

SIEMENS



SITRANS F

Ultrasonic Flowmeters

FST020 IP65 NEMA 4X

Function manual

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Answers for industry.

SITRANS F

Ultrasonic Flowmeters FST020 Function manual

Function Manual

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Legal information

Warning notice system

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indicates that death or severe personal injury **may** result if proper precautions are not taken.

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Introduction

1.1 Function Manual scope

Note

This Function Manual applies to the SITRANS FST020 only.

The FST020 transmitter can be connected to sensor types FSS200 and FSS300.

1.2 Purpose of this documentation

This manual contains a description of all device parameters and is aimed at persons configuring the device.

The default settings and the setting ranges are listed in tables for each parameter. Furthermore, the relation, if any, between parameters is described.

As of chapter 3, Setup (Page 19), the chapter and subchapter numbers equal the parameter numbers in the HMI structure.

For parameters with access level other than User (for example Read only or Expert), the access level is stated in parenthesis after the parameter name.

1.3 Quick start wizards

The device offers a set of wizards which will guide you through configuration of parameters essential for your application. The quick commissioning wizards are described in the Commissioning chapter of the device Operating Instructions.

1.4 Support

For product support, or to contact a Siemens representative, see Technical support (Page 187).

1.5 Product compatibility

The following table shows major changes in the documentation compared to the previous edition.

Edition	Remarks	Product compatibility	Compatibility version of device integration package	
09/2017	First edition	Modbus FW: 2.01.00-04 HW: 002 or later	SIMATIC PDM V8.2 SP1 or later AMS Device Manager 12.0 SITRANS DTM V4.1 Field communicator V3.8	EDD: 1.00.00 or later EDD: 1.00.00 or later EDD: 1.00.00 or later EDD: 1.00.00 or later

1.6 Document history

The following table shows major changes in the documentation compared to the previous edition.

The most important changes in the documentation when compared with the respective previous edition are given in the following table.

Edition	Note
09/2017	First edition

1.7 Device documentation package

The user documentation package for this product includes the following documents

Document	Purpose	Intended users	Availability
<i>Application planning sheets</i>	<i>Contains all information needed to</i> <i>plan the mechanical / physical installation and control signals before the product arrives</i>	<i>Plant design engineers, control system designers</i>	<i>Sent to the customer with Quote</i> <i>Available for download from homepage</i>
Operating Instructions	Contains all information needed to - check and identify the delivered package - install and electrically connect the product - commission the product, (setting parameters via HMI menu) - operate and maintain the device on a daily basis - troubleshoot and remedy minor operation interruptions	Instrument technicians, plant operators	- On documentation disk - Available for download from homepage - Hardcopy can be purchased via PIA Life Cycle Portal

Document	Purpose	Intended users	Availability
Sensor Installation Manual	Contains all information needed to install Clamp-on sensors.	Mechanical and electrical installers; instrument technicians	• Included in the delivery • On documentation disk • Available for download from homepage
Functions Manual	Contains • descriptions of all functions that can be accessed via the local display (HMI) • guide to setting parameters to obtain optimum operation of the device	Instrument technicians, plant operators	• Available for download from homepage • Hardcopy can be purchased via PIA Life Cycle Portal

Quick start

2.1 Introduction

The quick start wizard topics and introductory explanations are listed below. For detailed quick start wizard procedures refer to the FST020 Operating Instructions manual.

2.2 Quick commissioning

Description

Quick commissioning - The Quick commissioning wizard will guide you through configuration of parameters essential for your application. You configure parameters essential for your application by selecting the configuration path and sub-wizards appropriate for your application.

2.3 Sensor settings

Description

The sensor settings wizard will guide you through configuration of essential parameters.

2.4 Process values

The Process values wizard will guide you through setup of process values for your application. The prioritizing of the process values automatically configures the measurement views on the display. The process value configured as 1st process value appears as first value in the views.

2.5 Inputs and outputs

The Inputs and outputs wizard will guide you through setup of inputs and outputs on the available channels.

2.6 Copy configuration

This wizard allows you to copy the configuration from the SensorFlash to the device.

Setup

3.1 Sensor settings

3.1.1 Length unit

Description

Unit for length values.

3.1.2 Length unit - settings

Setting	ft; m; in; cm; mm
Default	m

Related

Path	Setup → Sensor settings → Length units
------	--

3.1.3 Pipe settings

3.1.3.1 Pipe class

Description

Pipe class - Read only. Can only be changed via the Sensor Wizard. Indicates the pipe class chosen from the pipe data library included in the sensor setup wizard.

3.1.3.2 Pipe size

Description

Pipe size - Read only. Can only be changed via the Sensor Wizard. Indicates the pipe class chosen from the pipe data library included in the sensor setup wizard.

3.1.3.3 Outer pipe diameter**Description**

External pipe diameter.

Setting	0.006 m to 10.0 m
Default	0.1 m

Related

Path	Setup → Sensor settings → Pipe settings → Outer pipe diameter
------	---

3.1.3.4 Wall thickness**Description**

Pipe wall thickness.

Setting	1.0 ⁻⁶ m to 0.5 m
Default	0.001 m

Related

Path	Setup → Sensor settings → Pipe settings → Wall thickness
------	--

3.1.3.5 Pipe material**Description**

Pipe material - Read only. Can only be changed via the Sensor Wizard.

Setting	Read only: Carbon steel; Stainless steel; ABS plastic; Aluminum; Black iron; Brass; Cast iron; Copper nickel 70/30; Copper nickel 90/10; Copper; Ductile iron; FRP plastic; Glass; Hastelloy; Inconel; Kynar plastic; Monel; Nickel; Polyethylene; PVC plastic; Teflon; Titanium
Default	Can only be changed via the Sensor wizard

Related

Path	Setup → Sensor settings → Pipe settings → Pipe material
------	---

3.1.3.6 Wall sound velocity**Description**

Pipe wall material sound velocity (clamp-on).

Use the shear velocity for metallic pipes. Use the longitudinal velocity for plastic pipes.

Setting	200.0 m/s to 4000.0 m/s
Default	3000.0 m/s

Related

Path	Setup → Sensor settings → Pipe settings → Wall sound velocity
------	---

3.1.3.7 Liner settings**3.1.3.7.1 Liner thickness****Description**

Pipe liner thickness

Setting	0.0 m to 0.5 m
Default	0.0 m

Related

Path	Setup → Sensor settings → Pipe settings → Liner settings → Liner thickness
------	--

3.1.3.7.2 Liner material**Description**

Liner material - Read only. Can only be changed via the Sensor Wizard.

Setting	Read only: Custom; Cement; Coal tar; Enamel; Glass; Plastic; Hi_dens_Poly; PTFE; Rubber
Default	Custom

Related

Path	Setup → Sensor settings → Pipe settings → Liner settings → Liner material
------	---

3.1.3.7.3 Liner sound velocity**Description**

Liner material sound velocity (clamp-on).

Setting	200.0 m/s to 4000.0 m/s
Default	2000.0 m/s

Related

Path	Setup → Sensor settings → Pipe settings → Liner settings → Liner sound velocity
------	---

3.1.3.8 Inner pipe roughness**Description**

Roughness of inner pipe/liner material.

Setting	0.0 m to 0.01 m
Default	0.0001 m

Related

Path	Setup → Sensor settings → Pipe settings → Inner pipe roughness
------	--

3.1.3.9 Inner pipe diameter**Description**

Read only. Calculated inner diameter of pipe (clamp-on).

Setting	
Default	0.0 m

Related

Path	Setup → Sensor settings → Pipe settings → Inner pipe diameter
------	---

3.1.4 Upstream and downstream conditions**3.1.4.1 Disturbed flow profile compensation****Description**

Disturbed flow profile compensation enable/disable

Setting	Enable; Disabled
Default	Disabled

Related

Path	Setup → Sensor settings → Upstream and downstream conditions → Disturbed flow profile compensation
------	--

3.1.4.2 Type of upstream condition

Description

Compensation for upstream pipe geometry.

Setting	Straight run; Single elbow; Double elbow (in-plane); Double elbow (out-of-plane); Reducer; Expansion
Default	Straight run

Related

Path	Setup → Sensor settings → Upstream and downstream conditions → Type of upstream condition
------	---

3.1.4.3 Upstream distance

Description

The distance to the upstream flow disturbance. The distance is given in pipe diameters.

Used for clamp-on flow profile compensation.

Setting	0 to 40
Default	0

Related

Path	Setup → Sensor settings → Upstream and downstream conditions → Upstream distance
------	--

3.1.4.4 Type of downstream condition

Description

Compensation for downstream pipe geometry.

Setting	Straight run; Single elbow; Double elbow (in-plane); Double elbow (out-of-plane); Reducer; Expansion
Default	Straight run

Related

Path	Setup → Sensor settings → Upstream and downstream conditions → Type of downstream condition
------	---

3.1.4.5 Downstream distance

Description

The distance to the downstream flow disturbance. The distance is given in pipe diameters.

Used for clamp-on flow profile compensation.

Setting	0 to 40
Default	0

Related

Path	Setup → Sensor settings → Upstream and downstream conditions → Downstream distance
------	--

3.1.5 Medium characteristics

3.1.5.1 Process medium type

Description

Process medium types - Read only. Can only be changed via the Sensor Wizard. Indicates the fluid medium type chosen from the fluid data library included in the sensor setup wizard.

3.1.5.2 Expected sound velocity

Description

Expected sound velocity in the medium at process temperature.

Setting	100.0 m/s to 2500.0 m/s
Default	1500.0 m/s

Related

Path	Setup → Sensor settings → Fluid settings → Expected sound velocity
------	--

3.1.5.3 Process temperature

Description

Temperature of media used for compensation.

Input during setup.

Setting	-273.0 °C to 400.0 °C
Default	20.0 °C

Related

Path	Setup → Sensor settings → Medium characteristics → Process temperature
------	--

3.1.5.4 Kinematic viscosity

Description

Viscosity of media used for compensation.

Input during setup.

Setting	0.00 m ² /s to 5000.0 m ² /s
Default	0.000001 m ² /s

Related

Path	Setup → Sensor settings → Medium characteristics → Kinematic viscosity
------	--

3.1.5.5 Process density

Description

Density of media used for compensation.

Input during setup.

Setting	0.0 kg/m ³ to 2000.0 kg/m ³
Default	1000.0 kg/m ³

Related

Path	Setup → Sensor settings → Medium characteristics → Process density
------	--

3.1.6 Sensor selection

3.1.6.1 Sensor model

Description

Installed sensor model (for multi-path all must be the same). Read only. Can only be changed via the Sensor Wizard. Indicates the Sensor model chosen from the sensor setup wizard.

Setting	Read only: FSS200 high precision; FSS200 / 1011 Universal; FSS200 / 991 high temperature; 1011 high precision liquid
Default	FSS200 / 1011 Universal

Related

Path	Setup → Sensor settings → Sensor selection → Sensor model
------	---

3.1.6.2 Clamp-on sensor size**Description**

Installed sensor size. Read only. Can only be changed via the Sensor Wizard. Indicates the Sensor model chosen from the sensor setup wizard.

3.1.6.3 Nominal sensor frequency**Description**

Nominal frequencies for the sensors

Setting	80000.0 m/s to 4000000.0 m/s
Default	1100000.0 m/s

Related

Path	Setup → Sensor settings → Sensor selection → Nominal sensor frequency
------	---

3.1.6.4 Sensor crystal projection**Description**

Length of the crystal projection onto the emitting surface of the sensor (clamp-on). Access level: Expert user only.

Setting	0.0 m to 0.3 m
Default	0.03409 m

Related

Path	Setup → Sensor settings → Sensor settings → Sensor crystal projection
------	---

3.1.6.5 Sensor phase velocity**Description**

The velocity at which the wave fronts traverse the interface between the wedge and pipe. Access level: Expert user only.

Setting	1000.0 m/s to 20000.0 m/s
Default	3695.5 m/s

Related

Path	Setup → Sensor settings → Sensor settings → Sensor phase velocity
------	---

3.1.6.6 Sensor inactive wedge

Description

The part of the wedge that is not part of the sound path. Access level: Expert user only.

Setting	0.0 m to 0.05 m
Default	0.00076 m

Related

Path	Setup → Sensor settings → Sensor settings → Sensor inactive wedge
------	---

3.1.6.7 Sensor fixed time

Description

Fixed time in sensor wedge. Access level: Expert user only.

Setting	2.0×10^{-6} s to 200.0×10^{-6} s
Default	10.61×10^{-6} s

Related

Path	Setup → Sensor settings → Sensor settings → Sensor fixed time
------	---

3.1.6.8 Mounting hole offset

Description

Distance between spacer hole and sensor front face.

Setting	0.0 m to 0.05 m
Default	0.00953 m

Related

Path	Setup → Sensor settings → Sensor settings → Mounting hole offset
------	--

3.1.6.9 Spacing offset

Description

Sensor spacing offset

Setting	MIN; NOM; MAX and A,B, C, D for High Temperature sensors
Default	MIN

Related

Path	Setup → Sensor settings → Sensor selection → Spacing offset
------	---

3.1.6.10 Temperature code of the sensor**Description**

Temperature code selections for sensors.

Setting	T1 (21°C), T2, T3
Default	T1 (21°C)

Related

Path	Setup → Sensor settings → Sensor selection → Temperature code of the sensor
------	---

3.1.6.11 Temperature compensation factor**Description**

Temperature compensation factors for the sensors.

Setting	0.0001 to 0.0009
Default	0.000638

Related

Path	Setup → Sensor settings → Sensor selection → Temperature compensation factor
------	--

3.1.6.12 Length of sensor cables**Description**

Length of sensor cable between transmitter/DSL and any sensors. All cables must have the same length.

Setting	0.0 m to 20.0 m
Default	0.0 m

Related

Path	Setup → Sensor settings → Sensor selection → Length of sensor cables
------	--

3.1.7 Path settings

3.1.7.1 Installed paths

Description

Bit encoded value containing installed paths for clamp-on systems.

Bit 0: Path 1 installed

Setting	0 to 31
Default	0

Related

Path	Setup → Sensor settings → Path settings → Installed paths
------	---

3.1.7.2 Path 1

3.1.7.2.1 Sensor frequency

Description

Desired sensor frequency for path 1. Read only.

Setting	80000.0 Hz to 4000000.0 Hz
Default	

Related

Path	Setup → Sensor settings → Path settings → Path 1 → Sensor frequency
------	---

3.1.7.2.2 Path geometry

Description

The number of crossings the signal makes through the pipe (Reflect or Direct geometry for Path 1).

For example:

Direct (1 traverse)

Reflect (2 traverse)

Direct (3 traverse)

Reflect (4 traverse)

Setting	1 to 10
Default	1

Related

Path	Setup → Sensor settings → Path settings → Path 1 → Path geometry
------	--

3.1.7.2.3 Sensor spacing**Description**

Sensor spacing - Distance between the front faces of the sensors for path 1.

Setting	-100.0 m to 100.0 m
Default	0.0 m

Related

Path	Setup → Sensor settings → Path settings → Path 1 → Sensor spacing
------	---

3.1.7.2.4 Zero point adjustment**Description**

Zero point adjustment. Can only be changed via the Sensor Wizard.

Note**Important**

Please stop all flow in the pipe and perform this function. The flow velocity is measured prior and after the function has been applied.

Setting	5 to 300
Default	10

Related

Path	Setup → Sensor settings → Path settings → Path 1 → Zero point adjustment → Time duration
------	--

3.1.7.2.5 Serial number**Description**

Serial number of sensor (clamp-on)

Setting	
Default	

Related

Path	Setup → Sensor settings → Path settings → Path 1 → Serial number
------	--

3.1.7.3 Path diagnostic alarm limits**3.1.7.3.1 Percent bursts accepted alarm limit****Description**

Sets the desired limit for the percentage of accepted bursts. If measured percentage accepted burst drops below this limit for any installed path, an alarm will be issued.

Setting	Min: 0%; Max: 100%
Default	50%

Related

Path	Setup → Sensor settings → Path settings → Path diagnostic alarm limits → Percent bursts accepted alarm limit
------	--

3.1.7.3.2 Correlation factor alarm limit**Description**

Sets the desired limit for the correlation factor. If the measured correlation factor drops below this limit for any installed path, an alarm will be issued.

Setting	Min: 0.0; Max: 1.0
Default	0.95

Related

Path	Setup → Sensor settings → Path settings → Path diagnostic alarm limits → Correlation factor alarm limit
------	---

3.1.7.3.3 RxGain alarm limit**Description**

Sets the limit for the RxGain value. If the RxGain goes above this limit for any installed path, an alarm will be issued.

Setting	Min: 0.0 dB; Max: 100.0 dB
Default	50.0 dB

Related

Path	Setup → Sensor settings → Path settings → Path diagnostic alarm limits → RxGain alarm limit
------	---

3.1.7.3.4 SNR alarm limit**Description**

Sets the desired limit for the measured SNR. If the measured SNR drops below this limit for any installed path, an alarm will be issued.

Setting	Min: 0.0 dB; Max: 100 dB
Default	20 dB

Related

Path	Setup → Sensor settings → Path settings → Path diagnostic alarm limits → SNR alarm limit
------	--

3.1.8 User calibration**3.1.8.1 Slope****Description**

A single point flow correction applied to volume flow equally at any flow rate.

$Q = Q * \text{Slope}$ (e.g. Slope of 0.99 = -1% correction)

Setting	0.5 to 2.0
Default	1.0

Related

Path	Setup → Sensor settings → User calibration → Slope
------	--

3.1.8.2 Path 1 offset**Description**

User calibrated zero offset for path 1.

Delta time offset correction value, which can be determined at zero flow.

Setting	-1250ns to 1250ns
Default	0.0

Related

Path	Setup → Sensor settings → User calibration → Path 1 offset
------	--

3.1.9 Multipoint calibration

3.1.9.1 Enable multipoint calibration

Description

Enable or disable the multipoint calibration.

Setting	Disabled; Enabled
Default	Disabled

Related

Path	Setup → Sensor settings → Multipoint calibration
------	--

3.1.9.2 Asymmetric calibration table

Description**Note**

Access level: Expert user only

Only available for LUILOCAL_CURRENT_LUI_ACCESS_LEVEL == SUP AND
PID_ProtectCalibrationTable == 0 AND PID_EnableUserCalibrationTable == 1

Usage of the calibration table:

- Unidirectional: All 20 calibration points are used for positive flow calibration and are then mirrored for negative flow.
- Bidirectional: The first 10 calibration points are used for positive flow calibration and the 10 last calibration points are used for negative flow calibration.

Setting	Unidirectional; Bidirectional
Default	Unidirectional

Related

Path	Setup → Sensor settings → Asymmetric calibration table
------	--

3.1.9.3 Calibration point**Description**

Calibration point that is to be transferred to the multipoint calibration table.

Setting	0.0 m ³ /s to 100000.0 m ³ /s
Default	0.0 m ³ /s

Related

Path	Setup → Sensor settings → Calibration point
------	---

3.1.9.4 Multipoint calibration table**3.1.9.4.1 Calibration points 1 - 20****Description**

Calibration points 1 through 20 for unidirectional flow or calibration points 1 through 20 for bidirectional positive flow. If 0.0 the calibration point is not used.

Access level: Expert user only.

Note

Only available for PID_ProtectCalibrationTable == 1 OR PID_EnableUserCalibrationTable == 1

Setting	0.0 m ³ /s to 100000.0 m ³ /s
Default	0.0 m ³ /s

Related

Path	Setup → Sensor settings → Multipoint calibration → Multipoint calibration table → Calibration points 1 - 20
------	---

3.1.9.4.2 Calibration value**Description**

Calibration correction factor that is associated to Calibration points 1 through 20.

Access level: Expert user only.

Setting	0.5 to 2.0
Default	1.0

Related

Path	Setup → Sensor settings → Multipoint calibration → Multipoint calibration table → Calibration value 1 - 20
------	--

3.1.10 Flow direction**Description**

The calibrated flow direction is indicated by the arrow on the sensor. If the system requires installation of the sensor with the flow running in the opposite direction, the **Flow Direction** parameter must be changed from Positive to Negative to totalize correctly. The sensitivity and the accuracy of the sensor do not change with reverse flow.

Define positive and negative flow direction. Default positive flow direction is indicated by the arrow on the sensor.

Setting	Negative; Positive
Default	Positive

Related

Path	Setup → Sensor settings → Flow direction
------	--

3.1.11 Miscellaneous**3.1.11.1 Preamplifier Setting****Description**

Preamplifier settings

Access level: Expert user only

Auto (default): Will automatically turn on the pre-amplifier if the sensor type is clamp-on.

Off: Turns off the pre-amplifier regardless of the sensor type (inline or clamp-on).

On: Turns on the pre-amplifier regardless of the sensor type (inline or clamp-on).

Half transmit amplitude: Reduces the transmit signal from the default ± 10 volts to ± 5 volts and turns off the pre-amplifier. This may be necessary for the smaller SONO sensors which can saturate the amplifiers even with the pre-amp off.

Setting	Auto; Off; On; Half transmit amplitude
Default	Auto

Related

Path	Setup → Sensor settings → Miscellaneous → Preamplifier Setting
------	--

3.1.11.2 Number of pulses to be transmitted**Description**

The number of pulses to configure optimum signal processing.

Access level: Expert user only.

Setting	1 to 10
Default	5

Related

Path	Setup → Sensor settings → Miscellaneous → Number of pulses to be transmitted
------	--

3.1.11.3 Minimum ringdown delay**Description**

The minimum ringdown delay is needed for optimized signal processing.

Access level: Expert user only.

Read only.

The minimum ringdown delay setting for optimized signal processing is: **2000.000122 µs**

3.1.11.4 Electronic time delay**Description**

The time delay induced by the DSL electronics.

Access level: Expert user only.

Read only.

The time delay induced by the DSL electronics is: **0.519 µs**

3.1.12 Configuration of test blocks

3.1.12.1 About

Description

NOTICE

Configuration data overwrite error

Running the test block configuration procedure will overwrite any existing sensor configuration.

Do not run the test block configuration procedure if configuration data is needed. Back up and record data as necessary.

The wizard configures the device for use with the Siemens sensor test blocks including sensor size and sensor path. It also allows for saving the setting.

3.1.12.2 Sensor size

Sensor size	Sensor path
A1	Path 1; Path 2
A2	Path 1; Path 2
B1	Path 1; Path 2
B2	Path 1; Path 2
B3	Path 1; Path 2
C1	Path 1; Path 2
C2	Path 1; Path 2
C3	Path 1; Path 2
D1	Path 1; Path 2
D2	Path 1; Path 2
D3	Path 1; Path 2

Save settings

After settings are complete, press the right arrow to save sensor test block settings.

3.2 Process values

3.2.1 Volume flow

3.2.1.1 Units

Description

Select units for displayed volume flow rate. Units are not applied at communication interface.

Setting	l/s (liters per second); l/min (liters per minute); l/h (liters per hour); l/d (liters per day); Ml/d (million liters per day); hl/s (hectoliters per second); hl/min (hectoliters per minute); hl/h (hectoliters per hour); hl/d (hectoliters per day); m³/s (cubic meters per second); m³/min (cubic meters per minute); m³/h (cubic meters per hour); m³/d (cubic meters per day); Mm³/d (million cubic meters per day); gal/s (US gallons per second); gal/min (US gallons per minute); gal/h (US gallons per hour); gal/d (US gallons per day); Mgal/d (million US gallons per day); i.gal/s (Imperial gallons per second); i.gal/min (Imperial gallons per minute); i.gal/h (Imperial gallons per hour); i.gal/d (Imperial gallons per day); BBL31/s (1 barrel = 31 US gallons); BBL31/min (1 barrel = 31 US gallons); BBL31/h (1 barrel = 31 US gallons); BBL31/d (1 barrel = 31 US gallons); BBL42/s (1 barrel = 42 US gallons); BBL42/min (1 barrel = 42 US gallons); BBL42/h (1 barrel = 42 US gallons); BBL42/d (1 barrel = 42 US gallons); KBBL42/d (Thousand barrels per day); MBBL42/d (million barrels per day); BBL31.5/s (1 barrel=31.5 US gallons); BBL31.5/min (1 barrel=31.5 US gallons); BBL31.5/h (1 barrel=31.5 US gallons); BBL31.5/d (1 barrel=31.5 US gallons); ft³/s (cubic feet per second); ft³/min (cubic feet per minute); ft³/h (cubic feet per hour); ft³/d (cubic feet per day); Mft³/d (million cubic feet per day); af/min (acre-feet per minute); af/h (acre-feet per hour); af/d (acre-feet per day); in³/sec (cubic inches per second); in³/min (cubic inches per minute); in³/h (cubic inches per hour); in³/d (cubic inches per day); yd³/s (cubic yards per second); yd³/min (cubic yards per minute); yd³/h (cubic yards per hour); yd³/d (cubic yards per day); bush/s (bushels per second); bush/min (bushels per minute); bush/h (bushels per hour); bush/d (bushels per day); custom units (see Custom units / Custom conversion factor)
Default	m³/h (cubic meters per hour)

Related

Path	Setup → Process values → Volume flow → Units
------	--

3.2.1.2 Custom units

Description

User specific text string for volume flow unit values. The custom units can then be selected in volume flow units.

Setting	-
Default	-

Related

Path	Setup → Process values → Volume flow → Custom units
------	---

3.2.1.3 Custom conversion factor**Description**

Conversion factor for user specific standard volume flow values related to SI m³/s.

Setting	-
Default	1.0

Related

Path	Setup → Process values → Volume flow → Custom conversion factor
------	---

3.2.1.4 Decimal places**Description**

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Standard volume flow → Decimal places
------	--

3.2.1.5 Low flow cut-off**Description**

Volume flow limit for low flow cut off. Below limit volume flow output is forced to zero.

Setting	0.00 m ³ /h to 896.40 m ³ /h (depends on sensor)
Default	0.1% of maximum flow (depends on sensor)

Related

Path	Setup → Process values → Volume flow → Low flow cut-off
------	---

3.2.1.6 Alarm and warning limits

3.2.1.6.1 Upper alarm limit

Description

Set Upper alarm limit. Alarm is triggered if measured value is above the limit.

Setting	-896.40 m ³ /h to 896.40 m ³ /h
Default	896.40 m ³ /h

Related

Path	Setup → Process values → Volume flow → Alarm and warning limits → Upper alarm limit
------	---

3.2.1.6.2 Upper warning limit

Description

Exceeding this limit causes a warning.

Setting	-896.40 m ³ /h to 896.40 m ³ /h
Default	896.40 m ³ /h

Related

Path	Setup → Process values → Volume flow → Alarm and warning limits → Upper warning limit
------	---

3.2.1.6.3 Lower warning limit

Description

Falling below this limit causes a warning.

Setting	-896.40 m ³ /h to 896.40 m ³ /h
Default	896.40 m ³ /h

Related

Path	Setup → Process values → Volume flow → Alarm and warning limits → Lower warning limit
------	---

3.2.1.6.4 Lower alarm limit

Description

Set Lower alarm limit. Alarm is triggered if measured value is below the limit.

Setting	-896.40 m ³ /h to 896.40 m ³ /h
Default	896.40m ³ /h

Related

Path	Setup → Process values → Volume flow → Alarm and warning limits → Lower alarm limit
------	---

3.2.1.6.5 Hysteresis**Description**

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0.00 m ³ /h to 896.40 m ³ /h
Default	0.0 m ³ /h

Related

Path	Setup → Process values → Volume flow → Alarm and warning limits → Hysteresis
------	--

3.2.2 Mass flow**3.2.2.1 Units****Description**

Select units for displayed mass flow rate. Units are not applied at communication interface.

Setting	g/s (grams per second); g/min (grams per min); g/h (grams per hour); kg/s (kilograms per second); kg/min (kilograms per minute); kg/h (kilograms per hour); kg/d (kilograms per day); t/min (1 t = 1000 kg); t/h (1 t = 1000 kg); t/d (1 t = 1000 kg); STon/min (1 STon = 2000 lb); STon/h (1 STon = 2000 lb); STon/d (1 STon = 2000 lb); T/h (1 T = 2240 lb); T/d (1 T = 2240 lb); lb/s (pounds per second); lb/min (pounds per minute); lb/h (pounds per hour); lb/d (pounds per day); custom units (see Custom units / Custom conversion factor)
Default	kg/h (kilograms per hour)

Related

Path	Setup → Process values → Mass flow → Units
------	--

3.2.2.2 Custom units**Description**

User specific string for mass flow values.

Setting	-
Default	-

Related

Path	Setup → Process values → Mass flow → Custom units
------	---

3.2.2.3 Custom conversion factor**Description**

User specific conversion factor based on SI mass flow units kg/s.

Setting	-
Default	1.0

Related

Path	Setup → Process values → Mass flow → Custom conversion factor
------	---

3.2.2.4 Decimal places**Description**

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Mass flow → Decimal places
------	---

3.2.2.5 Low flow cut-off**Description**

Mass flow limit for low flow cut off. Below limit mass flow output is forced to zero.

Setting	0.00 to 3682800.00 kg/h (depends on sensor)
Default	0.1% of maximum mass flow (depends on sensor)

Related

Path	Setup → Process values → Mass flow → Low flow cut-off
------	---

3.2.2.6 Alarm and warning limits

3.2.2.6.1 Upper alarm limit

Description

If mass flow value exceeds this limit an alarm is triggered.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	3682800.00 kg/h

Related

Path	Setup → Process values → Mass flow → Alarm and warning limits → Upper alarm limit
------	---

3.2.2.6.2 Upper warning limit

Description

Exceeding this limit causes a warning.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	3682800.00 kg/h

Related

Path	Setup → Process values → Mass flow → Alarm and warning limits → Upper warning limit
------	---

3.2.2.6.3 Lower warning limit

Description

If the mass flow value falls below this limit a warning is triggered.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	-3682800.00 kg/h

Related

Path	Setup → Process values → Mass flow → Alarm and warning limits → Lower warning limit
------	---

3.2.2.6.4 Lower alarm limit

Description

If mass flow value falls below this limit an alarm is triggered.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	-3682800.00 kg/h

Related

Path	Setup → Process values → Mass flow → Alarm and warning limits → Lower alarm limit
------	---

3.2.2.6.5 Hysteresis**Description**

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0.0 kg/h to 3682800.00 kg/h
Default	0.0 kg/h

Related

Path	Setup → Process values → Mass flow → Alarm and warning limits → Hysteresis
------	--

3.2.3 Flow velocity**3.2.3.1 Units****Description**

Select units for displayed flow velocity. Units are not applied at communication interface.

Units for flow velocity values.

Setting	m/s (meters per second); m/h (meters per hour); in/s (inches per second); in/min (inches per minute); ft/s (feet per second); ft/min (feet per minute); custom units (see Custom units / Custom conversion factor)
Default	m/s (meters per second)

Related

Path	Setup → Process values → Flow velocity → Units
------	--

3.2.3.2 Custom units**Description**

User specific text string to define custom unit values. The custom unit can then be selected in the flow velocity units.

Setting	-
Default	-

Related

Path	Setup → Process values → Flow velocity → Custom units
------	---

3.2.3.3 Custom conversion factor**Description**

Conversion factor for custom unit flow velocity values based on SI velocity units m/s.

Setting	-
Default	1.0

Related

Path	Setup → Process values → Flow velocity → Custom conversion factor
------	---

3.2.3.4 Decimal places**Description**

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Flow velocity → Decimal places
------	---

3.2.3.5 Low flow cut-off**Description**

Flow velocity limit for low flow cut off. Below limit flow velocity output is forced to zero.

Setting	Min 0.00
Default	0.0 m/s

Related

Path	Setup → Process values → Flow velocity → Low flow cut-off
------	---

3.2.3.6 Alarm and warning limits

3.2.3.6.1 Upper alarm limit

Description

If process value exceeds this limit an alarm is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	9999997952 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Upper alarm limit
------	---

3.2.3.6.2 Upper warning limits

Description

If process value exceeds this limit a warning is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	9999997952 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Upper warning limit
------	---

3.2.3.6.3 Lower warning limit

Description

If process value falls below this limit a warning is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	-9999997952 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Lower warning limit
------	---

3.2.3.6.4 Lower alarm limit

Description

If the process value falls below this limit an alarm is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	-9999997952 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Lower alarm limit
------	---

3.2.3.6.5 Hysteresis

Setting	0 m/s to +9999997952 m/s
Default	0.00 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Hysteresis
------	--

Setting	0 m/s to +9999997952 m/s
Default	0.00 m/s

Related

Path	Setup → Process values → Flow velocity → Alarm and warning limits → Hysteresis
------	--

3.2.4 Sound velocity**3.2.4.1 Units****Description**

Select units for displayed sound velocity. Units are not applied at communication interface.

Setting	m/s (meters per second); m/h (meters per hour); in/s (inches per second); in/min (inches per minute); ft/s (feet per second); ft/min (feet per minute); Custom units (see Custom units / Custom conversion factor)
Default	m/s (meters per second)

Related

Path	Setup → Process values → Sound velocity → Units
------	---

3.2.4.2 Custom units

Description

User specific text string to define a name for custom unit values. The custom unit can then be selected in the sound velocity units.

Setting	
Default	

Related

Path	Setup → Process values → Sound velocity → Custom units
------	--

3.2.4.3 Custom conversion factor

Description

Conversion factor for custom unit sound velocity values based on SI velocity units m/s.

Setting	
Default	1.0

Related

Path	Setup → Process values → Sound velocity → Custom conversion factor
------	--

3.2.4.4 Decimal places

Description

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Sound velocity → Decimal places
------	--

3.2.4.5 Alarm and warning limits

3.2.4.5.1 Upper alarm limit

Description

If process value exceeds this limit an alarm is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	9999997952 m/s

Related

Path	Setup → Process values → Sound velocity → Alarm and warning limits → Upper alarm limit
------	--

3.2.4.5.2 Upper warning limit**Description**

If process value exceeds this limit a warning is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	9999997952 m/s

Related

Path	Setup → Process values → Sound velocity → Alarm and warning limits → Upper warning limit
------	--

3.2.4.5.3 Lower warning limit**Description**

if the process value falls below this limit a warning is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	-9999997952 m/s

Related

Path	Setup → Process values → Sound velocity → Alarm and warning limits → Lower warning limit
------	--

3.2.4.5.4 Lower alarm limit**Description**

If the process value falls below this limit an alarm is triggered.

Setting	-9999997952 m/s to +9999997952 m/s
Default	-9999997952 m/s

Related

Path	Setup → Process values → Sound velocity → Alarm and warning limits → Lower alarm limit
------	--

3.2.4.5.5 Hysteresis

Description

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0 m/s to +9999997952 m/s
Default	0.00 m/s

Related

Path	Setup → Process values → Sound velocity → Alarm and warning limits → Hysteresis
------	---

3.2.5 Density

3.2.5.1 Units

Description

Displays units for displayed density. Units are not applied at communication interface.

Read only.

Setting	µg/l (micrograms per liter); µg/m³ (micrograms per cubic meter); mg/l (milligrams per liter); g/ml (grams per milliliter); g/cm³ (grams per cubic centimeters); g/l (grams per liter); kg/l (kilograms per liter); kg/m³ (kilograms per cubic meter); lb/in³ (pounds per cubic inch); lb/gal (pounds per US gallon); lb/ft³ (pounds per cubic foot); STon/yd³ (1 STon = 2000 lb); custom units (see Custom units / Custom conversion factor)
Default	kg/m³ (kilograms per cubic meter)

Related

Path	Setup → Process values → Density → Units
------	--

3.2.5.2 Custom units

Description

User specific text string to define custom unit values. The custom unit can then be selected in the density units.

Setting	
Default	

Related

Path	Setup → Process values → Density → Custom units
------	---

3.2.5.3 Custom conversion factor

Description

Conversion factor for custom Density values based on SI density units kg/m³.

Setting	
Default	1.0

Related

Path	Setup → Process values → Density → Custom conversion factor
------	---

3.2.5.4 Decimal places

Description

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Density → Decimal places
------	---

3.2.5.5 Alarm warning limits

3.2.5.5.1 Upper alarm limit

Description

If density value exceeds this limit an alarm is triggered.

Setting	0.00 kg/m ³ to +10000.00 kg/m ³
Default	900.00 kg/m ³

Related

Path	Setup → Process values → Density → Alarm and warning limits → Upper alarm limit
------	---

3.2.5.5.2 Upper warning limit

Description

If density value exceeds this limit a warning is triggered.

Setting	0.00 kg/m ³ to +10000.00 kg/m ³
Default	890.00 kg/m ³

Related

Path	Setup → Process values → Density → Alarm and warning limits → Upper warning limit
------	---

3.2.5.5.3 Lower warning limit**Description**

if density value falls below this limit a warning is triggered.

Setting	0.00 kg/m ³ to +10000.00 kg/m ³
Default	1.00 kg/m ³

Related

Path	Setup → Process values → Density → Alarm and warning limits → Lower warning limit
------	---

3.2.5.5.4 Lower alarm limit**Description**

If density value falls below this limit an alarm is triggered.

Setting	0.00 kg/m ³ to +10000.00 kg/m ³
Default	1.00 kg/m ³

Related

Path	Setup → Process values → Density → Alarm and warning limits → Lower alarm limit
------	---

3.2.5.5.5 Hysteresis**Description**

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0.00 kg/m ³ to +10000.00 kg/m ³
Default	0.00 kg/m ³

Related

Path	Setup → Process values → Density → Alarm and warning limits → Hysteresis
------	--

3.2.6 Kinematic viscosity

3.2.6.1 Units

Description

Units for kinematic viscosity.

Read only.

Setting	m ² /s (square meters per second); cSt (1 centistoke = 1 mm ² /s); St (stokes, 1St = 1cm ² /s)
Default	m ² /s (square meters per second)

Related

Path	Setup → Process values → Kinematic viscosity → Units
------	--

3.2.6.2 Decimal places

Description

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Kinematic viscosity → Decimal places
------	---

3.2.6.3 Alarm and warning limits

3.2.6.3.1 Upper alarm limit

Description

If process value exceeds this limit an alarm is triggered.

Setting	-9999997952 m ² /s to +9999997952 m ² /s
Default	+9999997952 m ² /s

Related

Path	Setup → Process values → Standard kinematic viscosity → Alarm and warning limits → Upper alarm limit
------	--

3.2.6.3.2 Upper warning limit

Description

If process value exceeds this limit a warning is triggered.

Setting	-9999997952 m ² /s to +9999997952 m ² /s
Default	+9999997952 m ² /s

Related

Path	Setup → Process values → Kinematic viscosity → Alarm and warning limits → Upper warning limit
------	---

3.2.6.3.3 Lower warning limit

Description

If process value falls below this limit a warning is triggered.

Setting	-9999997952 m ² /s to +9999997952 m ² /s
Default	-9999997952 m ² /s

Related

Path	Setup → Process values → Kinematic viscosity → Alarm and warning limits → Lower warning limit
------	---

3.2.6.3.4 Lower alarm limit

Description

If process value falls below this limit an alarm is triggered.

Setting	-9999997952 m ² /s to +9999997952 m ² /s
Default	-9999997952 m ² /s

Related

Path	Setup → Process values → Kinematic viscosity → Alarm and warning limits → Lower alarm limit
------	---

3.2.6.3.5 Hysteresis

Description

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0.00 m ² /s to +9999997952 m ² /s
Default	0.00 m ² /s

Related

Path	Setup → Process values → Kinematic viscosity → Alarm and warning limits → Hysteresis
------	--

3.2.7 Medium temperature

3.2.7.1 Units

Description

Select units for displayed temperature. Units are not applied at communication interface.

Setting	°C (degrees Celsius); °F (degrees Fahrenheit); °R (degrees Rankine); K (kelvins)
Default	°C (degrees Celsius)

Related

Path	Setup → Process values → Medium temperature → Units
------	---

3.2.7.2 Decimal places

Description

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Process values → Medium temperature → Decimal places
------	--

3.2.7.3 Alarm and warning limits

3.2.7.3.1 Upper alarm limit

Description

Exceeding this limit causes an alarm.

Setting	-272.77 to +400.00 °C
Default	280.00 °C

Related

Path	Setup → Process values → Medium temperature → Alarm and warning limits → Upper alarm limit
------	--

3.2.7.3.2 Upper warning limit**Description**

Exceeding this limit causes a warning.

Related

Setting	-272.77 to +400.00 °C
Default	270.00 °C

Related

Path	Setup → Process values → Medium temperature → Alarm and warning limits → Upper warning limit
------	--

3.2.7.3.3 Lower warning limit**Description**

Falling below this limit causes a warning.

Setting	-272.77.00 to +400.00 °C
Default	-270.00 °C

Related

Path	Setup → Process values → Medium temperature → Alarm and warning limits → Lower warning limit
------	--

3.2.7.3.4 Lower alarm limit**Description**

Falling below this limit causes an alarm.

Related

Setting	-272.77 to +400.00 °C
Default	-270.00 °C

Related

Path	Setup → Process values → Medium temperature → Alarm and warning limits → Lower alarm limit
------	--

3.2.7.3.5 Hysteresis

Description

Sets the hysteresis for alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	0.00 °C to +200.00 °C
Default	0.00 °C

Related

Path	Setup → Process values → Medium temperature → Alarm and warning limits → Hysteresis
------	---

3.3 Totalizers

3.3.1 Totalizer 1

3.3.1.1 Process value

Description

Select the process value to be totalized.

Setting	Mass flow; Volume flow
Default	Volume flow

Related

Path	Setup → Totalizers → Totalizer 1 → Process value
------	--

3.3.1.2 Units

Description

Select units for displayed Totalizer 1. The set of units depends on the selected process value. Units are not applied at communication interface.

Setting	Process value = Mass flow: g (grams); kg (kilograms); t (1 t = 1000 kg); STon (1 STon = 2000 lb); T (1 T = 2240 lb); oz (ounces); lb (pounds); Process value = Volume flow: l (liters); hl (hectoliters); m ³ (cubic meters); gal (US gallons); i.gal (Imperial gallons); BBL31.5 (1 barrel = 31.5 US gallons); BBL31 (1 barrel = 31 US gallons); BBL42 (1 barrel = 42 US gallons); in ³ (cubic inches); ft ³ (cubic feet); yd ³ (cubic yards); bush (bushels); Process value = Standard volume flow: NI (normal liters); Nm ³ (normal cubic meters); SI (standard liters); Sft ³ (standard cubic feet); Sm ³ (standard cubic meters); custom units (see Custom units / Custom conversion factor)
Default	kg (kilograms)

Related

Path	Setup → Totalizers → Totalizer 1 → Units
------	--

3.3.1.3 Custom units

Description

User specific string to define custom unit Totalizer 1 values.

Setting	-
Default	-

Related

Path	Setup → Totalizers → Totalizer 1 → Custom units
------	---

3.3.1.4 Custom conversion factor

Description

Conversion factor for user specific standard mass flow values related to SI kg.

Setting	-
Default	1.0

Related

Path	Setup → Totalizers → Totalizer 1 → Custom conversion factor
------	---

3.3.1.5 Decimal places

Description

Sets the decimal places for the process value displayed in the local display.

Setting	Auto; No decimal place; 1 decimal place; 2 decimal places; 3 decimal places; 4 decimal places; 5 decimal places; 6 decimal places
Default	2 decimal places

Related

Path	Setup → Totalizers → Totalizer 1 → Decimal places
------	---

3.3.1.6 Direction

Description

Totalizer 1 direction.

Setting	Forward and backward; Forward; Backward; Hold
Default	Forward

Related

Path	Setup → Totalizers → Totalizer 1 → Direction
------	--

3.3.1.7 Fail-safe behaviour

Description

Behaviour of the totalizer during the occurrence of bad input value.

Setting	RUN; totalization is continued using the bad input value; HOLD; totalization is stopped; MEMORY; totalization is continued based on the last incoming good value
Default	RUN; totalization is continued using the bad input value

Related

Path	Setup → Totalizers → Totalizer 1 → Fail safe mode
------	---

3.3.1.8 Reset

Description

Reset totalizer to zero.

Setting	Cancel; OK
Default	Cancel

Related

Path	Setup → Totalizers → Totalizer 1 → Reset
------	--

3.3.1.9 Preset**Description**

Reset Totalizer 1 to selected preset value.

After selecting OK the user is asked for the PRESET value. The PRESET value units depend on the selected Process value.

Therefore the range of the Preset value is for:

- Mass flow: -9999997952 kg to +9999997952 kg
- Volume flow: -9999997952 m³ to +9999997952 m³

Setting	Cancel; OK
Default	Cancel

Related

Path	Setup → Totalizers → Totalizer 1 → Preset
------	---

3.3.1.10 Alarm and warning limits**3.3.1.10.1 Upper alarm limit****Description**

Alarm is triggered if Totalizer 1 value is above the limit.

Setting	Process value = Mass flow: -9999997952 kg to +9999997952 kg Process value = Volume flow: -9999997952 m ³ to +9999997952 m ³
Default	Process value = Mass flow: +9999997952 kg Process value = Volume flow: +9999997952 m ³

Related

Path	Setup → Totalizers → Totalizer 1 → Alarm and warning limits → Upper alarm limit
------	---

3.3.1.10.2 Upper warning limit**Description**

Warning is triggered if Totalizer 1 value is above the limit.

Setting	Process value = Mass flow: -9999997952 kg to +9999997952 kg Process value = Volume flow: -9999997952 m³ to +9999997952 m³
Default	Process value = Mass flow: +9999997952 kg Process value = Volume flow: +9999997952 m³

Related

Path	Setup → Totalizers → Totalizer 1 → Alarm and warning limits → Upper warning limit
------	---

3.3.1.10.3 Lower warning limit

Description

Warning is triggered if Totalizer 1 value is below the limit.

Setting	Process value = Mass flow: -9999997952 kg to +9999997952 kg Process value = Volume flow: -9999997952 m³ to +9999997952 m³
Default	Process value = Mass flow: -9999997952 kg Process value = Volume flow: -9999997952 m³

Related

Path	Setup → Totalizers → Totalizer 1 → Alarm and warning limits → Lower warning limit
------	---

3.3.1.10.4 Lower alarm limit

Description

Alarm is triggered if Totalizer 1 value is below the limit.

Setting	Process value = Mass flow: -9999997952 kg to +9999997952 kg Process value = Volume flow: -9999997952 m³ to +9999997952 m³
Default	Process value = Mass flow: -9999997952 kg Process value = Volume flow: -9999997952 m³

Related

Path	Setup → Totalizers → Totalizer 1 → Alarm and warning limits → Lower alarm limit
------	---

3.3.1.10.5 Hysteresis

Description

Hysteresis sets the alarm and warning limits. The hysteresis is the distance between the limits for activation and deactivation of an alarm/warning.

Setting	Process value = Mass flow: 0.00 kg to +9999997952 kg Process value = Volume flow: 0.00 m ³ to +9999997952 m ³
Default	Process value = Mass flow: 0.00 kg Process value = Volume flow: 0.00 m ³

Related

Path	Setup → Totalizers → Totalizer 1 → Alarm and warning limits → Hysteresis
------	--

3.4 Inputs and outputs

The available configuration of the hardware functionality of input and output is described in the following table.

Table 3- 1 Hardware and software configuration of the input/output channels

Channel	HW configuration (fixed when ordering)	SW configuration available to the user
1	Modbus	Modbus
2	Signal output	Outputs: • Current output (0/4-20 mA)
3	Relay output	Status Output: • Alarm class • Alarm item • NAMUR status signals
4	Signal input/output	Outputs: • Frequency output • Pulse output

Current output

All four channels can be configured as current output.

Current output configuration

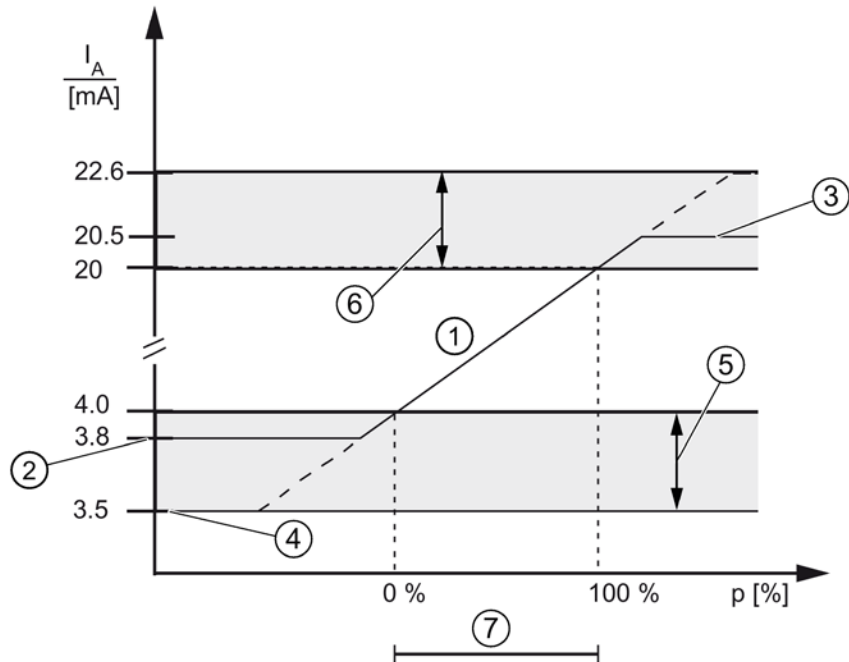
The following process values can be assigned to the current output:

- Volume flow
- Mass flow
- Sound velocity
- Flow velocity
- Density

- Medium temperature
- Kinematic viscosity

All process values are available for analog output channel 2 and frequency output channel 4.

The accuracy specified for the analog output signal applies only within the range 4 to 20 mA. Lower limit (4 mA) and upper limit (20 mA) can be assigned to any specific flow values.



- ① Linear control range
- ② Lower saturation limit
- ③ Upper saturation limit
- ④ Lower fault current value
- ⑤ Recommended setting range for lower fault current
- ⑥ Recommended setting range for upper fault current
- ⑦ Measuring range

Figure 3-1 Current limits for NAMUR configuration

The fail safe current output signal can be selected to:

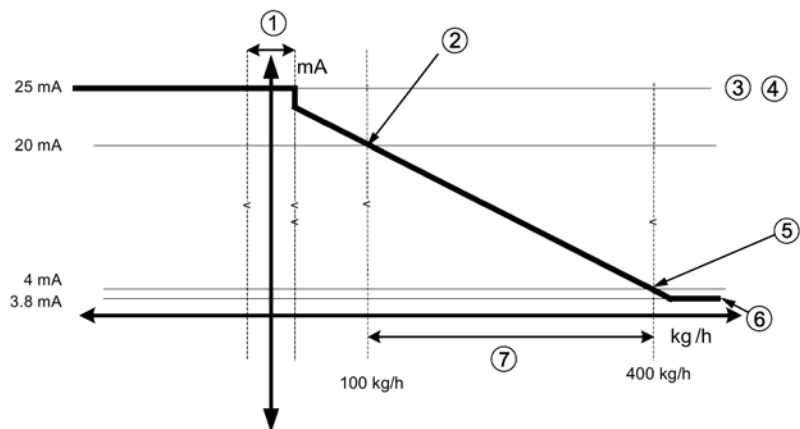
- Lower fault current (defined in the Loop current scale selection)
- Upper fault current (defined in the Loop current scale selection)
- Last valid value (the last process value before the failure occurred)
- Current value (actual measured value)
- Fail-safe value (within the range of 0 mA to 25 mA ¹⁾)

¹⁾ For channel 1 the range is 3.5 mA to 25 mA

Output scaling configuration

Below are four examples describing configuration possibilities for a current output.

Positive flow with negative scaling

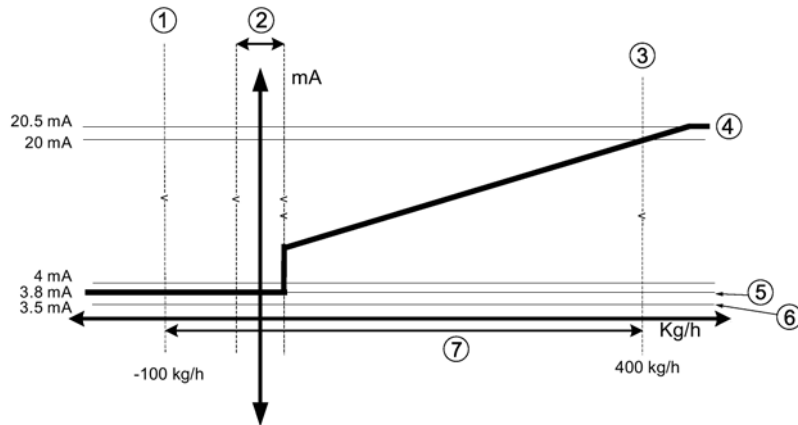


- ① Low flow cut-off
- ② Upper range value
- ③ Maximum output current
- ④ Upper fault current
- ⑤ Lower range value
- ⑥ Lower saturation limit
- ⑦ Span

Current output setting

- Process value = Mass flow
- Direction = Positive
- Loop current scale = 4-20 mA (maximum 25 mA)
- Upper range value = 100 kg/h
- Lower range value = 400 kg/h
- Fail-safe behaviour = Upper fault current
- Low flow cut-off = 25 kg/h

Positive flow across zero with positive scaling

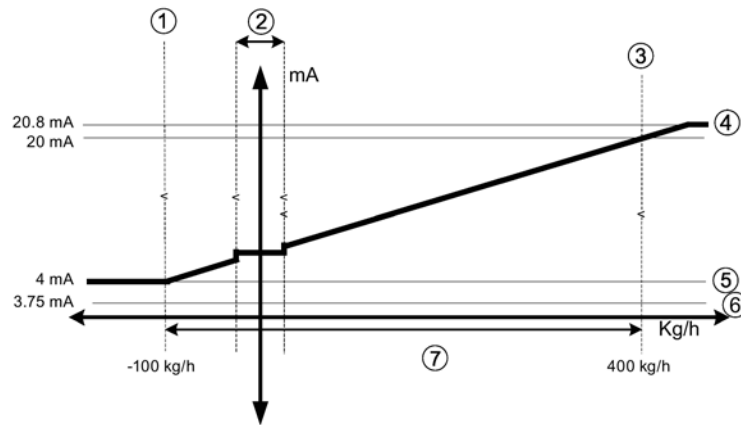


- ① Lower range value
- ② Low flow cut-off
- ③ Upper range value
- ④ Upper saturation limit
- ⑤ Lower saturation limit
- ⑥ Lower fault current
- ⑦ Span

Current output setting

- Process value = Mass flow
- Direction = Bidirectional
- Loop current scale = 4-20 mA NAMUR
- Upper range value = 400 kg/h
- Lower range value = -100 kg/h
- Fail-safe behaviour = Upper fault current
- Low flow cut-off = 25 kg/h

Bidirectional flow across zero with positive scaling

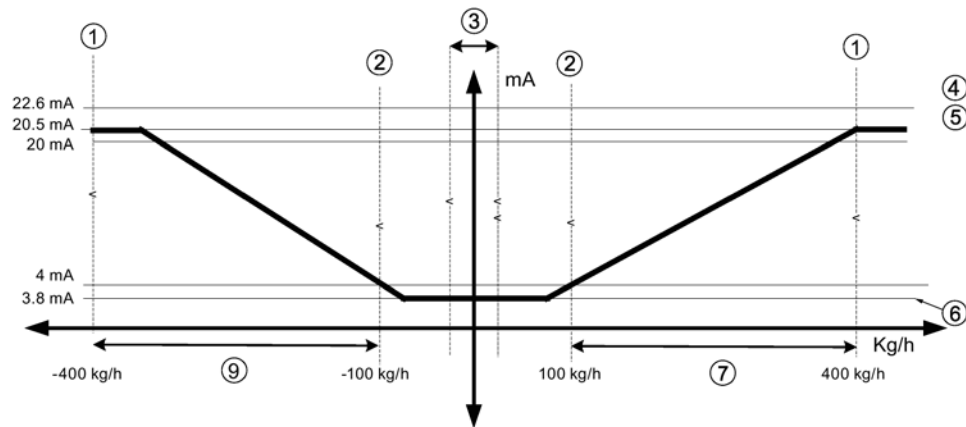


- ① Lower range value
- ② Low flow cut-off
- ③ Upper range value
- ④ Upper saturation limit
- ⑤ Lower saturation limit
- ⑥ Lower fault current
- ⑦ Span

Current output setting

- Process value = Mass flow
- Direction = Bidirectional
- Loop current scale = 4-20 mA US
- Upper range value = 400 kg/h
- Lower range value = -100 kg/h
- Fail-safe behaviour = Minimum current
- Low flow cut-off = 25 kg/h

Bidirectional flow with symmetrical scaling



- ① Upper range value
- ② Lower range value
- ③ Low flow cut-off
- ④ Upper fault current
- ⑤ Upper saturation limit
- ⑥ Lower saturation limit
- ⑦ Span

Current output setting

- Process value = Mass flow
- Direction = Bidirectional (Symmetric)
- Loop current scale = 4-20 mA NAMUR
- Upper range value = 400 kg/h
- Lower range value = 100 kg/h
- Fail-safe behaviour = Upper fault current
- Low flow cut-off = 25 kg/h

Pulse output

The pulse output function supplies pulses equivalent to a configured amount of accumulated volume or mass. The pulse width is configured and the pulse repetition is proportional to the selected flow rate.

Pulse repetition

Pulse repetition is calculated as follows:

$$\text{Pulse repetition} = \frac{\text{Amount per pulse}}{\text{Measured flow rate}}$$

FC0026.01

Example

- Pulse output configuration (channels 2 to 4)
 - Operation mode = Pulse output
 - Process value = Mass flow
 - Amount per pulse = 1 kg
 - Pulse width = 1 ms
- Measured mass flow value = 10 kg/s (constant)

Result:

- Pulse repetition = 100 ms
- Output frequency = 10 pulses per second with a pulse width of 1 ms
- Remaining time between pulses is 99 ms

$$\text{Pulse repetition} = \frac{\text{Amount per pulse}}{\text{Measured flow rate}}$$

FC0026.01

Note

Pulse width must be selected with the view that remaining time is always greater than pulse width at the highest measured flow.

Frequency output

The frequency output function supplies a frequency (50% duty cycle) proportional to the selected process value.

Frequency is calculated as follows:

$$\text{Frequency} = \frac{\text{Measured mass flow value}}{\text{Upper range value} - \text{Lower range value}} \times (\text{Frequency value high} - \text{Frequency value low})$$

Example

This example shows how to calculate the output frequency for any measured flowrate:

Frequency output configuration:

- Operation mode = Frequency output (Channel 2 to 4)
- Process value = Mass flow
- Direction = Positive
- Frequency value high = 12 kHz
- Frequency value low = 2 kHz
- Upper range value = 15 kg/s
- Lower range value = 5 kg/s

Measured mass flow value = 7.5 kg/s (constant)

Result:

- Frequency = 4.5 kHz

Note

The connected equipment must be capable of registering the full range of frequencies configured.

Status output

The status output can be used to show alarm status and it can be signaled on Status output or Relay output.

Note**Flow direction warning**

The limit function for the current output can be used to signal the flow direction by setting the Lower warning limit for the Process value to 0. A warning will occur in case of negative flow.

This warning can be output on the status output if Status mode is set to Alarm item and the Process alarms (1) [relevant process value] below warning limit is selected.

3.4.1 Alarm status

Depending on the Status mode setting, multiple alarms can be signaled on the output and selected from the alarm class or the alarm item lists.

- Alarm class: Alarm will be signaled if alarm within the selected alarm class occurs.
- Alarm item: Alarm will be signaled if selected alarm item occurs. It is possible to select multiple alarms to be signaled.

Note**Alarm class / NAMUR status signals**

The options depend on the setting selected in **Status icons**, either NAMUR status signals or Alarm class (Siemens Standard).

Digital input

If the input signal is activated with a logical signal (15 to 30 V DC) and the Polarity is set to Active high level, the meter carries out an activity selected in the menu Input function:

- Reset totalizer
 - Resets the totalizer when digital input is active.
- Start/Stop totalizer
 - Stops the totalizer when digital input is active, then resumes when the input is inactive.

Note**Changing polarity**

Changing the polarity triggers the signal input to execute the set functionality.

3.4.2 Channel 2 - output**3.4.2.1 Operation mode****Description**

Operation mode - Sets the output functionality for channel operation.

Setting	Off; Current output
Default	Off

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Operation mode
------	--

3.4.2.2 Active operation (read only)**Description**

Shows application possibilities.

Setting	Active operation not possible, use passive wiring; Active operation possible, hardware is able to drive the current loop
Default	

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Active operation
------	--

3.4.2.3 Fail-safe activation condition

Description

Defines the condition the fail-safe behaviour of the channel becomes active and determines the channel availability.

Setting	Invalid process value; Maintenance alarm or Failure (NAMUR)
Default	Maintenance alarm or Failure (NAMUR)

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Fail-safe activation condition
------	--

3.4.2.4 Current output

3.4.3.4.1 Process value

Description

Select process value for the current output.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Medium temperature
Default	Mass flow

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Process value
------	--

3.4.3.4.2 Direction

Description

Flow direction filter applicable for process values mass flow/volume flow/flow velocity/standard volume flow rate (only hydrocarbon and gas applications).

Setting	Positive; Negative; Bidirectional; Bidirectional (symmetric)
Default	Positive

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Direction
------	--

3.4.3.4.3 Loop current scale

Description

Sets current output scaling according to desired measurement range.

Format:

<Nominal range> (<lower fault current>) <lower saturation limit> to <upper saturation limit>
(<upper fault current>) [<Description>]

Setting	4 to 20 mA (3.50) 3.8 to 20.5 (22.6) NAMUR 4 to 20 mA (3.75) 4.0 to 20.8 (22.6) US 4 to 20 mA (0.00) 4.0 to 20.5 (22.0) 4 to 20 mA (2.00) 4.0 to 24.0 (25.0) 0 to 20 mA (0.00) 0.0 to 20.5 (22.0) 0 to 20 mA (0.00) 0.0 to 24.0 (25.0)
Default	4 to 20 mA (3.50) 3.8 to 20.5 (22.6) NAMUR

Related

Path	Setup → Inputs and outputs → Channel 2 -output → Current output → Loop current scale
------	--

3.4.3.4.4 Upper range value

Description

Sets value at 100% of measuring span and corresponds to a loop current of 20 mA.

Setting and Default are sensor specific, depending on the setting in Process value and depending on the Units setting.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	3682800.00 kg/h

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Upper range value
------	--

3.4.3.4.5 Lower range value

Description

Sets value at 0% of measuring span and corresponds to a loop current of 0/4 mA.

Setting and Default are sensor specific, depending on the setting in Process value and depending on the Units setting.

Setting	-3682800.00 kg/h to +3682800.00 kg/h
Default	0.00 kg/h

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Lower range value
------	--

3.4.3.4.6 Damping value**Description**

Sets the Damping (filtering) to smooth out response to sudden changes in measurement.

An increase to Damping value increases response time of device, and affects digital value and loop current. If output values are noisy, increase Damping value. For faster response time, decrease Damping value. Find a value that meets requirements of signal stability and response time.

Setting	0.00 s to 100.00 s
Default	0.00 s

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Damping value
------	--

3.4.3.4.7 Fail-safe behaviour**Description**

Current output reaction in case of a fault.

Setting	Lower fault current; Upper fault current; Last valid value; Current value; Fail-safe value
Default	Lower fault current

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Fail-safe behaviour
------	--

3.4.3.4.8 Fail-safe value**Description**

Output value in case of a fault and when fail-safe behaviour configured to fail-safe value.

Setting	0.0 mA to 25.0 mA
Default	0.0 mA

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Fail-safe value
------	--

3.4.3.4.9 Fail-safe minimum time**Description**

Minimum time the output stays in fail-safe mode.

Setting	0 s to 100 s
Default	0 s

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Current output → Fail-safe minimum time
------	---

3.4.2.5 Off delay**Description**

Set the time delay between resetting alarm condition and de-activating the output.

Setting	0.0 s to 100.0 s
Default	0.0 s

Related

Path	Setup → Inputs and outputs → Channel 2 - output → Status output → Off delay
------	---

3.4.3 Channel 3 - relay**3.4.3.1 Operation mode****Description**

Select the operation mode for the relay output.

Setting	Alarm class; Alarm item
Default	Alarm class

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Operation mode
------	---

3.4.3.2 Status mode**Description**

Select the functionality for the status output.

Setting	Alarm class; Alarm item
Default	Alarm class

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Status mode
------	--

3.4.3.3 Sensor alarms (1)**Description**

Selection of alarm items that impact the output. Mainly sensor alarms. Applicable if Status mode = Alarm item.

Setting	06 DSL Storage; 07 Flow measurement; 08 DSL internal; 14 Path 1: No signal; 26 Sensor temp. comp.; 28
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Sensor alarms (1)
------	--

3.4.3.4 Sensor alarms (2)**Description**

Selection of alarm items that impact the output. Mainly sensor alarms. Applicable if Status mode = Alarm item.

Setting	34 Invalid flow meas.; 36 Configuration 2; 37 DSL system monitor
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Sensor alarms (2)
------	--

3.4.3.5 Process alarms (1)**Description**

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

Setting	96 Mass flow above alarm limit; 97 Mass flow above warning limit; 98 Mass flow below warning limit; 99 Mass flow below alarm limit; 100 Volume flow above alarm limit; 101 Volume flow above warning limit; 102 Volume flow below warning limit; 103 Volume flow below alarm limit; 104 Density above alarm limit; 105 Density above warning limit; 106 Density below warning limit; 107 Density below alarm limit; 108 Medium temp. above alarm limit; 109 Medium temp. above warning limit; 110 Medium temp. below warning limit; 111 Medium temp. below alarm limit
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Process alarms (1)
------	---

3.4.3.6 Process alarms (3)**Description**

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

For hydrocarbon and gas applications only.

Setting	228 Sound velocity above alarm limit; 229 Sound velocity above warning limit; 230 Sound velocity below warning limit; 231 Sound velocity below alarm limit; 232 Flow velocity above alarm limit; 233 Flow velocity above warning limit; 234 Flow velocity below warning limit; 235 Flow velocity below alarm limit; 244 Kin. viscosity above alarm limit; 245 Kin. viscosity above warning limit; 246 Kin. viscosity below warning limit; 247 Kin. viscosity below alarm limit
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Process alarms (3)
------	---

3.4.3.7 Process alarms (4)**Description**

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

For hydrocarbon and gas applications only.

Setting	285 Datalogging; 286 Datalogging; 287 Datalogging
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Process alarms (4)
------	---

3.4.3.8 Totalizer alarms

Description

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

For hydrocarbon and gas applications only.

Setting	136 Totalizer 1 above alarm limit; 137 Totalizer 1 above warning limit; 138 Totalizer 1 - below warning limit; 139 Totalizer 1 below alarm
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Totalizer alarms
------	---

3.4.3.9 Device alarms

Description

Device alarms - If one of the selected events appears this affects the status icon, the related status output, and the alarm on the communication interface.

Setting	148 Transm. temp. above alarm limit; 149 Transm. temp. below alarm limit; 150 Sensor signal disrupted; 159 Internal error in transmitter
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Device alarms
------	--

3.4.3.10 Input/output alarms (1)

Description

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

Availability of certain settings depends on Hardware and Software configuration.

Setting	195 CH2 loop cur. in lower saturation; 196 CH2 loop cur. in upper saturation; 197 CH2 cable break; 209 CH4 cable break; 210 CH4 output frequency too low; 211 CH4 output frequency too high; 212 CH4 pulse overflow; 214 Channel 2 simulated; 216 Channel 4 simulated; 217 Process values frozen; 218 All outputs forced; 219 CH2 loop current deviation; 222 Invalid register mapping; 223 Invalid coil configuration
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Input/output alarms
------	--

3.4.3.11 Simulation alarms (1)**Description**

Selection of alarm items that impact the output. Mainly simulation alarms. Applicable if Status mode = Alarm item.

Setting	160 Mass flow simulated; 161 Volume flow simulated; 162 Density simulated; 163 Medium temp. simulated; 167 Totalizer 1 simulated
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Simulation alarms (1)
------	--

3.4.3.12 Simulation alarms (2)**Description**

Selection of alarm items that impact the output. Applicable if Status mode = Alarm item.

Setting	289 Sound velocity simulated; 290 Flow velocity simulated; 292 Kin. viscosity simulated; 300 Std. Kin. viscosity simulated
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Simulation alarms (2)
------	--

3.4.3.13 Alarm class

Description

Selection of alarm classes which impact the status output. Each diagnostic event is allocated to an alarm class. Applicable if Status mode = Alarm class and Status icons = Standard.

Bit 0: Process value alarm (PA)
 Bit 1: Process value warning (PW)
 Bit 2: Maintenance alarm (MA)
 Bit 3: Maintenance warning (MW)
 Bit 4: Maintenance required (MR)
 Bit 5: Function check (FC)

Setting	Maintenance alarm; Function check; Process value alarm; Process value warning; Maintenance demanded; Maintenance required; None
Default	

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Alarm class
------	--

3.4.3.14 NAMUR status signal

Description

Selection of NAMUR status signals which impact the status output. Each diagnostic event is allocated to a NAMUR status signal. Application if Status mode = Alarm class and Status icons = NAMUR

Setting	Failure; Function Check; Out of specification; Maintenance Required
Default	None

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → NAMUR status signal
------	--

3.4.3.15 Polarity

Description

Logical polarity of status output.

Setting	Active high level; Active low level
Default	Active high level

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Polarity
------	---

3.4.3.16 On delay**Description**

Sets the time delay between alarm condition and activating the output.

Setting	0.0 s to 100.0 s
Default	0.0 s

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → On delay
------	---

3.4.3.17 Off delay**Description**

Set the time delay between resetting alarm condition and de-activating the output.

Setting	0.0 s to 100.0 s
Default	0.0 s

Related

Path	Setup → Inputs and outputs → Channel 3 - relay → Off delay
------	--

3.4.4 Channel 4 - input/output**3.4.4.1 Operation mode****Description**

Shows the configured Operation mode. Use Change operation mode to set the mode.

Read only.

Setting	Off; Frequency output; Pulse output
Default	Off

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Operation mode
------	--

3.4.4.2 Change operation mode

Description

Sets operation mode.

Setting	Off; Frequency output; Pulse output
Default	Off

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Change operation mode
------	---

3.4.4.3 Frequency output

3.4.3.3.1 Process value

Description

Select process value for the frequency output.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Medium temperature
Default	Volume flow

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output (4) → Frequency output → Process value
------	--

3.4.3.3.2 Direction

Description

Flow direction filter applicable for process values mass flow/volume flow/flow velocity/standard volume flow rate (only hydrocarbon and gas applications).

Setting	Positive; Negative; Bidirectional; Bidirectional (symmetric)
Default	Positive

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Direction
------	--

3.4.3.3.3 Frequency value high

Description

Upper frequency value. Upper nominal output range boundary.

Setting	0.0 Hz to 12500.0 Hz
Default	10000.0 Hz

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Frequency value high
------	---

3.4.3.3.4 Frequency value low

Description

Lower frequency value. Lower nominal output range boundary.

Setting	0.0 Hz to 12500.0 Hz
Default	0.0 Hz

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Frequency value low
------	--

3.4.3.3.5 Upper range value

Description

Sets value at 100% of measuring span and corresponds to Frequency value high.

Setting and Default are sensor specific, depending on the setting in Process value and depending on the Units setting.

Setting	-10800000000.00 kg/h to +10800000000.00 kg/h
Default	+10800000000.00 kg/h

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Upper range value
------	--

3.4.3.3.6 Lower range value

Description

Sets value at 0% of measuring span and corresponds to Frequency value low.

Setting and Default are sensor specific, depending on the setting in Process value and depending on the Units setting.

Setting	-108000000.00 kg/h to +10800000000.00 kg/h
Default	0.00 kg/h

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Lower range value
------	--

3.4.3.3.7 Damping value

Description

Time constant of damping filter for frequency output signal.

Setting	0.0 s to 100.0 s
Default	0.0 s

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Damping value
------	--

3.4.3.3.8 Fail-safe behaviour

Description

Frequency output reaction in case of a fault.

Setting	Minimum frequency; Maximum frequency; Last valid value; Current valid; fail-safe value
Default	Last valid value

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Fail-safe behaviour
------	--

3.4.3.3.9 Fail-safe minimum time

Description

Minimum time the output stays in fail-safe mode.

Setting	0 s to 100 s
Default	0 s

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Fail-safe minimum time
------	---

3.4.3.3.10 Fail-safe value**Description**

Output value in case of a fault and when fail-safe mode configured to fail-safe value.

Setting	0.0 Hz to 12500.0 Hz
Default	0.0 Hz

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Frequency output → Fail-safe value
------	--

3.4.4.4 Pulse output**3.4.3.4.1 Process value****Description**

Select process value for the pulse output.

Setting	Mass flow; Volume flow
Default	Volume flow

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Process value
------	--

3.4.3.4.2 Direction**Description**

Flow direction filter.

Setting	Positive; Negative; Bidirectional; Bidirectional (symmetric)
Default	Positive

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Direction
------	--

3.4.3.4.3 Pulse units

Description

Units of pulse duration values of Ch4 in pulse mode.

Setting	Volume: l (liters); hl (hectoliters); m ³ (cubic meters); gal (US gallons); i.gal (Imperial gallons); BBL31.5 (1 barrel = 31.5 US gallons); BBL31 (1 barrel = 31 US gallons); BBL42 (1 barrel = 42 US gallons); in ³ (cubic inches); ft ³ (cubic feet); yd ³ (cubic yards); bush (bushels); Mass: g (grams); kg (kilograms); t (1 t = 1000 kg); STon (1 STon = 2000 lb); T (1 T = 2240 lb); oz (ounces); lb (pounds); custom units (see Custom units / Custom conversion factor)
Default	l (liters)

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Pulse units
------	--

3.4.3.4.4 Custom units

Description

User specific string to define custom pulse units.

Setting	-
Default	-

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Custom units
------	---

3.4.3.4.5 Custom conversion factor

Description

Conversion factor for user specific pulse values.

Setting	-
Default	-

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse outputs → Custom conversion factor
------	--

3.4.3.4.6 Amount per pulse

Description

Amount of value to generate an output pulse.

Setting	0.0 l to 99999997952 l
Default	1.00 l

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Amount per pulse
------	---

3.4.3.4.7 Pulses per amount**Description**

Number of pulses which will be output when configured amount is reached.

Setting	1 to 65535
Default	1

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Pulses per amount
------	--

3.4.3.4.8 Pulse width units**Description**

Units of pulse duration value used to configure Ch4 pulse width.

Setting	s (seconds); ms (milliseconds); μ s (micro seconds)
Default	s (seconds)

Related

Path	Setup → Inputs & outputs → Channel 4 - input/output → Pulse output → Pulse width units
------	--

3.4.3.4.9 Polarity**Description**

Logical polarity of pulse output.

Setting	Active high level; Active low level
Default	Active high level

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Polarity
------	---

3.4.3.4.10 Fail-safe behaviour

Description

Current output reaction in case of a fault.

Setting	Last valid value; Hold; Current value; Fail-safe value
Default	Last valid value

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Fail safe behaviour
------	--

3.4.3.4.11 Fail-safe value

Description

Output value in case of a fault and when fail-safe behaviour configured to Fail-safe value.

Setting	0.0 pulses/s to 12500.0 pulses/s
Default	1.0 pulses/s

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Fail-safe value
------	--

3.4.3.4.12 Fail-safe minimum time

Description

Minimum time the output stays in fail safe mode.

Setting	0 s to 100 s
Default	0 s

Related

Path	Setup → Inputs and outputs → Channel 4 - input/output → Pulse output → Fail-safe minimum time
------	---

3.4.5 Channel 7 - digital input

3.4.5.1 Input function

Description

Shows the digital input function. Selects the signal input functionality.

Setting	Off; Reset totalizer 1
Default	Off

Related

Path	Setup → Inputs and outputs → Channel 7 - digital input → Input function
------	---

3.4.6 Channel 8 - digital input

3.4.6.1 Input function

Description

Shows the digital input function. Selects the signal input functionality.

3.4.6.2 Input function - settings

Setting	Off; Start/Stop totalizer 1 on level
Default	Off

Related

Path	Setup → Inputs and outputs → Channel 8 - digital input → Input function
------	---

3.5 Date and time

3.5.1 Current date and time

Description

Displays the current date and time.

Read only.

Setting	
Default	

Related

Path	Setup → Date and time → Current date and time
------	---

3.5.2 Set date and time

Sets current date and time for the device. This date and time is used for all timestamps of logged information.

Setting	
Default	

Related

Path	Setup → Date and time → Set date and time
------	---

3.6 Local display

3.6.1 FST020 - Display

The system can be configured to show up to six different views.

In view 1 only measurement or diagnostic views can be selected. In views 2 to 6 all view types can be selected.

Measurement views

- Single value
- Three values
- 1 value and bargraph
- 1 value and graph
- Six values

Operation view

- Totalizer

Alarm view

- Alarm list

Diagnostic view

- Six diagnostic values

3.6.2 Brightness

Description

Adjust backlight level to improve local display conditions.

Setting	0%; 10%; 20%; 30%; 40%; 50%; 60%; 70%; 80%; 90%; 100%
Default	50%

Related

Path	Setup → Local display → Brightness
------	------------------------------------

3.6.3 Backlight

Description

Select between always on or backlight switch-off after 10 minutes..

Setting	Automatic; Always on
Default	Automatic (30 s)

Related

Path	Setup → Local display → Backlight
------	-----------------------------------

3.6.4 Contrast

Description

Adjust contrast to improve local display conditions.

Setting	0%; 10%; 20%; 30%; 40%; 50%; 60%; 70%; 80%; 90%; 100%
Default	80%

Related

Path	Setup → Local display → Contrast
------	----------------------------------

3.7 Damping

3.7.1 Damping value

Description

The damping filter time constant.

Setting	0.0 to 100.0
Default	10 s

Related

Path	Setup → Local display → Damping → Damping value
------	---

3.7.2 Process values (1)

Description

Available process values for the meter.

Setting	Volume flow; Mass flow; Totalizer 1; Sound velocity; Flow velocity; Pressure; Kinematic viscosity; Density; Medium temperature
Default	

Related

Path	Setup → Local display → Damping → Process values (1)
------	--

3.7.3 Process values (2)

Description

Available process values for the meter.

Setting	API gravity; Standard API gravity; Specific gravity; Standard specific gravity; Rate of change
Default	Specific gravity

Related

Path	Setup → Local display → Damping → Process values (2)
------	--

3.8 View 1

3.8.1 View

Description

The display View 1 can be configured.

Setting	Single value; Three values; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values
Default	Three values

Related

If Single value is selected, **1st process value** must be configured.

If Three values is selected, **1st process value**, **2nd process value** and **3rd process value** must be configured.

If 1 value and bargraph is selected, **1st process value** must be configured.

If 1 value and graph is selected, **1st process value**, **Trend scale mode** and **Trend log time window** must be configured.

If Six values or Six diagnostic values is selected, **1st process value**, **2nd process value**, **3rd process value**, **4th process value**, **5th process value**, and **6th process value** must be configured.

Path	Setup → Local display → View 1 → View
------	---------------------------------------

3.8.2 1st value

Description

The display **1st process value** can be selected. This process value is shown in all view types.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Medium temperature
Default	Volume flow

Related

Path	Setup → Local display → View 1 → 1st value
------	--

3.8.3 Graph scale mode

Description

Graph scale mode

Setting	Auto; Fixed
Default	Auto

Related

Path	Setup → Local display → View 1 → Graph scale mode
------	---

3.8.4 2nd value

Description

The display **2nd process value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Density

Related

This parameter is only available if **View 1** is set to Three values, Six values or Six diagnostic values.

Path	Setup → Local display → View 1 → 2nd value
------	--

3.8.5 3rd value

Description

The display **3rd process value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Totalizer 2; Totalizer 3; Pressure; Medium temperature
Default	Medium temperature

Related

This parameter is only available if **View 1** is set to Three values, Six values or Six diagnostic values.

Path	Setup → Local display → View 1 → 3rd value
------	--

3.8.6 4th process value

Description

The display **4th process value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Process viscosity; Fluid temperature; Totalizer 1
Default	Sound velocity

Related

This parameter is only available if **View 1** is set to Six values or Six diagnostic values.

Path	Setup → Local display → View 1 → 4th process value
------	--

3.8.7 5th process value

Description

The display **5th process value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Process viscosity; Fluid temperature; Totalizer 1
Default	Process pressure

Related

This parameter is only available if **View 1** is set to Six values or Six diagnostic values.

Path	Setup → Local display → View 1 → 5th process value
------	--

3.8.8 6th process value

Description

The display **6th process value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Process viscosity; Fluid temperature; Totalizer 1
Default	Fluid temperature

Related

This parameter is only available if **View 1** is set to Six values or Six diagnostic values.

Path	Setup → Local display → View 1 → 6th process value
------	--

3.8.9 Trend scale mode

Description

The **Trend scale mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to 1 value and graph.

If Fixed is selected, **Trend scale lower limit** and **Trend scale upper limit** must be configured.

Path	Setup → Local display → View 1 → Trend scale mode
------	---

3.8.10 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 minute; 5 minutes; 15 minutes; 30 minutes; 1 hour; 2 hours; 3 hours
Default	5 minutes

Related

This parameter is only available if **View** is set to 1 value and graph.

Path	Setup → Local display → View 1 → Trend log time window
------	--

3.8.11 Trend scale lower limit

Description

The **Trend scale lower limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend scale mode** is set to Fixed.

Path	Setup → Local display → View 1 → Trend scale lower limit
------	--

3.8.12 Trend scale upper limit

Description

The **Trend scale upper limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend scale mode** is set to Fixed.

Path	Setup → Local display → View 1 → Trend scale upper limit
------	--

3.9 View 2

3.9.1 Enable or disable

Description

In this parameter View 2 can be enabled.

Setting	Disabled; Enabled
Default	Enabled

Related

If Enabled is selected, all parameters for View 2 must be configured.

Path	Setup → Local display → View 2 → Enable or disable
------	--

3.9.2 View

Description

The display View 2 can be configured.

Setting	Single value; Three values; Totalizer; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values; Alarm list
Default	Single value

Related

If Single value or Dosing is selected, **1st process value** must be configured.

If Three values is selected, **1st process value**, **2nd process value** and **3rd process value** must be configured.

If Totalizer or 1 value and graph is selected, **1st process value**, **Trend scale mode** and **Trend log time window** must be configured.

If 1 value and bargraph is selected, **1st process value** must be configured.

If Six values or Six diagnostic values is selected, **1st process value**, **2nd process value**, **3rd process value**, **4th process value**, **5th process value**, and **6th process value** must be configured.

Path	Setup → Local display → View 2 → View
------	---------------------------------------

3.9.3 1st value

Description

The display **1st Process Value** can be selected. This process value is shown in all view types.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Volume flow

Related

Path	Setup → Local display → View 2 → 1st value
------	--

3.9.4 2nd process value

Description

The display **2nd Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Density

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 2nd Process Value
------	--

3.9.5 3rd process value

Description

The display **3rd Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Fluid Temperature

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 3rd Process Value
------	--

3.9.6 4th process value

Description

The display **4th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Volume flow

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 4th Process Value
------	--

3.9.7 5th process value

Description

The display **5th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Corrected Volume flow; Reference Density; Totalizer 1; Totalizer 2; Totalizer 3
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 5th Process Value
------	--

3.9.8 6th process value

Description

The display **6th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 6th Process Value
------	--

3.9.9 Trend scale mode

Description

The **Trend Scale Mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

If Fixed is selected, **Trend Scale Lower Limit** and **Trend Scale Upper Limit** must be configured.

Path	Setup → Display → View 2 → Trend Scale Mode
------	---

3.9.10 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 Minute; 5 Minutes; 15 Minutes; 30 Minutes; 1 Hour; 2 Hours; 3 Hours
Default	5 Minutes

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

Path	Setup → Display → View 2 → Trend log time window
------	--

3.9.11 Trend scale lower limit

Description

The **Trend Scale Lower Limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 2 → Trend Scale Lower Limit
------	--

3.9.12 Trend scale upper limit

Description

The **Trend Scale Upper Limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 2 → Trend Scale Upper Limit
------	--

3.10 View 3

3.10.1 Enable or disable

Description

In this parameter View 3 can be enabled.

Setting	Disabled; Enabled
Default	Enabled

Related

If Enabled is selected, all parameters for View 3 must be configured.

Path	Setup → Display → View 3 → Enable or disable
------	--

3.10.2 View

Description

The display View 3 can be configured.

Setting	Single value; Three values; Totalizer; Dosing; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values; Alarm list
Default	1 value and bargraph

Related

If Single value or Dosing is selected, **1st process value** must be configured.

If Three values is selected, **1st process value**, **2nd process value** and **3rd process value** must be configured.

If Totalizer or 1 value and graph is selected, **1st process value**, **Trend scale mode** and **Trend log time window** must be configured.

If 1 value and bargraph is selected, **1st process value** must be configured.

If Six values or Six diagnostic values is selected, **1st process value**, **2nd process value**, **3rd process value**, **4th process value**, **5th process value**, and **6th process value** must be configured.

Path	Setup → Display → View 3 → View
------	---------------------------------

3.10.3 1st value

Description

The display **1st Process Value** can be selected. This process value is shown in all view types.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium Temperature
Default	Volume flow

Related

Path	Setup → Display → View 3 → 1st Value
------	--------------------------------------

3.10.4 Graphic scale mode

Description

Graphic scale mode

Setting	Auto; Fixed
Default	Auto

Related

Path	Setup → Display → View 3 → Graphic scale mode
------	---

3.10.5 2nd process value

Description

The display **2nd Process Value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium Temperature
Default	Flow velocity

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 2 → 2nd Process Value
------	--

3.10.6 3rd process value

Description

The display **3rd Process Value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium Temperature
Default	Sound velocity

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 3 → 3rd Process Value
------	--

3.10.7 4th process value

Description

The display **4th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Volumeflow

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 3 → 4th Process Value
------	--

3.10.8 5th process value

Description

The display **5th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 3 → 5th Process Value
------	--

3.10.9 6th process value

Description

The display **6th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 3 → 6th Process Value
------	--

3.10.10 Trend scale mode

Description

The **Trend Scale Mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

If Fixed is selected, **Trend Scale Lower Limit** and **Trend Scale Upper Limit** must be configured.

Path	Setup → Display → View 3 → Trend Scale Mode
------	---

3.10.11 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 Minute; 5 Minutes; 15 Minutes; 30 Minutes; 1 Hour; 2 Hours; 3 Hours
Default	5 Minutes

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

Path	Setup → Display → View 3 → Trend log time window
------	--

3.10.12 Trend scale lower limit

Description

The **Trend Scale Lower Limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 3 → Trend Scale Lower Limit
------	--

3.10.13 Trend scale upper limit

Description

The **Trend Scale Upper Limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 3 → Trend Scale Upper Limit
------	--

3.11 View 4

3.11.1 Enable or disable

Description

In this parameter View 4 can be enabled.

Setting	Disabled; Enabled
Default	Enabled

Related

If Enabled is selected, all parameters for View 4 must be configured.

Path	Setup → Display → View 4 → Enable or disable
------	--

3.11.2 View

Description

The display View 4 can be configured.

Setting	Single value; Three values; Totalizer; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values; Alarm list
Default	Six diagnostic values

Related

If Single Value or Dosing is selected, **1st Process Value** must be configured.

If Three Values is selected, **1st Process Value**, **2nd Process Value** and **3rd Process Value** must be configured.

If Totalizer or 1 Value and Graph is selected, **1st Process Value**, **Trend Scale Mode** and **Trend log time window** must be configured.

If 1 Value and Bargraph is selected, **1st Process Value** must be configured.

If Six Values or Six Diagnostic Values is selected, **1st Process Value**, **2nd Process Value**, **3rd Process Value**, **4th Process Value**, **5th Process Value**, and **6th Process Value** must be configured.

Path	Setup → Display → View 4 → View
------	---------------------------------

3.11.3 1st value**Description**

The display **1st Process Value** can be selected. This process value is shown in all view types.

Setting	Transmitter internal temperature; Ch3 value; Ch4 value; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Flow velocity path 1

Related

Path	Setup → Display → View 4 → 1st value
------	--------------------------------------

3.11.4 2nd value**Description**

The display **2nd Process Value** can be selected.

Setting	Transmitter internal temperature; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Flow velocity path 1

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 4 → 2nd Value
------	--------------------------------------

3.11.5 3rd value

Description

The display **3rd Process Value** can be selected.

Setting	Transmitter internal temperature; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Sound velocity path 1

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 4 → 3rd Value
------	--------------------------------------

3.11.6 4th value

Description

The display **4th Process Value** can be selected.

Setting	Transmitter internal temperature; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Flow velocity path 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 4 → 4th Value
------	--------------------------------------

3.11.7 5th value

Description

The display **5th Process Value** can be selected.

Setting	Transmitter internal temperature; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Peak amplitude up path 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 4 → 5th value
------	--------------------------------------

3.11.8 6th value

Description

The display **6th Process Value** can be selected.

Setting	Transmitter internal temperature; Reynolds number; RxGain up path 1; RxGain down path 1; SNR up path 1; SNR down path 1; Sound velocity path 1; Flow velocity path 1; Delta time path 1; Travel time up path 1; Travel time down path 1; Correlation factor path 1; Percentage of bursts accepted path1; Peak amplitude up path 1; Peak amplitude down path 1; Min acc travel time path 1; Min acc travel time path 1; Max acc travel time path 1
Default	Flow velocity path 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 4 → 6th value
------	--------------------------------------

3.11.9 Trend scale mode

Description

The **Trend Scale Mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

If Fixed is selected, **Trend Scale Lower Limit** and **Trend Scale Upper Limit** must be configured.

Path	Setup → Display → View 4 → Trend Scale Mode
------	---

3.11.10 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 Minute; 5 Minutes; 15 Minutes; 30 Minutes; 1 Hour; 2 Hours; 3 Hours
Default	5 Minutes

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

Path	Setup → Display → View 4 → Trend log time window
------	--

3.11.11 Trend scale lower limit

Description

The **Trend Scale Lower Limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 4 → Trend Scale Lower Limit
------	--

3.11.12 Trend scale upper limit

Description

The **Trend Scale Upper Limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 4 → Trend Scale Upper Limit
------	--

3.12 View 5

3.12.1 Enable or disable

Description

In this parameter View 5 can be enabled.

Setting	Disabled; Enabled
Default	Enabled

Related

If Enabled is selected, all parameters for View 5 must be configured.

Path	Setup → Display → View 5 → Enable or disable
------	--

3.12.2 View

Description

The display View 5 can be configured.

Setting	Single value; Three values; Totalizer; Dosing; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values; Alarm list
Default	Three values

Related

If Single Value or Dosing is selected, **1st Process Value** must be configured.

If Three Values is selected, **1st Process Value**, **2nd Process Value** and **3rd Process Value** must be configured.

If Totalizer or 1 Value and Graph is selected, **1st Process Value**, **Trend Scale Mode** and **Trend log time window** must be configured.

If 1 Value and Bargraph is selected, **1st Process Value** must be configured.

If Six Values or Six Diagnostic Values is selected, **1st Process Value**, **2nd Process Value**,

3rd Process Value, **4th Process Value**, **5th Process Value**, and **6th Process Value** must be configured.

Path	Setup → Local display → View 5 → View
------	---------------------------------------

3.12.3 1st value

Description

The display **1st Process Value** can be selected. This process value is shown in all view types.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Totalizer 1

Related

Path	Setup → Display → View 5 → 1st value
------	--------------------------------------

3.12.4 2nd value

Description

The display **2nd Process Value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Density

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 5 → 2nd value
------	--------------------------------------

3.12.5 3rd value

Description

The display **3rd Process Value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Medium temperature

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 5 → 3rd value
------	--------------------------------------

3.12.6 4th process value**Description**

The display **4th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Volume flow

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 5 → 4th Process Value
------	--

3.12.7 5th process value**Description**

The display **5th Process Value** can be selected.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Totalizer 1; Medium temperature
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 5 → 5th value
------	--------------------------------------

3.12.8 6th process value**Description**

The display **6th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 5 → 6th Process Value
------	--

3.12.9 Trend scale mode

Description

The **Trend Scale Mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

If Fixed is selected, **Trend Scale Lower Limit** and **Trend Scale Upper Limit** must be configured.

Path	Setup → Display → View 5 → Trend Scale Mode
------	---

3.12.10 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 Minute; 5 Minutes; 15 Minutes; 30 Minutes; 1 Hour; 2 Hours; 3 Hours
Default	5 Minutes

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

Path	Setup → Display → View 5 → Trend log time window
------	--

3.12.11 Trend scale lower limit

Description

The **Trend Scale Lower Limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 5 → Trend Scale Lower Limit
------	--

3.12.12 Trend scale upper limit

Description

The **Trend Scale Upper Limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 5 → Trend Scale Upper Limit
------	--

3.13 View 6

3.13.1 Enable or disable

Description

In this parameter View 6 can be enabled.

Setting	Disabled; Enabled
Default	Enabled

Related

If Enabled is selected, all parameters for View 6 must be configured.

Path	Setup → Display → View 6 → Enable or disable
------	--

3.13.2 View

Description

The display View 6 can be configured.

Setting	Single value; Three values; Totalizer; Dosing; 1 value and bargraph; 1 value and graph; Six values; Six diagnostic values; Alarm list
Default	Alarm list

Related

If Single Value or Dosing is selected, **1st Process Value** must be configured.

If Three Values is selected, **1st Process Value**, **2nd Process Value** and **3rd Process Value** must be configured.

If Totalizer or 1 Value and Graph is selected, **1st Process Value**, **Trend Scale Mode** and **Trend log time window** must be configured.

If 1 Value and Bargraph is selected, **1st Process Value** must be configured.

If Six Values or Six Diagnostic Values is selected, **1st Process Value**, **2nd Process Value**, **3rd Process Value**, **4th Process Value**, **5th Process Value**, and **6th Process Value** must be configured.

Path	Setup → Local display → View 6 → View
------	---------------------------------------

3.13.3 1st process value

Description

The display **1st Process Value** can be selected. This process value is shown in all view types.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Massflow

Related

Path	Setup → Display → View 6 → 1st Process Value
------	--

3.13.4 2nd process value

Description

The display **2nd Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Density

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 6 → 2nd Process Value
------	--

3.13.5 3rd process value

Description

The display **3rd Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Fluid Temperature

Related

This parameter is only available if **View** is set to Three Values, Six Values or Six Diagnostic Values.

Path	Setup → Display → View 6 → 3rd Process Value
------	--

3.13.6 4th process value

Description

The display **4th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Volume flow

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 6 → 4th Process Value
------	--

3.13.7 5th process value

Description

The display **5th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 6 → 5th Process Value
------	--

3.13.8 6th process value

Description

The display **6th Process Value** can be selected.

Setting	Mass flow; Volume flow; Density; Fluid Temperature; Totalizer 1
Default	Totalizer 1

Related

This parameter is only available if **View** is set to Six Values or Six Diagnostic Values.

Path	Setup → Display → View 6 → 6th Process Value
------	--

3.13.9 Trend scale mode

Description

The **Trend Scale Mode** can be selected with automatic scaling or fixed scaling.

Setting	Auto; Fixed
Default	Auto

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

If Fixed is selected, **Trend Scale Lower Limit** and **Trend Scale Upper Limit** must be configured.

Path	Setup → Display → View 6 → Trend Scale Mode
------	---

3.13.10 Trend log time window

Description

The **Trend log time window** logging period (time axis length) can be selected.

Setting	1 Minute; 5 Minutes; 15 Minutes; 30 Minutes; 1 Hour; 2 Hours; 3 Hours
Default	5 Minutes

Related

This parameter is only available if **View** is set to Totalizer or 1 Value and Graph.

Path	Setup → Display → View 6 → Trend log time window
------	--

3.13.11 Trend scale lower limit

Description

The **Trend Scale Lower Limit** defines the scaling lower limit of the value axis for the fixed mode.

Setting	
Default	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 6 → Trend Scale Lower Limit
------	--

3.13.12 Trend scale upper limit

Description

The **Trend Scale Upper Limit** defines the scaling upper limit of the value axis for the fixed mode.

Setting options	
Default setting	0

Related

This parameter is only available if **Trend Scale Mode** is set to Fixed.

Path	Setup → Display → View 6 → Trend Scale Upper Limit
------	--

3.14 Status icons

Description

Sets the type of status icons used for diagnostic events.

Setting	Standard; NAMUR
Default	Standard

Related

Path	Setup → Local display→ Status icons
------	-------------------------------------

Maintenance and diagnostics

4.1 Identification

4.1.1 Long tag

Sets a unique tag name for device. Limited to 32 characters.

Setting	User-configurable
Default	-----; 32 characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance and diagnostics → Identification → Long tag
------	---

4.1.2 Tag

Sets a unique short tag name for device or measurement point. Limited to 8 characters.

Setting	User-configurable
Default	-----; characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance & diagnostics → Identification → Tag
------	--

4.1.3 Descriptor

Sets unique description for device. Limited to 32 characters.

Setting	User-configurable
Default	-----; 16 characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance and diagnostics → Identification → Descriptor
------	---

4.1.4 Message

Sets unique message for device. Limited to 32 characters.

Setting	User-configurable
Default	-----; 32 characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance and diagnostics → Identification → Message
------	--

4.1.5 Location

Sets unique location for device. Limited to 32 characters.

Setting	User-configurable
Default	-----; 32 characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance and diagnostics → Identification → Location
------	---

4.1.6 Installation date

Sets the installation date of the device.

Setting	User-configurable
Default	-----; 16 characters (A, B, C, ... X, Y, Z, /, 1, 2, 3, ... 7, 8, 9)

Related

Path	Maintenance and diagnostics → Identification → Installation date
------	--

4.1.7 Manufacturer

Displays manufacturer of device.

Setting	
Default	SIEMENS

Related

Path	Maintenance and diagnostics → Identification → Manufacturer
------	---

4.1.8 Product name

Displays product name.

Setting	
Default	SITRANS FS230

Related

Path	Maintenance and diagnostics → Identification → Product name
------	---

4.1.9 Version (read only)

Description

The product **Version** according to order can be viewed.

Setting	
Default	WM int DSL

Related

Path	Maintenance and diagnostics → Identification → Version
------	--

4.1.10 Order number (read only)

Description

System order number (MLFB) can be viewed. The system order number consists of three parts. Also shown on the device nameplate.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → System order number
------	--

4.1.11 Serial number

Description

Displays transmitter serial number. Also shown on the device nameplate.

4.1 Identification

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → Serial number
------	--

4.1.12 FW version

Displays version number corresponding to software or firmware embedded in device.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → FW version
------	---

4.1.13 HW version

Displays version number corresponding to electronics hardware of device.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → HW version
------	---

4.1.14 Final assembly number

Displays number corresponding to materials and components used in final assembly of device.

Setting	0 to 4294967295
Default	0

Related

Path	Maintenance and diagnostics → Identification → Final assembly number
------	--

4.1.15 System type

Description

System type

Setting	SITRANS FUS; SITRANS FUH
Default	SITRANS FUS

Related

Path	Maintenance and diagnostics → Identification → System type
------	--

4.1.16 Transmitter electronics

4.1.16.1 HW version

Displays version number corresponding to electronics hardware of device.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → HW version
------	---

4.1.16.2 FW version

Displays version number corresponding to software or firmware embedded in device.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → FW version
------	---

4.1.16.3 Serial number

Description

Displays transmitter serial number. Also shown on the device nameplate.

Setting	
Default	

4.1 Identification

Related

Path	Maintenance and diagnostics → Identification → Transmitter → Serial number
------	--

4.1.16.4 Order number

Displays order number for current device configuration.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → Transmitter → Order number
------	---

4.1.16.5 Comm. interface serial number**Description**

Communication interface serial number

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → Transmitter → Comm. interface serial number
------	--

4.1.17 Local display**Description**

Local display

Setting	HW version 1.01.00
Default	
Setting	FW version - 1.04.13-09
Default	
Setting	HMI cfg. version - 1.00.01.39
Default	

Related

Path	Maintenance and diagnostics → Identification → Local display
------	--

4.1.18 I/O electronics

Description

I/O electronics

Setting	FW version
Default	

Related

Path	Maintenance and diagnostics → Identification → I/O electronics
------	--

4.1.19 DSL

Description

Displays DSL versions

Setting	FW version
Default	

Related

Path	Maintenance and diagnostics → Identification → DSL
------	--

4.1.20 Sensor

4.1.20.1 Type (read only)

Description

The name of the digital sensor.

Path	Maintenance and diagnostics → Identification → Sensor → Type
------	--

4.1.20.2 Sensor type (read only)

Description

Identification of the sensor type. Used by the transmitter to enable technology-specific functionalities.

Path	Maintenance and diagnostics → Identification → Sensor → Sensor type
------	---

4.1.20.3 Serial number (read only)**Description**

Unique frontend serial number.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → Sensor → Frontend serial number
------	--

4.1.20.4 Sensor type (read only)**Description**

Type of sensor.

Setting	SITRANS FSS200 (Clamp-on); SITRANS FSS600 (Clamp-on)
Default	

Related

Path	Maintenance and diagnostics → Identification → Sensor → Sensor type
------	---

4.1.20.5 Sensor firmware version (read only)**Description**

Sensor firmware version.

Setting	
Default	

Related

Path	Maintenance and diagnostics → Identification → Sensor → Sensor firmware version
------	---

4.1.20.6 Frontend variant (read only)**Description**

Frontend variant.

Setting	Remote/integrated; Compact
Default	

Related

Path	Maintenance and diagnostics → Identification → Sensor → Frontend variant
------	--

4.2 Diagnostic events

4.2.1 Active diagnostic events

Displays list of active events.

Path	Maintenance and diagnostics → Diagnostic events → Active events
------	---

4.2.2 Diagnostic log

Displays list of logged events.

Path	Maintenance and diagnostics → Diagnostic events → Diagnostic log
------	--

4.2.3 Clear diagnostic log

Description

The diagnostic log can be reset using this parameter.

Setting	Cancel; OK
Default	Cancel

Related

When you confirm the reset by selecting OK, the **Diagnostic log** will be cleared.

Path	Maintenance and diagnostics → Diagnostic events → Clear diagnostic log
------	--

4.2.4 Acknowledge mode

Description

The system can be configured to acknowledge the alarms automatically when they are gone (Auto), or it can be configured to require an acknowledgement from the operator (Manual).

4.2 Diagnostic events

Setting	Auto; Manual
Default	Auto

Path	Maintenance and diagnostics → Diagnostic events → Acknowledge mode
------	--

4.2.5 Transmitter detailed events (read only)

Description

Transmitter Detail Alarms menu is only visible in case an alarm with detailed alarm information is pending.

Setting	• DE10 Failed to read any data related page • DE11 Failed to read FATAL_ERROR_PAGE from • DE12 Failed to read SHUT_DOWN_PAGE from • DE21 The EEPROM data is inconsistent • DE22 Inconsistency of totalizer 1 values • DE26 parameter cache full • DE27 Unsupported sensor units • De28 Communications module not found • DE29 Incomplete sensor connected • DE30 Invalid sensor type
Default	Communication module not found

Path	Maintenance and diagnostics → Diagnostic events → Transmitter detailed events
------	---

4.2.6 Suppression time

Description

A coming event can be suppressed in order to prevent alarm flooding.

Setting	0 to 300 s
Default	0 s

Path	Maintenance and diagnostics → Diagnostic events → Suppression time
------	--

4.2.7 Enable alarms

4.2.7.1 Sensor events (1)

Description

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	05 DSL voltages; 06 DSL storage; 07 Flow measurement; 08 DSL internal; 14 Path 1: No Signal; 15 Path 2: No signal; 16 Path 3: No signal; 17 Path : No signal; 19 Electronics temp.; 22 Density calculation; 23 Medium temp. calc.; 24 Pressure calculation; 25 Viscosity calculation; 26 Sensor temp. comp.; 28 Configuration 1; 31 Sensor temp.
Default	-

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Sensor events (1)
------	---

4.2.7.2 Sensor events (2)

Description

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	34 Invalid flow meas.; 36 Configuration 2; 37 DSL system monitor
Default	-

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Sensor events (2)
------	---

4.2.7.3 Process events (1)

Description

Various sensor alarms can be enabled to show in the display and on the output if they occur.

4.2 Diagnostic events

Setting	228 Sound velocity above alarm limit; 229 Sound velocity above warning limit; 230 Sound velocity below warning limit; 231 Sound velocity below alarm limit; 232 Flow velocity above alarm limit; 233 Flow velocity above warning limit; 234 Flow velocity below warning limit; 235 Flow velocity below alarm limit; 244 Kin. viscosity above alarm limit; 245 Kin. viscosity above warning limit; 246 Kin. viscosity below warning limit; 247 Kin. viscosity below alarm limit
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Process events (1)
------	--

4.2.7.4 Process events (2)

Description

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	Various process alarms selectable
Default	-

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Process events (2)
------	--

4.2.7.5 Process events (3)

Description

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	228 Sound velocity above alarm limit; 229 Sound velocity above warning limit; 230 Sound velocity below warning limit; 231 Sound velocity below alarm limit; 232 Flow velocity above alarm limit; 233 Flow velocity above warning limit; 234 Flow velocity below warning limit; 235 Flow velocity below alarm limit; 244 Kin. viscosity above alarm limit; 245 Kin. viscosity above warning limit; 246 Kin. viscosity below warning limit; 247 Kin. viscosity
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Process events (3)
------	--

4.2.7.6 Process events (4)**Description**

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	Various process alarms selectable
Default	-

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Process events (4)
------	--

4.2.7.7 Totalizer events**Description**

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	136 Totalizer 1 above alarm limit; 137 Totalizer 1 above warning limit; 138 Totalizer 1 below warning limit; 139 Totalizer 1 below alarm limit
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Totalizer events
------	--

4.2.7.8 Device events**Description**

If one of the selected events appears this affects the status icon, the related status output and the alarm on the communication interface.

Setting	148 Transm. temp. above alarm limit; 149 Transm. temp. below alarm limit; 150 Sensor signal disruption; 159 Internal error in transmitter
Default	

Related

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Device events
------	---

4.2.7.9 Simulation events (1)**Description**

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	160 Mass flow simulated; 161 Volume flow simulated; 162 Density simulated; 163 Medium temp. simulated; 167 Totalizer 1 simulated
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Simulation events (1)
------	---

4.2.7.10 Simulation events (2)**Description**

Various sensor alarms can be enabled to show in the display and on the output if they occur.

Setting	289 Sound velocity simulated; 290 Flow velocity simulated; 292 Kin. viscosity simulated
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Simulation events (2)
------	---

4.2.7.11 Input/output events (1)

Description

If one of the selected events appears this affects the status icon, the related status output and the alarm on the communication interface.

Setting	214 Channel 2 simulated; 215 Channel 3 simulated; 217 Process values frozen; 218 All outputs forced
Default	

Related

The selected events will be shown in the display when they occur. Furthermore, they will be indicated on the output if **Output (2)**, **Input/output (3)** and/or **Input/output (4)** is set to Status output and **Status mode** is set to Alarm item.

Path	Maintenance and diagnostics → Diagnostic events → Enable alarms → Input/output events (1)
------	---

4.2.8 Assign alarm class

4.2.8.1 14 - Path 1: No signal

Description

Warning alarms for Path 1

Setting	Process value warning; Maintenance demanded; Maintenance required
Default	Maintenance required

Path	Maintenance and diagnostics → Diagnostic events → Assign alarm class → 14 - Path 1: No signal
------	---

4.2.8.2 148 - Transm. temp. above alarm limit

Description

This event can be mapped to an alarm class respective NAMUR status signal.

Setting	Process value alarm (PA) resp. Out of specification; Maintenance alarm resp. Failure
Default	Process value alarm (PA) resp. Out of specification

Path	Maintenance and diagnostics → Diagnostic events → Assign alarm class → 148 - Transm. temp. above alarm limit
------	--

4.2.8.3 149 - Transm. temp. below alarm limit**Description**

This event can be mapped to an alarm class respective NAMUR status signal.

Setting	Process value alarm (PA) resp. Out of specification; Maintenance alarm resp. Failure
Default	Process alarm (PA) resp. Out of specification

Path	Maintenance and diagnostics → Diagnostic events → Assign alarm class → 149 - Transm. temp. below alarm limit
------	--

4.3 Maintenance**4.3.1 Copy configuration****Description**

Copy configuration - copy configurations from the SensorFlash to the device.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Copy configuration
------	--

4.3.2 Spare part replacement**4.3.2.1 Transmitter****4.3.2.1.1 Replace transmitter****Description**

Only Siemens authorized personnel may replace spare parts.

Access level: Expert user only.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Spare part replacement → Transmitter → Replace transmitter
------	--

4.3.2.2 Operating time

4.3.2.2.1 Operating time

Description

Operating time - Indicates the operating time of the transmitter since the last power up.

Description

Operating time total - Indicates the total operating time of the transmitter since the last power up.

4.3.3 Electronic part identification

4.3.3.1 Transmitter cassette

4.3.3.1.1 HW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Transmitter cassette → HW version
------	--

4.3.3.1.2 FW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

4.3 Maintenance

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Transmitter cassette → FW version
------	--

4.3.3.1.3 Serial number (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Transmitter cassette → Serial number
------	---

4.3.3.1.4 Comm. HW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Transmitter cassette → Comm. HW version
------	--

4.3.3.1.5 Comm. serial number (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Transmitter cassette → Comm. serial number
------	---

4.3.3.2 Local display

4.3.3.2.1 HW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Local display → HW version
------	---

4.3.3.2.2 FW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Local display → FW version
------	---

4.3.3.2.3 HMI config. version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Local display → HMI config. version
------	--

4.3 Maintenance

4.3.3.3 I/O cassette

4.3.3.3.1 FW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → I/O cassette → FW version
------	---

4.3.3.3.2 Serial number (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → I/O cassette → Serial number
------	--

4.3.3.4 Sensor cassette

4.3.3.4.1 FW version (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Sensor cassette → FW version
------	--

4.3.3.4.2 Serial number (expert)

Description

Only Siemens authorized personnel may replace spare parts.

Setting	Cancel; OK
Default	Cancel

Path	Maintenance and diagnostics → Maintenance → Electronic part identification → Sensor cassette → Serial number
------	--

4.4 Diagnostics

4.4.1 Sensor

4.4.1.1 Receiver signal

Description

Receiver signal

Path	Maintenance and diagnostics → Diagnostics → Sensor → Receiver signal
------	--

4.4.1.2 Reynolds number (read only)

Description

Calculated Reynolds number.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Reynolds number
------	--

4.4.1.3 Path 1

4.4.1.3.1 RxGain up (read only)

Description

Rx gain of upstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → RxGain up
------	---

4.4 Diagnostics

4.4.1.3.2 RxGain down (read only)

Description

Rx gain of downstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → RxGain down
------	---

4.4.1.3.3 SNR up (read only)

Description

Signal to noise ration of upstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → SNR up
------	--

4.4.1.3.4 SNR down (read only)

Description

Signal to noise ration of downstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → SNR down
------	--

4.4.1.3.5 Sound velocity (read only)

Description

Sound velocity.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Sound velocity
------	--

4.4.1.3.6 Flow velocity (read only)

Description

Flow velocity.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Flow velocity
------	---

4.4.1.3.7 Delta time (read only)

Description

Delta time.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Delta time
------	--

4.4.1.3.8 Travel time up (read only)

Description

Travel time of upstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Travel time up
------	--

4.4.1.3.9 Travel time down (read only)

Description

Travel time of downstream signal.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Travel time down
------	--

4.4.1.3.10 Correlation factor (read only)

Description

Correlation factor.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Correlation factor
------	--

4.4.1.3.11 Actual sensor frequency (read only)

Description

Sensor frequency.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Actual sensor frequency
------	---

4.4.1.3.12 Peak amplitude up (read only)

Description

Operating time of frontend since last power-up.

Path	Maintenance and diagnostics → Diagnostics → Sensor → Path 1 → Peak amplitude up
------	---

4.4.2 Temperature monitoring

4.4.2.1 Medium temperature

Description

Medium temperature

Setting	4.00 °C
Default	-

Related

Path	Maintenance and diagnostics → Diagnostic → Temperature monitoring → Medium temperature → Current value
------	--

4.4.2.2 Transmitter electronics temperature**4.4.2.2.1 Current value (read only).****Description**

Measured value of transmitter internal temperature.

Path	Maintenance and diagnostics → Diagnostics → Temperature monitoring → Transmitter temperature → Current value
------	--

4.4.2.2.2 Minimum (read only)**Description**

Drag indicator of minimum transmitter internal temperature.

Path	Maintenance and diagnostics → Diagnostics → Temperature monitoring → Transmitter electronics temperature → Minimum
------	--

4.4.2.2.3 Timestamp at minimum value (read only)**Description**

Shows timestamp of recorded minimum transmitter internal temperature.

Path	Maintenance and diagnostics → Diagnostics → Temperature monitoring → Transmitter electronics temperature → Timestamp at minimum value
------	---

4.4.2.2.4 Maximum (read only)**Description**

Drag indicator of maximum transmitter internal temperature.

Path	Maintenance and diagnostics → Diagnostics → Temperature monitoring → Transmitter electronics temperature → Maximum
------	--

4.4.2.2.5 Timestamp at maximum value (read only)

Description

Shows timestamp of recorded maximum transmitter internal temperature.

Path	Maintenance and diagnostics → Diagnostics → Temperature monitoring → Transmitter electronics temperature → Timestamp at maximum value
------	---

4.4.3 Inputs and outputs

4.4.3.1 Channel 2 - output

4.4.3.1.1 Operation mode (read only)

Description

The set Operation mode can be viewed in this parameter.

Options	Off; Current output
Default	Current output

Related

In this parameter the setting of **Operation mode** is read only.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 2 - output → Operation mode
------	--

4.4.3.1.2 Status output signal (read only)

Description

The channel value can be viewed in this parameter.

Related

if **Operation mode** is set to Current output, this parameter will show the current output value.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 2 - output → Channel value
------	---

Description

The error status of the channel can be viewed in this parameter.

Options	Overflow; Underflow; Fail-safe behaviour active; Cable break; Loop current deviation - Output current cannot be established (read back deviation > 0.1 mA)
---------	--

Operation mode is set to Current output

Options	Overflow; Underflow; Fail-safe behaviour active
---------	---

Operation mode is set to Frequency output

Options	The pulse output has reached maximum pulse output frequency; Fail-safe behaviour active
---------	---

Operation mode is set to Pulse output

Related

This parameter is only available if **Operation mode** is set to Current output, Frequency output or Pulse output.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 2 - output → Error status
------	--

4.4.3.2 Channel 3 - relay

4.4.3.2.1 Channel 3 - relay

Description

The channel value can be viewed in this parameter.

Related

This parameter is only available if **Operation mode** is set to On.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 3 - relay → Channel value
------	--

4.4.3.3 Channel 4 - Input/output

4.4.3.3.1 Operation mode - (read only)

Description

The set Operation mode can be viewed in this parameter.

Setting	Off; Frequency output; Pulse output
Default	Off

Related

In this parameter the setting of **Operation mode** is read only.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 4 - input/output → Operation mode
------	--

4.4.3.3.2 Channel value**Description**

The channel value can be viewed in this parameter.

Related

If **Operation mode** is set to Frequency output, this parameter will show the frequency output value.

If **Operation mode** is set to Pulse output, this parameter will show the pulse output value.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 4 - input/output → Channel value
------	---

4.4.3.3.3 Error status (read only)**Description**

The error status of the channel can be viewed in this parameter.

Options	Overflow; Underflow; Fail-safe behaviour is activated
---------	---

Operation mode is set to Frequency output

Options	The pulse output has reached maximum pulse output frequency; Fail-safe behaviour is activated
---------	---

Operation mode is set to Pulse output

Options	The pulse output has reached maximum pulse output frequency; Fail-safe behaviour is activated
---------	---

Operation mode is set to Pulse output

Related

This parameter is only available if **Operation mode** is set to Current output, Frequency output, Pulse output or Current input.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 4 - input/output → Error status
------	--

4.4.3.3.4 Pulse counter (read only)

Description

This parameter shows the number of pulses since startup/last reset.

Related

This parameter is only available if **Operation mode** is set to Pulse output.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 4 - input/output → Pulse counter
------	---

4.4.3.3.5 Reset pulse counter

Description

The pulse counter can be reset.

Setting	Cancel; OK
Default	Cancel

Related

This parameter is only available if **Operation mode** is set to Pulse output.

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Channel 4 - input/output → Reset pulse counter
------	---

4.4.3.4 Calibration picture

Description

Calibration picture

Setting	
Default	mA

Related

Path	Maintenance and diagnostics → Diagnostics → Inputs and outputs → Calibration picture
------	--

4.5 Peak values

4.5.1 Process value 1

4.5.1.1 Process value

Description

Assign the process value to be monitored.

Setting	Disabled; Volume flow; Mass flow; Sound velocity; Flow velocity; Density; Medium temperature; Kinematic viscosity; Totalizer 1
Default	Disabled

Related

If this parameter is set to any other setting than Disabled, parameters **Maximum value**, **Timestamp at maximum value**, **Minimum value**, **Timestamp at Minimum value**, and **Reset logging** will be available.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Process value
------	---

4.5.1.2 Maximum

Displays maximum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Maximum value
------	---

4.5.1.3 Timestamp at maximum

Displays timestamp when maximum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Maximum value timestamp
------	---

4.5.1.4 Minimum

Displays minimum measured value.

4.5 Peak values

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Minimum value
------	---

4.5.1.5 **Timestamp at minimum**

Displays timestamp when minimum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Minimum value timestamp
------	---

4.5.1.6 **Reset peak values****Description**

This command is used to reset the logging of the recorded maximum and minimum values monitored. The drag pointers will be set to the current value.

Setting	Cancel; Ok
Default	Cancel

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 1 → Reset logging
------	---

4.5.2 **Process value 2**4.5.2.1 **Process value****Description**

Assign the process value to be monitored.

Setting	Disabled; Volume flow; Mass flow; Sound velocity; Flow velocity; Density; Medium temperature; Kinematic viscosity; Totalizer 1
Default	Disabled

Related

If this parameter is set to any other setting than Disabled, parameters **Maximum value**, **Maximum value timestamp**, **Minimum value**, **Minimum value timestamp** and **Reset logging** will be available.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Process value
------	---

4.5.2.2 Maximum

Displays maximum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Maximum value
------	---

4.5.2.3 Timestamp at maximum

Displays timestamp when maximum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Maximum value timestamp
------	---

4.5.2.4 Minimum

Displays minimum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Minimum value
------	---

4.5.2.5 Timestamp at minimum

Displays timestamp when minimum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Minimum value timestamp
------	---

4.5.2.6 Reset peak values

Description

This command is used to reset the logging of the recorded maximum and minimum values monitored. The drag pointers will be set to the current value.

Setting	Cancel; Ok
Default	Cancel

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 2 → Reset logging
------	---

4.5.3 Process value 3

4.5.3.1 Process value

Description

Assign the process value to be monitored.

Setting	Disabled; Volume flow; Mass flow; Sound velocity; Flow velocity; Density; Medium temperature; Kinematic viscosity; Totalizer 1
Default	Disabled

Related

If this parameter is set to any other setting than Disabled, parameters **Maximum value**, **Maximum value timestamp**, **Minimum value**, **Minimum value timestamp**, and **Reset logging** will be available.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Process value
------	---

4.5.3.2 Maximum

Displays maximum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Maximum value
------	---

4.5.3.3 Timestamp at maximum

Displays timestamp when maximum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Maximum value timestamp
------	---

4.5.3.4 Minimum

Displays minimum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Minimum value
------	---

4.5.3.5 Timestamp at minimum

Displays timestamp when minimum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Minimum value timestamp
------	---

4.5.3.6 Reset peak values

Description

This command is used to reset the logging of the recorded maximum and minimum values monitored. The drag pointers will be set to the current value.

Setting	Cancel; Ok
Default	Cancel

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 3 → Reset logging
------	---

4.5.4 Process value 4

4.5.4.1 Process value

Description

Assign the process value to be monitored.

Setting	Disabled; Volume flow; Mass flow; Sound velocity; Flow velocity; Density; Medium temperature; Kinematic viscosity; Totalizer 1
Default	Disabled

Related

If this parameter is set to any other setting than Disabled, parameters **Maximum value**, **Maximum value timestamp**, **Minimum value**, **Minimum value timestamp**, and **Reset logging** will be available.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Assign process value
------	--

4.5.4.2 Maximum

Displays maximum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Maximum value
------	---

4.5.4.3 Timestamp at maximum

Displays timestamp when maximum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Maximum value timestamp
------	---

4.5.4.4 Minimum

Displays minimum measured value.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Minimum value
------	---

4.5.4.5 Timestamp at minimum

Displays timestamp when minimum value measured.

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Minimum value timestamp
------	---

4.5.4.6 Reset peak values

Description

This command is used to reset the logging of the recorded maximum and minimum values monitored. The drag pointers will be set to the current value.

Setting	Cancel; Ok
Default	Cancel

Related

This parameter is only available if **Process value** is **not** set to Disabled.

Path	Maintenance and diagnostics → Peak values → Process value 4 → Reset logging
------	---

4.6 Characteristics

4.6.1 Transmitter

4.6.1.1 Design (read only)

Description

Information about the main design features of the transmitter.

Path	Maintenance and diagnostics → Characteristics → Transmitter → Design
------	--

4.7 SensorFlash

4.7.1 Eject

Description

Eject Sensor Flash card

Setting	Cancel; Ok
Default	Cancel

Related

Path	Maintenance and diagnostics → SensorFlash → Eject
------	---

4.7.2 Installed (read only)

Description

Shows the status of the SD card.

Setting	SensorFlash not installed; SensorFlash installed; SensorFlash used as mass storage device
Default	SensorFlash installed

Related

Path	Maintenance and diagnostics → SensorFlash → Installed
------	---

4.7.3 Capacity total (read only)

Description

Total capacity of installed SensorFlash.

Shows INSERT CARD if card is not installed.

Setting	
Default	GB

Related

Path	Maintenance and diagnostics → SensorFlash → Capacity total
------	--

4.7.4 Capacity available (read only)

Description

Free capacity of installed SensorFlash.

Shows INSERT CARD if card is not installed.

Setting	
Default	GB

Related

Path	Maintenance and diagnostics → SensorFlash → Capacity available
------	--

4.7.5 Data logging

4.7.5.1 Activation

Description

Activation - turns on and off data logging activation

Setting	Off; On
Default	Off

Related

If this parameter is set to Enabled, the parameters **Logging value 1** through **Logging value 20** can be configured.

Path	Maintenance and diagnostics → SensorFlash → Data logging → Activation
------	---

4.7.5.2 Data logging mode

Description

Select between a momentary value or an averaged value calculated over one logging interval.

Setting	Log instantaneous, Log average value
Default	Log instantaneous

Related

Path	Maintenance and diagnostics → SensorFlash → Data logging → Data logging mode
------	--

4.7.5.3 Logging interval

Description

Defines the interval for logging. Granularity is 10 ms.

Setting	10 ms; 20 ms; 100 ms; 200 ms; 500 ms; 1 s; 5 s; 10 s; 15 s; 30 s; 1 min; 5 min; 15 min; 30 min; 1 h; 2 h; 4 h; 6 h; 12 h; 24 h
Default	5 s

Related

Path	Maintenance and diagnostics → SensorFlash → Data logging → Logging interval
------	---

4.7.5.4 Process values

4.7.5.4.1 Logging value 1...20

Description

The process value to be logged can be selected in this parameter.

Logged process values are an indicator that you have to stop logging before you can change the logged process values.

Setting	Disabled; Volume flow; Mass flow; Sound velocity; Flow velocity; Density; Medium temperature; Kinematic viscosity; Totalizer 1
Default	Disabled

Related

This parameter is only available if **Data logging** is enabled.

Path	Maintenance and diagnostics → SensorFlash → Data logging → Process values → Logging value 1...20
------	--

4.8 Simulation

4.8.1 Simulation Inputs/outputs

4.8.1.1 Channel 2 - output

4.8.1.1.1 Operation mode

Description

Set the output functionality you want the channel to operate.

Setting	Off; Current output
Default	Off

Related

The setting of this parameter affects the setting options in parameter **Simulation value**.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 2 - output → Operation mode
------	--

4.8.1.1.2 Simulation

Description

Enables or disables simulation of channel 2 current output.

Setting	Disabled; Enabled
Default	Disabled

Related

Only if this parameter is set to Enabled, then the setting of parameter **Simulation value** will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 2 - output → Simulation
------	--

4.8.1.1.3 Simulation value

Description

Set the current value to be output on the channel when current output simulation is enabled.

4.8 Simulation

Setting	0 mA to 25 mA
Default	0 mA

Operation mode is set to Current output

Related

Only if parameter **Simulation** is set to Enabled, the setting of this parameter will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 2 - output → Simulation value
------	--

4.8.1.2 Channel 3 - relay

4.8.1.2.1 Simulation

Description

Enables or disables simulation of channel 3 relay output.

Setting	Disabled; Enabled
Default	Disabled

Related

Only if this parameter is set to Enabled, then the setting of parameter **Simulation value** will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 3 - relay → Simulation
------	---

4.8.1.2.2 Simulation value

Description

Relay output value to be output when simulation is enabled.

Setting	0; 1
Default	0

Related

Only if parameter **Simulation** is set to Enabled, then the setting of this parameter will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 3 - relay → Simulation value
------	---

4.8.1.3 Channel 4 - Input/output

4.8.1.3.1 Operation mode

Description

Set the output functionality you want the channel to operate.

Setting	Off; Frequency output; Pulse output
Default	Off

Related

The setting of this parameter affects the setting options in parameter **Simulation value**.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 4 - input/output → Operation mode
------	--

4.8.1.3.2 Simulation

Description

Enables or disables simulation of Channel 4 input/output.

Setting	Disabled; Enabled
Default	Disabled

Related

Only if this parameter is set to Enabled, then the setting of parameter **Simulation value** will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 4 - input/output → Simulation
------	--

4.8.1.3.3 Simulation value

Description

Set the frequency value to be output on the channel when frequency output simulation is enabled.

Set the pulse value to be output on the channel when pulse output simulation is enabled.

Setting	0.0 Hz to 12500.0 Hz
Default	1.0 Hz

Operation mode is set to Frequency output

Setting	0.0 pulses/s to 12500.0 pulses/s
Default	0.0

Operation mode is set to Pulse output

Related

Only if parameter **Simulation** is set to Enabled, then the setting of this parameter will be relevant.

Path	Maintenance and diagnostics → Simulation → Simulation inputs and outputs → Channel 4 - input/output → Simulation value
------	--

4.8.2 Simulation process values

4.8.2.1 Enable simulation

Description

Select the process value(s) to be simulated.

Setting	Volume flow; Mass flow; Flow velocity; Sound velocity; Density; Kinematic viscosity; Medium temperature
Default	None selected

Related

Only if process values are marked in this parameter, the setting of **Simulated value** under each relevant process value becomes relevant.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Enable simulation
------	--

4.8.2.2 Volume flow

Simulation value

Description

Set the Volume flow value to be simulated.

Setting	-10800000000.0 m³/h to +10800000000.0 m³/h
Default	0.0 m³/h

Related

Only if Volume flow is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Volume flow → Simulation value
------	---

4.8.2.3 Mass flow**Simulation value****Description**

Set the Mass flow value to be simulated.

Setting	-10800000000.000001 kg/h to +10800000000.000001 kg/h
Default	0.0 kg/h

Related

Only if Mass flow is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Mass flow → Simulation value
------	---

4.8.2.4 Flow velocity**Simulation value****Description**

Set the Flow velocity value to be simulated.

Setting	-400 m/s to +400 m/s
Default	0.0 m/s

Related

Only if Flow velocity is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Flow velocity → Simulation value
------	---

4.8.2.5 Sound velocity

Simulation value

Description

Set the Sound velocity value to be simulated.

Setting	100.0 m/s to 25000.0
Default	1500.0 m/s

Related

Only if Sound velocity is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Sound velocity → Simulation value
------	--

4.8.2.6 Density

Simulation value

Description

Set the Density value to be simulated.

Setting	0.0 kg/m ³ - 10000.0 kg/m ³
Default	1000.0 kg/m ³

Related

Only if Density is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Density → Simulation value
------	---

4.8.2.7 Kinematic viscosity

Simulation value

Description

Set the Kinematic viscosity value to be simulated.

Setting	The range is shown as minimum and maximum values in the HMI.
Default	0.000001 m ² /s

Related

Only if Kinematic viscosity is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Kinematic viscosity → Simulation value
------	---

4.8.2.8 Medium temperature

Simulation value**Description**

Set the Medium temperature value to be simulated.

Setting	-273.0 °C (-459.399994 °F) to +400.0 °C (752.0 °F)
Default	20.0 °C (68 °F)

Related

Only if Medium temperature is marked in **Enable simulation**, then the setting of this parameter will be relevant.

The range and default setting are dependent on the selected **Unit**.

Path	Maintenance and diagnostics → Simulation → Simulation process values → Medium temperature → Simulation value
------	--

4.8.3 Simulate alarms

4.8.3.1 Simulation mode

Description

The alarm simulation mode can be configured in this parameter.

Setting	Off; Simulate alarm (ID number); Simulate alarm class
Default	Off

Related

If **Simulation mode** is set to Simulate alarm (ID number), **Alarms** and its subcategories will be available.

If **Simulation mode** is set to Simulate alarm class, **Alarm class** will be available.

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Simulation mode
------	--

4.8.3.2 Alarms

4.8.3.2.1 Sensor alarms (1)

Description

The simulation of single and multiple **Sensor alarms (1)** can be configured.

Setting	Various sensor alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Sensor alarms (1)
------	---

4.8.3.2.2 Sensor alarms (2)

Description

The simulation of single and multiple **Sensor alarms (2)** can be configured.

Setting	Various sensor alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Sensor alarms (2)
------	---

4.8.3.2.3 Process alarms (1)

Description

The simulation of single and multiple **Process alarms (1)** can be configured.

Setting	Various process alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Process alarms (1)
------	--

4.8.3.2.4 Process alarms (2)**Description**

The simulation of single and multiple **Process alarms (2)** can be configured.

Setting	Various process alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Process alarms (2)
------	--

4.8.3.2.5 Process alarms (3)**Description**

The simulation of single and multiple **Process alarms (3)** can be configured.

Setting	Various process alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Process alarms (3)
------	--

4.8.3.2.6 Process alarms (4)**Description**

The simulation of single and multiple **Process alarms (4)** can be configured.

Setting	Various process alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Process alarms (4)
------	--

4.8.3.2.7 Totalizer alarms**Description**

The simulation of single and multiple **Totalizer alarms** can be configured.

Setting	Totalizer 1 above alarm limit; Totalizer 1 above warning limit; Totalizer 1 below warning limit; Totalizer 1 below alarm limit
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Totalizer alarms
------	--

4.8.3.2.8 Input/output alarms**Description**

The simulation of single and multiple **Input/output alarms** can be configured.

Setting	Various input/output alarms can be selected
Default	None selected

Related

This parameter is only available if **Simulation mode** is set to Simulate alarm (ID number).

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarms → Input/output alarms
------	---

4.8.3.3 Alarm class**Description**

The Siemens standard alarm class to be simulated can be configured. The alarm status is activated on all outputs.

Setting	Maintenance alarm; Function check; Process value alarm; Process value warning; Maintenance warning; Maintenance required
Default	None selected

Related

This parameter can only be accessed if **Status icons** is set to Standard.

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarm class
------	--

4.8.3.4 Alarm class

Description

The NAMUR alarm class to be simulated can be configured. The alarm status is activated on all outputs.

Setting	Failure; Function check; Out of specification; Maintenance required
Default	None selected

Related

This parameter can only be accessed if **Status icons** is set to NAMUR.

Path	Maintenance and diagnostics → Simulation → Simulation alarms → Alarm class
------	--

4.9 Audit trail

4.9.1 Parameter change log

Displays list of logged parameter changes. (Log shows parameter value before the change, not the current value.)

Path	Maintenance and diagnostics → Audit trail → Parameter change log
------	--

4.9.2 Clear parameter change log (write only)

Description

The parameter change log can be reset using this parameter.

Setting	Cancel; Ok
Default	Cancel

4.10 Self test

Related

Path	Maintenance and diagnostics → Audit trail → Clear parameter change log
------	--

4.9.3 Firmware update change log

Description

A list of logged firmware updates can be viewed in this parameter. Up to 20 logs can be listed with timestamp in the format YYYY-MM-DD hh-mm.

Path	Maintenance and diagnostics → Audit trail → Firmware update change log
------	--

4.9.4 Clear FW update change log (expert)

Description

The firmware update log can be reset using this parameter.

Setting	Cancel; Ok
Default	Cancel

Related

Path	Maintenance and diagnostics → Audit trail → Clear FW update change log
------	--

4.10 Self test

4.10.1 Display test

Description

The display can be tested using a wizard..

Path	Maintenance and diagnostics → Self test → Display test
------	--

4.11 Resets

4.11.1 Restore ordered configuration (write only)

Description

Command to set all parameters to their defined default values.

Setting	Cancel; Ok
Default	Cancel

Related

Path	Maintenance and diagnostics → Resets → Set to default
------	---

4.11.2 Device restart (write only)

Description

Command to restart device.

Setting	Cancel; Ok
Default	Cancel

Related

Path	Maintenance and diagnostics → Resets → Device restart
------	---

4.12 Firmware update

Description

The firmware of the device can be updated using a wizard.

Path	Maintenance and diagnostics → Firmware update
------	---

Communication

5.1 Service channel (USB)

5.1.1 USB mode (read only)

Description

The **USB mode** can be read in this parameter.

Options	USB communication; Mass storage device (MSD)
---------	--

Related

Path	Communications → Service channel (USB) → USB mode
------	---

5.1.2 Auto mode

Description

The **Auto mode** can be enabled/disabled. When auto mode is enabled, a device connected via a USB cable is always considered an MSD.

Setting	Disabled; Enabled
Default	

Related

Path	Communications → Service channel (USB) → Auto mode
------	--

5.1.3 MSD connect (write only)

Description

This command is used to connect/disconnect to a mass storage device (for example: a PC).

Setting	Do nothing; Connect; Disconnect
Default	Do nothing

Related

Path	Communications → Service channel (USB) → MSD connect
------	--

5.2 Modbus (Channel 1)

5.2.1 Slave address (SW)

Description

The slave address (SW) for the Modbus device can be configured. This address is used if the DIP switch is set to 0.

Setting	1 to 247
Default	

Related

Path	Communication → Modbus (Channel 1) → Slave address (SW)
------	---

5.2.2 Slave address (HW) (read only)

Description

The slave address (HW) is determined by the DIP switch setting on the transmitter cassette and can be read out in this parameter. This address is used if the DIP switch is set to a value > 0.

Options	Read only
---------	-----------

Related

Path	Communication → Modbus (Channel 1) → Slave address (HW)
------	---

5.2.3 Baud rate

Description

Baud rate of Modbus interface.

Setting	9600 Bit/s; 19200 Bit/s; 115200 Bit/s; 38400 Bit/s; 57600 Bit/s; 76800 Bit/s; 1200 Bit/s; 2400 Bit/s; 4800 Bit/s
Default	

Related

Path	Communication → Modbus (Channel 1) → Baudrate
------	---

5.2.4 Parity / framing

Description

Parity and framing of the Modbus communication interface.

Setting	Even parity, 1 stop; Odd parity, 1 stop; No parity, 2 stop
Default	

Related

Path	Communication → Modbus (Channel 1) → Parity / framing
------	---

5.2.5 Floating point byte order

Description

The floating-point number byte order used within the data field of Modbus messages,

The first mentioned byte is the first byte sent.

Byte 3 corresponds to the left-most byte (MSB) of a 32 bit floating-point number in big endian format, byte 0 to the right-most byte.

Setting	1-0-3-2; 0-1-2-3; 2-3-0-1; 3-2-1-0
Default	

Related

Path	Communication → Modbus (Channel 1) → Floating point byte order
------	--

5.2.6 Integer byte order

Description

The integer byte order used in Modbus messages.

MSB = most significant byte / high byte

LSB = least significant byte / low byte

Setting	MSB to LSB (big endian); LSB to MSB (little endian)
Default	

Related

Path	Communication → Modbus (Channel 1) → Integer byte order
------	---

5.2.7 Register mapping

5.2.7.1 Enable mapping

Description

Activation/deactivation of the register mapping. A set bit means that the mapping pair is activated, a reset bit that the mapping pair is deactivated.

Bit 0:

Requested register 1 / Target register 1

...

Bit 19:

Requested register 20 / Target register 20

Setting	0 to 1048575
Default	

Related

Path	Communication → Modbus (Channel 1) → Register mapping → Enable mapping
------	--

5.2.7.2 Source register 1..20

Description

Modbus register that appears within Modbus request is redirected to the parameter specified by Target register 1..20.

Setting	
Default	

Related

Path	Communication → Modbus (Channel 1) → Register mapping → Source register 1..20
------	---

5.2.7.3 Target register 1..20

Description

Register of an existing product parameter to which a Modbus request is redirected.

Setting	
Default	

Related

Path	Communications → Modbus (Channel 1) → Register mapping → Target register 1..20
------	--

5.2.8 Modbus units

5.2.8.1 Mass flow unit

Description

Set the unit for mass flow values.

Setting	Metric:	Gram → g/s; g/min; g/h Kilogram → kg/s; kg/min; kg/h; kg/d Tonne → t/min; t/h; t/d
	US:	Pound → lb/s; lb/min; lb/h; lb/d Short ton → STon/min; STon/h; STon/d Ton (long ton) → T/h; T/d
	Custom unit	
Default	kg/h	

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Mass flow unit
------	---

5.2.8.2 Volume flow unit

Description

Set the unit for volume flow values.

Setting	Metric:	Litre → l/s; l/min; l/h; l/d; Ml/d; hl/s; hl/min; hl/h; hl/d m ³ → m ³ /s; m ³ /min; m ³ /h; m ³ /d
	US:	Gallons → Ugal/s; Ugal/min; Ugal/h; Ugal/d; Mgal/d; gal/s; gal/min; gal/h; gal/d Barrels → BBPS; BBPM; BBPH; BBPD; BOPS; BOPM; BOPH; BOPD; BLPS; BLPM; BLPH; BLPD ft ³ → ft ³ /s; ft ³ /min; ft ³ /h; ft ³ /d
	Custom unit	
Default	m ³ /h	

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Volume flow unit
------	---

5.2.8.3 Flow velocity unit**Description**

Set the unit for flow velocity values.

Setting	Metric:	Meter → m/s; m/h
	US:	Foot → ft/s; ft/min Inch → in/s; in/min
	Custom unit	
Default	m/s	

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Flow velocity unit
------	---

5.2.8.4 Sound velocity unit**Description**

Set the unit for sound velocity values.

Setting	Metric:	Meter → m/s; m/h
	US:	Foot → ft/s; ft/min Inch → in/s; in/min
	Custom unit	
Default	m/s	

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Sound velocity unit
------	--

5.2.8.5 Density unit**Description**

Set the unit for density values.

Setting	Metric:	Microgram → $\mu\text{g/l}$; $\mu\text{g/m}^3$ Milligram → mg/l Gram → g/ml ; g/cm^3 ; g/l Kilogram → kg/l ; kg/m^3
	US:	Pound → lb/in^3 ; lb/gal ; lb/ft^3 Short ton → STon/yd^3
	Custom unit	
Default	kg/m^3	

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Density unit
------	---

5.2.8.6 Kinematic viscosity unit**Description**

Set the unit for kinematic viscosity values.

Setting	cSt
Default	cSt

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Kinematic viscosity unit
------	---

5.2.8.7 Temperature units**Description**

Set the unit for temperature values.

Setting	$^{\circ}\text{C}$, $^{\circ}\text{F}$, $^{\circ}\text{R}$, K
Default	$^{\circ}\text{C}$

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Temperature units
------	--

5.2.8.8 Totalizer 1 unit**Description**

Set the unit for totalizer 1 quantities.

5.2 Modbus (Channel 1)

Setting	Metric:	l; hl; m ³
	US:	Ugal; gal; BBL42; BBL31; BBL31.5; bush; yd ³ ; ft ³ ; in ³
	Custom unit	
Default	m ³	

is set to Volume flow

Setting	Metric:	g; kg; t
	US:	lb; STon; T; oz
	Custom unit	
Default	kg	

is set to Mass flow

Setting	Metric:	NI; Nm ³ ; SI; Sm ³
	US:	Sft ³
Default	NI	

is set to Corrected volume flow

Related

Path	Communications → Modbus (Channel 1) → Modbus units → Totalizer 1 unit
------	---

5.2.8.9 Service channel (USB)

USB mode (read only)

Description

The **USB mode** can be read in this parameter.

Options	USB communication; Mass storage device (MSD)
---------	--

Related

Path	Communications → Service channel (USB) → USB mode
------	---

6.1 Change user PIN

Used to change PIN code that enables User access level.

Setting	
Default	

Related

Path	Security → Access management → Change user PIN code
------	---

6.2 Change expert PIN code (expert)

Description

The **Change expert PIN code** function can be accessed.

Setting	
Default	

Related

Path	Security → Access management → Change expert PIN code
------	---

6.3 Recovery ID

Displays an ID number required to reset PIN if lost. Record this ID number for use when contacting Siemens customer support.

Setting	
Default	

Related

Path	Security → Access management → Unique ID code
------	---

6.4 PIN recovery

Used to enter PIN unlock key (PUK) which resets device PIN(s) to default. (PUK obtained from Siemens customer support.)

Setting	
Default	

Related

Path	Security → Access management → PUK
------	------------------------------------

6.5 Activate user PIN

Description

The **Enable access level control** function can be configured.

Setting	Disable; Enable
Default	Enable

Related

Path	Security → Access management → Enable access level control
------	--

6.6 Deactivate user PIN

Description

The **Disable access level control** function can be configured.

Setting	Disable; Enable
Default	Enable

Related

Path	Security → Access management → Disable access level control
------	---

6.7 Auto logout

Description

The **Auto logout** function can be configured. When the parameter is set to Off (default), you will **not** be prompted for password for 10 minutes after the last key press. When the

parameter is set to On, you will be prompted to enter the password before each HMI operation.

6.8 Auto logout

Description

The **Auto logout** function can be configured. When the parameter is set to Off (default), you will **not** be prompted for password for 10 minutes after the last key press. When the parameter is set to On, you will be prompted to enter the password before each HMI operation.

Setting	Off; On
Default	Off

Related

Path	Security → Access management → Auto logout
------	--

6.9 Logout

Description

The **Logout** function can be configured.

Setting	
Default	

Related

Path	Security → Access management → Logout
------	---------------------------------------

Language

7.1 Language

Description

Select the local display language.

Setting	English; Deutsch
Default	English

Related

Language	Language
----------	----------

Support

A.1 Technical support

If you have any technical questions about the device described in these Operating Instructions and do not find the right answers, you can contact Customer Support:

- Via the Internet using the **Support Request**:
Support request (<http://www.siemens.com/automation/support-request>)
- Via Phone:
 - Europe: +49 (0)911 895 7222
 - America: +1 423 262 5710
 - Asia-Pacific: +86 10 6475 7575

Further information about our technical support is available on the Internet at
Technical support (<http://support.automation.siemens.com/WW/view/en/16604318>)

Service & Support on the Internet

In addition to our documentation, we offer a comprehensive knowledge base online on the Internet at:

Service and support (<http://www.siemens.com/automation/service&support>)

There you will find:

- The latest product information, FAQs, downloads, tips and tricks.
- Our newsletter, providing you with the latest information about your products.
- Our bulletin board, where users and specialists share their knowledge worldwide.
- You can find your local contact partner for Industry Automation and Drives Technologies in our partner database.
- Information about field service, repairs, spare parts and lots more under **Services**.

Additional Support

If you have additional questions about the device, please contact your local Siemens representative and offices at:

Local contact person (<http://www.automation.siemens.com/partner>)

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For more information

www.siemens.com/flow

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