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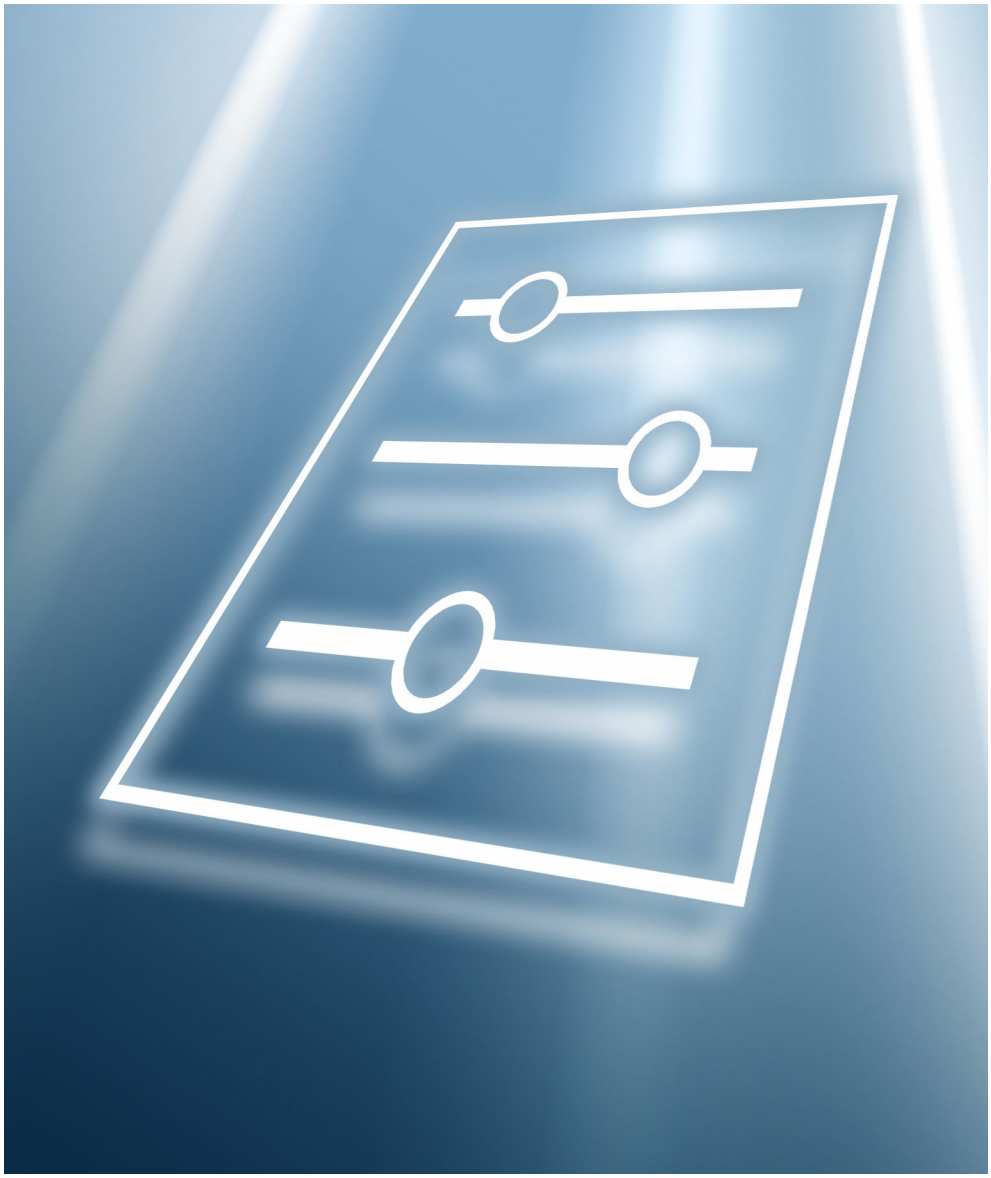
71673924
2024-09-30
01.00.zz (Device firmware)

Description of Device Parameters
Liquiphant FTL43

Vibronic
IO-Link



Endress+Hauser
People for Process Automation

1 About this document

1.1 Document function

The document is part of the Operating Instructions and serves as a reference for parameters.

Tasks that require detailed knowledge of the function of the device:
- Starting up measurements under difficult conditions
- Optimal adjustment of measurements to difficult conditions
- Detailed configuration of communication interface
- Fault diagnosis in difficult cases

1.2 Target group

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

1.3 Document structure

The document consists of a general part and a specific part.

The structure of the document and its components are explained in the general part (section 1).

The specific part starts with an overview of the device operating menu, which is the focus of this manual.

The description of the device parameters follows the overview of the operating menu. The description is divided into 4 main menus and their submenus.

The 4 main menus:
- Identification
- Parameter
- Observation
- Diagnosis

In the "Description of device parameters" section, the menus, submenus and parameters are displayed in the same way as they are laid out in the menu structure for the **operating tool**.

An operating tool is software, such as IO-Link master, which can be used to display and edit the data and parameters stored in the device on a PC or laptop. Compared to operation via the local display, an operating tool offers more options. In the operating tool, additional information, such as help texts, is displayed which explain the properties of the parameters.

The submenus visible to a user depend on the **User role** they are logged in with. This document lists the submenus and their parameters that are available to the User role **Maintenance**.

The operating menu is dynamic and adapts the choice of parameters to the selected options.

For information on operating options, see the Operating Instructions

The device-specific parameters are configured via IO-Link. There are specific configuration or operating programs from different manufacturers available to the user for this purpose. The device description file (IODD) is provided for the device.

IODD download
Two options to download the IODD:
- www.endress.com/download
- https://ioddfinder.io-link.com/

www.endress.com/download

1. Select "Device Driver".
2. Select the "IO Device Description (IODD)" entry under "Type".
3. Select "Product root".
4. Click "Search".
   ↳ A list of search results is displayed.

Select the appropriate version and download.

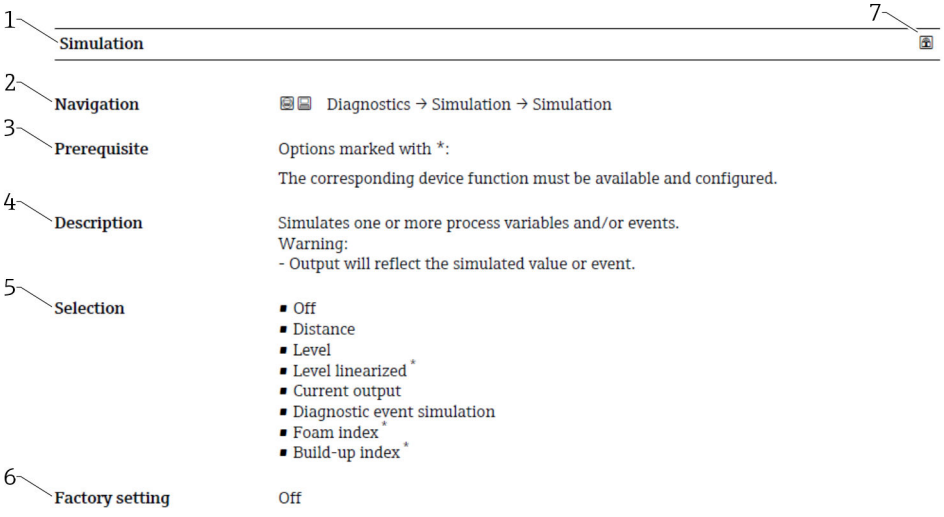
https://ioddfinder.io-link.com/

1. Enter "Endress+Hauser" as the manufacturer and select.
2. Select product name.
   ↳ A list of search results is displayed.

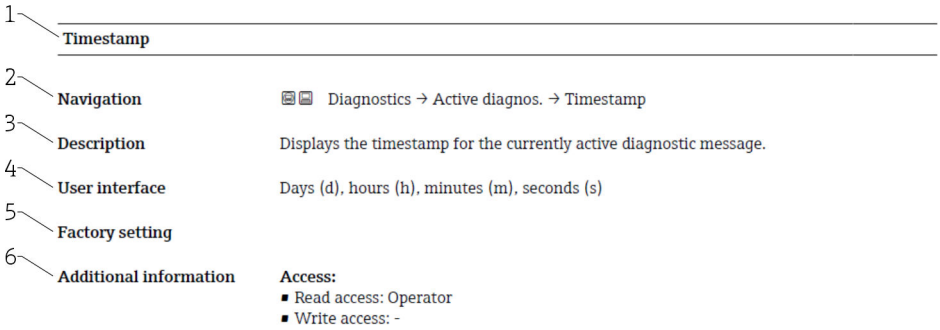
Select the appropriate version and download.

1.4 Elements of parameter descriptions

Parameter descriptions are structured and made up of a number of elements. Depending on the parameter, more or fewer elements may be available. Below are 2 examples of different parameters:



1 Name: Parameter designation (Label)
2 Navigation: Navigation path to the parameter. The graphics indicate whether the path applies to the onsite display, the operating tool or both.
3 Prerequisite: The marked options can only be selected under the condition specified in each case
4 Description: Description of the parameter function
5 Selection: List of the individual options for the parameter
6 Factory setting: Default setting on leaving the factory
7 The lock symbol indicates that the parameter is write-protected



1 *Name: Parameter designation (Label)*
2 *Navigation: Navigation path to the parameter. The graphics indicate whether the path applies to the onsite display, the operating tool or both.*
3 *Description: Description of the parameter function*
4 *User interface: Display value/data of the parameter*
5 *Factory setting: Default setting on leaving the factory*
6 *Additional information:*
Read and write access: Information on access rights that users with certain roles have to the parameter

Additional information at the end of the parameter description can refer to all elements of the parameter description and expand them.

1.5 Symbols

1.5.1 Safety symbols

⚠ DANGER
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

⚠ WARNING
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

⚠ CAUTION
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE
This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.5.2 Symbols for certain types of Information

Indicates additional information

Reference to documentation

Operation via local display

Operation via operating tool

Write-protected parameter

1.6 Documentation

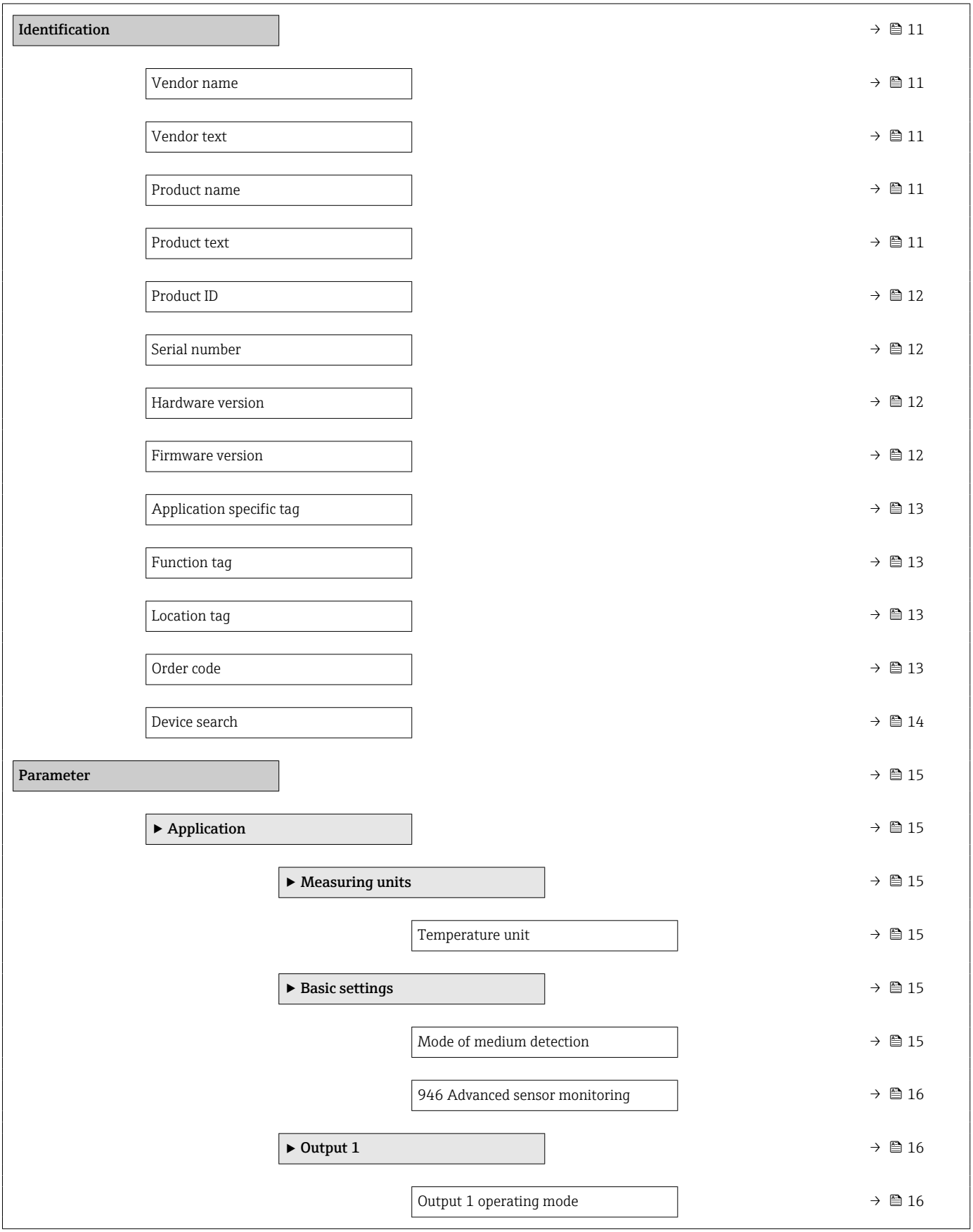
For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

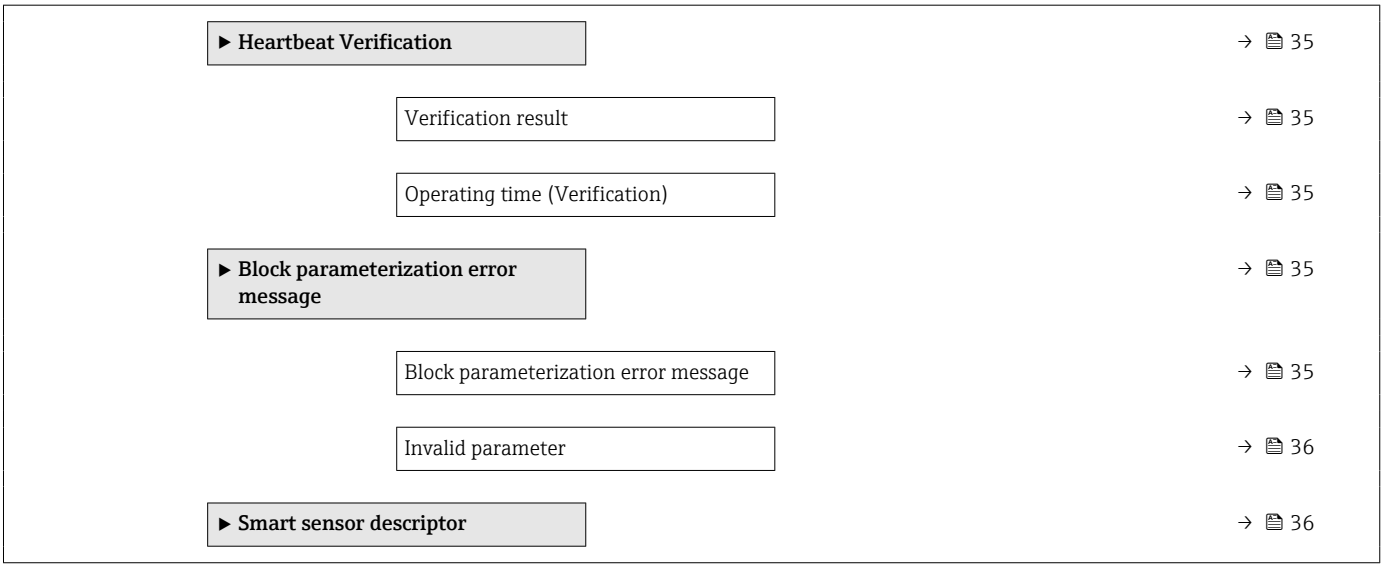
The documentation is available via the Internet: → www.endress.com Download

2 Overview of the operating menu

Navigation Operating tool



▶ **Output 2**	→ 16
Output 2 operating mode	→ 16
▶ **Current output**	→ 17
Current range output	→ 17
Lower range value output	→ 17
Upper range value output	→ 17
Failure behavior current output	→ 18
Failure current	→ 18
Output current	→ 18
Terminal current	→ 18
▶ **Switching signal channel 1.1 - Frequency**	→ 19
SP 1	→ 19
SP 2	→ 19
Logic	→ 19
Mode	→ 20
Hysteresis	→ 20
Switching delay	→ 20
Switch back delay	→ 20
Switching signal channel 1.1 - Frequency	→ 21
▶ **Switching signal channel 1.2 - Frequency**	→ 19
SP 1	→ 19
SP 2	→ 19
Logic	→ 19
Mode	→ 20


▶ Heartbeat Verification
→ 35
Verification result
→ 35
Operating time (Verification)
→ 35
▶ Block parameterization error message
→ 35
Block parameterization error message
→ 35
Invalid parameter
→ 36
▶ Smart sensor descriptor
→ 36

3 Description of device parameters

3.1 Identification

Navigation Identification

Vendor name

Navigation Identification → Vendor name

Description Displays the manufacturer.

User interface Character string comprising numbers, letters and special characters

Factory setting Endress+Hauser

Vendor text

Navigation Identification → Vendor text

Description Displays the manufacturer's claim.

User interface Character string comprising numbers, letters and special characters

Factory setting People for Process Automation

Product name

Navigation Identification → Product name

User interface Character string comprising numbers, letters and special characters

Factory setting Liquiphant

Product text

Navigation Identification → Product text

Description Displays manufacturer-specific short description of the device.

User interface Character string comprising numbers, letters and special characters

Factory setting Vibronic point level switch

Product ID

Navigation Identification → Product ID

Description Displays the product root.

User interface Character string comprising numbers, letters and special characters

Factory setting FTL43-60

Serial number

Navigation Identification → Serial number

Description The serial number is a unique alphanumerical code identifying the device.
It is printed on the nameplate.
In combination with the Operations app it allows to access all device related documentation.

User interface Character string comprising numbers, letters and special characters

Factory setting Device-specific

Hardware version

Navigation Identification → Hardware version

User interface Character string comprising numbers, letters and special characters

Firmware version

Navigation Identification → Firmware version

Description Displays the device firmware version installed.

User interface Character string comprising numbers, letters and special characters

Application specific tag

Navigation Identification → Application tag

Description Enter the tag of the application in which the device is used, e.g. the designation of the production process or step (max. 32 characters).

User entry Character string comprising numbers, letters and special characters (32)

Factory setting Customized

Function tag

Navigation Identification → Function tag

Description Enter the tag of the function the device performs in the application (max. 32 characters).

User entry Character string comprising numbers, letters and special characters (32)

Factory setting ***

Location tag

Navigation Identification → Location tag

Description Enter the tag of the device location in the plant (max. 32 characters).

User entry Character string comprising numbers, letters and special characters (32)

Factory setting ***

Order code

Navigation Identification → Order code

Description Shows the device order code.

User interface Character string comprising numbers, letters and special characters

Additional information **Access:**
- Read access: Operator
- Write access: Expert

Device search

Navigation Identification → Device search

Description Activate the device search to locate the device in the application. When the function is activated, the device emits visual signals (e.g. a flashing LED or local display).

Selection
- Off
- On

Factory setting Off

3.2 Parameter

Navigation Parameter

3.2.1 Application

Navigation Parameter → Application

Measuring units

Navigation Parameter → Application → Measuring units

Temperature unit

Navigation Parameter → Application → Measuring units → Temperature unit

Description Select the temperature unit.

Selection

SI units	*US units*
▪ ℃	℉
▪ K	

Factory setting ℃

Basic settings

Navigation Parameter → Application → Basic settings

Mode of medium detection

Navigation Parameter → Application → Basic settings → Medium detection

Description Select the mode of medium dection.

Selection
- Standard
- Detect foam
  (only visible with order option Heartbeat Verification + Monitoring)
- Ignore foam
  (only visible with order option Heartbeat Verification + Monitoring)

Factory setting Standard

946 Advanced sensor monitoring

Navigation Parameter → Application → Basic settings → 946Adv.Sens.Mon.

Description Enable/disable advanced sensor monitoring to detect high external vibrations and other sensor errors (e.g. caused by pumps, agitators, turbulent flows, high flow rates, etc.).

Selection
- Enable
- Disable

Factory setting Enable

Output 1 operating mode

Navigation Parameter → Application → Output 1

Output 1 operating mode

Navigation Parameter → Application → Output 1 → Output 1 mode

Description Select the operating mode for output 1.

User interface PNP SSC 1.1 - Frequency

Factory setting PNP SSC 1.1. - Frequency

Output 2 operating mode

Navigation Parameter → Application → Output 2

Output 2 operating mode

Navigation Parameter → Application → Output 2 → Output 2 mode

Description Select the operating mode for output 2.

Selection
- Off
- 4...20 mA MDC 1 - Frequency *
- PNP SSC 1.2 - Frequency *

* Visibility depends on order options or device settings

Factory setting PNP SSC 1.2. - Frequency

Current output

Navigation Parameter → Application → Curr.output

Current range output	

Navigation Parameter → Application → Curr.output → Current range

Description Defines the current range used to transmit the measured or calculated value.
In brackets are indicated the “low saturation value” and the “high saturation value”.
If Measured value <= “low saturation”, the output current is set to “low saturation”.
If Measured value >= “high saturation”, the output current is set to “high saturation”.

Note:
Currents below 3.6 mA or above 21.5 mA can be used to signal an alarm.

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

Factory setting 4...20 mA NE (3.8...20.5 mA)

Lower range value output	

Navigation Parameter → Application → Curr.output → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry 0 to 10 000 Hz

Factory setting 400 Hz

Upper range value output	

Navigation Parameter → Application → Curr.output → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry 0 to 10 000 Hz

Factory setting 1 440 Hz

Failure behavior current output

Navigation Parameter → Application → Curr.output → Failure behav.

Description Defines which current the output assumes in the case of an error.
Min: < 3.6 mA
Max: >21.5 mA

Note: The hardware DIP Switch for alarm current (if available) has priority over software setting.

Selection
- Min.
- Max.

Factory setting Min.

Failure current

Navigation Parameter → Application → Curr.output → Failure current

Description Enter current output value in alarm condition.

Applies to failure mode current output = max.

User entry 21.5 to 23 mA

Factory setting 22.5 mA

Output current

Navigation Parameter → Application → Curr.output → Output curr.

Description Displays the value currently calculated for the current output

User interface 3.59 to 23 mA

Terminal current

Navigation Parameter → Application → Curr.output → Terminal curr.

Description Shows the current value of the current output which is currently measured

User interface 0 to 30 mA

Switching signal channel 1.1 -Frequency

Navigation Parameter → Application → SSC 1.1

SP 1

Navigation Parameter → Application → SSC 1.1 → SP 1

Description Enter setpoint 1.

User entry 400 to 1 440 Hz

Factory setting Device-specific and depends on the order option

SP 2

Navigation Parameter → Application → SSC 1.1 → SP 2

Description Enter setpoint 2.

Additional information:
When the "Single point" option is selected in the "Mode" parameter, setpoint 2 is ignored.

User entry 400 to 1 440 Hz

Factory setting Device-specific and depends on the order option

Logic

Navigation Parameter → Application → SSC 1.1 → Logic

Description Select the switching logic.

High active (corresponds to MIN safety)

Low active (corresponds to MAX safety)

Selection
- High active
- Low active

Factory setting High active

Mode

Navigation Parameter → Application → SSC 1.1 → Mode

Description Select the switching mode.

Selection
- Deactivated
- Density > 0.7 g/cm³ (> 43.7 lb/ft³)
- Density > 0.5 g/cm³ (> 31.2 lb/ft³)
- Density > 0.4 g/cm³ (> 25.0 lb/ft³)
- Single point
- Window
- Two point

Factory setting Depends on the order option

Hysteresis

Navigation Parameter → Application → SSC 1.1 → Hysteresis

Description Enter a value. The hysteresis is applied to the setpoints. The hysteresis prevents constant changes of the switching state if the measured value fluctuates near a setpoint.

The hysteresis is only relevant in the Single point mode and in the Window mode.

User entry 0 to 400 Hz

Switching delay

Navigation Parameter → Application → SSC 1.1 → Switching delay

Description Enter the delay for the setpoint until the output switches.

User entry 0.25 to 60 s

Factory setting 0.5 s

Switch back delay

Navigation Parameter → Application → SSC 1.1 → SwitchBackDelay

Description Enter the delay for the setpoint until the output switches back.

User entry 0.25 to 60 s

Factory setting 1 s

Switching signal channel 1.1 -Frequency

Navigation Parameter → Application → SSC 1.1 → SSC 1.1

Description Displays the state of the switching signal channel (SSC).

User interface
- High
- Low

Switching signal channel 1.2 -Frequency

Navigation Parameter → Application → SSC 1.2

SP 1

Navigation Parameter → Application → SSC 1.2 → SP 1

Description Enter setpoint 1.

User entry 400 to 1 440 Hz

Factory setting Device-specific and depends on the order option

SP 2

Navigation Parameter → Application → SSC 1.2 → SP 2

Description Enter setpoint 2.

Additional information:
When the "Single point" option is selected in the "Mode" parameter, setpoint 2 is ignored.

User entry 400 to 1 440 Hz

Factory setting Device-specific and depends on the order option

Logic

Navigation Parameter → Application → SSC 1.2 → Logic

Description Select the switching logic.

High active (corresponds to MIN safety)

Low active (corresponds to MAX safety)

Selection
- High active
- Low active

Factory setting Low active

Mode

Navigation Parameter → Application → SSC 1.2 → Mode

Description Select the switching mode.

Selection
- Deactivated
- Density > 0.7 g/cm³ (> 43.7 lb/ft³)
- Density > 0.5 g/cm³ (> 31.2 lb/ft³)
- Density > 0.4 g/cm³ (> 25.0 lb/ft³)
- Single point
- Window
- Two point

Factory setting Depends on the order option

Hysteresis

Navigation Parameter → Application → SSC 1.2 → Hysteresis

Description Enter a value. The hysteresis is applied to the setpoints. The hysteresis prevents constant changes of the switching state if the measured value fluctuates near a setpoint.

The hysteresis is only relevant in the Single point mode and in the Window mode.

User entry 0 to 400 Hz

Switching delay

Navigation Parameter → Application → SSC 1.2 → Switching delay

Description Enter the delay for the setpoint until the output switches.

User entry 0.25 to 60 s

Factory setting 0.5 s

Switch back delay

Navigation Parameter → Application → SSC 1.2 → SwitchBackDelay

Description Enter the delay for the setpoint until the output switches back.

User entry 0.25 to 60 s

Factory setting 1 s

Switching signal channel 1.2 -Frequency

Navigation Parameter → Application → SSC 1.2 → SSC 1.2

Description Displays the state of the switching signal channel (SSC).

User interface
- High
- Low

Teach single value

Navigation Parameter → Application → TeachSingleValue

Teach select

Navigation Parameter → Application → TeachSingleValue → Teach select

Description Select the switching signal channel (SSC) for the next teach procedure.

Selection
- SSC 1.1
- SSC 1.2

Factory setting SSC 1.1

Teach result

Navigation Parameter → Application → TeachSingleValue → Teach result

Description Displays the status of the teach process.

User interface
- Idle
- SP 1 success
- SP 2 success
- SP 1, SP2 success
- Wait for command
- Busy
- Error

Factory setting Idle

3.2.2 System

Navigation Parameter → System

Bluetooth configuration

Navigation Parameter → System → Bluetooth conf.

Bluetooth activation

Navigation Parameter → System → Bluetooth conf. → Bluetooth active

Description If Bluetooth is deactivated, it can only be reactivated via the display or the operating tool. Reactivating via the SmartBlue app is not possible.

Selection
- Disable
- Enable

Factory setting Depends on the order option

Device management

Navigation Parameter → System → Device manag.

Safety locked

Navigation Parameter → System → Device manag. → Safety locked

User interface
- Off
- On

Factory setting Off

Temporarily locked

Navigation Parameter → System → Device manag. → Temp. locked

User interface
- Off
- On

Factory setting Off

Operating time

Navigation Parameter → System → Device manag. → Operating time

Description Indicates how long the device has been in operation.

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

Factory setting

Configuration counter

Navigation Parameter → System → Device manag. → Config. counter

Description Displays the counter for changes to the device parameters.

Additional information:
- If the value for a static parameter is changed when optimizing or configuring the parameter, the counter is incremented by 1. This is to enable tracking different parameter versions.
- When multiple parameters are changed simultaneously, e.g. when loading parameters into the device from an external source such as FieldCare, the counter may display a higher value. The counter cannot be reset, nor is it reset to a default value on performing a device reset.
- Once the counter has reached the value 65535, it restarts at 0.

User interface 0 to 65 535

Factory setting 0

Software configuration

Navigation Parameter → System → Softw. config.

Activate SW option	
Navigation	Parameter → System → Softw. config. → Activate SW opt.
Description	Enter the application package code or code of another re-ordered functionality to enable it
User entry	Positive integer
Factory setting	Depends on the order option

Heartbeat Monitoring	
Navigation	Parameter → System → Softw. config. → Heartbeat Mon.
User interface	▪ Off ▪ On
Factory setting	Depends on the order option

Heartbeat Verification	
Navigation	Parameter → System → Softw. config. → Heartbeat Verif.
User interface	▪ Off ▪ On
Factory setting	Depends on the order option

WHG	
Navigation	Parameter → System → Softw. config. → WHG
User interface	▪ Off ▪ On
Factory setting	Depends on the order option

Bluetooth

Navigation Parameter → System → Softw. config. → Bluetooth

User interface
- Off
- On

Factory setting Depends on the order option

3.3 Observation

Navigation Observation

3.3.1 Process data input

Navigation Observation → Data input

Frequency

Navigation Observation → Data input → Frequency

User interface 0 to 10 000 Hz

Factory setting Device-specific

Extended device status

Navigation Observation → Data input → Ext.DeviceStatus

Description Displays the extended device status:
- 0: Not specified
- 36: Failure
- 37: Failure - simulation
- 60: Function check
- 61: Function check - simulation
- 120: Out of specification
- 121: Out of specification - simulation
- 164: Maintenance required
- 165: Maintenance required - simulation
- 128: Good
- 129: Good - simulation

User interface
- Failure
- Failure - simulation
- Function check
- Function check - simulation
- Out of specification
- Out of specification - simulation
- Good
- Maintenance required
- Maintenance required - simulation
- Good - simulation
- Not specified

Factory setting Good

Switching signal channel 1.1 -Frequency

Navigation Observation → Data input → SSC 1

Description Displays the state of the switching signal channel (SSC).

User interface
- High
- Low

Switching signal channel 1.2 -Frequency

Navigation Observation → Data input → SSC 1

Description Displays the state of the switching signal channel (SSC).

User interface
- High
- Low

3.3.2 Measured values

Navigation Observation → Measured values

Receiving signal strength of fork

Navigation Observation → Measured values → Sign.Str.Fork

Description Displays the receiving signal strength of the vibrating fork to the sensor electronics in percent.
The value indicates how much oscillation energy comes back from the vibrating fork. Energy loss occurs due to e.g. viscous medium, external vibrations or mechanical tensioning of the sensor.

User interface −200 to 1000 %

3.4 Diagnosis

Navigation Diagnosis

Device Status

Navigation Diagnosis → Device Status

User interface List of existing device states

Detailed device status

Navigation Diagnosis → DetailDeviceStat

Description Displays the currently active diagnostic messages, starting with the highest priority (up to 5).

User interface Character string comprising numbers, letters and special characters

3.4.1 Active diagnostics

Navigation Diagnosis → Active diagnos.

Active diagnostics

Navigation Diagnosis → Active diagnos. → Active diagnos.

Description Displays the currently active diagnostic message.

If there is more than one pending diagnostic event, the message for the diagnostic event with the highest priority is displayed.

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

Factory setting -

Active diagnostic IO-Link

Navigation Diagnosis → Active diagnos. → ActDiag IO-Link

Description Displays the IO-Link event code for the currently active diagnostic message. If there is more than one pending diagnostic event, the code for the diagnostic message with the highest priority is displayed.

User interface 0 to 65 535

Factory setting 0

Previous diagnostics

Navigation Diagnosis → Active diagnos. → Prev.diagnostics

Description Displays the diagnostic message for the last diagnostic event that has ended.

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

Factory setting -

Last diagnostic IO-Link

Navigation Diagnosis → Active diagnos. → LastDiag IO-Link

Description Displays the IO-Link event code for the last diagnostic event that has ended.

User interface 0 to 65 535

Factory setting 0

3.4.2 Simulation

Navigation Diagnosis → Simulation

Simulation

Navigation Diagnosis → Simulation → Simulation

Description By activating the simulation, the following can be simulated:
- Sensor frequency
- Current output
- Diagnostic event simulation
The simulation can affect the output current.

Selection
- Off
- Sensor frequency
- Current output
- Diagnostic event simulation
- Switch output

Factory setting Off

Simulation value

Navigation Diagnosis → Simulation → Simulation value

Diagnostic event simulation

Navigation Diagnosis → Simulation → Simulation value → Diagnostic event

Description Select the diagnostic event to be simulated.

Note:
To terminate the simulation, select "Off".

Selection
- Off
- Drop-down list of diagnostic events

Factory setting Off

Value current output

Navigation Diagnosis → Simulation → Simulation value → Current output

Description Defines the value of the simulated output current.

User entry 3.59 to 23 mA

Factory setting 3.59 mA

Simulation switch output 1.1

Navigation Diagnosis → Simulation → Simulation value → Sim. switch 1.1

Description Select the switching state to simulate. The simulation affects the switch output.

Additional information:
If the simulation is active, the "494 - Switch output simulation active" diagnostic message is displayed. In the event of a supply voltage interruption, the simulation is not continued. The device then operates in operating mode again.

Selection
- High
- Low

Factory setting High

Simulation switch output 1.2

Navigation Diagnosis → Simulation → Simulation value → Sim. switch 1.2

Description Select the switching state to simulate. The simulation affects the switch output.

Additional information:
If the simulation is active, the "494 - Switch output simulation active" diagnostic message is displayed. In the event of a supply voltage interruption, the simulation is not continued. The device then operates in operating mode again.

Selection
- High
- Low

Factory setting High

Frequency simulation value

Navigation Diagnosis → Simulation → Simulation value → Freq. simulation

Description Enter the frequency value to be simulated.

Note:
Prerequisite for the simulation to have an effect on the output:
Select "Sensor frequency " in the "Mode of operation" parameter in the Application > Sensor > Basic settings menu.
The simulated frequency value has no affect on the displayed state of the vibrating fork ("Fork uncovered ", "Fork covered ").

User entry 0 to 10 000 Hz

Factory setting 0 Hz

3.4.3 Electronics temperature

Navigation Diagnosis → Electronics temp

Temperature of sensor electronics

Navigation Diagnosis → Electronics temp → T sens.electr.

Description Displays the actual temperature of the main electronics.

User interface Signed floating-point number

Electronics temperature

Navigation Diagnosis → Electronics temp → Electronics temp

Description Displays the current temperature of the main electronics.

User interface Signed floating-point number

3.4.4 Heartbeat Verification

Navigation Diagnosis → Heartbeat Verif.

Verification result

Navigation Diagnosis → Heartbeat Verif. → Verific. result

User interface
- Not done
- Passed
- Failed

Factory setting Not done

Operating time (Verification)

Navigation Diagnosis → Heartbeat Verif. → Operating time

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

3.4.5 Block parameterization error message

Navigation Diagnosis → BlockPar. error

Block parameterization error message

Navigation Diagnosis → BlockPar. error → BlockPar. error

Description Displays the block parameterization error, e. g. value is out of range.

Additional information:
With block parameterization, a set of parameters is written to the device in one block. In the event of an error, the parameterization is not applied.

User interface
- --------
- Index not available
- Subindex not available
- Service temporarily not available
- Service blocked by local operation
- Service blocked by remote operation
- Access denied
- Parameter out of range
- Value above limit
- Value below limit

- Data length above maximum
- Data length below minimum
- Command not supported
- Dev. function temporarily not available
- Parameter invalid
- Parameter block inconsistent
- Application not ready
- Unknown error

Factory setting --------

Invalid parameter

Navigation Diagnosis → BlockPar. error → Invalid param.

Description Displays the block parameter with the invalid setting, e. g. value is out of range.

Additional information:
With block parameterization, a set of parameters is written to the device in one block. In the event of an error, the parameterization is not applied.

User interface List of parameters

Factory setting -

3.4.6 Smart sensor descriptor

Navigation Diagnosis → SmartSensorDescr

4 Reading out and writing device data (ISDU – Indexed Service Data Unit)

Device data are always exchanged acyclically and at the request of the IO-Link master. Using the device data, the following parameter values or device statuses can be read out:

4.1 IO-Link-specific device data

Abbreviations used in table below:
- OPR - Operator
- MAINT - Maintenance
- PROD - Production
- DEV - Development

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
System command	2 (0x2)	Enum8	1	r/-	OPR	OPR	Application reset	1 : ParamUploadStart 2 : ParamUploadEnd 3 : ParamDownloadStart 4 : ParamDownloadEnd 5 : ParamDownloadStore 6 : ParamBreak 65 : Teach SP 1 66 : Teach SP 2 129 : Application reset 131 : Back-to-box 164 : To delivery settings 240 : SystemTestCommand240 241 : SystemTestCommand241 242 : SystemTestCommand242 243 : SystemTestCommand243	false
Device access locking	12 (0xC)	BitEnum16	2	r/w	OPR	MAINT		4 : Local parameterization 8 : Local user interface	false
Data storage index	3 (0x3)	Uint8	1	r/w	OPR	MAINT	0	0...255	false
Vendor name	16 (0x10)	String	32	r/-	OPR	PROD	Endress +Hauser		false
Product name	18 (0x12)	String	32	r/-	OPR	PROD	Liquiphant		false
Device Status	36 (0x24)	Uint8	1	r/-	OPR	PROD	0	0...255	false
Master Command	8624 (0x21B0)	Uint8	1	r/w	OPR	MAINT	0	0...255	false
Master Cycle Time	8625 (0x21B1)	Uint8	1	r/w	OPR	MAINT	0	0...255	false
M-Sequence Capability	8626 (0x21B2)	Uint8	1	r/-	OPR		0	0...255	false
Revision ID	8627 (0x21B3)	Uint8	1	r/w	OPR	MAINT	17	0...255	false
Process Data Input	4143 (0x102F)	Uint8	1	r/-	OPR		0	0...255	false
Vendor ID 1	8629 (0x21B5)	Uint8	1	r/-	OPR	PROD	0	0...255	false
Vendor ID 2	8630 (0x21B6)	Uint8	1	r/-	OPR	PROD	17	0...255	false
Device ID 1	8631 (0x21B7)	Uint8	1	r/-	OPR	PROD	145	0...255	false
Device ID 2	8632 (0x21B8)	Uint8	1	r/-	OPR	PROD	223	0...255	false
Device ID 3	8633 (0x21B9)	Uint8	1	r/-	OPR	PROD	1	0...255	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Device type	256 (0x100)	Uint16	2	r/-	MAINT		37343	0...65535	false
Active diagnostic	260 (0x104)	Uint16	2	r/-	OPR		0	0...65535	false
Last diagnostic	261 (0x105)	Uint16	2	r/-	OPR		0	0...65535	false
MinCycTime	8637 (0x21BD)	Uint8	1	r/-	OPR		0	0...255	false
Revision ID	8638 (0x21BE)	String	3	r/-	OPR		1.1		false
Vendor text	17 (0x11)	String	32	r/-	OPR		People for Process Automation		false
Product ID	19 (0x13)	String	64	r/-	OPR		FTL43-60		false
Transmission quality	1522 (0x5F2)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Percent)	false
Profile Characteristic	13 (0xD)	Uint16	2	r/-	OPR		16384	0...65535	false
PDInputDescriptor	14 (0xE)	ByteArray	3	r/-	OPR		1,2,0		false
Detailed device status	37 (0x25)	ByteArray	3	r/-	OPR		0x00		false
Product text	20 (0x14)	String	64	r/-	OPR		Vibronic point level switch		false
Direct Parameter Page 1	0 (0x0)	Record	11	r/-			-		false
Application specific tag	24 (0x18)	String	32	r/w	OPR	MAINT	***		true
Device search	12399 (0x306F)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 33006 : On	false
Configuration counter	1503 (0x5DF)	Uint16	2	r/-	OPR		0	0...65535	false
Teach select	58 (0x3A)	Enum8	1	r/w	MAINT	MAINT	SSC 1.1	1 : SSC 1.1 2 : SSC 1.2	false
Process data input	350 (0x15E)	Record	7	r/-			-		false
Teach result	59 (0x3B)	Enum8	1	r/-	MAINT	DEV	Idle	0 : Idle 1 : SP 1 success 2 : SP 2 success 3 : SP 1, SP2 success 4 : Wait for command 5 : Busy 7 : Error	false
Lower value	8657 (0x21D1)	Float	4	r/-	OPR	DEV	400	-3.0e+38...3.0e+38 (Hertz / Frequency)	false
Upper value	8661 (0x21D5)	Float	4	r/-	OPR	DEV	1440	-3.0e+38...3.0e+38 (Hertz / Frequency)	false
Function tag	25 (0x19)	String	32	r/w	OPR	MAINT	***		true
Location tag	26 (0x1A)	String	32	r/w	OPR	MAINT	***		true
Unit	8667 (0x21DB)	Enum16	2	r/-	OPR	DEV	Hz	1077 : Hz	false
Scale	8671 (0x21DF)	Sint8	1	r/-	OPR	DEV	0	-128...127	false
Measurement data channel 1 - Frequency	16512 (0x4080)	Record	11	r/-			-		false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Output 1 operating mode	1504 (0x5E0)	Enum16	2	r/-	OPR		PNP SSC 1.1 - Frequency	5383 : PNP SSC 1.1 - Frequency	true
Output 2 operating mode	1505 (0x5E1)	Enum16	2	r/w	OPR	MAINT	PNP SSC 1.2 - Frequency	33004 : Off 5391 : 4...20 mA MDC 1 - Frequency 5384 : PNP SSC 1.2 - Frequency	true
Invalid parameter	12338 (0x3032)	Uint16	2	r/-	OPR		255	0...65535	false
Block parameterization error message	12339 (0x3033)	Enum8	1	r/-	OPR		--------	255 : -------- 17 : Index not available 18 : Subindex not available 32 : Service temporarily not available 33 : Service blocked by local operation 34 : Service blocked by remote operation 35 : Access denied 48 : Parameter out of range 49 : Value above limit 50 : Value below limit 51 : Data length above maximum 52 : Data length below minimum 53 : Command not supported 54 : Dev. function temporarily not available 64 : Parameter invalid 65 : Parameter block inconsistent 130 : Application not ready 0 : Unknown error	false
Extended device status	8683 (0x21EB)	Enum8	1	r/-	OPR		Not specified	36 : Failure 37 : Failure - simulation 60 : Function check 61 : Function check - simulation 120 : Out of specification 121 : Out of specification - simulation 128 : Good 164 : Maintenance required 165 : Maintenance required - simulation 129 : Good - simulation 0 : Not specified	false
Active diagnostic IO-Link	12345 (0x3039)	Uint16	2	r/-	OPR		0	0...65535	false
Last diagnostic IO-Link	12346 (0x303A)	Uint16	2	r/-	OPR		0	0...65535	false
Temporarily locked	12341 (0x3035)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Heartbeat Verification	12342 (0x3036)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Heartbeat Monitoring	12343 (0x3037)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Process data input	40 (0x28)	Uint8	1	r/-	OPR		0	0...255	false
WHG	1524 (0x5F4)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Safety locked	12356 (0x3044)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Bluetooth	1525 (0x5F5)	Enum8	1	r/-	OPR		Off	0 : Off 1 : On	false
Switch back delay	1512 (0x5E8)	Float	4	r/w	OPR	MAINT	1	0.25...60 (Second)	true
Logic	8788 (0x2254)	Enum8	1	r/w	OPR	MAINT	High active	0 : High active 1 : Low active	true

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Mode	8789 (0x2255)	Enum8	1	r/w	OPR	MAINT	Two point	0 : Deactivated 128 : Density > 0.7 g/cm³ (> 43.7 lb/ft³) 129 : Density > 0.5 g/cm³ (> 31.2 lb/ft³) 130 : Density > 0.4 g/cm³ (> 25.0 lb/ft³) 1 : Single point 2 : Window 3 : Two point	true
Switching signal channel .1 - Frequency	12326 (0x3026)	BitEnum8	1	r/-	OPR		High	1 : High	false
Simulation switch output .1	1514 (0x5EA)	Enum16	2	r/w	OPR	MAINT	High	4167 : High 4168 : Low	false
SSC .1 param	60 (0x3C)	Record	8	r/-			-		false
SSC .2 param	62 (0x3E)	Record	8	r/-			-		false
SP 1	8794 (0x225A)	Float	4	r/w	OPR	MAINT	930	400...1440 (Hertz)	true
SP 2	8795 (0x225B)	Float	4	r/w	OPR	MAINT	900	400...1440 (Hertz)	true
Hysteresis	8796 (0x225C)	Float	4	r/w	MAINT	MAINT	30	0...400 (Hertz)	true
Logic	8797 (0x225D)	Enum8	1	r/w	OPR	MAINT	Low active	0 : High active 1 : Low active	true
Mode	8798 (0x225E)	Enum8	1	r/w	OPR	MAINT	Two point	0 : Deactivated 128 : Density > 0.7 g/cm³ (> 43.7 lb/ft³) 129 : Density > 0.5 g/cm³ (> 31.2 lb/ft³) 130 : Density > 0.4 g/cm³ (> 25.0 lb/ft³) 1 : Single point 2 : Window 3 : Two point	true
Hysteresis	8799 (0x225F)	Float	4	r/w	MAINT	MAINT	30	0...400 (Hertz)	true
SSC .1 config	61 (0x3D)	Record	6	r/-			-		false
SSC .2 config	63 (0x3F)	Record	6	r/-			-		false
Switching delay	1510 (0x5E6)	Float	4	r/w	OPR	MAINT	0.5	0.25...60 (Second)	true
Simulation switch output	1506 (0x5E2)	Enum16	2	r/-	OPR	OPR	Off	33004 : Off 33006 : On	false
Switching signal channel .2 - Frequency	12330 (0x302A)	BitEnum8	1	r/-	OPR		High	1 : High	false
Switching delay	1516 (0x5EC)	Float	4	r/w	OPR	MAINT	0.5	0.25...60 (Second)	true
Switch back delay	1518 (0x5EE)	Float	4	r/w	OPR	MAINT	1	0.25...60 (Second)	true
Simulation switch output .2	1520 (0x5F0)	Enum16	2	r/w	OPR	MAINT	High	4167 : High 4168 : Low	false
SP 1	8809 (0x2269)	Float	4	r/w	OPR	MAINT	930	400...1440 (Hertz)	true
SP 2	8810 (0x226A)	Float	4	r/w	OPR	MAINT	900	400...1440 (Hertz)	true

4.2 Endress+Hauser-specific device data

Abbreviations used in table below:
- OPR - Operator
- MAINT - Maintenance
- PROD - Production
- DEV - Development

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
None	283 (0x11B)	Uint8	1	r/-	OPR	OPR	0	0...255	false
Filter options	1320 (0x528)	Enum8	1	r/-	OPR	OPR	All	255 : All 0 : Failure (F) 8 : Function check (C) 12 : Out of specification (S) 4 : Maintenance required (M) 16 : Information (I) 20 : Not categorized	false
Device alarm simulation	284 (0x11C)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 33006 : On	false
Timestamp	313 (0x139)	String	14	r/-	OPR				false
Operating time from restart	285 (0x11D)	String	14	r/-	OPR				false
Operating time	331 (0x14B)	String	14	r/-	OPR				false
Entries list	286 (0x11E)	Uint16	2	r/-	OPR		0	0...65535	false
Filter options	287 (0x11F)	Enum8	1	r/-	OPR	OPR	All	255 : All 0 : Failure (F) 8 : Function check (C) 12 : Out of specification (S) 4 : Maintenance required (M) 16 : Information (I) 20 : Not categorized	false
Prepare state	288 (0x120)	Uint8	1	r/-	OPR		0	0...255	false
Offset position	290 (0x122)	Uint16	2	r/-	OPR	OPR	0	0...65535	false
Eventlist data size	291 (0x123)	Uint8	1	r/-	OPR	OPR	60	1...60	false
Event list	292 (0x124)	ByteArray	60	r/-	OPR		0		false
Quit data transfer	293 (0x125)	Uint8	1	r/-	OPR	OPR	0	0...255	false
Timestamp	314 (0x13A)	String	14	r/-	OPR				false
Event category	295 (0x127)	Enum8	1	r/-	OPR		OK	0 : OK 1 : Failure (F) 2 : Function check (C) 8 : Out of specification (S) 4 : Maintenance required (M) 16 : --- 32 : Not categorized	false
Maximum terminal voltage	1321 (0x529)	Float	4	r/-	OPR	DEV		0.0...50.0 (Volt)	false
Terminal voltage 1	1322 (0x52A)	Float	4	r/-	OPR		0	0.0...50.0 (Volt)	false
Maximum electronics temperature	1323 (0x52B)	Float	4	r/-	OPR	DEV		-3.4E+38...3.4E+38 (Celsius / Temperature unit)	false
Electronics temperature	1324 (0x52C)	Float	4	r/-	OPR		0	-3.4E+38...3.4E+38 (Celsius / Temperature unit)	false
Minimum electronics temperature	1325 (0x52D)	Float	4	r/-	OPR	DEV		-3.4E+38...3.4E+38 (Celsius / Temperature unit)	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Minimum terminal voltage	1326 (0x52E)	Float	4	r/-	OPR	DEV		0.0...50.0 (Volt)	false
Active diagnostics	297 (0x129)	Uint32	4	r/-	OPR		0	0...4294967295	false
Previous diagnostics	298 (0x12A)	Uint32	4	r/-	OPR		0	0...4294967295	false
Eventlist max.data size	300 (0x12C)	Uint8	1	r/-	OPR		60	1...255	false
Failure mode simulation	1327 (0x52F)	Enum16	2	r/w	OPR	MAINT	Warning	33298 : Off 33299 : Alarm 33297 : Warning 185 : Logbook entry only	false
Update Event	302 (0x12E)	Uint32	4	r/-	OPR		0	0...4294967295	false
Status signal	303 (0x12F)	Enum8	1	r/-	OPR		---	0 : OK 1 : Failure (F) 2 : Function check (C) 8 : Out of specification (S) 4 : Maintenance required (M) 16 : --- 32 : Not categorized	false
Diagnostic event simulation	304 (0x130)	Enum32	4	r/w	OPR	MAINT	Off	33004 : Off	false
Diagnostic event category	305 (0x131)	Enum8	1	r/w	OPR	MAINT	Process	0 : Sensor 1 : Electronics 2 : Configuration 3 : Process	false
Minimum terminal voltage	1328 (0x530)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Volt)	false
Maximum terminal voltage	1329 (0x531)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Volt)	false
Loop diagnostics	1330 (0x532)	Enum16	2	r/w	OPR	MAINT	Disable	32852 : Disable 32887 : Enable	false
Terminal voltage	1331 (0x533)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Volt)	false
Simulation	1332 (0x534)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 3994 : State of vibrating fork 3992 : Sensor frequency 1505 : Current output 3459 : Diagnostic event simulation 5457 : Switch output	false
Rebuild baseline	1333 (0x535)	Enum16	2	r/w	OPR	MAINT	No	32979 : No 33138 : Yes	false
Resistance Baseline	1334 (0x536)	Float	4	r/-	OPR	DEV	0	0...3.0e+38 (Ohm)	false
Resistance previous Baseline	1335 (0x537)	Float	4	r/-	OPR	DEV	0	0...3.0e+38 (Ohm)	false
Supply voltage previous Baseline	1336 (0x538)	Float	4	r/-	OPR	DEV	0	0.0...50.0 (Volt)	false
Supply voltage Baseline	1337 (0x539)	Float	4	r/-	OPR	DEV	0	0.0...50.0 (Volt)	false
Timestamp Baseline	1338 (0x53A)	String	14	r/-	OPR	DEV			false
Timestamp previous Baseline	1339 (0x53B)	String	14	r/-	OPR	DEV			false
Tolerated deviation +/-	1340 (0x53C)	Float	4	r/w	OPR	MAINT	1.5	0.5...3.0 (Volt)	false
806 Event delay	1341 (0x53D)	Uint32	4	r/w	OPR	MAINT	1	0...60 (Second)	false
806 Diagnostic behavior	1342 (0x53E)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
806 Event category	1343 (0x53F)	Enum16	2	r/w	OPR	MAINT	Maintenance required (M)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
Baseline is available	1344 (0x540)	Enum16	2	r/-	OPR	DEV	No	451 : Please select 32979 : No 33138 : Yes	false
Previous baseline	1345 (0x541)	Record	22	r/-			-		false
Actual baseline	1346 (0x542)	Record	22	r/-			-		false
Electronic temperature lower range limit	1347 (0x543)	Float	4	r/-	OPR	DEV		-3.0e+37...3.0e+37 (Celsius / Temperature unit)	false
Electronic temperature upper range limit	1348 (0x544)	Float	4	r/-	OPR	DEV		-3.0e+37...3.0e+37 (Celsius / Temperature unit)	false
Internal	1350 (0x546)	Uint32	4	r/-	OPR	DEV	0	0...4294967295	false
Clamping voltage upper threshold	1351 (0x547)	Float	4	r/-	OPR	DEV	0	0.0...50.0 (Volt)	false
Clamping voltage lower threshold	1352 (0x548)	Float	4	r/-	OPR	DEV	0	0.0...50.0 (Volt)	false
Baseline status	1353 (0x549)	Enum16	2	r/-	OPR	DEV	Failed	3240 : Failed 3250 : Success	false
Baseline build process	1354 (0x54A)	Float	4	r/-	OPR		0	0...100 (Percent)	false
825 Electronics temperature	8493 (0x212D)	Enum16	2	r/w	OPR	MAINT	On	33004 : Off 33006 : On	false
Loop diagnostics	4148 (0x1034)	Float	4	r/-	OPR		0	0...100 (Percent)	false
Configuration counter	8193 (0x2001)	Uint16	2	r/-	OPR		0	0...65535	false
Restart device	8199 (0x2007)	Uint8	1	r/-	OPR	OPR	0	0...1	false
Device name	12295 (0x3007)	String	16	r/-	OPR	PROD	FTL43-60		false
Device name	12374 (0x3056)	String	16	r/-	OPR	PROD	Liquiphant		false
Manufacturer ID	12290 (0x3002)	Uint16	2	r/-	OPR	PROD	17	0...65535	false
Manufacturer	12291 (0x3003)	String	32	r/-	OPR	PROD	Endress +Hauser		false
Firmware version	23 (0x17)	String	8	r/-	OPR		01.00.00		false
Firmware version	12292 (0x3004)	Uint32	4	r/-	OPR		10000	0...4294967295	false
Serial number	21 (0x15)	String	11	r/-	OPR	PROD	Device-specific		false
Extended order code	259 (0x103)	Record	60	r/-			-		false
Order code	12375 (0x3057)	String	20	r/-	OPR	Service	- none -		false
Device tag	12293 (0x3005)	String	32	r/-	OPR		FTL43-60		false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
ENP version	257 (0x101)	String	16	r/-	OPR		2.02.00		false
Load bootloader	8217 (0x2019)	Uint8	1	r/-	OPR	OPR	0	0...1	false
Languages supported	274 (0x112)	BitEnum32	4	r/-	OPR		العَرَبيّة (Arabic) 中文 (Chinese) čeština (Czech) Nederlands English Français Deutsch Bahasa Indonesia Italiano 日本語 (Japanese) 한국어 (Korean) Polski Portuguesa русский язык (Russian) Español Svenska ภาษาไทย (Thai) Türkçe tiếng Việt (Vietnamese)	1 : English 2 : Deutsch 4 : العَرَبيّة (Arabic) 8 : 中文 (Chinese) 16 : čeština (Czech) 32 : Nederlands 64 : Français 128 : Bahasa Indonesia 256 : Italiano 512 : 日本語 (Japanese) 1024 : 한국어 (Korean) 2048 : Polski 65536 : Portuguesa 8192 : русский язык (Russian) 16384 : Español 1048576 : Svenska 32768 : ภาษาไทย (Thai) 131072 : Türkçe 524288 : tiếng Việt (Vietnamese)	false
Enter access code	12289 (0x3001)	Uint16	2	r/w	MAINT	MAINT	0	0...9999	false
User role	258 (0x102)	Enum16	2	r/-	OPR		Maintenance	33014 : Operator 32959 : Maintenance 33064 : Expert 32807 : Production 32791 : Development	false
Locking status	12362 (0x304A)	BitEnum16	2	r/-	OPR			256 : Hardware locked 1024 : Safety locked 2048 : CT active - defined parameters 4096 : WHG locked 8192 : FDA locked 512 : Temporarily locked	false
Enter safety locking code	318 (0x13E)	Uint16	2	r/w	OPR	MAINT	0	0...65535	false
Enter safety unlocking code	317 (0x13D)	Uint16	2	r/w	OPR	MAINT	0	0...65535	false
Reset device	12288 (0x3000)	Enum16	2	r/w	MAINT	MAINT	Cancel	32823 : Cancel 33056 : To SW-defaults 3392 : To service defaults 33054 : To fieldbus defaults 33053 : To factory defaults 33052 : To delivery settings 33125 : Restart device 33089 : Start factory default 33087 : Start customer settings 598 : Start append to factory default 599 : Start append to Customer settings 33096 : Stop 5342 : Application reset	false
Extended order code 1	12389 (0x3065)	String	20	r/-	OPR	Service			false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Extended order code 2	12390 (0x3066)	String	20	r/-	OPR	Service	-		false
Extended order code 3	12391 (0x3067)	String	20	r/-	OPR	Service	-		false
UDL features	12371 (0x3053)	BitEnum16	2	r/-	OPR		Upload support	1 : Upload support 2 : Download support 4 : Multibuffer support	false
UDL operation	12372 (0x3054)	Enum16	2	r/w	OPR	MAINT	Terminate up-/ download	33116 : Initiate upload 32868 : Download to different device 33426 : Download to identical device 33113 : Abort up-/download 33114 : Terminate up-/download 33462 : Confirm download status	false
UDL status	12373 (0x3055)	Enum16	2	r/-	OPR		Up-/ download inactive	33111 : Up-/download inactive 32866 : Download temporary impossible 33115 : Upload active 32863 : Download active 33112 : Up-/Download verification active 32865 : Download succeeded 32867 : Download terminated with warnings 32864 : Download failed	false
UDL verify delay	12369 (0x3051)	Uint16	2	r/-	OPR		5	0...65535 (Second)	false
Activate SW option	277 (0x115)	Uint32	4	r/w	OPR	MAINT	0	0...4294967295	false
SW option enabled overview	278 (0x116)	BitEnum32	4	r/-	OPR			8 : SIL 16 : WHG 32 : Heartbeat Verification 64 : Heartbeat Monitoring 256 : Bluetooth	false
Software option overview	280 (0x118)	BitEnum32	4	r/-	OPR			8 : SIL 16 : WHG 32 : Heartbeat Verification 64 : Heartbeat Monitoring 256 : Bluetooth	false
Hardware version	22 (0x16)	String	16	r/-	OPR	PROD	01.00.00		false
Parameter dependency status	1299 (0x513)	ByteArray	6	r/-	MAINT	DEV	0xff		false
Messages	1300 (0x514)	BitEnum32	4	r/-	OPR	OPR		1 : Commissioning done 2 : DIP switch status 4 : Set date/time 8 : 3-wire	false
Password	1301 (0x515)	String	16	r/-	OPR	OPR			false
Status password entry	1302 (0x516)	Enum16	2	r/-	OPR		--------	33296 : -------- 3277 : Wrong password 3278 : Password rule violated 3279 : Password accepted 3280 : Permission denied 3462 : Confirm PW mismatch 3282 : Reset password accepted 3487 : Invalid user role 3514 : Wrong sequence of entry	false
Old password	1303 (0x517)	String	16	r/w	MAINT	MAINT			false
New password	1304 (0x518)	String	16	r/w	MAINT	MAINT			false
Confirm new password	1305 (0x519)	String	16	r/w	MAINT	MAINT			false
Reset password	1307 (0x51B)	String	16	r/-	OPR	OPR			false
Select user role	1308 (0x51C)	Enum16	2	r/-	OPR	OPR	Operator	33014 : Operator 32959 : Maintenance 3283 : Logout	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Password management	1310 (0x51E)	Enum16	2	r/-	OPR	OPR	Please select	33296 : Please select 3383 : Define password 3412 : Enter password 3384 : Change password 3385 : Delete password 3386 : Forgot password?	false
Start	1311 (0x51F)	String	14	r/-	OPR	DEV	Start Sequence		false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Verification version	12324 (0x3024)	Uint8	1	r/-	OPR		1	0...255	false
Overall result	12322 (0x3022)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Verification ID	12321 (0x3021)	Uint16	2	r/-	OPR	DEV	0	0...65535	false
Start verification	12325 (0x3025)	Enum16	2	r/-	OPR	OPR	Cancel	32823 : Cancel 1429 : Start 32846 : Clear data	false
Status	12323 (0x3023)	Enum16	2	r/-	OPR		Not done	1280 : Done 33242 : Busy 275 : Failed 33161 : Not done	false
Operating time (Verification)	1397 (0x575)	String	14	r/-	OPR				false
Mainboard module	1394 (0x572)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Electronics temperature	1398 (0x576)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Celsius / Temperature unit)	false
Verification ID	1391 (0x56F)	Uint16	2	r/-	OPR		0	0...65535	false
Verification result	1396 (0x574)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Sensor module	1390 (0x56E)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
System status	1392 (0x570)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Terminal voltage	1395 (0x573)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
RAM check	1379 (0x563)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
ROM check	1380 (0x564)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Output current	1381 (0x565)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Software integrity	1382 (0x566)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Sensor integrity	1383 (0x567)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Terminal voltage value	1389 (0x56D)	Float	4	r/-	OPR		0	0.0...50.0 (Volt)	false
Sensor temperature	1403 (0x57B)	Float	4	r/-	OPR		273.15 K		false
Minimum terminal voltage	1384 (0x568)	Float	4	r/-	OPR			0.0...50.0 (Volt)	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Maximum terminal voltage	1385 (0x569)	Float	4	r/-	OPR			0.0...50.0 (Volt)	false
Maximum electronics temperature	1387 (0x56B)	Float	4	r/-	OPR			-3.4E+38...3.4E+38 (Celsius / Temperature unit)	false
Minimum electronics temperature	1386 (0x56A)	Float	4	r/-	OPR			-3.4E+38...3.4E+38 (Celsius / Temperature unit)	false
Output current deviation	1388 (0x56C)	Float	4	r/-	OPR		0	-1...1 (mA)	false
IO-Link Signal Quality	1393 (0x571)	Float	4	r/-	OPR		100	0...100 (Percent)	false
Loop diagnostics	1399 (0x577)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Lower voltage signal loop diagnostics	1400 (0x578)	Float	4	r/-	OPR		0.0	0.0...50.0 (Volt)	false
Upper voltage signal loop diagnostics	1401 (0x579)	Float	4	r/-	OPR		50.0	0.0...50.0 (Volt)	false
Loop diagnostics	1402 (0x57A)	Enum16	2	r/-	OPR		Disable	32852 : Disable 32887 : Enable	false
Counter power on	8567 (0x2177)	Uint32	4	r/-	OPR		0	0...4294967295	false
Active diagnostics	8568 (0x2178)	Uint32	4	r/-	OPR		0	0...4294967295	false
Date/time	8569 (0x2179)	Uint64	8	r/-	OPR	OPR	0	0...18446744073709551615	false
Date/time Heartbeat Verification	8570 (0x217A)	String	22	r/-	OPR		01.01.1970 00:00:00		false
Fork corrosion/ abrasion	8571 (0x217B)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Frequency of vibrating fork	8572 (0x217C)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Verification history	8573 (0x217D)	Uint16	2	r/-	OPR	DEV	0	0...16	false
Maximum electronics temperature	8574 (0x217E)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Celsius / Temperature unit)	false
Minimum electronics temperature	8575 (0x217F)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Celsius / Temperature unit)	false
Process window low	8576 (0x2180)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Fork frequency	8577 (0x2181)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Sensor frequency 1	8578 (0x2182)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 2	8579 (0x2183)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 3	8580 (0x2184)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 4	8581 (0x2185)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 5	8582 (0x2186)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 6	8583 (0x2187)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Sensor frequency 7	8584 (0x2188)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 8	8585 (0x2189)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Date 1	8586 (0x218A)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 2	8587 (0x218B)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 3	8588 (0x218C)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 4	8589 (0x218D)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 5	8590 (0x218E)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 6	8591 (0x218F)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 7	8592 (0x2190)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 8	8593 (0x2191)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Sensor frequency 9	8594 (0x2192)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 10	8595 (0x2193)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 11	8596 (0x2194)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 12	8597 (0x2195)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 13	8598 (0x2196)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 14	8599 (0x2197)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 15	8600 (0x2198)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Sensor frequency 16	8601 (0x2199)	Float	4	r/-	OPR		0	-3.0e+38...3.0e+38 (Hertz)	false
Date 16	8602 (0x219A)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 15	8603 (0x219B)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 14	8604 (0x219C)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 13	8605 (0x219D)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 12	8606 (0x219E)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 11	8607 (0x219F)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 10	8608 (0x21A0)	String	22	r/-	OPR		1970-01-01 00:00:00		false
Date 9	8609 (0x21A1)	String	22	r/-	OPR		1970-01-01 00:00:00		false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Process window high	8610 (0x21A2)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
High alert value	8611 (0x21A3)	Float	4	r/-	OPR	DEV	0	-3.0e+38...3.0e+38 (Hertz)	false
Low alert value	8612 (0x21A4)	Float	4	r/-	OPR	DEV	0	-3.0e+38...3.0e+38 (Hertz)	false
Process frequency high active	8613 (0x21A5)	Enum16	2	r/-	OPR		Disable	32852 : Disable 32887 : Enable	false
Process frequency low active	8614 (0x21A6)	Enum16	2	r/-	OPR		Disable	32852 : Disable 32887 : Enable	false
946 Advanced sensor monitoring	4096 (0x1000)	Enum16	2	r/-	OPR		Not done	32996 : Not done 809 : Passed 33161 : Not done 275 : Failed	false
Assembly Information 1	1465 (0x5B9); 1466 (0x5BA); 1467 (0x5BB); 1468 (0x5BC)	String	10	r/-	OPR	PROD	Assembly		false
Resource available	12317 (0x301D); 12318 (0x301E); 12319 (0x301F); 12320 (0x3020)	Uint8	1	r/-	OPR		1	0...1	false
Checksum	1449 (0x5A9); 1450 (0x5AA); 1451 (0x5AB); 1452 (0x5AC)	Uint32	4	r/-	OPR		0	0...4294967295	false
Temperature unit	315 (0x13B)	Enum16	2	r/w	OPR	MAINT	°C	1001 : °C 1002 : °F 1000 : K	true
Time unit	398 (0x18E)	Enum16	2	r/-	OPR	MAINT	s	1056 : ms 1057 : µs 1055 : ks 1054 : s 1058 : min 1059 : h 1060 : d	false
Frequency	8425 (0x20E9)	Enum16	2	r/-	OPR	MAINT	Hz	1077 : Hz	false
Percent Unit	4154 (0x103A)	Enum16	2	r/-	OPR	MAINT	%	1342 : %	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
State of vibrating fork	8687 (0x21EF)	Float	4	r/-	OPR		0	0...1	false
Customer delay to covered	8688 (0x21F0)	Uint16	2	r/w	OPR	MAINT	1	1...60 (Second)	false
Customer delay to uncovered	8689 (0x21F1)	Uint16	2	r/w	OPR	MAINT	1	1...60 (Second)	false
Lower switching point at density	8690 (0x21F2)	Float	4	r/w	MAINT	MAINT	900	400...1440 (Hertz)	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Upper switching point at density	8691 (0x21F3)	Float	4	r/w	MAINT	MAINT	930	400...1440 (Hertz)	false
49 Corrosion warning	8692 (0x21F4)	Enum16	2	r/w	OPR	MAINT	On	33004 : Off 33006 : On	false
Temperature of sensor electronics	8693 (0x21F5)	Float	4	r/-	OPR		0		false
49 Diagnostic behavior	8694 (0x21F6)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false
49 Event category	8695 (0x21F7)	Enum16	2	r/w	OPR	MAINT	Maintenance required (M)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
826 Event category	8696 (0x21F8)	Enum16	2	r/w	OPR	MAINT	Out of specification (S)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
826 Diagnostic behavior	8697 (0x21F9)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false
826 Temperature of sensor electronics	8698 (0x21FA)	Enum16	2	r/w	OPR	MAINT	On	33004 : Off 33006 : On	false
Sensor type	8699 (0x21FB)	Enum8	1	r/-	OPR		Bimorph	0 : Bimorph 1 : Stack 2 : High temperature stack	false
Sensor surface	8700 (0x21FC)	Enum8	1	r/-	OPR		Standard	0 : Standard 2 : Ra 0.38 Mechanincal polished 3 : Ra 0.38 Electrical polished 1 : Ra 0.76 6 : Coated ECTFE 7 : Coated Edlon 8 : Coated RubyRed 9 : Coated PFA Conductible 10 : Coated Email 11 : Coated Tantal	false
Minimum fork frequency	8701 (0x21FD)	Float	4	r/-	OPR	DEV	1500	-3.0e+38...3.0e+38 (Hertz)	false
Maximum fork frequency	8702 (0x21FE)	Float	4	r/-	OPR	DEV	0	-3.0e+38...3.0e+38 (Hertz)	false
Minimum temp. of sensor electronics	8703 (0x21FF)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Celsius / Temperature unit)	false
Maximum temp. of sensor electronics	8704 (0x2200)	Float	4	r/-	OPR	DEV		-3.0e+38...3.0e+38 (Celsius / Temperature unit)	false
Safety function	8707 (0x2203)	Enum16	2	r/w	OPR	MAINT	MIN	32972 : MIN 32962 : MAX	false
Density setting	8708 (0x2204)	Enum16	2	r/w	OPR	MAINT	> 0.7 g/cm³ (> 43.7 lb/ft³)	4151 : > 0.4 g/cm³ (> 25.0 lb/ft³) 3012 : > 0.4 g/cm³ (> 25.0 lb/ft³) 3013 : > 0.5 g/cm³ (> 31.2 lb/ft³) 3011 : > 0.7 g/cm³ (> 43.7 lb/ft³) 3946 : by user	false
Serial number	8711 (0x2207)	String	16	r/-	OPR		Device-specific		false
Firmware version	8712 (0x2208)	Uint32	4	r/-	OPR		10000	0...4294967295	false
Hardware revision	8713 (0x2209)	String	16	r/-	OPR		-none-		false
946 Advanced sensor monitoring	4153 (0x1039)	Enum16	2	r/w	OPR	MAINT	Enable	32887 : Enable 32852 : Disable	true
Module name	8714 (0x220A)	String	16	r/-	OPR		SEUFTL		false
Build no. software	8715 (0x220B)	Uint16	2	r/-	OPR		0	0...65535	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Stored covered frequency	8716 (0x220C)	Float	4	r/w	OPR	MAINT	0	0...10000 (Hertz)	false
High alert value	8717 (0x220D)	Float	4	r/w	OPR	MAINT	0	0...2000 (Hertz)	false
901 Process alert frequency too high	8718 (0x220E)	Enum16	2	r/w	OPR	MAINT	Disable	32852 : Disable 32887 : Enable	false
901 Event category	8719 (0x220F)	Enum16	2	r/w	OPR	MAINT	Maintenance required (M)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
901 Diagnostic behavior	8720 (0x2210)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false
900 Diagnostic behavior	8721 (0x2211)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false
900 Event category	8722 (0x2212)	Enum16	2	r/w	OPR	MAINT	Maintenance required (M)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
900 Process alert frequency too low	8723 (0x2213)	Enum16	2	r/w	OPR	MAINT	Disable	32852 : Disable 32887 : Enable	false
Low alert value	8724 (0x2214)	Float	4	r/w	OPR	MAINT	0	0...2000 (Hertz)	false
900 Alarm delay	8725 (0x2215)	Uint32	4	r/w	OPR	MAINT	60	0...300 (Second)	false
Module ID	8727 (0x2217)	Uint16	2	r/-	OPR		0	0...65535	false
Stored uncovered frequency	8728 (0x2218)	Float	4	r/w	OPR	MAINT	0	0...10000 (Hertz)	false
Switching delay uncovered to covered	8729 (0x2219)	Enum16	2	r/w	OPR	MAINT	0.50 s	3995 : 0.25 s 3996 : 0.50 s 3997 : 1.00 s 3998 : 1.50 s 3999 : 5.00 s 33287 : Customer specific	false
Switching delay covered to uncovered	8730 (0x221A)	Enum16	2	r/w	OPR	MAINT	1.00 s	3995 : 0.25 s 3996 : 0.50 s 3997 : 1.00 s 3998 : 1.50 s 3999 : 5.00 s 33287 : Customer specific	false
Mode of operation	8731 (0x221B)	Enum16	2	r/w	OPR	MAINT	Level limit detection	3991 : Level limit detection 3992 : Sensor frequency	false
Hardware ID	8732 (0x221C)	String	16	r/-	OPR		HW part no		false
Software ID	8733 (0x221D)	String	16	r/-	OPR		FW part no		false
825 Event category	8734 (0x221E)	Enum16	2	r/w	OPR	MAINT	Out of specification (S)	163 : Failure (F) 162 : Function check (C) 192 : Out of specification (S) 191 : Maintenance required (M) 1337 : Not categorized	false
825 Diagnostic behavior	8735 (0x221F)	Enum16	2	r/w	OPR	MAINT	Warning	33297 : Warning 185 : Logbook entry only	false
Frequency simulation	8736 (0x2220)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 33006 : On	false
Forkstate simulation	8737 (0x2221)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 33006 : On	false
Frequency simulation value	8738 (0x2222)	Float	4	r/w	OPR	MAINT	0	0...10000 (Hertz)	false
Fork state simulation value	8739 (0x2223)	Enum8	1	r/w	OPR	MAINT	Fork uncovered	1 : Fork covered 0 : Fork uncovered	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Upper switching point at density	4156 (0x103C)	Float	4	r/w	MAINT	MAINT	930	400...1440 (Hertz)	false
901 Alarm delay	8740 (0x2224)	Uint32	4	r/w	OPR	MAINT	60	0...300 (Second)	false
Damping	8741 (0x2225)	Float	4	r/w	OPR	MAINT	1	0...999 (Second)	false
Frequency	8742 (0x2226)	Float	4	r/-	OPR		0	0...10000 (Hertz)	false
Upper range value	8743 (0x2227)	Float	4	r/w	OPR	MAINT	1200	0...10000 (Hertz)	false
Lower range value	8744 (0x2228)	Float	4	r/w	OPR	MAINT	460	0...10000 (Hertz)	false
Lower switching point at density	4157 (0x103D)	Float	4	r/w	MAINT	MAINT	900	400...1440 (Hertz)	false
Switching delay uncovered to covered	4158 (0x103E)	Uint16	2	r/w	MAINT	MAINT	2	1...240 (Second)	false
Switching delay covered to uncovered	4159 (0x103F)	Uint16	2	r/w	MAINT	MAINT	4	1...240 (Second)	false
Safety function	4160 (0x1040)	Enum16	2	r/w	MAINT	MAINT	MAX	32972 : MIN 32962 : MAX	false
Hysteresis	4161 (0x1041)	Float	4	r/w	MAINT	MAINT	30	0.0...1000	false
Hysteresis	4162 (0x1042)	Float	4	r/w	MAINT	MAINT	30	0.0...1000	false
Mode of medium detection	4163 (0x1043)	Enum16	2	r/w	OPR	MAINT	Standard	33106 : Standard 2800 : Detect foam 5817 : Ignore foam	true
Lower sw. point at density > 0.7 g/cm³	4168 (0x1048)	Float	4	r/-	OPR			-3.0e+38...3.0e+38	false
Upper sw. point at density > 0.7g/cm³	4169 (0x1049)	Float	4	r/-	OPR			0...3.0e+38	false
Upper sw. point at density > 0.4 g/cm³	4170 (0x104A)	Float	4	r/-	OPR			0...3.0e+38	false
Lower sw. point at density > 0.4 g/cm³	4171 (0x104B)	Float	4	r/-	OPR			-3.0e+38...3.0e+38	false
Upper sw. point at density > 0.5 g/cm³	4172 (0x104C)	Float	4	r/-	OPR			0...3.0e+38	false
Lower sw. point at density > 0.5 g/cm³	4173 (0x104D)	Float	4	r/-	OPR			-3.0e+38...3.0e+38	false
Reset min./max.	4099 (0x1003)	Enum16	2	r/w	OPR	MAINT	None	32989 : None 33307 : Frequency	false
Receiving signal strength of fork	4174 (0x104E)	Float	4	r/-	OPR		100 %	-200...1000 (Percent)	false
Operating time of proof test on device	8745 (0x2229)	String	14	r/-	OPR	DEV			false
Verification history	8746 (0x222A)	Uint16	2	r/-	OPR	DEV	0	0...65535	false
Eeprom product ID	8747 (0x222B)	Uint8	1	r/-	MAINT		0	0...255	false
EEPROM revision number	8748 (0x222C)	Uint8	1	r/-	MAINT		0	0...255	false
Frequency at delivery status	8749 (0x222D)	Float	4	r/-	OPR		0	0...10000 (Hertz)	false

Parameter	ISDU Index	Data Type	Size [Byte]	Access	Visibility	Write	Default value	Range	Data Storage
Upper warning frequency	8750 (0x222E)	Float	4	r/-	OPR		0	0...10000 (Hertz)	false
Upper alarm frequency	8751 (0x222F)	Float	4	r/-	OPR		1010	0...10000 (Hertz)	false
Electronic alarm	8754 (0x2232)	Float	4	r/-	OPR	DEV	510	0...10000 (Hertz)	false
Switching delay uncovered to covered	8755 (0x2233)	Uint16	2	r/w	MAINT	MAINT	2	1...240 (Second)	false
Switching delay covered to uncovered	8756 (0x2234)	Uint16	2	r/w	MAINT	MAINT	4	1...240 (Second)	false
State of vibrating fork	8757 (0x2235)	Enum8	1	r/-	OPR		Fork uncovered	1 : Fork covered 0 : Fork uncovered	false
Frequency of vibrating fork	8758 (0x2236)	Float	4	r/-	OPR		0	0...10000 (Hertz)	false
Output current	1357 (0x54D)	Float	4	r/-	OPR		3.59	3.59...23 (mA)	false
Loop current mode	1359 (0x54F)	Enum16	2	r/w	OPR	MAINT	Enable	32852 : Disable 32887 : Enable	false
Failure behavior current output	1360 (0x550)	Enum16	2	r/w	OPR	MAINT	Min.	32972 : Min. 32962 : Max.	true
Failure current	1361 (0x551)	Float	4	r/w	OPR	MAINT	22.5	21.5...23 (mA)	true
Fixed current	1362 (0x552)	Float	4	r/w	OPR	MAINT	3.59	3.59...23 (mA)	false
Process variable output current	1363 (0x553)	Enum16	2	r/w	OPR	MAINT	Sensor frequency	3991 : Level limit detection 3992 : Sensor frequency 33004 : Off	false
Terminal current	1364 (0x554)	Float	4	r/-	OPR		0	0...30 (mA)	false
Measuring mode current output	1365 (0x555)	Enum16	2	r/w	OPR	MAINT	Standard	33106 : Standard 32942 : Inverse 2941 : Bi-directional	true
Current range output	1366 (0x556)	Enum16	2	r/w	OPR	MAINT	4...20 mA NE (3.8...20.5 mA)	32778 : 4...20 mA (4...20.5 mA) 32780 : 4...20 mA NE (3.8...20.5 mA) 32781 : 4...20 mA US (3.9...20.8 mA) 3343 : Customer specific	true
Current output simulation	1367 (0x557)	Enum16	2	r/w	OPR	MAINT	Off	33004 : Off 33006 : On	false
Value current output	1368 (0x558)	Float	4	r/w	OPR	MAINT	3.59	3.59...23 (mA)	false
Internal	1371 (0x55B)	Float	4	r/-	OPR	Service	1	-2...2	false
Internal	1372 (0x55C)	Float	4	r/-	OPR	Service	0	-5...5 (mA)	false
Lower range value output	1373 (0x55D)	Float	4	r/w	OPR	MAINT	400	0...10000 (Hertz)	true
Upper range value output	1374 (0x55E)	Float	4	r/w	OPR	MAINT	1440	0...10000 (Hertz)	true
Higher saturation value	1377 (0x561)	Float	4	r/-	OPR		20.8	3.8...20.8 (mA)	false
Lower saturation value	1378 (0x562)	Float	4	r/-	OPR		3.8	3.8...20.8 (mA)	false

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