse/total
31165	Net mass flow 1 lowcut
31166	Net mass flow 1 LRV
31167	Net mass flow 1 URV
31168	Net mass flow 1 low alarm
31169	Net mass flow 1 high alarm

ID	Parameter
31170	Net mass flow 1 low low alarm
31171	Net mass flow 1 high high alarm
31172	Net mass flow 1 unit
31173	Net mass flow 1 user unit
31174	Net mass flow 1 bi-directional mode
31175	Net mass flow 1 user unit conversion factor
31190	Net mass flow 2 trim select
31191	Net mass flow 2 trim offset
31192	Net mass flow 2 trim gain
31193	Net mass flow 2 damping
31194	Net mass flow 2 damping pulse/total
31195	Net mass flow 2 lowcut
31196	Net mass flow 2 LRV
31197	Net mass flow 2 URV
31198	Net mass flow 2 low alarm
31199	Net mass flow 2 high alarm
31200	Net mass flow 2 low low alarm
31201	Net mass flow 2 high high alarm
31202	Net mass flow 2 unit
31203	Net mass flow 2 user unit
31204	Net mass flow 2 bi-directional mode
31205	Net mass flow 2 user unit conversion factor
31220	Net volume flow 1 trim select
31221	Net volume flow 1 trim offset
31222	Net volume flow 1 trim gain
31223	Net volume flow 1 damping
31224	Net volume flow 1 damping pulse/total
31225	Net volume flow 1 lowcut
31226	Net volume flow 1 LRV
31227	Net volume flow 1 URV
31228	Net volume flow 1 low alarm
31229	Net volume flow 1 high alarm
31230	Net volume flow 1 low low alarm
31231	Net volume flow 1 high high alarm
31232	Net volume flow 1 unit
31233	Net volume flow 1 user unit
31234	Net volume flow 1 bi-directional mode
31235	Net volume flow 1 user unit conversion factor
31250	Net volume flow 2 trim select
31251	Net volume flow 2 trim offset
31252	Net volume flow 2 trim gain
31253	Net volume flow 2 damping
31254	Net volume flow 2 damping pulse/total
31255	Net volume flow 2 lowcut
31256	Net volume flow 2 LRV
31257	Net volume flow 2 URV
31258	Net volume flow 2 low alarm
31259	Net volume flow 2 high alarm

ID	Parameter
31260	Net volume flow 2 low low alarm
31261	Net volume flow 2 high high alarm
31262	Net volume flow 2 unit
31263	Net volume flow 2 user unit
31264	Net volume flow 2 bi-directional mode
31265	Net volume flow 2 user unit conversion factor
31280	Net corrected volume flow trim select
31281	Net corrected volume flow trim offset
31282	Net corrected volume flow trim gain
31283	Net corrected volume flow damping
31284	Net corrected volume flow damping pulse/total
31285	Net corrected volume flow lowcut
31286	Net corrected volume flow LRV
31287	Net corrected volume flow URV
31288	Net corrected volume flow low alarm
31289	Net corrected volume flow high alarm
31290	Net corrected volume flow low low alarm
31291	Net corrected volume flow high high alarm
31292	Net corrected volume flow unit
31293	Net corrected volume flow user unit
31294	Net corrected volume flow bi-directional mode
31295	Net corrected volume flow user unit conversion factor
31310	Flow direction
3760	Total density hysteresis
31311	Alarm hysteresis
31330	Total 1 channel
31331	Total 1 unit
31332	Total 1 option
31333	Total 1 failure option
31334	Total 1 set point
31336	Total 1 user unit
31337	Total 1 conversion factor
31338	Total 1 preset value
31339	Total 1 start/stop
1094	Total 1 reset/preset
31340	Total 1 status input function
3762	Total 1 density lower value
3763	Total 1 density upper value
3794	Total 24hours value manual setting
3795	Total 24hours value manual update
31360	Total 2 channel
31361	Total 2 unit
31362	Total 2 option
31363	Total 2 failure option
31364	Total 2 set point
31366	Total 2 user unit
31367	Total 2 conversion factor
31368	Total 2 preset value

ID	Parameter
31369	Total 2 start/stop
1095	Total 2 reset/preset
31370	Total 2 status input function
3771	Total 2 density lower value
3772	Total 2 density upper value
31390	Total 3 channel
31391	Total 3 unit
31392	Total 3 option
31393	Total 3 failure option
31394	Total 3 set point
31396	Total 3 user unit
31397	Total 3 conversion factor
31398	Total 3 preset value
31399	Total 3 start/stop
1096	Total 3 reset/preset
31400	Total 3 status input function
3780	Total 3 density lower value
3781	Total 3 density upper value
31420	Total 4 channel
31421	Total 4 unit
31422	Total 4 option
31423	Total 4 failure option
31424	Total 4 set point
31426	Total 4 user unit
31427	Total 4 conversion factor
31428	Total 4 preset value
31429	Total 4 start/stop
1097	Total 4 reset/preset
31430	Total 4 status input function
31450	Total 5 channel
31451	Total 5 unit
31452	Total 5 option
31453	Total 5 failure option
31454	Total 5 set point
31456	Total 5 user unit
31457	Total 5 conversion factor
31458	Total 5 preset value
31459	Total 5 start/stop
1098	Total 5 reset/preset
31460	Total 5 status input function
31480	Total 6 channel
31481	Total 6 unit
31482	Total 6 option
31483	Total 6 failure option
31484	Total 6 set point
31486	Total 6 user unit
31487	Total 6 conversion factor
31488	Total 6 preset value

ID	Parameter
31489	Total 6 start/stop
1099	Total 6 reset/preset
31490	Total 6 status input function
31510	Analog input function
1100	Analog input failure option
31512	Analog input low limit
31513	Analog input high limit
31530	NAMUR NE 43 option
31550	Analog output 1 low limit
31551	Analog output 1 high limit
31552	Analog output 1 select
31553	Analog output 1 alarm output
31570	Analog output 2 low limit
31571	Analog output 2 high limit
31572	Analog output 2 select
31573	Analog output 2 alarm output
31590	Pulse/Status output type
31610	Pulse/Status output 1 mode
31611	Pulse output 1 select
31612	Pulse output 1 flow direction
31613	Pulse output 1 unit select
31614	Pulse output 1 active mode
31615	Pulse output 1 width
31616	Pulse output 1 alarm action
31617	Pulse output 1 rate
31618	Pulse output 1 user set alarm value
31619	Frequency output 1 select
31620	Frequency output 1 alarm action
31621	Status output 1 function
31622	Max frequency 1
31623	Min frequency 1
31624	Frequency output 1 user set alarm value
31625	Status output 1 active mode
31640	Pulse/Status output 2 active pulse mode
31641	Pulse/Status output 2 mode
31642	Pulse output 2 select
31643	Pulse output 2 flow direction
31644	Pulse output 2 unit select
31645	Pulse output 2 active mode
31646	Pulse output 2 width
31647	Pulse output 2 alarm action
31648	Pulse output 2 rate
31649	Pulse output 2 user set alarm value
31650	Frequency output 2 select
31651	Frequency output 2 alarm action
31652	Status output 2 function
31653	Max Frequency 2
31654	Min Frequency 2

ID	Parameter
31655	Frequency output 2 user set alarm value
31656	Status output 2 active mode
31670	Status output 3 function
31671	Status output 3 active mode
31691	Double pulse phase shift mode
31694	Double pulse rate
31710	Status input function
31711	Status input active mode
31731	After slug mass flow
3682	After slug density
3683	After slug mass flow fixed value
3684	After slug density fixed value
3789	Average start time
3790	Average end time
31733	After empty pipe
1101	Slug detection level
1102	Slug hysteresis
1103	Slug alarm delay
31736	Drive current damping
31737	Empty pipe criteria
1104	Empty pipe alarm delay
32611	Corrosion criteria
32612	Corrosion damping
32613	Tube leakage criteria
31750	Indicator alarm mode reserved
31793	Language
1112	Display unit selection
31770	Display select 1
31771	Display select 2
31772	Display select 3
31773	Display select 4
31774	Display select 5
31775	Display select 6
31776	Display select 7
31777	Display select 8
31778	Display select 9
31779	Display select 10
31780	Display select 11
31781	Display select 12
31782	Display select 13
31783	Display select 14
31784	Display select 15
31785	Display select 16
31786	Display select 17
31787	Display select 18
31788	Display select 19
31789	Display select 20
1106	Batch display select 1

ID	Parameter
1107	Batch display select 2
1108	Batch display select 3
1109	Batch display select 4
31790	Display damping
31791	Display contrast
31792	Display period
31794	Display format date
31795	Display line
31796	Display scroll
1115	Display measurement mode
31800	Display alarm
31799	Display NE 107
3871	Display total health result
31816	LCD test
31820	Squawk
1113	IRSW operation
31817	Display rotation
31818	Display inversion
3568	Trend offline position
1116	Trend offline LRV
1117	Trend offline URV
3691	Display unit mass flow dual
3692	Display unit density dual
31801	Display format mass flow
31802	Display format density
31803	Display format temperature
31804	Display format pressure
31805	Display format volume flow
31806	Display format reference density
31807	Display format relative density
31808	Display format corrected volume flow
31809	Display format concentration
31810	Display format net mass flow 1
31811	Display format net mass flow 2
31812	Display format net volume flow 1
31813	Display format net volume flow 2
31814	Display format net corrected volume flow
1110	Display format viscosity
31335	Display format total 1
31365	Display format total 2
31395	Display format total 3
31425	Display format total 4
31455	Display format total 5
31485	Display format total 6
1111	Display format batch
3872	Auto proving setting
1178	Viscosity trim select
1179	Viscosity trim offset

ID	Parameter
1180	Viscosity trim gain
1181	Viscosity damping
1182	Viscosity unit
8017	Viscosity user unit dynamic
8018	Viscosity user unit kinematic
8019	Viscosity user unit dynamic conversion factor
8020	Viscosity user unit kinematic conversion factor
14030	Viscosity LRV
1183	Viscosity URV
1184	Viscosity low alarm
1185	Viscosity high alarm
1186	Viscosity low low alarm
1187	Viscosity high high alarm
32670	Device behavior temperature alarm
32672	Device behavior indicator alarm
32673	Device behavior slug detection
32674	Device behavior empty pipe detection
32675	Device behavior corrosion detection
32676	Device behavior autozero alarm
32677	Device behavior batch alarm
32678	Device behavior analog input alarm
32679	Device behavior mass flow high high low low alarm
32680	Device behavior density high high low low alarm
32681	Device behavior temperature high high low low alarm
32682	Device behavior pressure high high low low alarm
32683	Device behavior total 1 threshold exceed
32684	Device behavior mass flow configuration error
32685	Device behavior density configuration error
32686	Device behavior temperature configuration error
32687	Device behavior pressure configuration error
32688	Device behavior volume flow configuration error
32689	Device behavior reference density configuration error
32690	Device behavior relative density configuration error
32691	Device behavior corrected volume flow configuration error
32692	Device behavior calorific value configuration error
32693	Device behavior concentration configuration error
32694	Device behavior net mass flow configuration error
32696	Device behavior net volume flow configuration error
32698	Device behavior net corrected volume flow configuration error
32699	Device behavior viscosity configuration error
32700	Device behavior analog output 1 configuration error
32701	Device behavior analog output 2 configuration error
32702	Device behavior pulse/status output 1 configuration error
32703	Device behavior pulse/status output 2 configuration error
32704	Device behavior double pulse configuration error
32705	Device behavior status output 3 configuration error
32706	Device behavior status input configuration error
32707	Device behavior analog input configuration error

ID	Parameter
32709	Device behavior total configuration error
32710	Device behavior batch configuration error
32711	Device behavior maintenance mode
32712	Device behavior batch warning
32730	Acknowledge behavior slug detection
32731	Acknowledge behavior empty pipe detection
32732	Acknowledge behavior corrosion detection
32733	Acknowledge behavior batch alarm
32734	Acknowledge behavior analog output 1 saturated
32735	Acknowledge behavior analog output 2 saturated
32736	Acknowledge behavior pulse status output 1 saturated
32737	Acknowledge behavior pulse status output 2 saturated
32738	Acknowledge behavior double pulse out saturated
32750	Event setting slug detection
32751	Event setting empty pipe detection
32752	Event setting corrosion detection
32753	Event setting batch alarm
32754	Event setting density fixed
32755	Event setting temperature fixed
32756	Event setting pressure fixed
32757	Event setting reference density fixed
32758	Event setting calorific value fixed
32759	Event setting process variables trim
32760	Event setting analog output 1 saturated
32761	Event setting analog output 2 saturated
32762	Event setting pulse status output 1 saturated
32763	Event setting pulse status output 2 saturated
32764	Event setting double pulse output saturated
32765	Event setting date/time not set
32766	Event setting device configuration locked
32767	Event setting device configuration not locked
1189	Batch mode
1190	Batch select
1191	Batch start/stop
1192	Batch reset
1193	Batch up down select
1194	Batch status input
1195	Batch status output 1
1196	Batch status output 2
1197	Batch status output 3
1198	Batch type select 1
1199	Batch variable select 1
1200	Batch unit 1
1201	Batch quantity 1
1202	Batch primary valve open 1
1203	Batch secondary valve open 1
1204	Batch secondary valve close 1
1205	Max batch time 1

ID	Parameter
1206	Max batch flow 1
1207	Batch user unit 1
1208	Batch user unit conversion factor 1
1209	Batch end judgment value 1
1210	Fixed compensation value 1
1211	Compensation mode select 1
8021	Calculation mode sel 1
8022	Averaging data number 1
1212	Auto compensation 1
1213	Leakage hysteresis time 1
1214	Max leakage time 1
1215	Min batch quantity 1
1216	Max batch quantity 1
1217	Progress indication 1
1218	Batch type select 2
1219	Batch variable select 2
1248	Batch unit 2
1249	Batch quantity 2
1250	Batch primary valve open 2
1251	Batch secondary valve open 2
1252	Batch secondary valve close 2
1253	Max batch time 2
1254	Max batch flow 2
1255	Batch user unit 2
1256	Batch user unit conversion factor 2
1257	Batch end judgment value 2
1258	Fixed compensation value 2
1259	Compensation mode select 2
8023	Calculation mode sel 2
8024	Averaging data number 2
1260	Auto compensation 2
1261	Leakage hysteresis time 2
1262	Max leakage time 2
1263	Min batch quantity 2
1264	Max batch quantity 2
1265	Progress indication 2
1266	Batch type select 3
1267	Batch variable select 3
1268	Batch unit 3
1269	Batch quantity 3
1270	Batch primary valve open 3
1271	Batch secondary valve open 3
1272	Batch secondary valve close 3
1273	Max batch time 3
1274	Max batch flow 3
1275	Batch user unit 3
1276	Batch user unit conversion factor 3
1277	Batch end judgment value 3

ID	Parameter
1278	Fixed compensation value 3
1279	Compensation mode select 3
8025	Calculation mode sel 3
8026	Averaging data number 3
1280	Auto compensation 3
1281	Leakage hysteresis time 3
1282	Max leakage time 3
1283	Min batch quantity 3
1284	Max batch quantity 3
1285	Progress indication 3
1286	Batch type select 4
1287	Batch variable select 4
1288	Batch unit 4
1289	Batch quantity 4
1290	Batch primary valve open 4
1291	Batch secondary valve open 4
1292	Batch secondary valve close 4
1293	Max batch time 4
1294	Max batch flow 4
1295	Batch user unit 4
1296	Batch user unit conversion factor 4
1297	Batch end judgment value 4
1298	Fixed compensation value 4
1299	Compensation mode select 4
8027	Calculation mode sel 4
8028	Averaging data number 4
1301	Auto compensation 4
1302	Leakage hysteresis time 4
1303	Max leakage time 4
1304	Min batch quantity 4
1305	Max batch quantity 4
1306	Progress indication 4
1307	Batch type select 5
1308	Batch variable select 5
1309	Batch unit 5
1311	Batch quantity 5
1312	Batch primary valve open 5
1313	Batch secondary valve open 5
1314	Batch secondary valve close 5
1315	Max batch time 5
1316	Max batch flow 5
1317	Batch user unit 5
1318	Batch user unit conversion factor 5
1319	Batch end judgment value 5
1320	Fixed compensation value 5
1321	Compensation mode select 5
8029	Calculation mode sel 5
8030	Averaging data number 5

ID	Parameter
1322	Auto compensation 5
1323	Leakage hysteresis time 5
1324	Max leakage time 5
1325	Min batch quantity 5
1326	Max batch quantity 5
1327	Progress indication 5
1328	Event acknowledge
1329	Event file name
3558	Monitor file name
1330	User role
1331	Maintenance code
1332	Specialist code
1333	Change maintenance code
1334	Change specialist code
1336	Write lock setting
1337	SIL mode
1338	Clear event history
1339	Process variables additional parameters
1340	Totalizer additional parameters
1341	Display additional parameters
1342	Alarm/Event additional parameters
1343	Alarm/Event history additional parameters
1344	HART burst/event parameters
1345	Double pulse additional parameters
1346	Standard diagnostics additional parameters
1347	Tube health check additional parameters
1348	Batch additional parameters
1349	Logging file name
1350	Logging interval time
1351	Logging 1 select
1352	Logging execute
1353	Logging start date
1354	Logging end time
1356	Logging 2 select
1361	Logging 3 select
1366	Logging 4 select
3521	Drive current URV
3522	Drive current LRV
5080	Process variables simulation select 1
5081	Process variables simulation select 2
32050	Mass flow simulation value
32051	Density simulation value
32052	Temperature simulation value
32053	Pressure simulation value
32054	Calorific simulation value
32055	Volume flow simulation value
32056	Reference density simulation value
32057	Relative density simulation value

ID	Parameter
32058	Corrected volume flow simulation value
32059	Concentration simulation value
32060	Net mass flow 1 simulation value
32061	Net mass flow 2 simulation value
32062	Net volume flow 1 simulation value
32063	Net volume flow 2 simulation value
32064	Net corrected volume flow simulation value
1371	Viscosity simulation value
32080	Clear D/A trim 1
32081	Clear D/A trim 2
32082	Clear AI trim
32083	Clear autozero
32166	Memo 1
32167	Memo 2
32168	Memo 3
32140	Velocity unit
32192	Last calibration date 1
32193	Last calibration date 2
32194	Last calibration date 3
32195	Last calibration date 4
32196	Last calibration date 5
32197	Next calibration date
32198	Last calibration information 1
32199	Last calibration information 2
32200	Last calibration information 3
32201	Last calibration information 4
32202	Last calibration information 5
1379	Backup file name
32222	User configuration backup name 1
32223	User configuration backup date 1
32224	User configuration backup name 2
32225	User configuration backup date 2
32226	User configuration backup name 3
32227	User configuration backup date 3
32228	User configuration backup
32229	Restoration
1396	backup Incomplete
3553	restore Incomplete
32250	Set current date
32251	Set current time
32270	Key code
3538	New password
3539	Enable write 10min
32310	TuHC enable
32312	TuHC continue interval
32313	TuHC continue number
32314	TuHC stiffness change limit
1381	TuHC reference number copy from

ID	Parameter
1405	TuHC retry number
1406	TuHC retry interval
1411	TuHC setting retry
1413	TuHC magnet temperature selection
1414	TuHC fixed temperature
1415	TuHC temperature ratio for magnet 1
1416	TuHC temperature ratio for magnet 2
26000	SKT1
26002	SKT2
26004	SKT3
26006	FT1
26008	FT2
26010	FT3
26024	Sound velocity at reference temperature
26026	Reference temperature for sound velocity
26028	Sound velocity temperature coefficient
26040	VK0
26042	VKT1
26044	VKT2
26064	Process variable compensation
26038	Total temperature hysteresis
26012	Total 1 temperature lower value
26014	Total 1 temperature upper value
26016	Total 2 temperature lower value
26018	Total 2 temperature upper value
26020	Total 3 temperature lower value
26022	Total 3 temperature upper value
26056	Viscosity fixed value
26058	Viscosity value select
26060	Re compensation viscosity value
26062	Re compensation viscosity unit

7.6 IDs stored instead of written parameters

The following table shows the IDs which are stored instead of the written parameters:

Parameters	Stored ID
NOC pressure fixed value	Concentration select
NOC density hysteresis GVF density hysteresis	GVF select

Parameters	Stored ID
Volume flow unit Corrected volume flow unit Net mass flow 1/2 unit Net volume flow 1/2 unit Net corrected volume flow unit Density unit Temperature unit Relative density unit Pressure unit Velocity unit Concentration unit set 1/2/3/4 Analog input temperature unit Analog input pressure unit Analog input calorific unit	Mass flow unit
Pulse output 2 unit select Batch 1/2/3/4/5 unit Calofiric unit Viscosity unit Totalizer 1/2/3/4/5/6 unit	Pulse output 1 unit select
Oil density calculator set 1 Thermal expansion factor set 1 K0 coefficient set 1 K1 coefficient set 1 K2 coefficient set 1	Reference oil density set 1
Oil density calculator set 2 Thermal expansion factor set 2 K0 coefficient set 2 K1 coefficient set 2 K2 coefficient set 2	Reference oil density set 2
Oil density calculator set 3 Thermal expansion factor set 3 K0 coefficient set 3 K1 coefficient set 3 K2 coefficient set 3	Reference oil density set 3
Oil density calculator set 4 Thermal expansion factor set 4 K0 coefficient set 4 K1 coefficient set 4 K2 coefficient set 4	Reference oil density set 4
Water density calculator set 1 Water density UNESCO1980 set 1 Reference temperature set 1 Salinity ppt set 1 Salinity fixed value set 1	Reference water density set 1

Parameters	Stored ID
Water density calculator set 2 Water density UNESCO1980 set 2 Reference temperature set 2 Salinity ppt set 2 Salinity fixed value set 2	Reference water density set 2
Water density calculator set 3 Water density UNESCO1980 set 3 Reference temperature set 3 Salinity ppt set 3 Salinity fixed value set 3	Reference water density set 3
Water density calculator set 4 Water density UNESCO1980 set 4 Reference temperature set 4 Salinity ppt set 4 Salinity fixed value set 4	Reference water density set 4
Device behavior indicator alarm Device behavior slug detection Device behavior empty pipe detection Device behavior corrosion detection Device behavior autozero alarm Device behavior batch alarm	Device behavior temperature alarm
Device behavior mass flow high high low low alarm Device behavior density high high low low alarm Device behavior temperature high high low low alarm Device behavior pressure high high low low alarm Device behavior total 1 threshold exceed Device behavior mass flow config error Device behavior density config error	Device behavior analog input alarm
Device behavior pressure configuration error Device behavior volume flow configuration error Device behavior reference density configuration error Device behavior relative density configuration error Device behavior corrected volume flow configuration error Device behavior calorific value configuration error	Device behavior temperature configuration error

Parameters	Stored ID
Device behavior net volume flow configuration error Device behavior net corrected volume flow configuration error Device behavior viscosity configuration error Device behavior analog output 1 configuration error Device behavior analog output 2 configuration error Device behavior pulse/status output 1 configuration error Device behavior pulse/status output 2 configuration error	Device behavior net mass flow configuration error
Device behavior status output 3 configuration error Device behavior status input configuration error Device behavior analog input configuration error Device behavior total configuration error Device behavior batch configuration error	Device behavior double pulse configuration error
Device behavior batch warning Acknowledge behavior slug detection Acknowledge behavior empty pipe detection Acknowledge behavior corrosion detection Acknowledge behavior batch alarm Device behavior concentration configuration error	Device behavior maintenance mode
Acknowledge behavior analog output 2 saturated Acknowledge behavior pulse status output 1 saturated Acknowledge behavior pulse status output 2 saturated Acknowledge behavior double pulse out saturated Event setting slug detection Event setting empty pipe detection Event setting corrosion detection	Acknowledge behavior analog output 1 saturated
Event setting density fixed Event setting temperature fixed Event setting pressure fixed Event setting reference density fixed Event setting calorific value fixed Event setting process variables trim Event setting analog output 1 saturated	Event setting batch alarm

Parameters	Stored ID
Event setting pulse status output 1 saturated Event setting pulse status output 2 saturated Event setting double pulse output saturated Event setting date/time not set Event setting device configuration locked Event setting device configuration not locked	Event setting analog output 2 saturated
Frequency output 1 alarm action Max frequency 1 Min frequency 1 Frequency output 1 user set alarm value	Frequency output 1 select
Frequency output 2 alarm action Max frequency 2 Min frequency 2 Frequency output 2 user set alarm value	Frequency output 2 select
Display select 2 – 8	Display select 1
Display format density Display format temperature Display format pressure Display format volume flow Display format total 1 – 3	Display format mass flow
Mass flow URV Mass flow damping Mass flow damping pulse/total Mass flow lowcut	Mass flow LRV
Density URV Density damping Density lowcut	Density LRV
Temperature URV Temperature damping	Temperature LRV
Analog input temperature URV	Analog input temperature LRV
Pressure URV Pressure damping	Pressure LRV
Analog input pressure URV	Analog input pressure LRV
Volume flow URV Volume flow damping Volume flow damping pulse/total Volume flow lowcut	Volume flow LRV
Reference density URV Reference density damping Reference density lowcut	Reference density LRV
Relative density URV Relative density damping	Relative density LRV

Parameters	Stored ID
Corrected volume flow URV Corrected volume flow damping Corrected volume flow damping pulse/total Corrected volume flow lowcut	Corrected volume flow LRV
Analog input calorific URV	Analog input calorific LRV
Concentration measurement URV set 1 Concentration damping	Concentration measurement LRV set 1
Concentration measurement URV set 2 Concentration damping	Concentration measurement LRV set 2
Concentration measurement URV set 3 Concentration damping	Concentration measurement LRV set 3
Concentration measurement URV set 4 Concentration damping	Concentration measurement LRV set 4
Net mass flow 1 URV Net mass flow 1 damping Net mass flow 1 damping pulse/total Net mass flow 1 lowcut	Net mass flow 1 LRV
Net mass flow 2 URV Net mass flow 2 damping Net mass flow 2 damping pulse/total Net mass flow 2 lowcut	Net mass flow 2 LRV
Net volume flow 1 URV Net volume flow 1 damping Net volume flow 1 damping pulse/total Net volume flow 1 lowcut	Net volume flow 1 LRV
Net volume flow 2 URV Net volume flow 2 damping Net volume flow 2 damping pulse/total Net volume flow 2 lowcut	Net volume flow 2 LRV
Net corrected volume flow URV Net corrected volume flow damping Net corrected volume flow damping pulse/total Net corrected volume flow lowcut	Net corrected volume flow LRV
Viscosity URV Viscosity damping	Viscosity LRV
Mass flow high alarm Mass flow low low alarm Mass flow high high alarm Mass flow trim select Mass flow trim offset Mass flow trim gain	Mass flow low alarm

Parameters	Stored ID
Density high alarm Density low low alarm Density high high alarm Density trim select Density trim offset Density trim gain	Density low alarm
Temperature high alarm Temperature low low alarm Temperature high high alarm Temperature trim select Temperature trim offset Temperature trim gain	Temperature low alarm
Pressure high alarm Pressure low low alarm Pressure high high alarm Pressure trim select Pressure trim offset Pressure trim gain	Pressure low alarm
Volume flow high alarm Volume flow low low alarm Volume flow high high alarm Volume flow trim select Volume flow trim offset Volume flow trim gain	Volume flow low alarm
Reference density high alarm Reference density low low alarm Reference density high high alarm Reference density trim select Reference density trim offset Reference density trim gain	Reference density low alarm
Relative density high alarm Relative density low low alarm Relative density high high alarm Relative density trim select Relative density trim offset Relative density trim gain	Relative density low alarm
Corrected volume flow high alarm Corrected volume flow low low alarm Corrected volume flow high high alarm Corrected volume flow trim select Corrected volume flow trim offset Corrected volume flow trim gain	Corrected volume flow low alarm

Parameters	Stored ID
Concentration measurement high alarm set 1 Concentration measurement low low alarm set 1 Concentration measurement high high alarm set 1 Concentration measurement trim select Concentration measurement trim offset Concentration measurement trim gain	Concentration measurement low alarm set 1
Concentration measurement high alarm set 2 Concentration measurement low low alarm set 2 Concentration measurement high high alarm set 2 Concentration measurement trim select Concentration measurement trim offset Concentration measurement trim gain	Concentration measurement low alarm set 2
Concentration measurement high alarm set 3 Concentration measurement low low alarm set 3 Concentration measurement high high alarm set 3 Concentration measurement trim select Concentration measurement trim offset Concentration measurement trim gain	Concentration measurement low alarm set 3
Concentration measurement high alarm set 4 Concentration measurement low low alarm set 4 Concentration measurement high high alarm set 4 Concentration measurement trim select Concentration measurement trim offset Concentration measurement trim gain	Concentration measurement low alarm set 4
Net mass flow 1 high alarm Net mass flow 1 low low alarm Net mass flow 1 high high alarm Net mass flow 1 trim select Net mass flow 1 trim offset Net mass flow 1 trim gain	Net mass flow 1 low alarm
Net mass flow 2 high alarm Net mass flow 2 low low alarm Net mass flow 2 high high alarm Net mass flow 2 trim select Net mass flow 2 trim offset Net mass flow 2 trim gain	Net mass flow 2 low alarm

Parameters	Stored ID
Net volume flow 1 high alarm Net volume flow 1 low low alarm Net volume flow 1 high high alarm Net volume flow 1 trim select Net volume flow 1 trim offset Net volume flow 1 trim gain	Net volume flow 1 low alarm
Net volume flow 2 high alarm Net volume flow 2 low low alarm Net volume flow 2 high high alarm Net volume flow 2 trim select Net volume flow 2 trim offset Net volume flow 2 trim gain	Net volume flow 2 low alarm
Net corrected volume flow high alarm Net corrected volume flow low low alarm Net corrected volume flow high high alarm Net corrected volume flow trim select Net corrected volume flow trim offset Net corrected volume flow trim gain	Net corrected volume flow low alarm
Viscosity high alarm Viscosity low low alarm Viscosity high high alarm Viscosity trim select Viscosity trim offset Viscosity trim gain	Viscosity low alarm
Mass flow user unit conversion factor Mass flow bi-directional mode	Mass flow user unit
Density user unit conversion factor	Density user unit
Volume flow user unit conversion factor Volume flow bi-directional mode	Volume flow user unit
Net mass flow 1 user unit conversion factor Net mass flow 1 bi-directional mode	Net mass flow 1 user unit
Net mass flow 2 user unit conversion factor Net mass flow 2 bi-directional mode	Net mass flow 2 user unit
Net volume flow 1 user unit conversion factor Net volume flow 1 bi-directional mode	Net volume flow 1 user unit
Net volume flow 2 user unit conversion factor Net volume flow 2 bi-directional mode	Net volume flow 2 user unit
Net corrected volume flow user unit conversion factor Net corrected volume flow bi-directional mode	Net corrected volume flow user unit

Parameters	Stored ID
Total 1 option Total 1 failure option Total 1 set point Total 1 preset value Total 1 start/stop Total 1 reset/preset	Total 1 channel
Total 2 option Total 2 failure option Total 2 set point Total 2 preset value Total 2 start/stop Total 2 reset/preset	Total 2 channel
Total 3 option Total 3 failure option Total 3 set point Total 3 preset value Total 3 start/stop Total 3 reset/preset	Total 3 channel
Total 4 option Total 4 failure option Total 4 set point Total 4 preset value Total 4 start/stop Total 4 reset/preset	Total 4 channel
Total 5 option Total 5 failure option Total 5 set point Total 5 preset value Total 5 start/stop Total 5 reset/preset	Total 5 channel
Total 6 option Total 6 failure option Total 6 set point Total 6 preset value Total 6 start/stop Total 6 reset/preset	Total 6 channel
SK20 reverse FTC1 FTCK KD FL20	SK20
Concentration B 1 set 1 Concentration C 1 set 1 Concentration D 1 set 1 Concentration temperature 1 set 1	Concentration A 1 set 1

Parameters	Stored ID
Concentration B 2 set 1 Concentration C 2 set 1 Concentration D 2 set 1 Concentration temperature 2 set 1	Concentration A 2 set 1
Concentration B 3 set 1 Concentration C 3 set 1 Concentration D 3 set 1 Concentration temperature 3 set 1	Concentration A 3 set 1
Concentration B 4 set 1 Concentration C 4 set 1 Concentration D 4 set 1 Concentration temperature 4 set 1	Concentration A 4 set 1
Concentration B 5 set 1 Concentration C 5 set 1 Concentration D 5 set 1 Concentration temperature 5 set 1	Concentration A 5 set 1
Concentration B 6 set 1 Concentration C 6 set 1 Concentration D 6 set 1 Concentration temperature 6 set 1	Concentration A 6 set 1
Concentration B 7 set 1 Concentration C 7 set 1 Concentration D 7 set 1 Concentration temperature 7 set 1	Concentration A 7 set 1
Concentration B 8 set 1 Concentration C 8 set 1 Concentration D 8 set 1 Concentration temperature 8 set 1	Concentration A 8 set 1
Concentration B 1 set 2 Concentration C 1 set 2 Concentration D 1 set 2 Concentration temperature 1 set 2	Concentration A 1 set 2
Concentration B 2 set 2 Concentration C 2 set 2 Concentration D 2 set 2 Concentration temperature 2 set 2	Concentration A 2 set 2
Concentration B 3 set 2 Concentration C 3 set 2 Concentration D 3 set 2 Concentration temperature 3 set 2	Concentration A 3 set 2
Concentration B 4 set 2 Concentration C 4 set 2 Concentration D 4 set 2 Concentration temperature 4 set 2	Concentration A 4 set 2

Parameters	Stored ID
Concentration B 5 set 2 Concentration C 5 set 2 Concentration D 5 set 2 Concentration temperature 5 set 2	Concentration A 5 set 2
Concentration B 6 set 2 Concentration C 6 set 2 Concentration D 6 set 2 Concentration temperature 6 set 2	Concentration A 6 set 2
Concentration B 7 set 2 Concentration C 7 set 2 Concentration D 7 set 2 Concentration temperature 7 set 2	Concentration A 7 set 2
Concentration B 8 set 2 Concentration C 8 set 2 Concentration D 8 set 2 Concentration temperature 8 set 2	Concentration A 8 set 2
Concentration B 1 set 3 Concentration C 1 set 3 Concentration D 1 set 3 Concentration temperature 1 set 3	Concentration A 1 set 3
Concentration B 2 set 3 Concentration C 2 set 3 Concentration D 2 set 3 Concentration temperature 2 set 3	Concentration A 2 set 3
Concentration B 3 set 3 Concentration C 3 set 3 Concentration D 3 set 3 Concentration temperature 3 set 3	Concentration A 3 set 3
Concentration B 4 set 3 Concentration C 4 set 3 Concentration D 4 set 3 Concentration temperature 4 set 3	Concentration A 4 set 3
Concentration B 5 set 3 Concentration C 5 set 3 Concentration D 5 set 3 Concentration temperature 5 set 3	Concentration A 5 set 3
Concentration B 6 set 3 Concentration C 6 set 3 Concentration D 6 set 3 Concentration temperature 6 set 3	Concentration A 6 set 3
Concentration B 7 set 3 Concentration C 7 set 3 Concentration D 7 set 3 Concentration temperature 7 set 3	Concentration A 7 set 3

Parameters	Stored ID
Concentration B 8 set 3 Concentration C 8 set 3 Concentration D 8 set 3 Concentration temperature 8 set 3	Concentration A 8 set 3
Concentration B 1 set 4 Concentration C 1 set 4 Concentration D 1 set 4 Concentration temperature 1 set 4	Concentration A 1 set 4
Concentration B 2 set 4 Concentration C 2 set 4 Concentration D 2 set 4 Concentration temperature 2 set 4	Concentration A 2 set 4
Concentration B 3 set 4 Concentration C 3 set 4 Concentration D 3 set 4 Concentration temperature 3 set 4	Concentration A 3 set 4
Concentration B 4 set 4 Concentration C 4 set 4 Concentration D 4 set 4 Concentration temperature 4 set 4	Concentration A 4 set 4
Concentration B 5 set 4 Concentration C 5 set 4 Concentration D 5 set 4 Concentration temperature 5 set 4	Concentration A 5 set 4
Concentration B 6 set 4 Concentration C 6 set 4 Concentration D 6 set 4 Concentration temperature 6 set 4	Concentration A 6 set 4
Concentration B 7 set 4 Concentration C 7 set 4 Concentration D 7 set 4 Concentration temperature 7 set 4	Concentration A 7 set 4
Concentration B 8 set 4 Concentration C 8 set 4 Concentration D 8 set 4 Concentration temperature 8 set 4	Concentration A 8 set 4
Batch variable select 1 Batch quantity 1 Batch primary valve open 1 Batch primary valve close 1 Batch secondary valve open 1 Batch secondary valve close 1	Batch type select 1

Parameters	Stored ID
Batch variable select 2 Batch quantity 2 Batch primary valve open 2 Batch primary valve close 2 Batch secondary valve open 2 Batch secondary valve close 2	Batch type select 2
Batch variable select 3 Batch quantity 3 Batch primary valve open 3 Batch primary valve close 3 Batch secondary valve open 3 Batch secondary valve close 3	Batch type select 3
Batch variable select 4 Batch quantity 4 Batch primary valve open 4 Batch primary valve close 4 Batch secondary valve open 4 Batch secondary valve close 4	Batch type select 4
Batch variable select 5 Batch quantity 5 Batch primary valve open 5 Batch primary valve close 5 Batch secondary valve open 5 Batch secondary valve close 5	Batch type select 5
Max batch flow 1 Batch end judgment value 1 Fixed compensation value 1 Compensation mode select 1 Auto compensation 1 Leakage hysteresis time 1	Max batch time 1
Max batch flow 2 Batch end judgment value 2 Fixed compensation value 2 Compensation mode select 2 Auto compensation 2 Leakage hysteresis time 2	Max batch time 2
Max batch flow 3 Batch end judgment value 3 Fixed compensation value 3 Compensation mode select 3 Auto compensation 3 Leakage hysteresis time 3	Max batch time 3

Parameters	Stored ID
Max batch flow 4 Batch end judgment value 4 Fixed compensation value 4 Compensation mode select 4 Auto compensation 4 Leakage hysteresis time 4	Max batch time 4
Max batch flow 5 Batch end judgment value 5 Fixed compensation value 5 Compensation mode select 5 Auto compensation 5 Leakage hysteresis time 5	Max batch time 5
Batch user unit 1 Min batch quantity 1 Max batch quantity 1 Progress indication 1	Batch user unit conversion factor 1
Batch user unit 2 Min batch quantity 2 Max batch quantity 2 Progress indication 2	Batch user unit conversion factor 2
Batch user unit 3 Min batch quantity 3 Max batch quantity 3 Progress indication 3	Batch user unit conversion factor 3
Batch user unit 4 Min batch quantity 4 Max batch quantity 4 Progress indication 4	Batch user unit conversion factor 4
Batch user unit 5 Min batch quantity 5 Max batch quantity 5 Progress indication 5	Batch user unit conversion factor 5
Analog output 1 high limit Analog output 1 select Analog output 1 alarm output	Analog output 1 low limit
Analog output 2 high limit Analog output 2 select Analog output 2 alarm output	Analog output 2 low limit
Pulse/Status output 1 mode Pulse output 1 flow direction Pulse output 1 active mode Pulse output 1 width Pulse output 1 alarm action Pulse output 1 rate Pulse output 1 user set alarm value	Pulse output 1 select

Parameters	Stored ID
Pulse/Status output 2 mode Pulse output 2 flow direction Pulse output 2 active mode Pulse output 2 width Pulse output 2 alarm action Pulse output 2 rate Pulse output 2 user set alarm value	Pulse output 2 select
Logging 1 select Logging execute Logging end time	Logging 1 interval time
Logging 2 select	No parameter [ID: 1355]
Logging 3 select	No parameter [ID: 1360]
Logging 4 select	No parameter [ID: 1365]

Published by
Siemens AG

Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

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