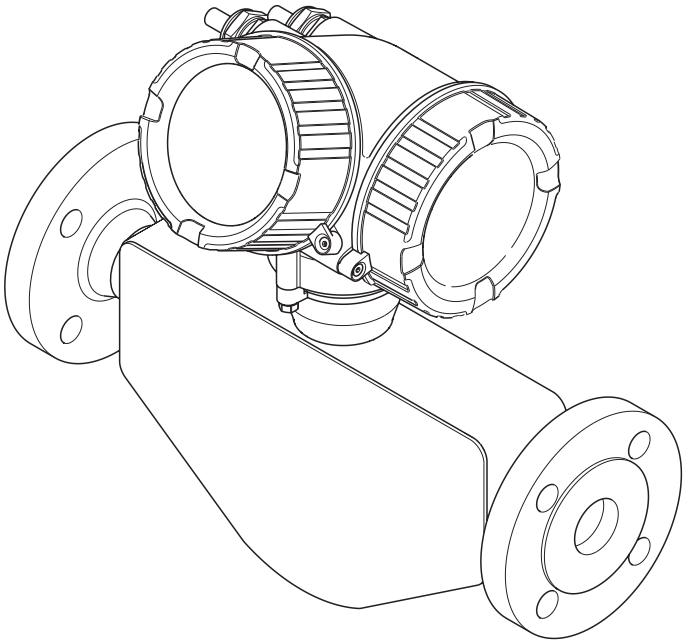
BA01314D/06/EN/01.14
71258948

Valid as of version
01.00.zz (Device firmware)

Operating Instructions
Proline Promass E 200 FOUNDATION Fieldbus

Coriolis flowmeter



Endress+Hauser
People for Process Automation

- Make sure the document is stored in a safe place such that it is always available when working on or with the device.
- To avoid danger to individuals or the facility, read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures.
- The manufacturer reserves the right to modify technical data without prior notice. Your Endress+Hauser Sales Center will supply you with current information and updates to these Instructions.

Table of contents

1 Document information

1.1 Document function

These Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.

1.2 Symbols used

1.2.1 Safety symbols

Symbol	Meaning
DANGER	**DANGER!** This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
WARNING	**WARNING!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
CAUTION	**CAUTION!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
NOTICE	**NOTE!** This symbol contains information on procedures and other facts which do not result in personal injury.

1.2.2 Electrical symbols

Symbol	Meaning
⎓	**Direct current** A terminal to which DC voltage is applied or through which direct current flows.
~	**Alternating current** A terminal to which alternating voltage is applied or through which alternating current flows.
⎓ ~	**Direct current and alternating current** ▪ A terminal to which alternating voltage or DC voltage is applied. ▪ A terminal through which alternating current or direct current flows.
⏚	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
⊜	**Protective ground connection** A terminal which must be connected to ground prior to establishing any other connections.
⏚	**Equipotential connection** A connection that has to be connected to the plant grounding system: This may be a potential equalization line or a star grounding system depending on national or company codes of practice.

1.2.3 Tool symbols

Symbol	Meaning
	Flat blade screwdriver
	Allen key
	Open-ended wrench

1.2.4 Symbols for certain types of information

Symbol	Meaning
	**Permitted** Indicates procedures, processes or actions that are permitted.
	**Preferred** Indicates procedures, processes or actions that are preferred.
	**Forbidden** Indicates procedures, processes or actions that are forbidden.
	**Tip** Indicates additional information.
	**Reference to documentation** Refers to the corresponding device documentation.
	**Reference to page** Refers to the corresponding page number.
	**Reference to graphic** Refers to the corresponding graphic number and page number.
	Series of steps
	Result of a sequence of actions
	**Help in the event of a problem**
	**Visual inspection**

1.2.5 Symbols in graphics

Symbol	Meaning
1, 2, 3,...	Item numbers
	Series of steps
A, B, C, ...	Views
A-A, B-B, C-C, ...	Sections
 A0013441	Flow direction
 A0011187	**Hazardous area** Indicates a hazardous area.
 A0011188	**Safe area (non-hazardous area)** Indicates the non-hazardous area.

1.3 Documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:
- The CD-ROM provided for the device (depending on the device version, the CD-ROM might not be part of the delivery!)
- The *W@M Device Viewer* : Enter the serial number from the nameplate (www.endress.com/deviceviewer)
- The *Endress+Hauser Operations App*: Enter the serial number from the nameplate or scan the 2-D matrix code (QR code) on the nameplate.

For a detailed list of the individual documents along with the documentation code

1.3.1 Standard documentation

Document type	Purpose and content of the document
Technical Information	**Planning aid for your device** The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device.
Brief Operating Instructions	**Guide that takes you quickly to the 1st measured value** The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.
Description of Device Parameters	**Reference for your parameters** The document provides a detailed explanation of each individual parameter in the operating menu. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations.

1.3.2 Supplementary device-dependent documentation

Additional documents are supplied depending on the device version ordered: Always comply strictly with the instructions in the supplementary documentation. The supplementary documentation is an integral part of the device documentation.

1.4 Registered trademarks

FOUNDATION™ Fieldbus
Registration-pending trademark of the Fieldbus Foundation, Austin, Texas, USA

TRI-CLAMP ®
Registered trademark of Ladish & Co., Inc., Kenosha, USA

Applicator®, FieldCare®, Field Xpert™, HistoROM®, Heartbeat Technology™
Registered or registration-pending trademarks of the Endress+Hauser Group

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:
- Trained, qualified specialists must have a relevant qualification for this specific function and task
- Are authorized by the plant owner/operator
- Are familiar with federal/national regulations
- Before beginning work, the specialist staff must have read and understood the instructions in the Operating Instructions and supplementary documentation as well as in the certificates (depending on the application)
- Following instructions and basic conditions

The operating personnel must fulfill the following requirements:
- Being instructed and authorized according to the requirements of the task by the facility's owner-operator
- Following the instructions in these Operating Instructions

2.2 Designated use

Application and media
The measuring device described in these Instructions is intended only for flow measurement of liquids and gases.

Depending on the version ordered, the measuring device can also measure potentially explosive, flammable, poisonous and oxidizing media.

Measuring devices for use in hazardous areas, in hygienic applications or in applications where there is an increased risk due to process pressure, are labeled accordingly on the nameplate.

To ensure that the measuring device remains in proper condition for the operation time:
- Only use the measuring device in full compliance with the data on the nameplate and the general conditions listed in the Operating Instructions and supplementary documentation.
- Based on the nameplate, check whether the ordered device is permitted for the intended use in the hazardous area (e.g. explosion protection, pressure vessel safety).
- Use the measuring device only for media against which the process-wetted materials are adequately resistant.
- If the measuring device is not operated at atmospheric temperature, compliance with the relevant basic conditions specified in the associated device documentation is absolutely essential: "Documentation" section (→ 8).

Incorrect use
Non-designated use can compromise safety. The manufacturer is not liable for damage caused by improper or non-designated use.

WARNING

Danger of breakage of the measuring tube due to corrosive or abrasive fluids.
Housing breakage due to mechanical overload possible!
- Verify the compatibility of the process fluid with the measuring tube material.
- Ensure the resistance of all fluid-wetted materials in the process.
- Observe the specified pressure and temperature range.

Verification for borderline cases:
- For special fluids and fluids for cleaning, Endress+Hauser is glad to provide assistance in verifying the corrosion resistance of fluid-wetted materials, but does not accept any

warranty or liability as minute changes in the temperature, concentration or level of contamination in the process can alter the corrosion resistance properties.

Residual risks

⚠ WARNING

Danger of housing breaking due to measuring tube breakage!

- In the event of a measuring tube breakage for a device version without rupture disk it is possible for the pressure loading capacity of the sensor housing to be exceeded. This can lead to rupture or failure of the sensor housing.

The external surface temperature of the housing can increase by max. 20 K due to the power consumption of the electronic components. Hot process fluids passing through the measuring device will further increase the surface temperature of the housing. The surface of the sensor, in particular, can reach temperatures which are close to the fluid temperature.

Possible burn hazard due to fluid temperatures!

- For elevated fluid temperature, ensure protection against contact to prevent burns.

2.3 Workplace safety

For work on and with the device:

- Wear the required personal protective equipment according to federal/national regulations.

For welding work on the piping:

- Do not ground the welding unit via the measuring device.

If working on and with the device with wet hands:

- It is recommended to wear gloves on account of the higher risk of electric shock.

2.4 Operational safety

Risk of injury.

- Operate the device in proper technical condition and fail-safe condition only.
- The operator is responsible for interference-free operation of the device.

Conversions to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers.

- If, despite this, modifications are required, consult with Endress+Hauser.

Repair

To ensure continued operational safety and reliability,

- Carry out repairs on the device only if they are expressly permitted.
- Observe federal/national regulations pertaining to repair of an electrical device.
- Use original spare parts and accessories from Endress+Hauser only.

2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate.

It meets general safety standards and legal requirements. It also complies with the EC directives listed in the device-specific EC Declaration of Conformity. Endress+Hauser confirms this by affixing the CE mark to the device.

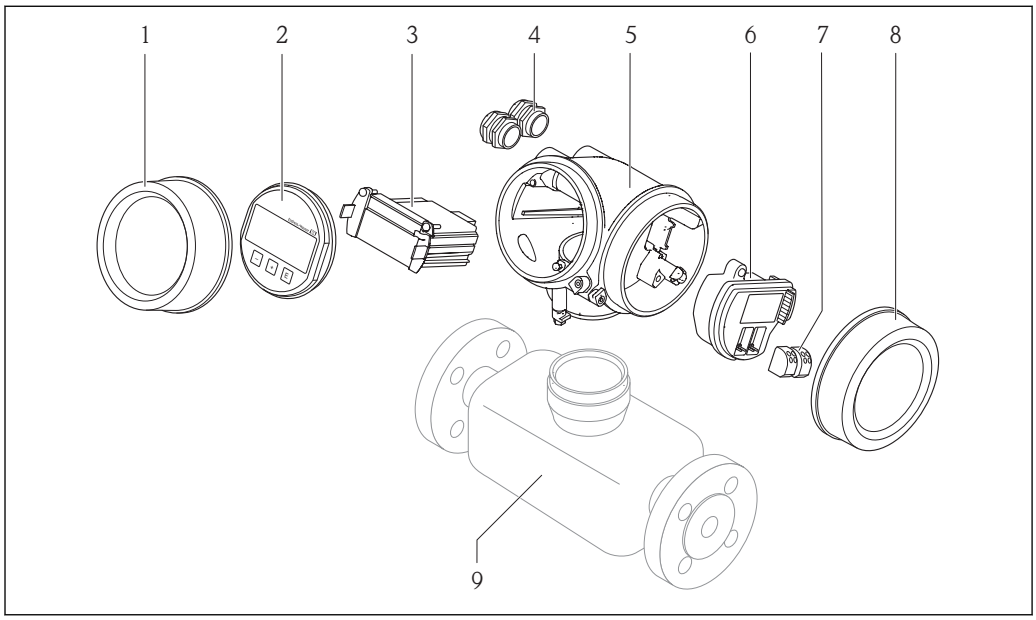
2.6 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

3 Product description

3.1 Product design

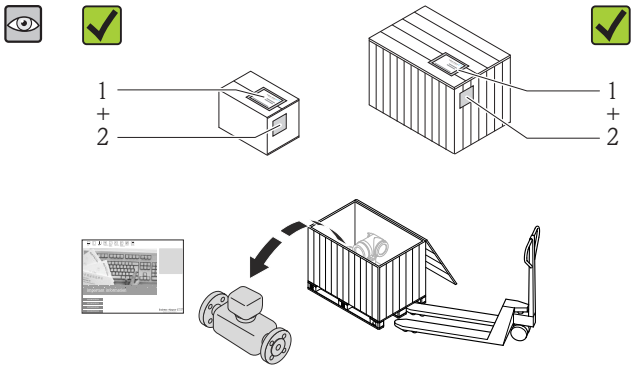


1 *Important components of a measuring device*

1 *Electronics compartment cover*
2 *Display module*
3 *Main electronics module*
4 *Cable glands*
5 *Transmitter housing (incl. integrated HistoROM)*
6 *I/O electronics module*
7 *Terminals (spring loaded terminals, pluggable)*
8 *Connection compartment cover*
9 *Sensor (incl. HistoROM S-DAT)*

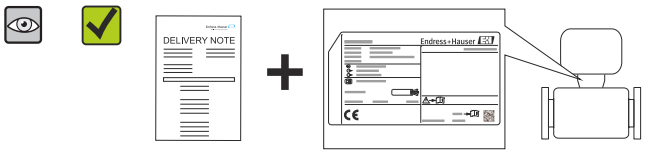
4 Incoming acceptance and product identification

4.1 Incoming acceptance

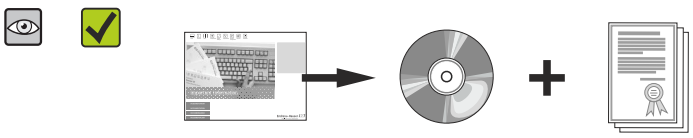


Are the order codes on the delivery note (1) and the product sticker (2) identical?

Are the goods undamaged?



Do the nameplate data match the ordering information on the delivery note?



Is the CD-ROM with the Technical Documentation (depends on device version) and documents present?

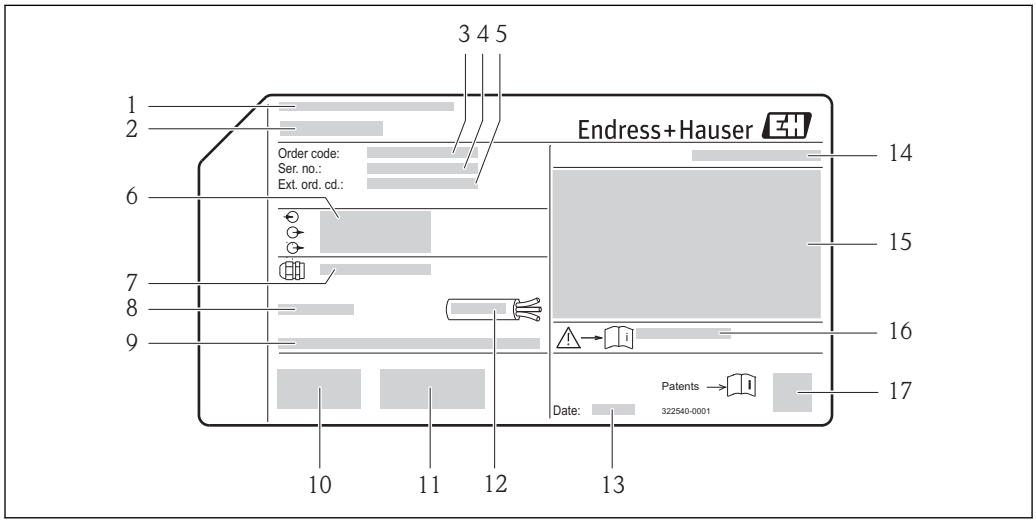
- If one of the conditions is not satisfied, contact your Endress+Hauser Sales Center.
- Depending on the device version, the CD-ROM might not be part of the delivery! In such cases, the technical documentation is available via the Internet or via the *Endress+Hauser Operations App*, see the "Product identification" section (→ 14).

4.2 Product identification

The following options are available for identification of the measuring device:
- Nameplate specifications
- Order code with breakdown of the device features on the delivery note
- Enter serial numbers from nameplates in *W@M Device Viewer* (www.endress.com/deviceviewer): All information about the measuring device is displayed.
- Enter the serial number from the nameplates into the *Endress+Hauser Operations App* or scan the 2-D matrix code (QR code) on the nameplate with the *Endress+Hauser Operations App*: all the information for the measuring device is displayed.

For an overview of the scope of the associated Technical Documentation, refer to the following:
- The chapters "Additional standard documentation on the device" (→ 8) and "Supplementary device-dependent documentation" (→ 8)
- The *W@M Device Viewer*: Enter the serial number from the nameplate (www.endress.com/deviceviewer)
- The *Endress+Hauser Operations App*: Enter the serial number from the nameplate or scan the 2-D matrix code (QR code) on the nameplate.

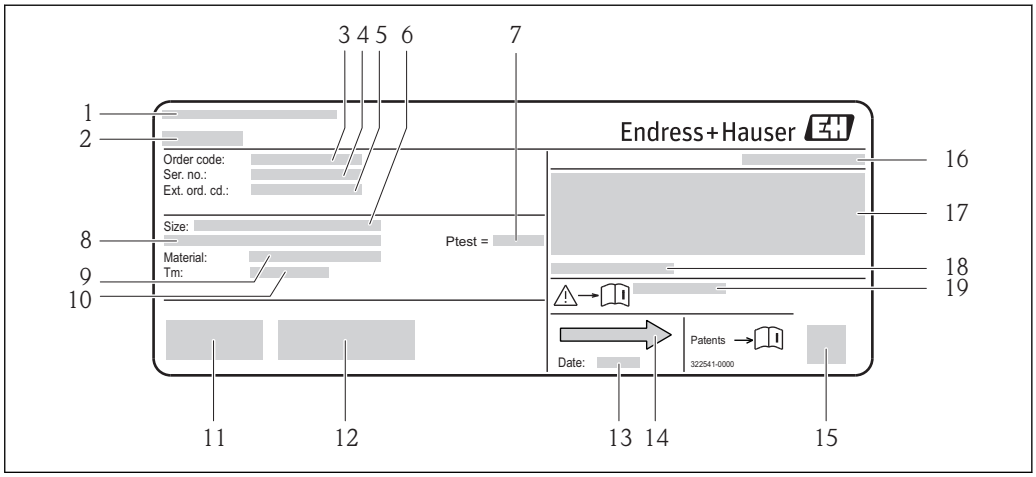
4.2.1 Transmitter nameplate



2 *Example of a transmitter nameplate*

1 *Manufacturing location*
2 *Name of the transmitter*
3 *Order code*
4 *Serial number (Ser. no.)*
5 *Extended order code (Ext. ord. cd.)*
6 *Electrical connection data, e.g. available inputs and outputs, supply voltage*
7 *Type of cable glands*
8 *Permitted ambient temperature (T_a)*
9 *Firmware version (FW) from the factory*
10 *CE mark, C-Tick*
11 *Additional information on version: certificates, approvals*
12 *Permitted temperature range for cable*
13 *Manufacturing date: year-month*
14 *Degree of protection*
15 *Approval information for explosion protection*
16 *Document number of safety-related supplementary documentation*
17 *2-D matrix code*

4.2.2 Sensor nameplate



3 *Example of a sensor nameplate*

1 *Manufacturing location*
2 *Name of the sensor*
3 *Order code*
4 *Serial number (Ser. no.)*
5 *Extended order code (Ext. ord. cd.)*
6 *Nominal diameter of the sensor*
7 *Test pressure of the sensor*
8 *Flange nominal diameter/nominal pressure*
9 *Material of measuring tube and manifold*
10 *Medium temperature range*
11 *CE mark, C-Tick*
12 *Additional information on version: certificates, approvals*
13 *Manufacturing date: year-month*
14 *Flow direction*
15 *2-D matrix code*
16 *Degree of protection*
17 *Approval information for explosion protection and Pressure Equipment Directive*
18 *Permitted ambient temperature (T_a)*
19 *Document number of safety-related supplementary documentation*

Order code

The measuring device is reordered using the order code.

Extended order code

- The device type (product root) and basic specifications (mandatory features) are always listed.
- Of the optional specifications (optional features), only the safety and approval-related specifications are listed (e.g. LA). If other optional specifications are also ordered, these are indicated collectively using the # placeholder symbol (e.g. #LA#).
- If the ordered optional specifications do not include any safety and approval-related specifications, they are indicated by the + placeholder symbol (e.g. XXXXXX-ABCDE +).

4.2.3 Symbols on measuring device

Symbol	Meaning
⚠	**WARNING!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
 A0011194	**Reference to documentation** Refers to the corresponding device documentation.
 A0011199	**Protective ground connection** A terminal which must be connected to ground prior to establishing any other connections.

5 Storage and transport

5.1 Storage conditions

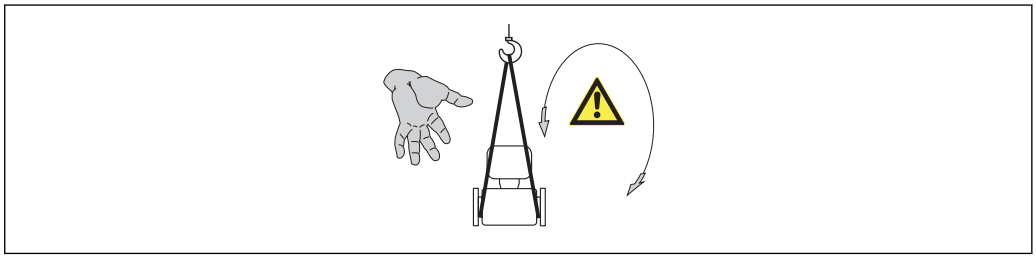
Observe the following notes for storage:
- Store in the original packaging to ensure protection from shock.
- Do not remove protective covers or protective caps installed on process connections. They prevent mechanical damage to the sealing surfaces and fouling in the measuring tube.
- Protect from direct sunlight to avoid unacceptably high surface temperatures.
- Storage temperature: –40 to +80 °C (–40 to +176 °F), preferable for +20 °C (+68 °F)
- Store in a dry and dust-free place.
- Do not store outdoors.

5.2 Transporting the product

⚠ WARNING

Center of gravity of the measuring device is higher than the suspension points of the webbing slings.

Risk of injury if the measuring device slips.
- ▶ Secure the measuring device from rotating or slipping.
- ▶ Observe the weight specified on the packaging (stick-on label).
- ▶ Observe the transport instructions on the stick-on label on the electronics compartment cover.



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Observe the following notes during transport:
- Transport the measuring device to the measuring point in the original packaging.
- Lifting gear
  - Webbing slings: Do not use chains, as they could damage the housing.
  - For wood crates, the floor structure enables these to be loaded lengthwise or broadside using a forklift.
- For measuring device > DN 40 (1½ in): lift the measuring device using the webbing slings at the process connections; do not lift at the transmitter housing.
- Do not remove protective covers or protective caps installed on process connections. They prevent mechanical damage to the sealing surfaces and contamination in the measuring tube.

5.3 Packaging disposal

All packaging materials are environmentally friendly and 100% recyclable:
- Measuring device secondary packaging: polymer stretch film that conforms to EC Directive 2002/95/EC (RoHS).
- Packaging:
  - Wood crate, treated in accordance with ISPM 15 standard, which is confirmed by the affixed IPPC logo.
    or
  - Carton in accordance with European Packaging Directive 94/62EC; recyclability is confirmed by the affixed RESY symbol.
- Seaworthy packaging (optional): Wood crate, treated in accordance with ISPM 15 standard, which is confirmed by the affixed IPPC logo.
- Carrying and mounting hardware:
  - Disposable plastic pallet
  - Plastic straps
  - Plastic adhesive strips
- Dunnage: Paper cushion

6 Installation

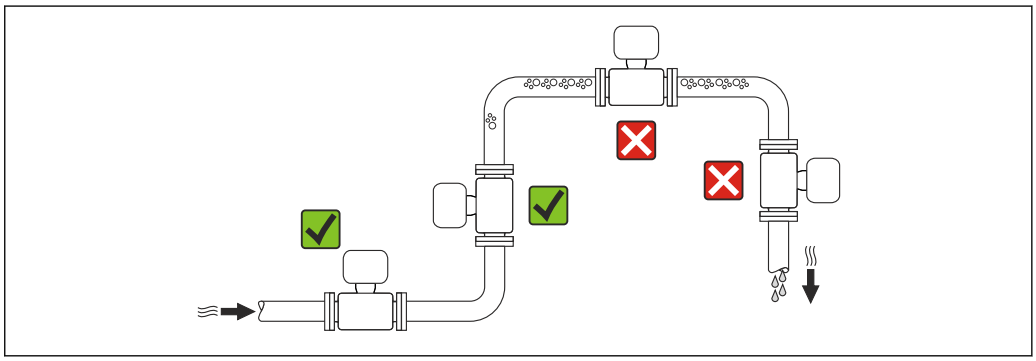
6.1 Installation conditions

No special measures such as supports are necessary. External forces are absorbed by the construction of the device.

6.1.1 Mounting position

Mounting location

To prevent measuring errors arising from accumulation of gas bubbles in the measuring tube, avoid the following mounting locations in the pipe:
- Highest point of a pipeline.
- Directly upstream of a free pipe outlet in a down pipe.



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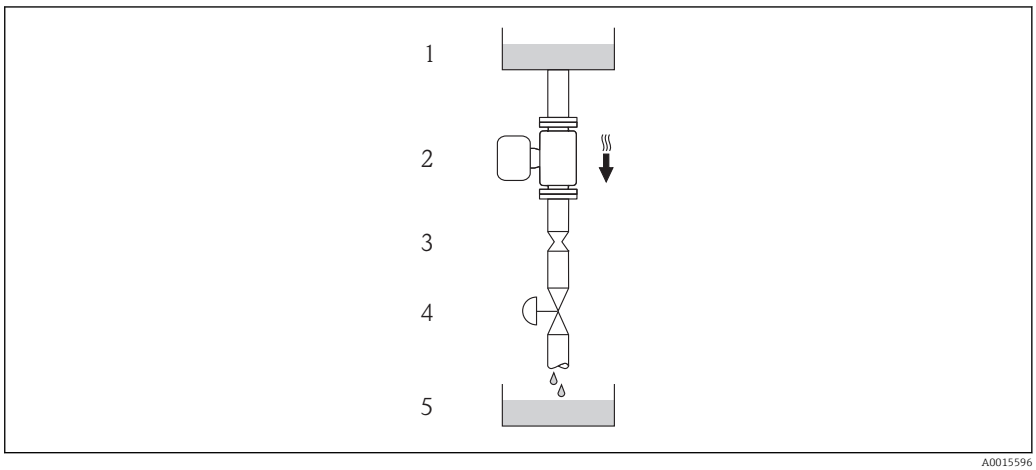
Installation in down pipes

However, the following installation suggestion allows for installation in an open vertical pipeline. Pipe restrictions or the use of an orifice with a smaller cross-section than the nominal diameter prevent the sensor running empty while measurement is in progress.



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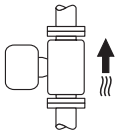
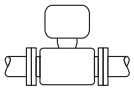
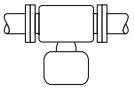
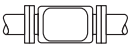
4 *Installation in a down pipe (e.g. for batching applications)*

1 *Supply tank*
2 *Sensor*
3 *Orifice plate, pipe restriction*
4 *Valve*
5 *Batching tank*

DN		Ø orifice plate, pipe restriction	
[mm]	[in]	[mm]	[in]
8	3/8	6	0.24
15	½	10	0.40
25	1	14	0.55
40	1½	22	0.87
50	2	28	1.10

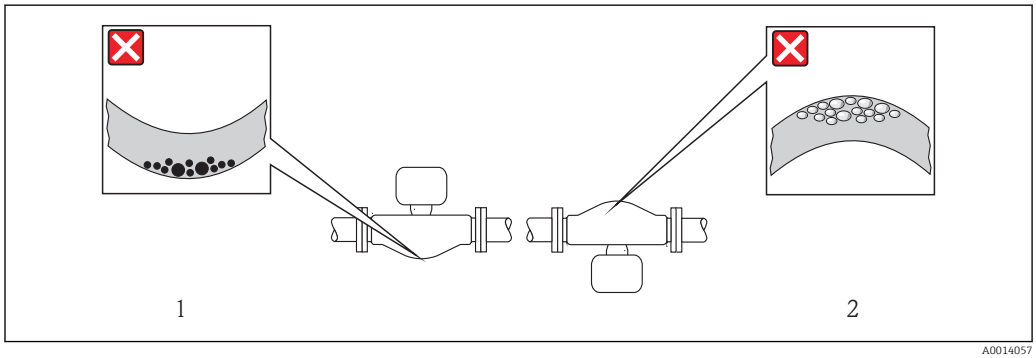
Orientation

The direction of the arrow on the sensor nameplate helps you to install the sensor according to the flow direction (direction of medium flow through the piping).

Orientation			Recommendation
A	Vertical orientation	 A0015591	✓✓
B	Horizontal orientation, transmitter head up	 A0015589	✓✓ [1] Exception: (→ 5, 20)
C	Horizontal orientation, transmitter head down	 A0015590	✓✓ [2] Exception: (→ 5, 20)
D	Horizontal orientation, transmitter head at side	 A0015592	✗

1) Applications with low process temperatures may reduce the ambient temperature. To maintain the minimum ambient temperature for the transmitter, this orientation is recommended.
2) Applications with high process temperatures may increase the ambient temperature. To maintain the maximum ambient temperature for the transmitter, this orientation is recommended.

If a sensor is installed horizontally with a curved measuring tube, match the position of the sensor to the fluid properties.



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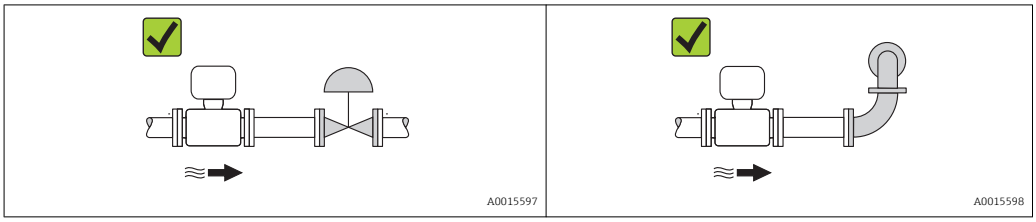
5 Orientation of sensor with curved measuring tube

1 Avoid this orientation for fluids with entrained solids: Risk of solids accumulating.
2 Avoid this orientation for outgassing fluids: Risk of gas accumulating.

Inlet and outlet runs

No special precautions need to be taken for fittings which create turbulence, such as valves, elbows or T-pieces, as long as no cavitation occurs (→ 21).



Installation dimensions

For the dimensions and installation lengths of the device, see the "Technical Information" document, "Mechanical construction" section

6.1.2 Requirements from environment and process

Ambient temperature range

Measuring device	–40 to +60 °C (–40 to +140 °F)
Local display	–20 to +60 °C (–4 to +140 °F) The readability of the display may be impaired at temperatures outside the temperature range.

▶ If operating outdoors:
Avoid direct sunlight, particularly in warm climatic regions.

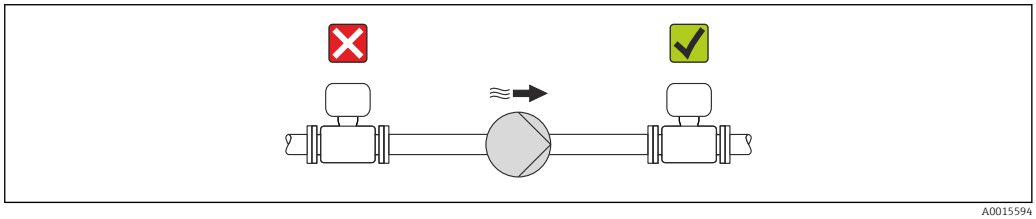
System pressure

It is important that cavitation does not occur, or that gases entrained in the liquids do not outgas.

Cavitation is caused if the pressure drops below the vapor pressure:
- In liquids that have a low boiling point (e.g. hydrocarbons, solvents, liquefied gases)
- In suction lines

▶ Ensure the system pressure is sufficiently high to prevent cavitation and outgassing.

For this reason, the following mounting locations are recommended:
- At the lowest point in a vertical pipe
- Downstream from pumps (no danger of vacuum)



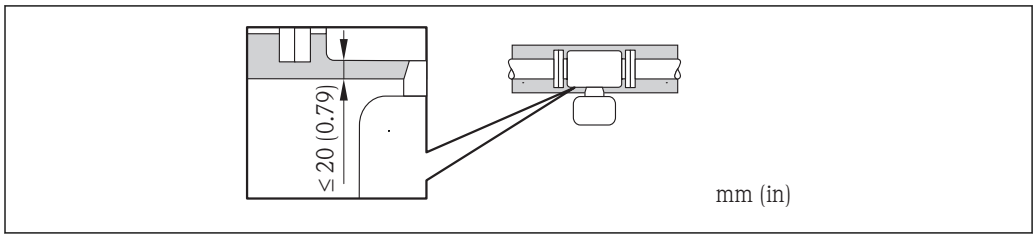
Thermal insulation

In the case of some fluids, it is important that the heat radiated from the sensor to the transmitter is kept to a minimum. A wide range of materials can be used for the required insulation.

NOTICE

Electronics overheating on account of thermal insulation!

- Observe maximum permitted insulation height of the transmitter neck so that the transmitter head is completely free.



Heating

NOTICE

Electronics can overheat due to elevated ambient temperature!

- Observe maximum permitted ambient temperature for the transmitter (→ 21).
- Depending on the fluid temperature, take the device orientation requirements into account .

Heating options

If a fluid requires that no heat loss should occur at the sensor, users can avail of the following heating options:
- Electrical heating, e.g. with electric band heaters
- Via pipes carrying hot water or steam
- Via heating jackets

Using an electrical trace heating system

If heating is regulated via phase angle control or pulse packages, magnetic fields can affect the measured values (= for values that are greater than the values approved by the EN standard (sine 30 A/m)).

For this reason, the sensor must be magnetically shielded: the housing can be shielded with tin plates or electric sheets without a privileged direction (e.g. V330-35A).

The sheet must have the following properties:
- Relative magnetic permeability μr ≥ 300
- Plate thickness d ≥ 0.35 mm (d ≥ 0.014 in)

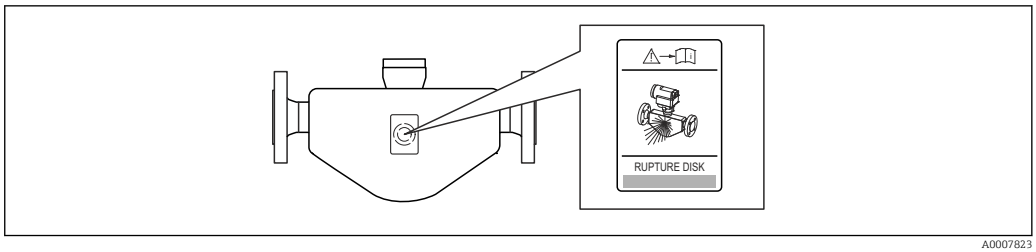
Vibrations

The high oscillation frequency of the measuring tubes ensures that the correct operation of the measuring system is not influenced by plant vibrations.

6.1.3 Special mounting instructions

Rupture disk

Make sure that the function and operation of the rupture disk is not impeded through the installation of the device. The position of the rupture disk is indicated on a sticker applied over it. If the rupture disk is triggered, the sticker is destroyed. The disk can therefore be visually monitored. For additional information that is relevant to the process (→ 127).



6 *Rupture disk label*

▶ After the rupture disk is actuated, do not operate the measuring device any more.

⚠ WARNING

Limited functional reliability of the rupture disk.
Danger to persons from escaping fluids!
- ▶ Do not remove the rupture disk.
- ▶ When using a rupture disk, do not use a heating jacket.
- ▶ Make sure that the function and operation of the rupture disk is not impeded through the installation of the device.
- ▶ Take precautions to prevent damage and danger to persons if the rupture disk is actuated.
- ▶ Observe information on the rupture disk sticker.

Zero point adjustment

All measuring devices are calibrated in accordance with state-of-the-art technology. Calibration takes place under reference conditions (→ 123). Therefore, a zero point adjustment in the field is generally not required.

Experience shows that zero point adjustment is advisable only in special cases:
- To achieve maximum measuring accuracy even with low flow rates
- Under extreme process or operating conditions (e.g. very high process temperatures or very high-viscosity fluids).

Zero point adjustment is performed via the **Zero point adjustment control** parameter (→ 66).

6.2 Mounting the measuring device

6.2.1 Required tools

For transmitter

- For turning the transmitter housing: Open-ended wrench8 mm
- For opening the securing clamps: Allen key3 mm

For sensor

For flanges and other process connections: Corresponding mounting tools

6.2.2 Preparing the measuring device

1. Remove all remaining transport packaging.
2. Remove any protective covers or protective caps present from the sensor.
3. If present, remove transport protection of the rupture disk.
4. Remove stick-on label on the electronics compartment cover.

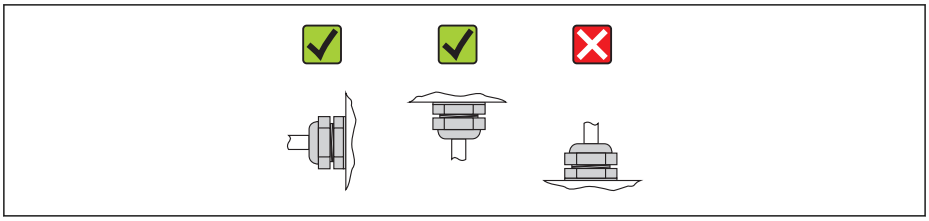
6.2.3 Mounting the measuring device

WARNING

Danger due to improper process sealing!

- ▶ Ensure that the inside diameters of the gaskets are greater than or equal to that of the process connections and piping.
- ▶ Ensure that the gaskets are clean and undamaged.
- ▶ Install the gaskets correctly.

1. Ensure that the direction of the arrow on the nameplate of the sensor matches the flow direction of the fluid.
2. Install the measuring device or turn the transmitter housing so that the cable entries do not point upwards.



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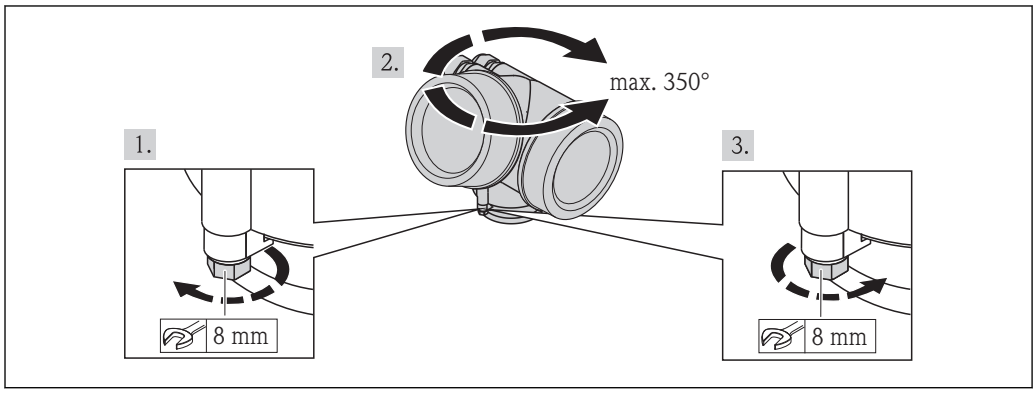
6.2.4 Turning the transmitter housing

To provide easier access to the connection compartment or display module, the transmitter housing can be turned.

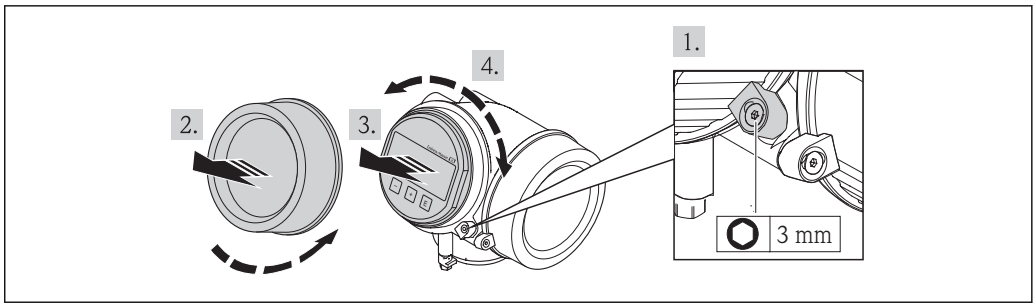


A0013713

1. Release the fixing screw.
2. Turn the housing to the desired position.
3. Firmly tighten the securing screw.

6.2.5 Turning the display module

The display module can be turned to optimize display readability and operability.



A0013905

1. Loosen the securing clamp of the electronics compartment cover using an Allen key.
2. Unscrew cover of the electronics compartment from the transmitter housing.
3. Optional: pull out the display module with a gentle rotational movement.
4. Rotate the display module into the desired position: Max. 8 × 45° in each direction.
5. Without display module pulled out:
   Allow display module to engage at desired position.
6. With display module pulled out:
   Feed the cable into the gap between the housing and main electronics module and plug the display module into the electronics compartment until it engages.
7. Reverse the removal procedure to reassemble the transmitter.

6.3 Post-installation check

Is the device undamaged (visual inspection)?	❑
Does the measuring device conform to the measuring point specifications? For example: ▪ Process temperature (→ 🖹 127) ▪ Process pressure (refer to the chapter on "Pressure-temperature ratings" of the "Technical Information" document) ▪ Ambient temperature (→ 🖹 21) ▪ Measuring range (→ 🖹 115)	❑
Has the correct orientation for the sensor been selected ? ▪ According to sensor type ▪ According to medium temperature ▪ According to medium properties (outgassing, with entrained solids)	❑
Does the arrow on the sensor nameplate match the direction of flow of the fluid through the piping (→ 🖹 20)?	❑
Are the measuring point identification and labeling correct (visual inspection)?	❑
Is the device adequately protected from precipitation and direct sunlight?	❑
Are the securing screw and securing clamp tightened securely?	❑

7 Electrical connection

The measuring device does not have an internal circuit breaker. For this reason, assign the measuring device a switch or power-circuit breaker so that the power supply line can be easily disconnected from the mains.

7.1 Connection conditions

7.1.1 Required tools

- For cable entries: Use corresponding tools
- For securing clamp: Allen key 3 mm
- Wire stripper
- When using stranded cables: crimping tool for ferrule
- For removing cables from terminal: flat blade screwdriver ≤3 mm (0.12 in)

7.1.2 Requirements for connecting cable

The connecting cables provided by the customer must fulfill the following requirements.

Electrical safety

In accordance with applicable federal/national regulations.

Permitted temperature range

- −40 °C (−40 °F) to +80 °C (+176 °F)
- Minimum requirement: cable temperature range ≥ ambient temperature +20 K

Signal cable

FOUNDATION Fieldbus

Twisted, shielded two-wire cable.

For further information on planning and installing FOUNDATION Fieldbus networks see:

- Operating Instructions for "FOUNDATION Fieldbus Overview" (BA00013S)
- FOUNDATION Fieldbus Guideline
- IEC 61158-2 (MBP)

Pulse/frequency/switch output

Standard installation cable is sufficient.

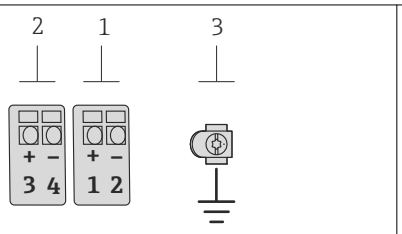
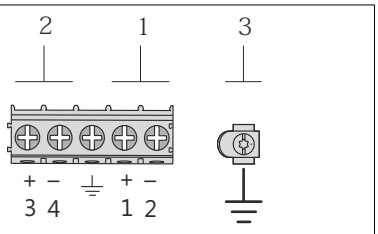
Cable diameter

- Cable glands supplied:
  M20 × 1.5 with cable Φ6 to 12 mm (0.24 to 0.47 in)
- Plug-in spring terminals for device version without integrated overvoltage protection: wire cross-sections 0.5 to 2.5 mm² (20 to 14 AWG)
- Screw terminals for device version with integrated overvoltage protection: wire cross-sections 0.2 to 2.5 mm² (24 to 14 AWG)

7.1.3 Terminal assignment

Transmitter

Connection version for FOUNDATION Fieldbus, pulse/frequency/switch output

	
Maximum number of terminals	*Maximum number of terminals for order code for "Accessory mounted", option NA "Overvoltage protection"*

1 Output 1: FOUNDATION Fieldbus
2 Output 2 (passive: pulse/frequency/switch output
3 Ground terminal for cable shield

Order code for "Output"	Terminal numbers			
	Output 1		Output 2	
	1 (+)	2 (-)	3 (+)	4 (-)
Option **E** [1) 2)]	FOUNDATION Fieldbus		Pulse/frequency/switch output (passive)	

1) Output 1 must always be used; output 2 is optional.
2) FOUNDATION Fieldbus with integrated reverse polarity protection.

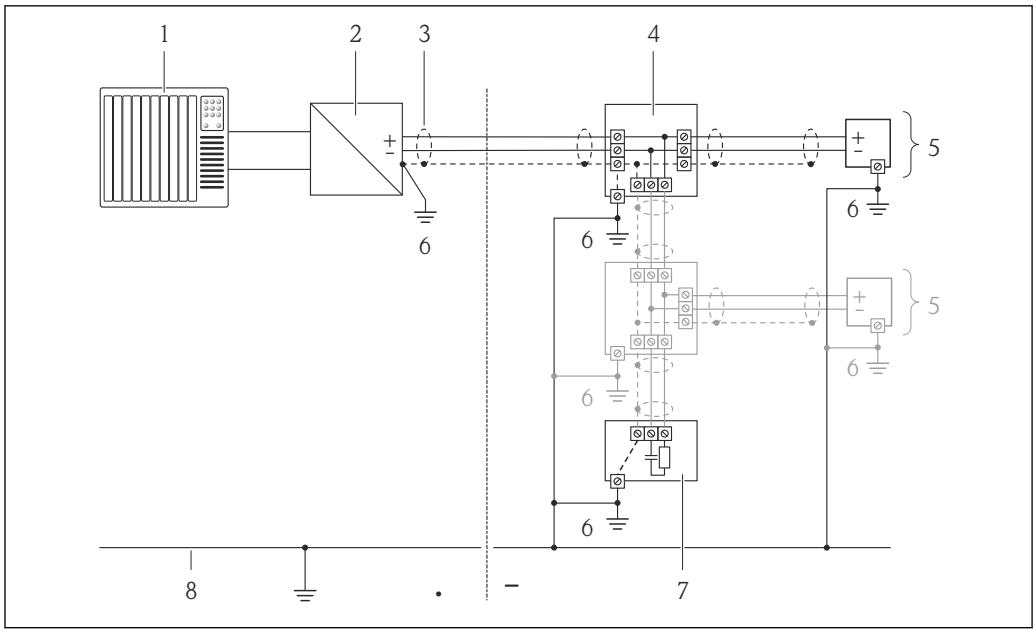
7.1.4 Shielding and grounding

Optimum electromagnetic compatibility (EMC) of the fieldbus system can only be guaranteed if the system components and, in particular, the lines are shielded and the shield forms as complete a cover as possible. A shield coverage of 90% is ideal.
- To ensure an optimum EMC protective effect, connect the shield as often as possible to the reference ground.
- For reasons of explosion protection, you should refrain from grounding however.

To comply with both requirements, the fieldbus system allows three different types of shielding:
- Shielding at both ends.
- Shielding at one end on the feed side with capacitance termination at the field device.
- Shielding at one end on the feed side.

Experience shows that the best results with regard to EMC are achieved in most cases in installations with one-sided shielding on the feed side (without capacitance termination at the field device). Appropriate measures with regard to input wiring must be taken to allow unrestricted operation when EMC interference is present. These measures have been taken into account for this device. Operation in the event of disturbance variables as per NAMUR NE21 is thus guaranteed.

Where there are large differences in potential between the individual grounding points, only one point of the shielding is connected directly with the reference ground. In systems without potential equalization, therefore, cable shielding of fieldbus systems should only be grounded on one side, for example at the fieldbus supply unit or at safety barriers.



1 *Controller (e.g. PLC)*
2 *Power Conditioner (FOUNDATION Fieldbus)*
3 *Cable shield*
4 *T-box*
5 *Measuring device*
6 *Local grounding*
7 *Bus terminator*
8 *Potential matching line*

7.1.5 Requirements for the supply unit

Supply voltage

Transmitter

An external power supply is required for each output. The following supply voltage values apply for FOUNDATION Fieldbus and the pulse/frequency/switch output:

Order code for "Output"	Minimum terminal voltage	Maximum terminal voltage
Option **E** [1] : FOUNDATION Fieldbus, pulse/frequency/ switch output	≥DC 9 V	DC 32 V

1) For device versions with local display SD03: The terminal voltage must be increased by DC 0.5 V if backlighting is used.

7.1.6 Preparing the measuring device

1. Remove dummy plug if present.
2. **NOTICE!** Insufficient sealing of the housing! Operational reliability of the measuring device could be compromised. Use suitable cable glands corresponding to the degree of protection.
   If measuring device is delivered without cable glands:
   Provide suitable cable gland for corresponding connecting cable (→ 26).
3. If measuring device is delivered with cable glands:
   Observe cable specification (→ 26).

7.2 Connecting the measuring device

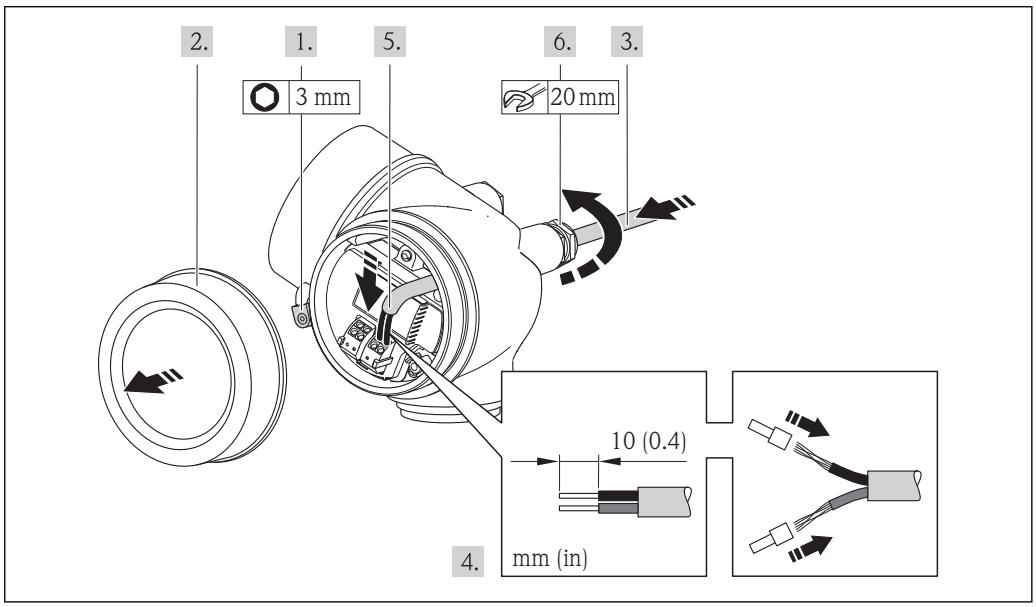
NOTICE

Limitation of electrical safety due to incorrect connection!

- Have electrical connection work carried out by correspondingly trained specialists only.
- Observe applicable federal/national installation codes and regulations.
- Comply with local workplace safety regulations.
- For use in potentially explosive atmospheres, observe the information in the device-specific Ex documentation.

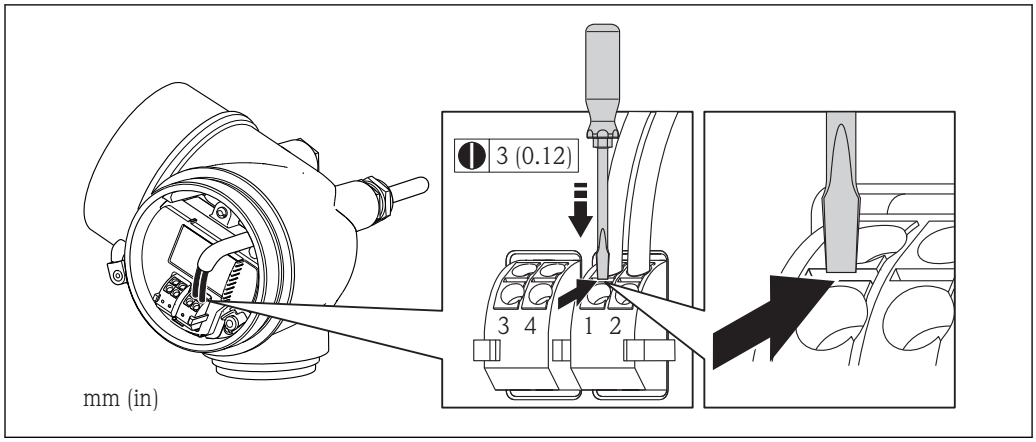
7.2.1 Connecting the transmitter

Connection via terminals



1. Loosen the securing clamp of the connection compartment cover.
2. Unscrew the connection compartment cover.
3. Push the cable through the cable entry . To ensure tight sealing, do not remove the sealing ring from the cable entry.
4. Strip the cable and cable ends. In the case of stranded cables, also fit ferrules.
5. **WARNING!** Housing degree of protection may be voided due to insufficient sealing of the housing. Screw in the screw without using any lubricant. The threads on the cover are coated with a dry lubricant.
   Reverse the removal procedure to reassemble the transmitter.

Removing a cable

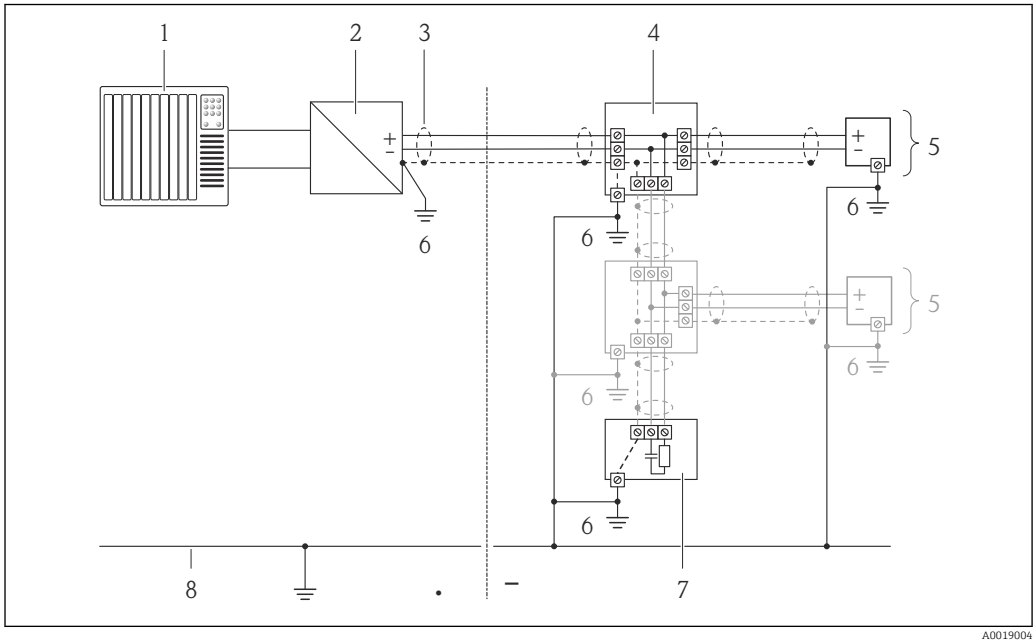


► To remove a cable from the terminal, use a flat-blade screwdriver to push the slot between the two terminal holes while simultaneously pulling the cable end out of the terminal.

7.3 Special connection instructions

7.3.1 Connection examples

FOUNDATION Fieldbus



7 *Connection example for FOUNDATION Fieldbus*

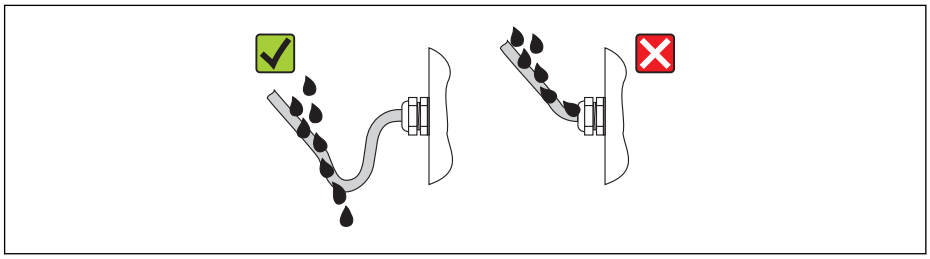
1 *Control system (e.g. PLC)*
2 *Power Conditioner (FOUNDATION Fieldbus)*
3 *Cable shield*
4 *T-box*
5 *Measuring device*
6 *Local grounding*
7 *Bus terminator*
8 *Potential matching line*

7.4 Ensuring the degree of protection

The measuring device fulfills all the requirements for the IP66/67 degree of protection, Type 4X enclosure.

To guarantee IP66/67 degree of protection, Type 4X enclosure, carry out the following steps after the electrical connection:

1. Check that the housing seals are clean and fitted correctly. Dry, clean or replace the seals if necessary.
2. Tighten all housing screws and screw covers.
3. Firmly tighten the cable glands.
4. To ensure that moisture does not enter the cable entry, route the cable so that it loops down before the cable entry ("water trap").



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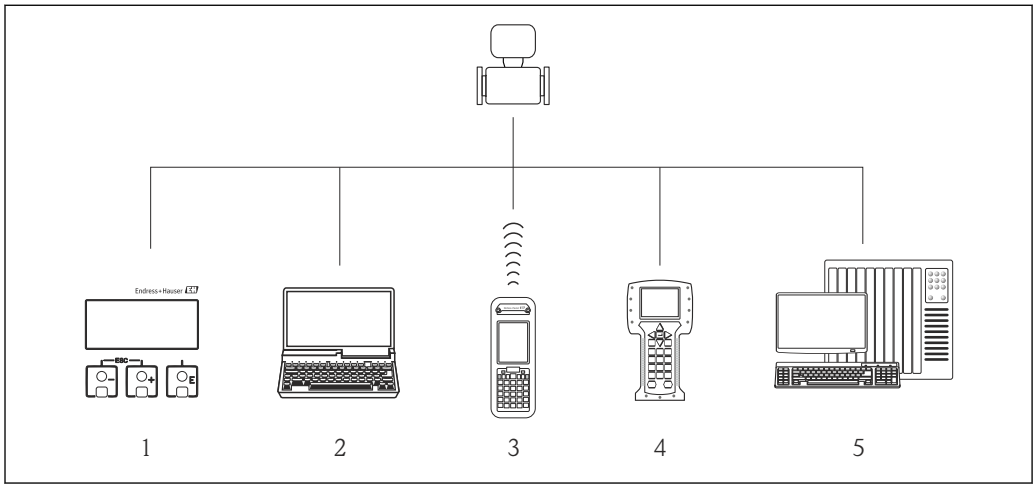
5. Insert dummy plugs into unused cable entries.

7.5 Post-connection check

Are cables or the device undamaged (visual inspection)?	❑
Do the cables comply with the requirements (→ 🖹 26)?	❑
Do the cables have adequate strain relief?	❑
Are all the cable glands installed, firmly tightened and leak-tight? Cable run with "water trap" (→ 🖹 31) ?	❑
Depending on the device version: are all the device plugs firmly tightened ?	❑
Does the supply voltage match the specifications on the transmitter nameplate (→ 🖹 28)?	❑
Is the terminal assignment correct ?	❑
If supply voltage is present, do values appear on the display module?	❑
Are all housing covers installed and firmly tightened?	❑
Is the securing clamp tightened correctly?	❑

8 Operation options

8.1 Overview of operation options



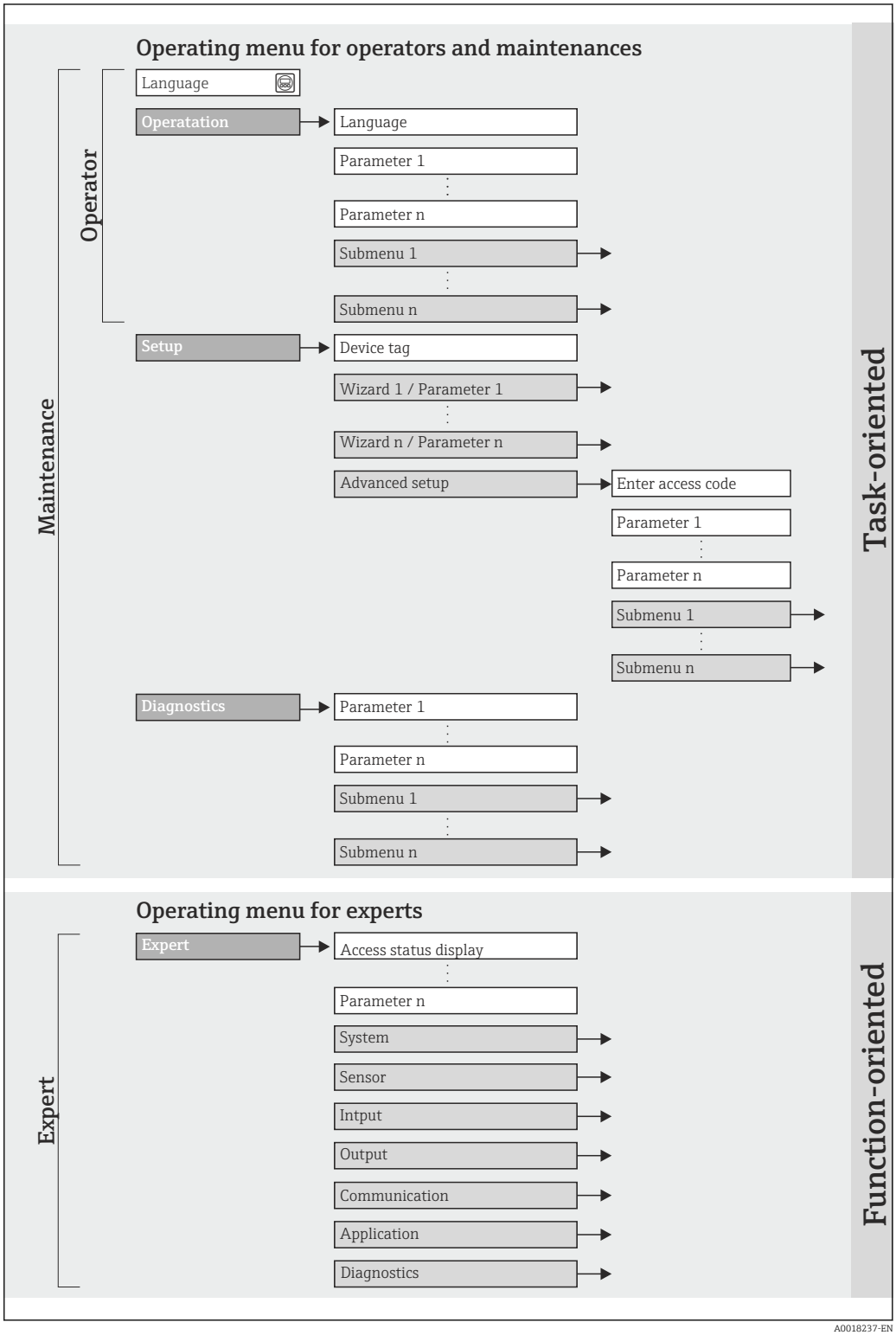
A0015607

1 Local operation via display module
2 Computer with operating tool (e.g. FieldCare, AMS Device Manager)
3 Field Xpert SFX350 or SFX370
4 Field Communicator 475
5 Control system (e.g. PLC)

8.2 Structure and function of the operating menu

8.2.1 Structure of the operating menu

For an overview of the operating menu with menus and parameters (→ 138)



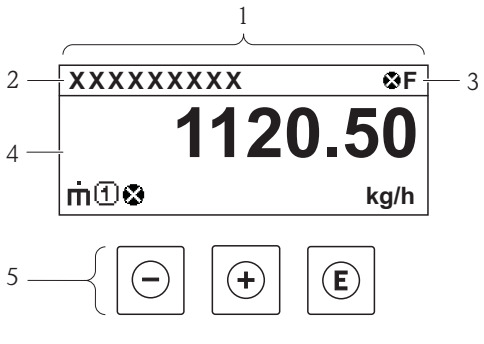
8 *Schematic structure of the operating menu*

8.2.2 Operating philosophy

The individual parts of the operating menu are assigned to certain user roles. Each user role corresponds to typical tasks within the device lifecycle.

8.3 Access to the operating menu via the local display

8.3.1 Operational display



1 *Operational display*
2 *Device tag (→ 🖹 55)*
3 *Status area*
4 *Display area for measured values (4-line)*
5 *Operating elements (→ 🖹 39)*

Status area

The following symbols appear in the status area of the operational display at the top right:
- Status signals(→ 🖹 94)
- Diagnostic behavior(→ 🖹 95)
- Locking
- Communication

Locking

Symbol	Meaning
	Device locked The measuring device is hardware locked (→ 🖹 81).

Communication

Symbol	Meaning
	Communication via remote operation is active.

Display area

In the display area, each measured value is prefaced by certain symbol types for further description:

Measured variables

Symbol	Meaning
	Mass flow
	▪ Volume flow ▪ Corrected volume flow

	▪ Density ▪ Reference density
	Temperature
	Totalizer The measurement channel number indicates which of the three totalizers is displayed.

Measurement channel numbers

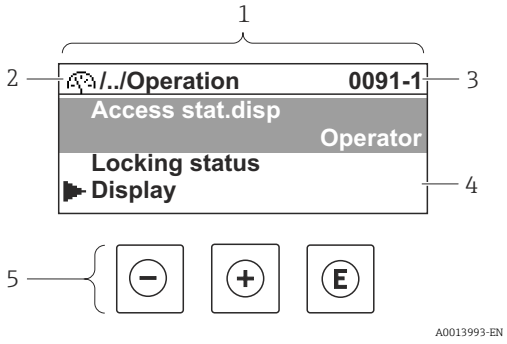
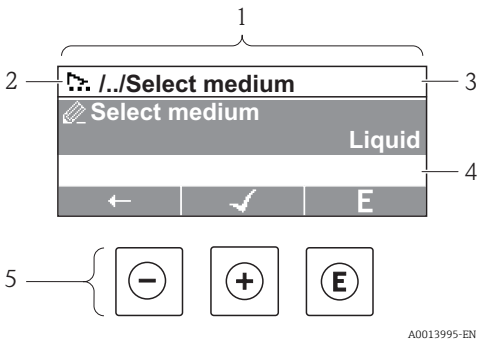
Symbol	Meaning
1 ... 4	Measurement channel 1 to 4
The measurement channel number is displayed only if more than one channel is present for the same measured variable type (e.g. Totalizer 1 to 3).	

Diagnostic behavior

The diagnostic behavior pertains to a diagnostic event that is relevant to the displayed measured variable. For information on the symbols (→ 95)

The number and display format of the measured values can be configured via the **"Format display" parameter**(→ 60). "Operation" menu → Display → Format display

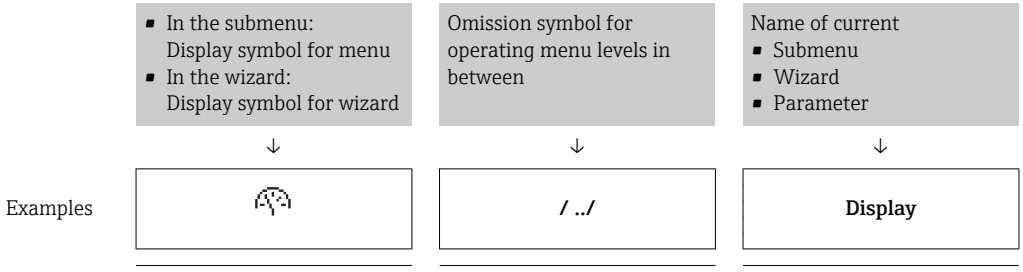
8.3.2 Navigation view

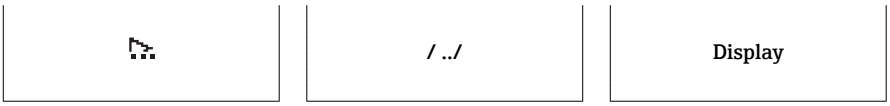
In the submenu	In the wizard
	

1 Navigation view
2 Navigation path to current position
3 Status area
4 Display area for navigation
5 Operating elements (→ 39)

Navigation path

The navigation path - displayed at the top left in the navigation view - consists of the following elements:





For more information about the menu icons, refer to the "Display area" section (→ 36)

Status area

The following appears in the status area of the navigation view in the top right corner:
- Of the submenu
  - The direct access code for the parameter you are navigating to (e.g. 0022-1)
  - If a diagnostic event is present, the diagnostic behavior and status signal
- In the wizard
  If a diagnostic event is present, the diagnostic behavior and status signal

- For information on the diagnostic behavior and status signal (→ 94)
- For information on the function and entry of the direct access code (→ 41)

Display area

Menus

Symbol	Meaning
	Operation Appears: ▪ In the menu next to the "Operation" selection ▪ At the left in the navigation path in the "Operation" menu
	Setup Appears: ▪ In the menu next to the "Setup" selection ▪ At the left in the navigation path in the "Setup" menu
	Diagnostics Appears: ▪ In the menu next to the "Diagnostics" selection ▪ At the left in the navigation path in the "Diagnostics" menu
	Expert Appears: ▪ In the menu next to the "Expert" selection ▪ At the left in the navigation path in the "Expert" menu

Submenus, wizards, parameters

Symbol	Meaning
	Submenu
	Wizard
	Parameters within a wizard No display symbol exists for parameters in submenus.

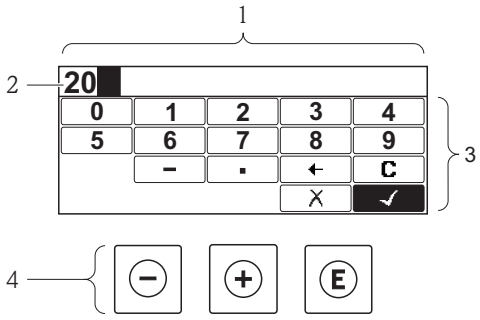
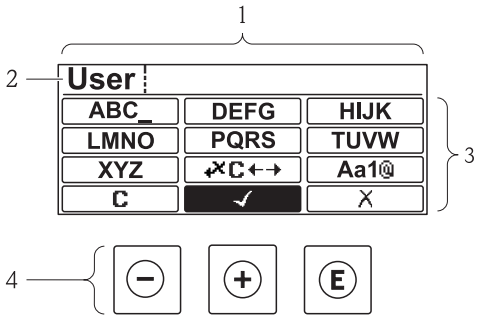
Locking

Symbol	Meaning
	Parameter locked When displayed in front of a parameter name, indicates that the parameter is locked. ▪ By a user-specific access code (→ 80) ▪ By the hardware write protection switch (→ 81)

Wizard operation

Symbol	Meaning
	Switches to the previous parameter.
	Confirms the parameter value and switches to the next parameter.
E	Opens the editing view of the parameter.

8.3.3 Editing view

Numeric editor	Text editor
	

1 Editing view
2 Display area of the entered values
3 Input mask
4 Operating elements (→ 🖹 39)

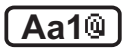
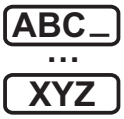
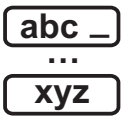
Input mask

The following input symbols are available in the input mask of the numeric and text editor:

Numeric editor

Symbol	Meaning
0 … 9	Selection of numbers from 0 to 9.
.	Inserts decimal separator at the input position.
–	Inserts minus sign at the input position.
	Confirms selection.
	Moves the input position one position to the left.
	Exits the input without applying the changes.
C	Clears all entered characters.

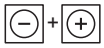
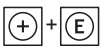
Text editor

Symbol	Meaning
	Toggle ▪ Between upper-case and lower-case letters ▪ For entering numbers ▪ For entering special characters
	Selection of letters from A to Z.
	Selection of letters from a to z.
	Selection of special characters.
	Confirms selection.
	Switches to the selection of the correction tools.
	Exits the input without applying the changes.
	Clears all entered characters.

Correction symbols under

Symbol	Meaning
	Clears all entered characters.
	Moves the input position one position to the right.
	Moves the input position one position to the left.
	Deletes one character immediately to the left of the input position.

8.3.4 Operating elements

Key	Meaning
	**Minus key** *In a menu, submenu* Moves the selection bar upwards in a choose list. *With a Wizard* Confirms the parameter value and goes to the previous parameter. *With a text and numeric editor* In the input mask, moves the selection bar to the left (backwards).
	**Plus key** *In a menu, submenu* Moves the selection bar downwards in a choose list. *With a Wizard* Confirms the parameter value and goes to the next parameter. *With a text and numeric editor* Moves the selection bar to the right (forwards) in an input screen.
	**Enter key** *For operational display* ▪ Pressing the key briefly opens the operating menu. ▪ Pressing the key for 2 s opens the context menu. *In a menu, submenu* ▪ Pressing the key briefly: – Opens the selected menu, submenu or parameter. – Starts the wizard. – If help text is open, closes the help text of the parameter. ▪ Pressing the key for 2 s for parameter: If present, opens the help text for the function of the parameter. *With a Wizard* Opens the editing view of the parameter. *With a text and numeric editor* ▪ Pressing the key briefly: – Opens the selected group. – Carries out the selected action. ▪ Pressing the key for 2 s confirms the edited parameter value.
	**Escape key combination (press keys simultaneously)** *In a menu, submenu* ▪ Pressing the key briefly: – Exits the current menu level and takes you to the next higher level. – If help text is open, closes the help text of the parameter. ▪ Pressing the key for 2 s returns you to the operational display ("home position"). *With a Wizard* Exits the wizard and takes you to the next higher level. *With a text and numeric editor* Closes the text or numeric editor without applying changes.
	**Minus/Enter key combination (press the keys simultaneously)** Reduces the contrast (brighter setting).
	**Plus/Enter key combination (press and hold down the keys simultaneously)** Increases the contrast (darker setting).
	**Minus/Plus/Enter key combination (press the keys simultaneously)** *For operational display* Enables or disables the keypad lock (only SD02 display module).

8.3.5 Opening the context menu

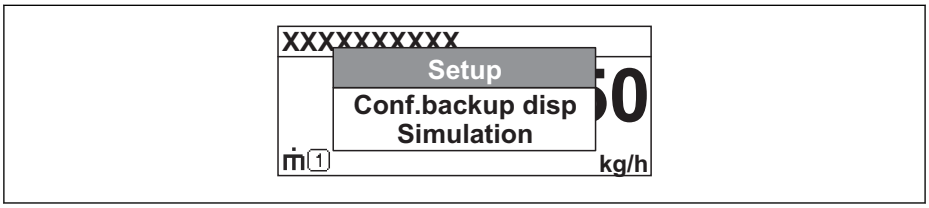
Using the context menu, the user can call up the following menus quickly and directly from the operational display:

- Setup
- Conf. backup disp.
- Simulation

Calling up and closing the context menu

The user is in the operational display.

1. Press E for 2 s.
   ↳ The context menu opens.



2. Press − + + simultaneously.
   ↳ The context menu is closed and the operational display appears.

Calling up the menu via the context menu

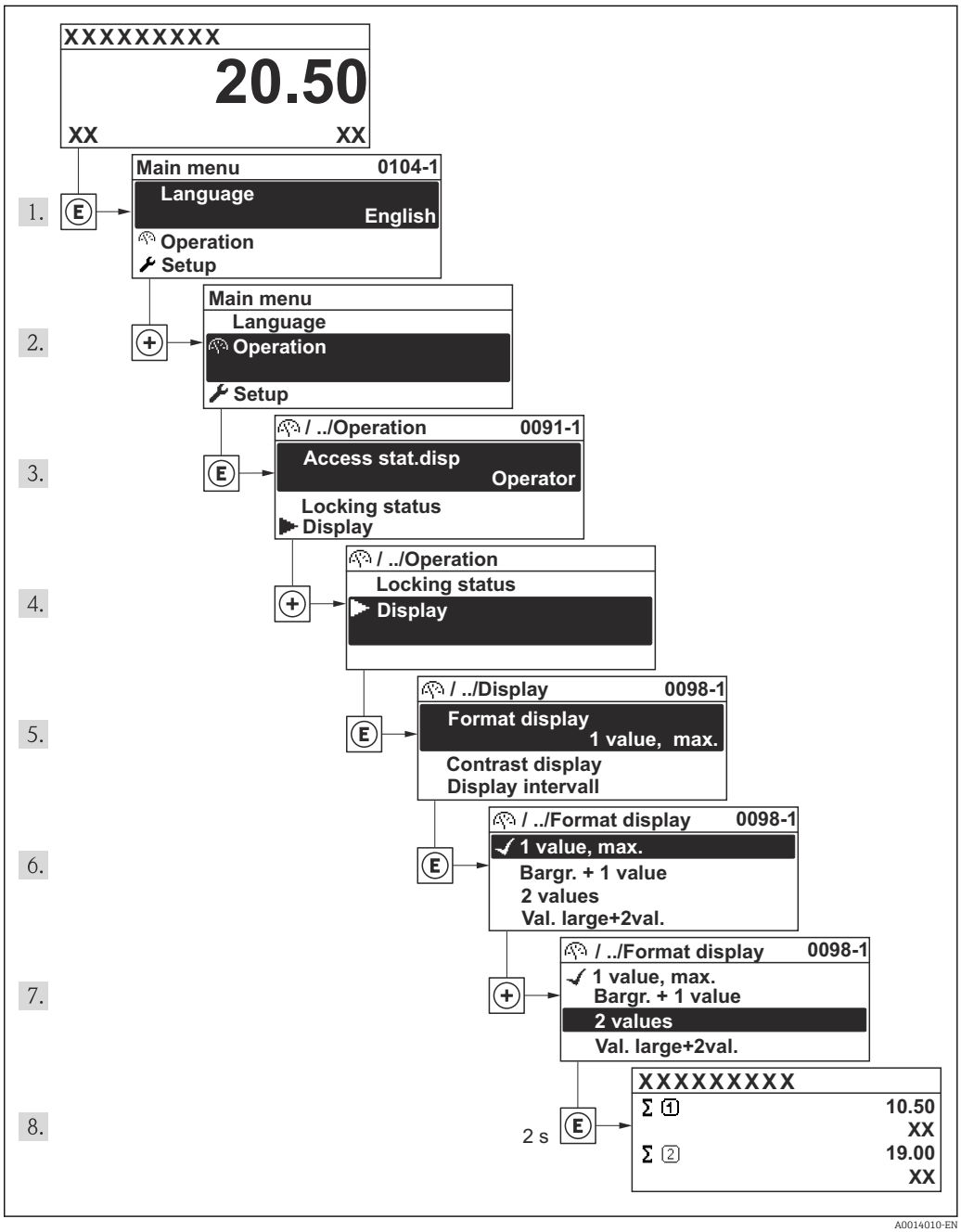
1. Open the context menu.
2. Press + to navigate to the desired menu.
3. Press E to confirm the selection.
   ↳ The selected menu opens.

8.3.6 Navigating and selecting from list

Different operating elements are used to navigate through the operating menu. The navigation path is displayed on the left in the header. Icons are displayed in front of the individual menus. These icons are also shown in the header during navigation.

For an explanation of the navigation view with symbols and operating elements (→ 35)

Example: Setting the number of displayed measured values to "2 values"

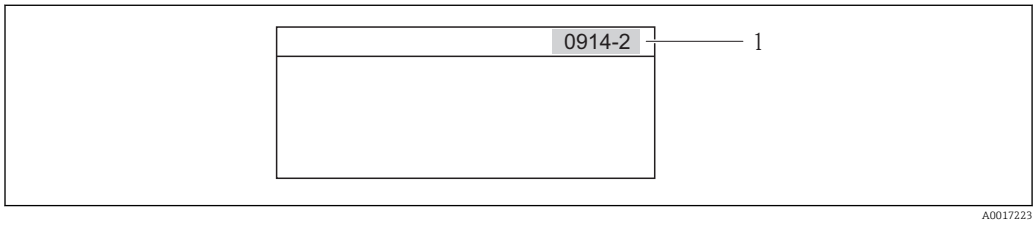


8.3.7 Calling the parameter directly

A parameter number is assigned to every parameter to be able to access a parameter directly via the onsite display. Entering this access code in the **Direct access** parameter calls up the desired parameter directly.

Navigation path
"Expert" menu → Direct access

The direct access code consists of a 4-digit number and the channel number, which identifies the channel of a process variable: e.g. 0914-1. In the navigation view, this appears on the right-hand side in the header of the selected parameter.



1 Direct access code

Note the following when entering the direct access code:
- The leading zeros in the direct access code do not have to be entered.
  Example: Input of "914" instead of "0914"
- If no channel number is entered, channel 1 is jumped to automatically.
  Example: Input of "0914" → Parameter **Totalizer 1**
- If a different channel is jumped to: Enter the direct access code with the corresponding channel number.
  Example: Input of "0914-2" → Parameter **Totalizer 2**

For the direct access codes of the individual parameters

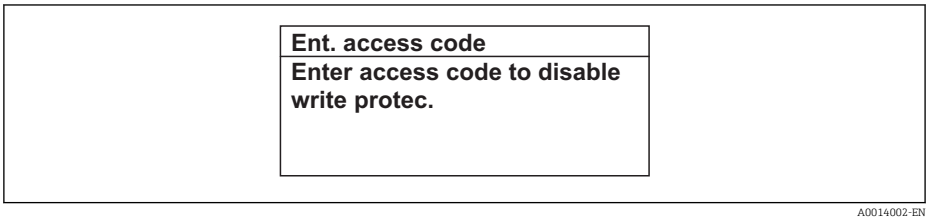
8.3.8 Calling up help text

For some parameters, help texts exist, which the user can call up from the navigation view. These briefly describe the function of the parameter and thus support fast and reliable commissioning.

Calling up and closing the help text

The user is in the navigation view and the selection bar is on a parameter.

1. Press E for 2 s.
   ↳ The help text for the selected parameter opens.



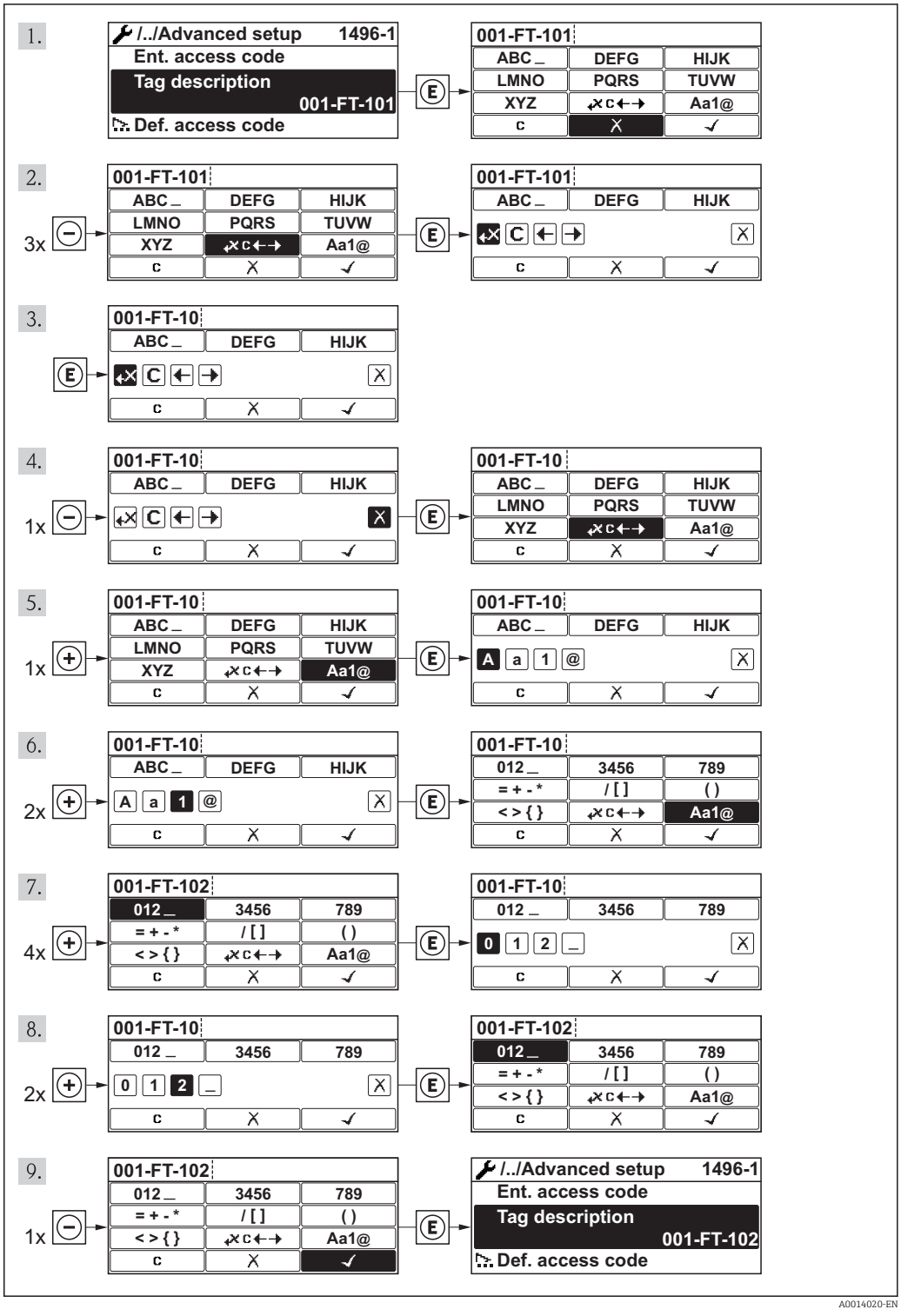
9 Example: Help text for parameter "Enter access code"

2. Press − + + simultaneously.
   ↳ The help text is closed.

8.3.9 Changing the parameters

For a description of the editing display - consisting of text editor and numeric editor - with symbols (→ 37), for a description of the operating elements (→ 39)

Example: Changing the tag name in the "Tag description" parameter from 001-FT-101 to 001-FT-102



8.3.10 User roles and related access authorization

The two user roles "Operator" and "Maintenance" have different write access to the parameters if the customer defines a user-specific access code. This protects the device configuration via the local display from unauthorized access (→ 🖹 80).

Access authorization to parameters

User role	Read access		Write access	
	Without access code (from the factory)	With access code	Without access code (from the factory)	With access code
Operator	✔	✔	✔	-- [1]
Maintenance	✔	✔	✔	✔

1) Despite the defined access code, certain parameters can always be modified and thus are excepted from the write protection, as they do not affect the measurement. Refer to the "Write protection via access code" section

If an incorrect access code is entered, the user obtains the access rights of the "Operator" role.

The user role with which the user is currently logged on is indicated by the **Access status display** parameter. Navigation path: Operation → Access status display

8.3.11 Disabling write protection via access code

If the 🔒-symbol appears on the local display in front of a parameter, the parameter is write-protected by a user-specific access code and its value cannot be changed at the moment using the local display (→ 🖹 80).

The locking of the write access via local operation can be disabled by entering the customer-defined access code via the respective access option.

1. After you press E, the input prompt for the access code appears.
2. Enter the access code.
   ↳ The 🔒-symbol in front of the parameters disappears; all previously write-protected parameters are now re-enabled.

8.3.12 Enabling and disabling the keypad lock

The keypad lock makes it possible to block access to the entire operating menu via local operation. As a result, it is no longer possible to navigate through the operating menu or change the values of individual parameters. Users can only read the measured values on the operational display.

Local operation with mechanical push buttons (display module SD02)

Display module SD02: order characteristic *"Display; Operation"*, option **C**

The keypad lock is switched on and off in the same way:

Switching on the keypad lock

▶ The device is in the measured value display.
Press the − + + + E keys simultaneously.
↳ The message **Keylock on** appears on the display: The keypad lock is switched on.

If the user attempts to access the operating menu while the keypad lock is active, the message **Keylock on** appears.

Switching off the keypad lock

▶ The keypad lock is switched on.
Press the ⊟ + ⊞ + Ⓔ keys simultaneously.
↳ The message **Keylock off** appears on the display: The keypad lock is switched off.

Local operation with touch control (display module SD03)

Display module SD03: Order characteristic *"Display; Operation"*, option **E**

The keypad lock is switched on and off via the context menu.

Switching on the keypad lock

The keypad lock is switched on automatically:
- Each time the device is restarted.
- If the device has not been operated for longer than one minute in the measured value display.

1. The device is in the measured value display.
Press the Ⓔ key for longer than 2 seconds.
↳ A context menu appears.
2. In the context menu, select the **Keylock on** option.
↳ The keypad lock is switched on.

If the user attempts to access the operating menu while the keypad lock is active, the message **Keylock on** appears.

Switching off the keypad lock

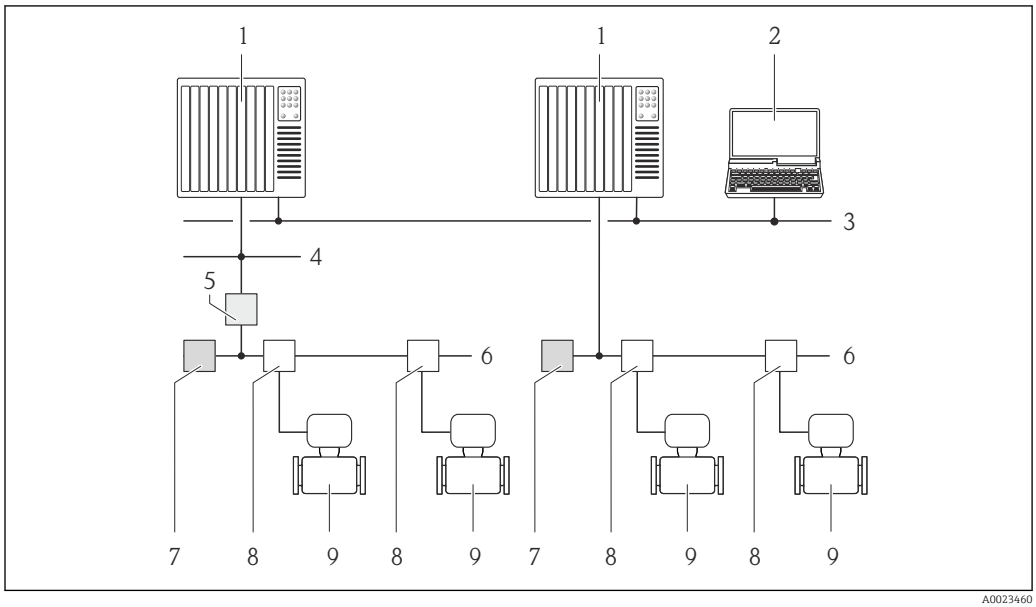
1. The keypad lock is switched on.
Press the Ⓔ key for longer than 2 seconds.
↳ A context menu appears.
2. In the context menu, select the **Keylock off** option.
↳ The keypad lock is switched off.

8.4 Access to the operating menu via the operating tool

The structure of the operating menu in the operating tools is the same as for operation via the local display.

8.4.1 Connecting the operating tool

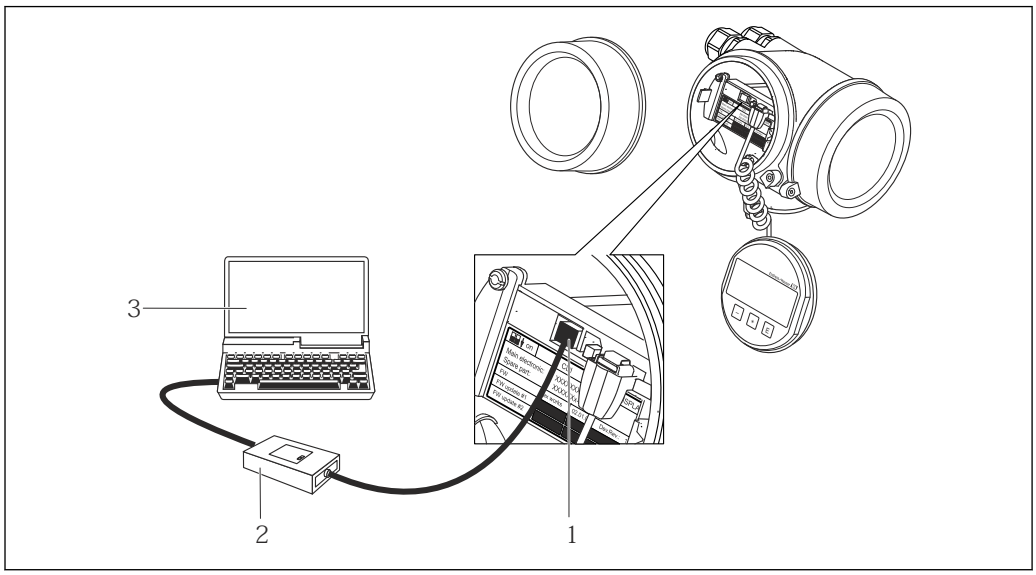
Via FOUNDATION Fieldbus network



A0023460

1 *Automation system*
2 *Computer with FOUNDATION Fieldbus network card*
3 *Industry network*
4 *High Speed Ethernet FF-HSE network*
5 *Segment coupler FF-HSE/FF-H1*
6 *FOUNDATION Fieldbus FF-H1 network*
7 *Power supply FF-H1 network*
8 *T-box*
9 *Measuring device*

Via service interface (CDI)



A0014019

1 *Service interface (CDI = Endress+Hauser Common Data Interface) of the measuring device*
2 *Commubox FXA291*
3 *Computer with "FieldCare" operating tool with COM DTM "CDI Communication FXA291"*

8.4.2 Field Xpert SFX350, SFX370

Function scope

Field Xpert SFX350 and Field Xpert SFX370 are mobile computers for commissioning and maintenance. They enable efficient device configuration and diagnostics for HART and FOUNDATION fieldbus devices in the **non-Ex area** (SFX350, SFX370) and the **Ex area** (SFX370).

For details, see Operating Instructions BA01202S

Source for device description files

See data (→ 49)

8.4.3 FieldCare

Function scope

FDT-based plant asset management tool from Endress+Hauser. It can configure all smart field devices in a system and helps you manage them. By using the status information, it is also a simple but effective way of checking their status and condition.

Access takes place via:

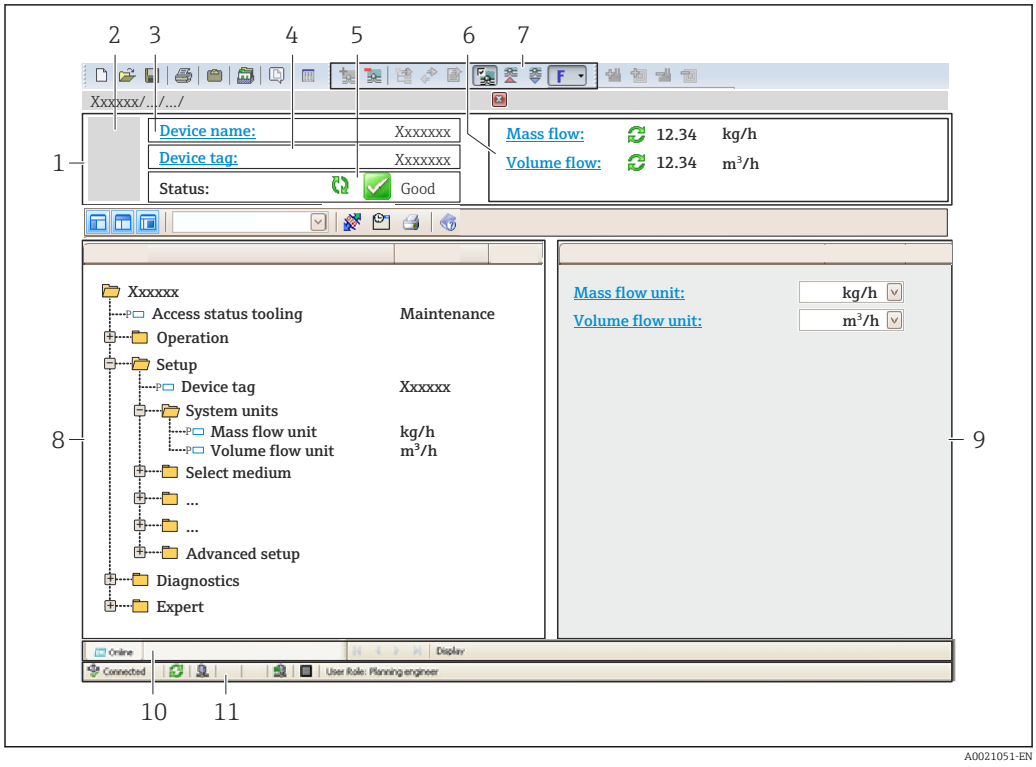
Typical functions:
- Configuring parameters of transmitters
- Loading and saving device data (upload/download)
- Documentation of the measuring point
- Visualization of the measured value memory (line recorder) and event logbook

For details, see Operating Instructions BA00027S and BA00059S

Source for device description files

See data (→ 49)

User interface



1 *Header*
2 *Picture of device*
3 *Device name*
4 *Device tag (→ 55)*
5 *Status area with status signal*
6 *Display area for current measured values (→ 86)*
7 *Event list with additional functions such as save/load, events list and document creation*
8 *Navigation area with operating menu structure*
9 *Operating range*
10 *Range of action*
11 *Status area*

8.4.4 AMS Device Manager

Function scope

Program from Emerson Process Management for operating and configuring measuring devices via FOUNDATION Fieldbus H1 protocol.

Source for device description files

See data (→ 49)

8.4.5 Field Communicator 475

Function scope

Industrial handheld terminal from Emerson Process Management for remote configuration and measured value display via FOUNDATION Fieldbus H1 protocol.

Source for device description files

See data (→ 49)

9 System integration

9.1 Overview of device description files

9.1.1 Current version data for the device

Manufacturer ID	452B48 hex	**Manufacturer ID** parameter Diagnostics → Device info→ Manufacturer ID
Device type ID	0x1054	**Device type** parameter Diagnostics → Device info → Device type
Device revision	1	▪ On transmitter nameplate (→ 🖹 14) ▪ **Device revision** parameter Diagnostics → Device info → Device revision
DD revision	Information and files under: ▪ www.endress.com ▪ www.fieldbus.org	
CFF revision		

For an overview of the different firmware versions for the device (→ 🖹 108)

9.1.2 Operating tools

The suitable device description file for the individual operating tools is listed in the table below, along with information on where the file can be acquired.

Operating tool via FOUNDATION Fieldbus	Sources for obtaining device descriptions
▪ Field Xpert SFX350 ▪ Field Xpert SFX370	Use update function of handheld terminal
FieldCare	▪ www.endress.com → Download Area ▪ CD-ROM (contact Endress+Hauser) ▪ DVD (contact Endress+Hauser)
AMS Device Manager (Emerson Process Management)	www.endress.com → Download Area
Field Communicator 475 (Emerson Process Management)	Use update function of handheld terminal

9.2 Integration into a FOUNDATION Fieldbus network

9.2.1 Block model

- Resource Block
- Transducer Blocks
  - Setup Transducer Block
  - Advanced Setup Transducer Block
  - Display Transducer Block
  - HistoROM Transducer Block
  - Diagnostic Transducer Block
  - Expert Configuration Transducer Block
  - Expert Information Transducer Block
  - Total Inventory Counter Transducer Block
  - Service Sensor Transducer Block
  - Service Info Transducer Block
  - Heartbeat Technology Transducer Block
  - Heartbeat Results 1 Transducer Block
  - Heartbeat Results 2 Transducer Block
  - Heartbeat Results 3 Transducer Block
  - Heartbeat Results 4 Transducer Block
- Function blocks
  - Analog Input Block
  - Discrete Input Block
  - PID Block
  - Multiple Analog Output Block
  - Multiple Digital Output Block
  - Integrator Block

Technical values for the individual blocks (→ 119)

9.2.2 Assignment of the measured values in the function blocks

The input value of a function block is defined via the CHANNEL parameter.

Analog Input (AI)

Channel	Measured variable
7	Temperature
9	Volume flow
11	Mass flow
13	Corrected volume flow
14	Density
15	Reference density
16	Totalizer 1
17	Totalizer 2
18	Totalizer 3

Digital Input (DI)

Channel	Signal
101	Status switch output
103	Low flow cut off

Channel	Signal
104	Empty pipe detection
105	Status verification

Multiple Analog Output Block (MAO)

Structure

Channel_0							
Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8

Channel	Measured variable	
121	Channel_0	
	Value 1:	Pressure [1]
	Value 2:	Not assigned
	Value 3:	
	Value 4:	
	Value 5:	
	Value 6:	
	Value 7:	
	Value 8:	

1) The pressure must be transmitted to the device in the SI basic unit.

The measured variable is accessed via "Setup" menu → Advanced setup → External compensation.

Multiple Digital Output Block (MDO)

Structure

Channel_DO							
Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8

Channel	Measured variable	
122	Channel_DO	
	Value 1:	Reset totalizer 1
	Value 2:	Reset totalizer 2
	Value 3:	Reset totalizer 3
	Value 4:	Flow override
	Value 5:	Start heartbeat verification
	Value 6:	Status switch output
	Value 7:	Start zero point adjustment
	Value 8:	Not assigned

9.2.3 Index tables of Endress+Hauser parameters

(→ 138)

9.2.4 Methods

Method	Block / accessibility via menu	Description
Set to "AUTO" mode	Block: – Accessibility via menu: Configure/Setup → Expert → Block Mode → Resource & Transducer Blocks	This method sets the Resource Block and all the Transducer Blocks to the AUTO (Automatic) mode.
Set to "OOS" mode	Block: – Accessibility via menu: Configure/Setup → Expert → Block Mode → Resource & Transducer Blocks	This method sets the Resource Block and all the Transducer Blocks to the OOS (Out of service) mode.
Restart	Block: Resource Block Accessibility via menu: Actions → Methods → Calibrate → Restart	This method is used for selecting the setting for the restart parameter in the Resource Block. This resets device parameters to a specific value. The following options are supported: ▪ Uninitialized ▪ Run ▪ Resource ▪ Defaults ▪ Processor ▪ To factory defaults ▪ To delivery settings ▪ ENP restart ▪ To transducer defaults ▪ Factory default blocks
ENP parameter	Block: Resource Block Accessibility via menu: Actions → Methods → Calibrate → ENP parameter	This method is used to display and configure the parameters of the electronic nameplate (ENP).
Overview diagnostics - Remedy information	Block: Diagnostic Transducer Block Accessibility via link: Namur symbol	This method is used to display the diagnostic event with the highest priority that is currently active and the corresponding remedial measures.
Actual diagnostics – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Actual diagnostics Alternatively accessible via menu: Device/ Diagnostics → Diagnostics	This method is used to display remedial measures for the diagnostic event with the highest priority that is currently active. This method is only available if an appropriate diagnostic event has occurred.
Previous diagnostics – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Previous diagnostics Alternatively accessible via menu: Device/ Diagnostics → Diagnostics	This method is used to display remedial measures for the previous diagnostic event. This method is only available if an appropriate diagnostic event has occurred.
Diagnostics 1 – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Diagnostic list → Diagnostics 1 Alternatively accessible via menu: ▪ Device/Diagnostics → Diagnostics list ▪ Instrument health status → Diagnostic list	This method is used to display remedial measures for the diagnostic event with the highest priority that is currently active. This method is only available if an appropriate diagnostic event has occurred.
Diagnostics 2 – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Diagnostic list → Diagnostics 2 Alternatively accessible via menu: ▪ Device/Diagnostics → Diagnostics list ▪ Instrument health status → Diagnostic list	This method is used to display remedial measures for an additional active diagnostic event. This method is only available if an appropriate diagnostic event has occurred.

Method	Block / accessibility via menu	Description
Diagnostics 3 – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Diagnostic list → Diagnostics 3 Alternatively accessible via menu: ▪ Device/Diagnostics → Diagnostics list ▪ Instrument health status → Diagnostic list	This method is used to display remedial measures for an additional active diagnostic event. This method is only available if an appropriate diagnostic event is present.
Diagnostics 4 – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Diagnostic list → Diagnostics 4 Alternatively accessible via menu: ▪ Device/Diagnostics → Diagnostics list ▪ Instrument health status → Diagnostic list	This method is used to display remedial measures for an additional active diagnostic event. This method is only available if an appropriate diagnostic event has occurred.
Diagnostics 5 – Remedy information	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Diagnostic list → Diagnostics 5 Alternatively accessible via menu: ▪ Device/Diagnostics → Diagnostics list ▪ Instrument health status → Diagnostic list	This method is used to display remedial measures for an additional active diagnostic event. This method is only available if an appropriate diagnostic event has occurred.
Diagnostic list	Block: Diagnostic Transducer Block Accessibility via menu: Configure/Setup → Diagnostics → Alarm indication (polling) Alternatively accessible via menu: ▪ Device/Diagnostics → Alarm indication (Polling) ▪ Instrument health status → Diagnostic list	This method is used to display up to five pending diagnostic events and the related remedial measures.

10 Commissioning

10.1 Function check

Before commissioning the device, make sure that the post-installation and post-connection checks have been performed.

- "Post-installation check" checklist (→ 25)
- "Post-connection check" checklist (→ 31)

10.2 Switching on the measuring device

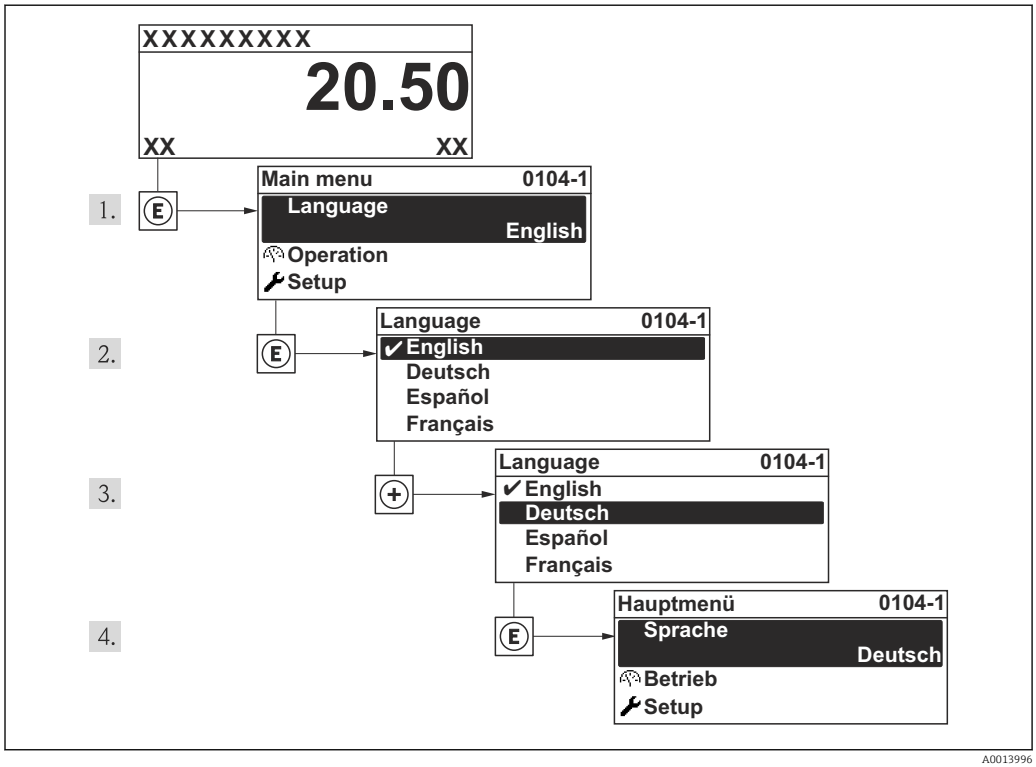
After a successful function check, switch on the measuring device.

After a successful startup, the local display switches automatically from the startup display to the operational display.

If nothing appears on the local display or a diagnostic message is displayed, refer to the section on "Diagnostics and troubleshooting" (→ 92).

10.3 Setting the operating language

Factory setting: English or ordered local language

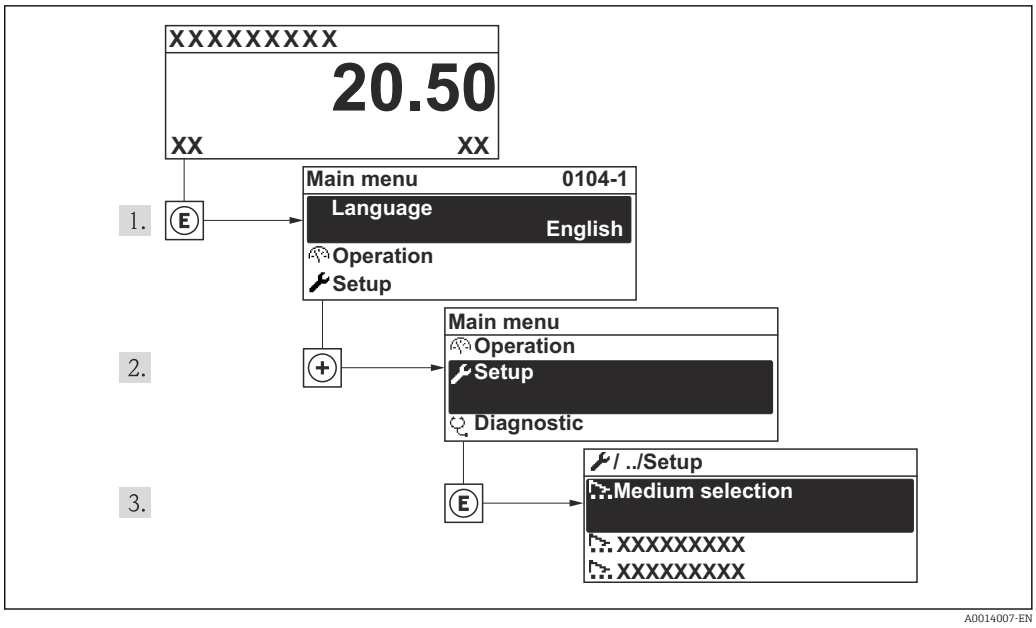


10 *Using the example of the local display*

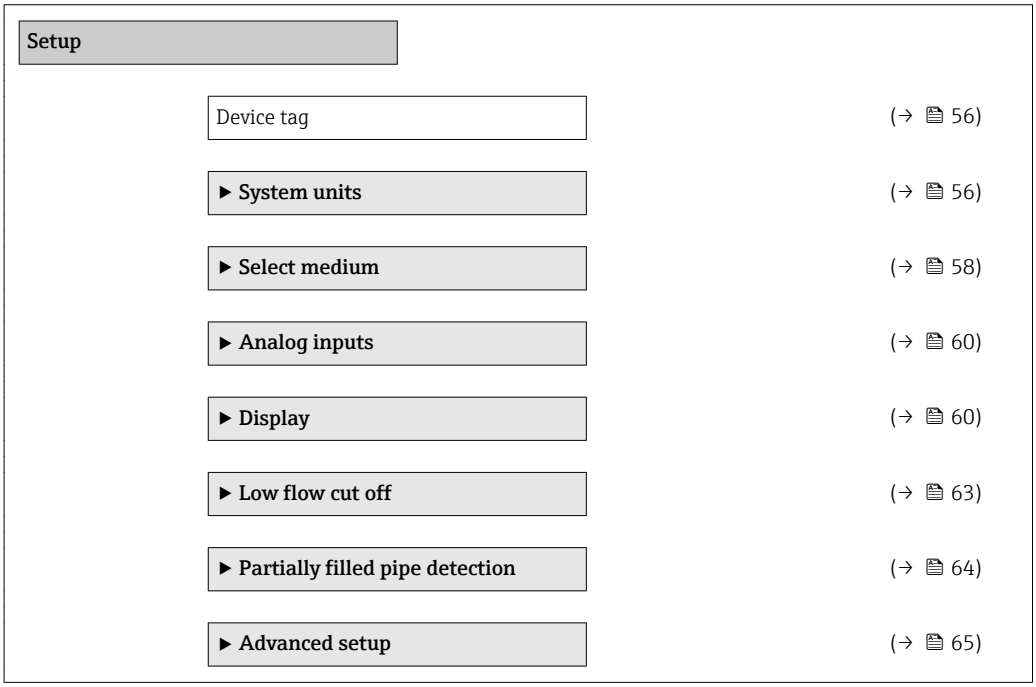
10.4 Configuring the measuring device

The **Setup** menu with its guided wizards contains all the parameters needed for standard operation.

Navigation to the **Setup** menu



11 *Using the example of the local display*

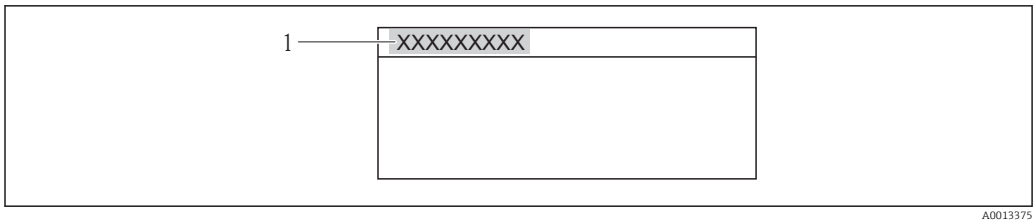


10.4.1 Defining the tag name

To enable fast identification of the measuring point within the system, you can enter a unique designation using the **Device tag** parameter and thus change the factory setting.

The number of characters displayed depends on the characters used.

For information on the tag name in the "FieldCare" operating tool (→ 48)



12 Header of the operational display with tag name

1 Device tag

Navigation
"Setup" menu → Device tag

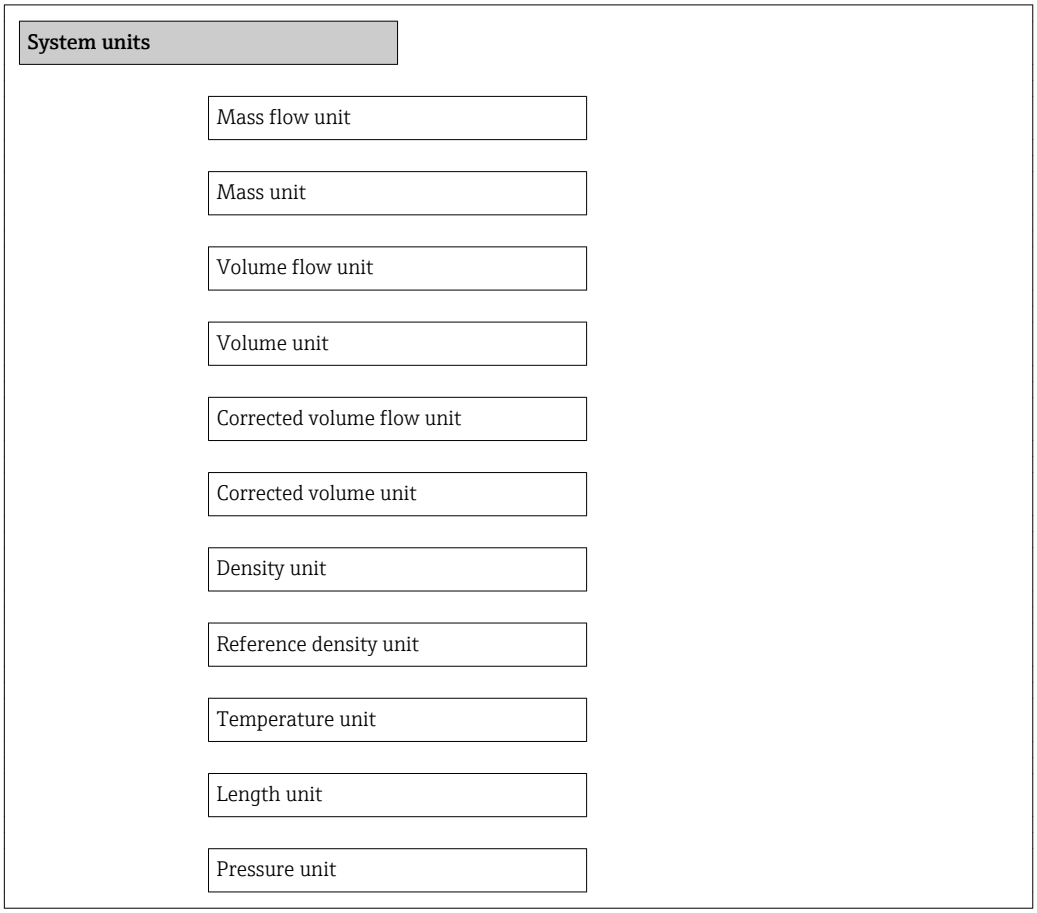
Parameter overview with brief description

Parameter	Description	User entry	Factory setting
Device tag	Enter the name for the measuring point.	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /)	Promass 200

10.4.2 Setting the system units

In the **System units** submenu the units of all the measured values can be set.

Navigation
"Setup" menu → System units



Parameter overview with brief description

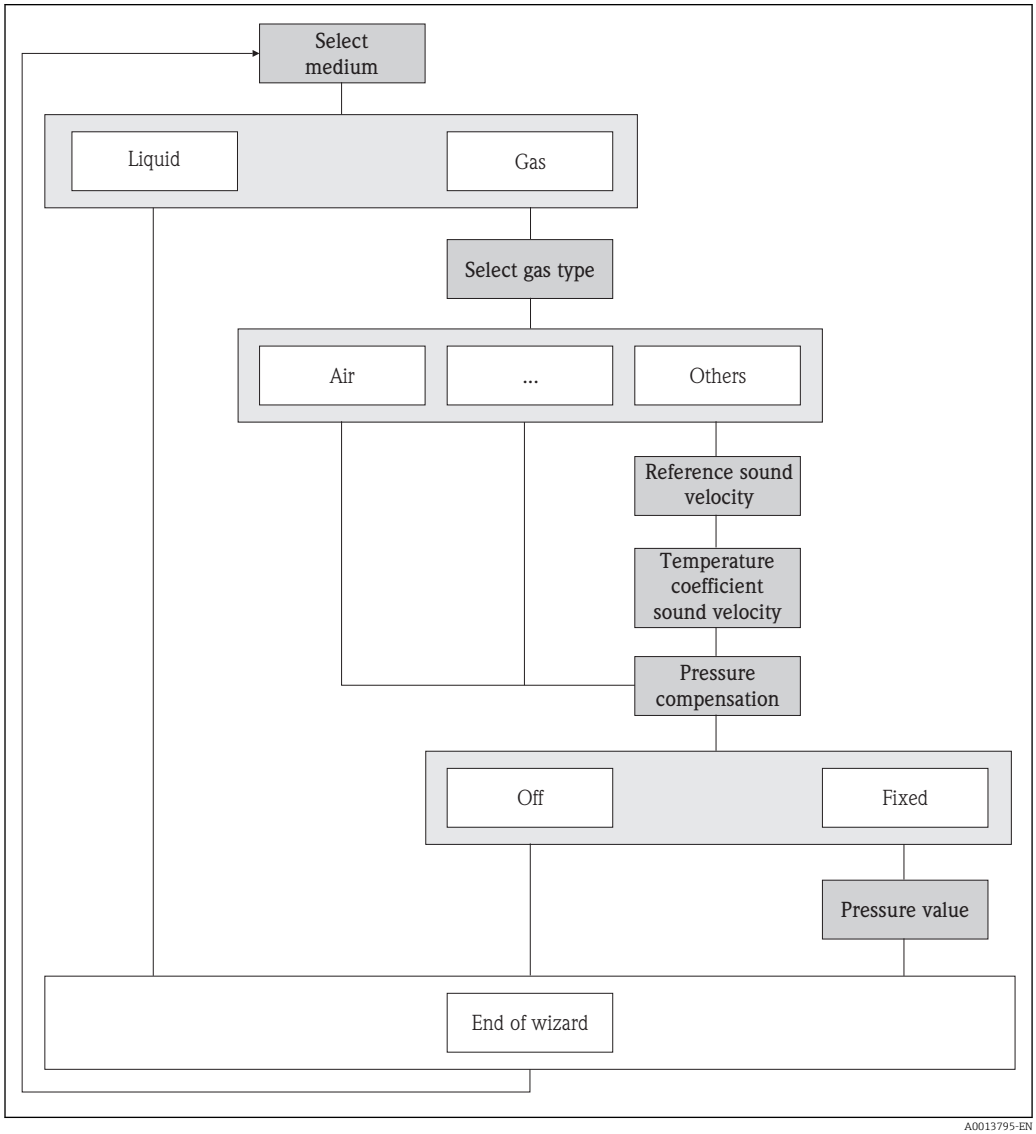
Parameter	Description	Selection	Factory setting
Mass flow unit	Select mass flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ kg/h ▪ lb/min
Mass unit	Select mass unit. *Result* The selected unit is taken from: **Mass flow unit** parameter	Unit choose list	Country-specific: ▪ kg ▪ lb
Volume flow unit	Select volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ l/h ▪ gal/min (us)
Volume unit	Select volume unit. **Result** The selected unit is taken from: **Volume flow unit** parameter	Unit choose list	Country-specific: ▪ l ▪ gal (us)
Corrected volume flow unit	Select corrected volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ Nl/h ▪ Sft^3/h
Corrected volume unit	Select corrected volume unit. **Result** The selected unit is taken from: **Corrected volume flow unit** parameter	Unit choose list	Country-specific: ▪ Nl ▪ Sft^3
Density unit	Select density unit. *Result* The selected unit applies for: ▪ Output ▪ Simulation process variable ▪ Density adjustment (in **Expert** menu)	Unit choose list	Country-specific: ▪ kg/l ▪ lb/ft^3
Reference density unit	Select reference density unit.	Unit choose list	kg/Nl
Temperature unit	Select temperature unit. *Result* The selected unit applies for: ▪ Output ▪ Reference temperature ▪ Simulation process variable	Unit choose list	Country-specific: ▪ °C (Celsius) ▪ °F (Fahrenheit)
Length unit	Select length unit for nominal diameter.	Unit choose list	Country-specific: ▪ mm ▪ in
Pressure unit	Select process pressure unit.	Unit choose list	Country-specific: ▪ bar ▪ psi

10.4.3 Selecting and setting the medium

The **Medium selection** wizard guides you systematically through all the parameters that have to be configured for selecting and setting the medium.

Navigation
"Setup" menu → Select medium

Structure of the wizard



13 Wizard "Select medium" wizard in the "Setup" menu

Parameter overview with brief description

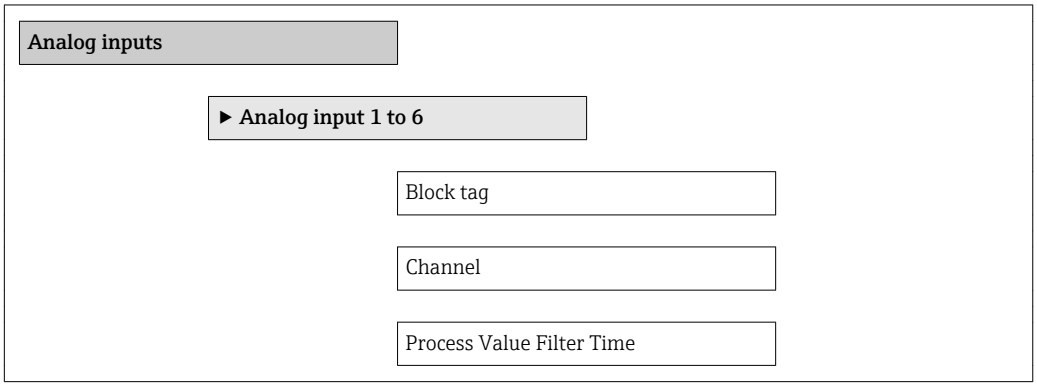
Parameter	Description	Selection / User entry	Factory setting
Select medium	Select medium type.	▪ Liquid ▪ Gas	Liquid
Select gas type	Select measured gas type.	Gas type choose list	Air
Reference sound velocity	Enter sound velocity of gas at 0 °C (32 °F).	1 to 99 999.9999 m/s	0 m/s
Temperature coefficient sound velocity	Enter temperature coefficient for the gas sound velocity.	Positive floating-point number	0 (m/s)/K

Parameter	Description	Selection / User entry	Factory setting
Pressure compensation	Select pressure compensation type.	▪ Off ▪ Fixed value ▪ External value	Off
Pressure value	Enter process pressure to be used for pressure correction.	Positive floating-point number	101 325 bar

10.4.4 Configuring the analog inputs

The **Analog inputs** submenu guides you systematically to the individual **Analog input 1 to 6** submenu. From here you get to the parameters of the individual analog input.

Navigation
"Setup" menu → Analog inputs



Parameter overview with brief description

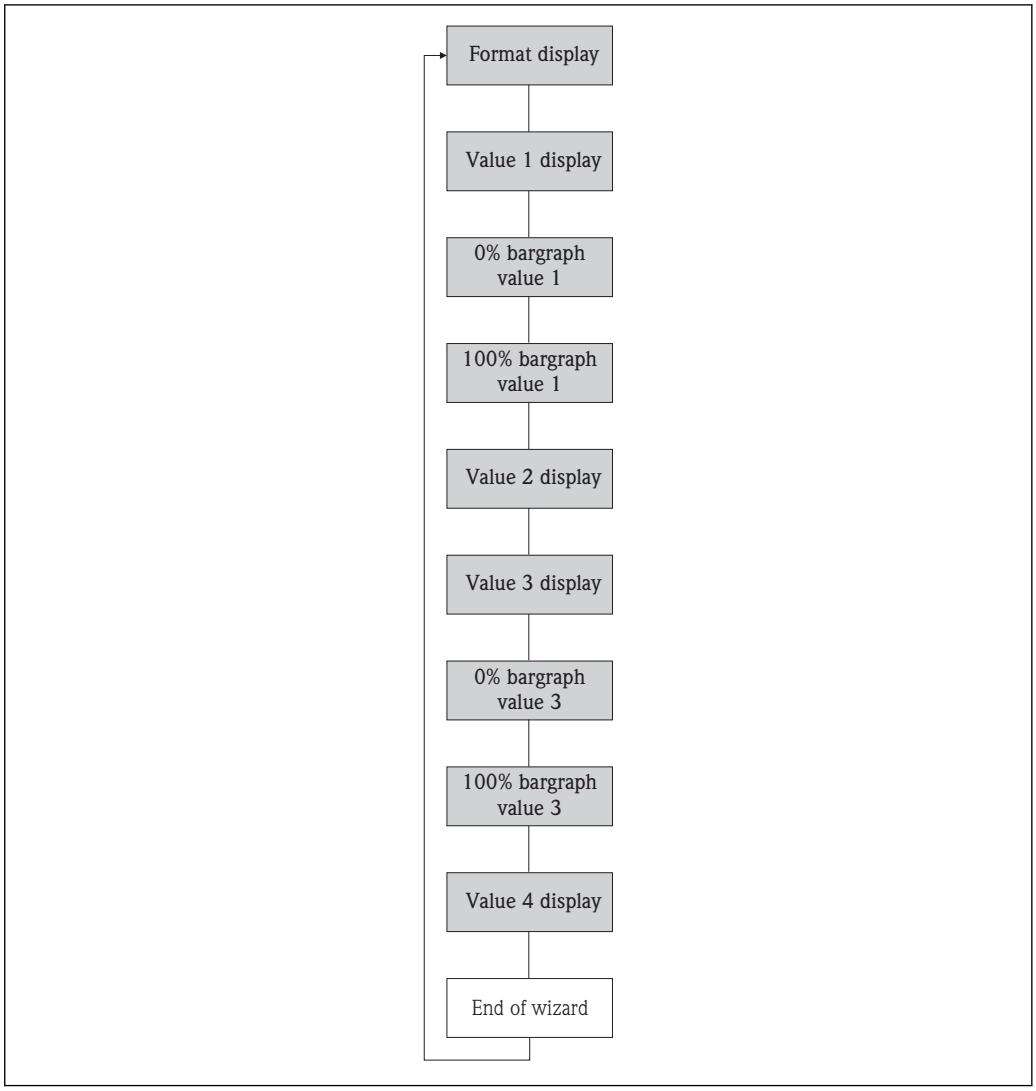
Parameter	Description	User entry / Selection	Factory setting
Block tag	Unique name of the measuring device.	Character string composed of letters, numbers and certain punctuation marks.	–
Channel	Select the process variable.	▪ Uninitialized ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Totalizer 1 ▪ Totalizer 2 ▪ Totalizer 3	Uninitialized
Process Value Filter Time	Specify a time to suppress signal peaks. During the specified time the totalizer does not respond to an erratic increase in the process variable.	Positive floating-point number	0 s

10.4.5 Configuring the local display

The **Display** wizard guides you systematically through all the parameters that can configured for configuring the local display.

Navigation
"Setup" menu → Display

Structure of the wizard



14 *"Display" wizard in the "Setup" menu*

Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Format display	Select how measured values are shown on the display.	▪ 1 value, max. size ▪ 1 bargraph + 1 value ▪ 2 values ▪ 1 value large + 2 values ▪ 4 values	1 value, max. size
Value 1 display	Select the measured value that is shown on the local display.	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Totalizer 1 ▪ Totalizer 2 ▪ Totalizer 3	Mass flow
0% bargraph value 1	Enter 0% value for bar graph display.	Signed floating-point number	0 kg/h
100% bargraph value 1	Enter 100% value for bar graph display.	Signed floating-point number	2.5 kg/h

Parameter	Description	Selection / User entry	Factory setting
Value 2 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None
Value 3 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None
0% bargraph value 3	Enter 0% value for bar graph display.	Signed floating-point number	0
100% bargraph value 3	Enter 100% value for bar graph display.	Signed floating-point number	0
Value 4 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None

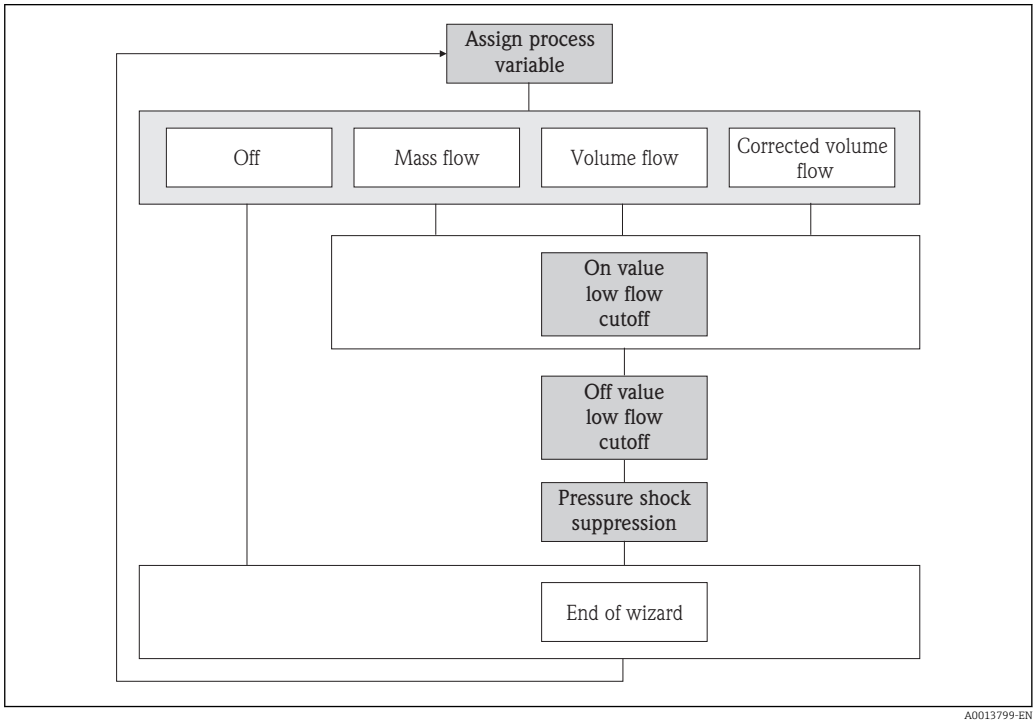
10.4.6 Configuring the low flow cut off

The **Low flow cut off** wizard guides you systematically through all the parameters that have to be set for configuring the low flow cut off.

Navigation

"Setup" menu → Low flow cut off

Structure of the wizard



15 "Low flow cut off" wizard in the "Setup" menu

Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Assign process variable	Select process variable for low flow cut off.	▪ Off ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow	Mass flow
On value low flow cutoff	Enter on value for low flow cut off.	Positive floating-point number	0 kg/h
Off value low flow cutoff	Enter off value for low flow cut off.	0 to 100.0 %	50 %
Pressure shock suppression	Enter time frame for signal suppression (= active pressure shock suppression).	0 to 100 s	0 s

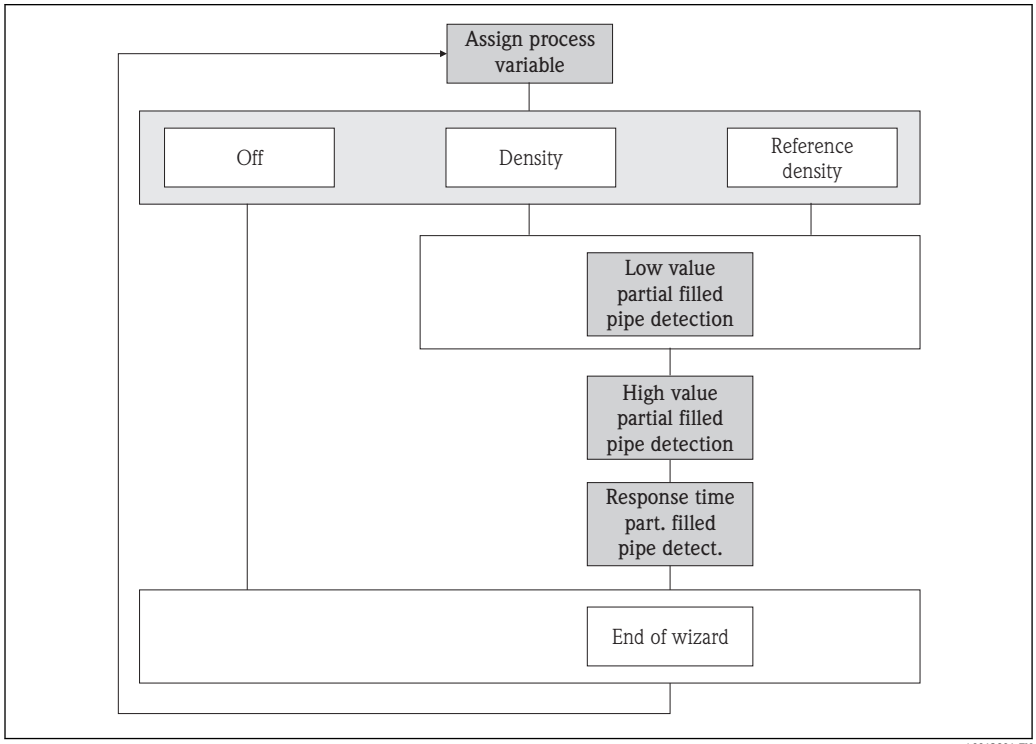
10.4.7 Configuring the partial filled pipe detection

The **Partial filled pipe detection** wizard guides you systematically through all parameters that have to be set for configuring the monitoring of the pipe filling.

Navigation

"Setup" menu → Partially filled pipe detection

Structure of the wizard



16 Wizard"Partially filled pipe detection" wizard in the "Setup" menu

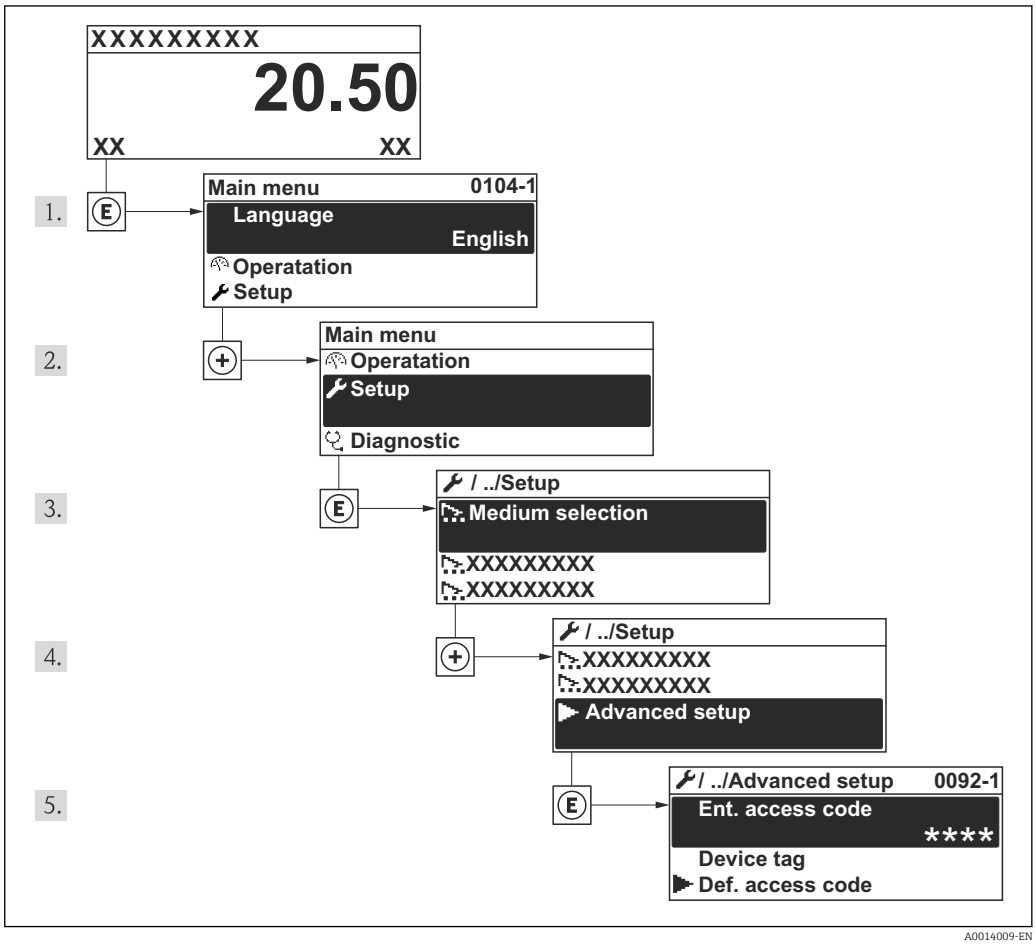
Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Assign process variable	Select process variable for partially filled pipe detection.	▪ Off ▪ Density ▪ Reference density	Off
Low value partial filled pipe detection	Enter lower limit value for deactivating partialy filled pipe detection.	Signed floating-point number	Country-dependent: ▪ 0.2 kg/l ▪ 12.5 lb/ft³
High value partial filled pipe detection	Enter upper limit value for deactivating partialy filled pipe detection.	Signed floating-point number	Country-dependent: ▪ 6 kg/l ▪ 374.6 lb/ft³
Response time part. filled pipe detect.	Enter time before diagnostic message is displayed for partially filled pipe detection.	0 to 100 s	1 s

10.5 Advanced settings

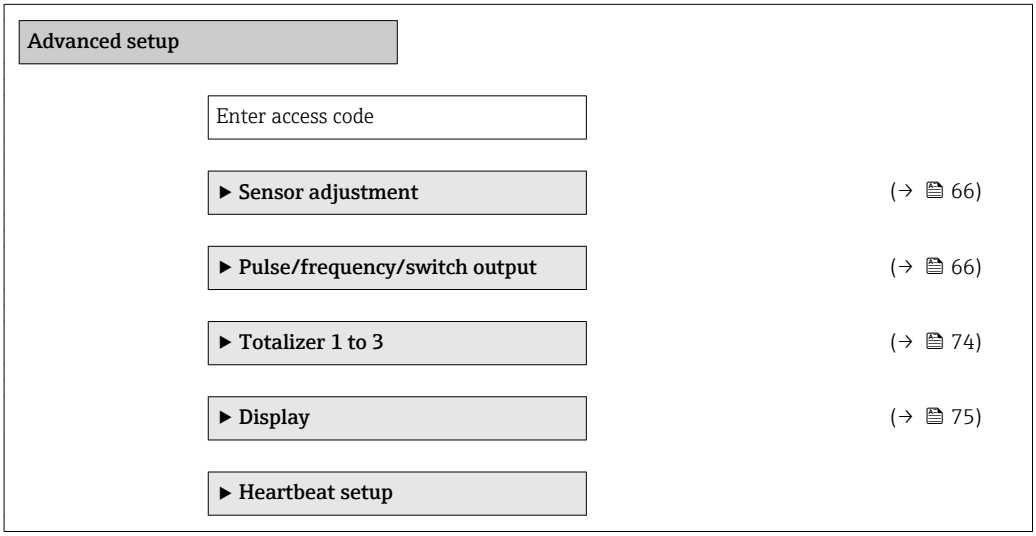
The **Advanced setup** submenu with its submenus contains parameters for specific settings.

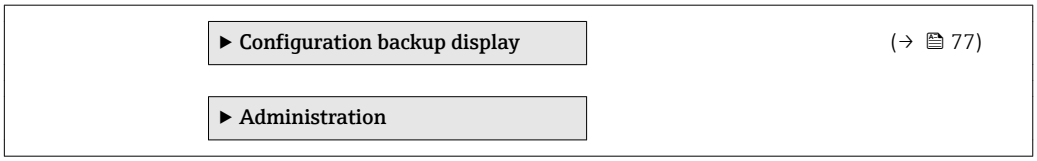
Navigation to the "Advanced setup" submenu



17 *Using the example of the local display*

Navigation
"Setup" menu → Advanced setup



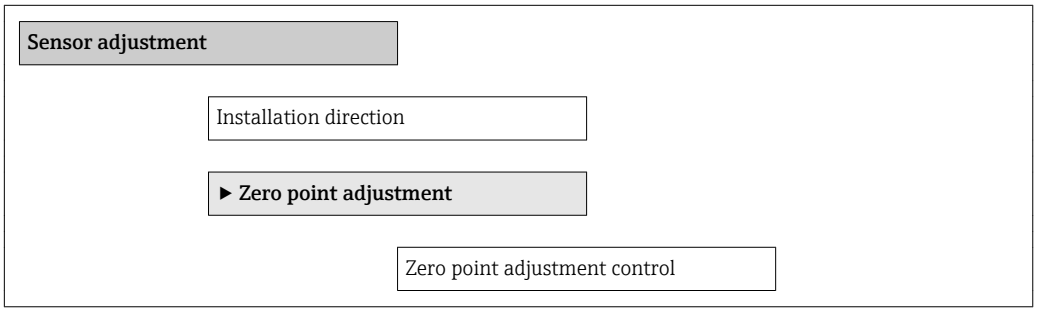


10.5.1 Carrying out a sensor adjustment

The **Sensor adjustment** submenu contains parameters that pertain to the functionality of the sensor.

Navigation

"Setup" menu → Advanced setup → Sensor adjustment



Parameter overview with brief description

Parameter	Description	Selection / User interface	Factory setting
Installation direction	Set sign of flow direction to match the direction of the arrow on the sensor.	▪ Flow in arrow direction ▪ Flow against arrow direction	Flow in arrow direction
Zero point adjustment control	Start zero point adjustment.	▪ Cancel ▪ Busy ▪ Zero point adjust failure ▪ Start	Cancel
Adjustment in progress		0 to 100 %	100 %

10.5.2 Configuring the pulse/frequency/switch output

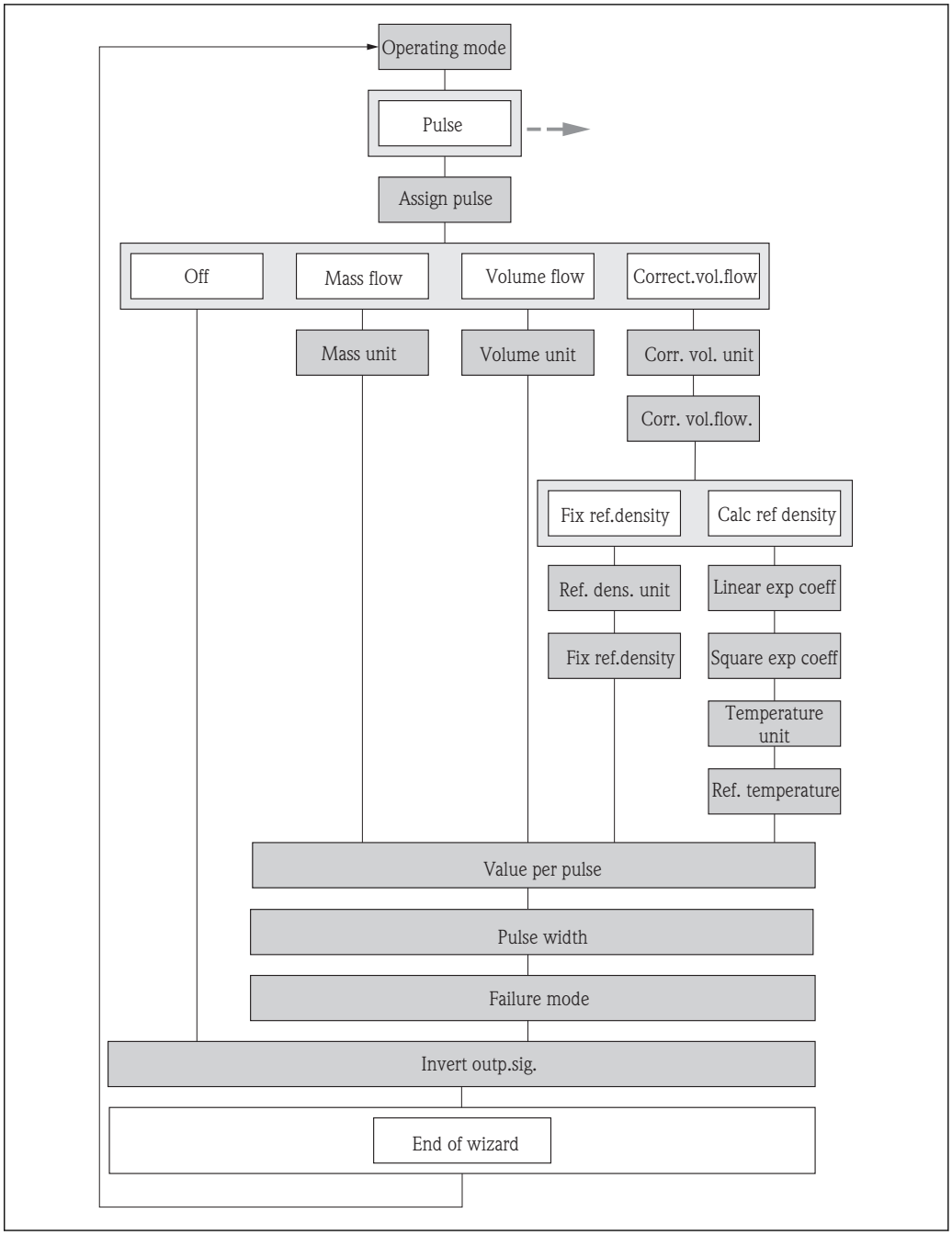
The **Pulse/frequency/switch output** wizard guides you systematically through all the parameters that can be set for configuring the selected output type.

Configuring the pulse output

Navigation

"Setup" menu → Advanced setup → Pulse/frequency/switch output → Operating mode

Structure of the wizard for the pulse output



18 *"Pulse/frequency/switch output" wizard in the "Setup" menu: "Pulse" operating mode*

Parameter overview with brief description

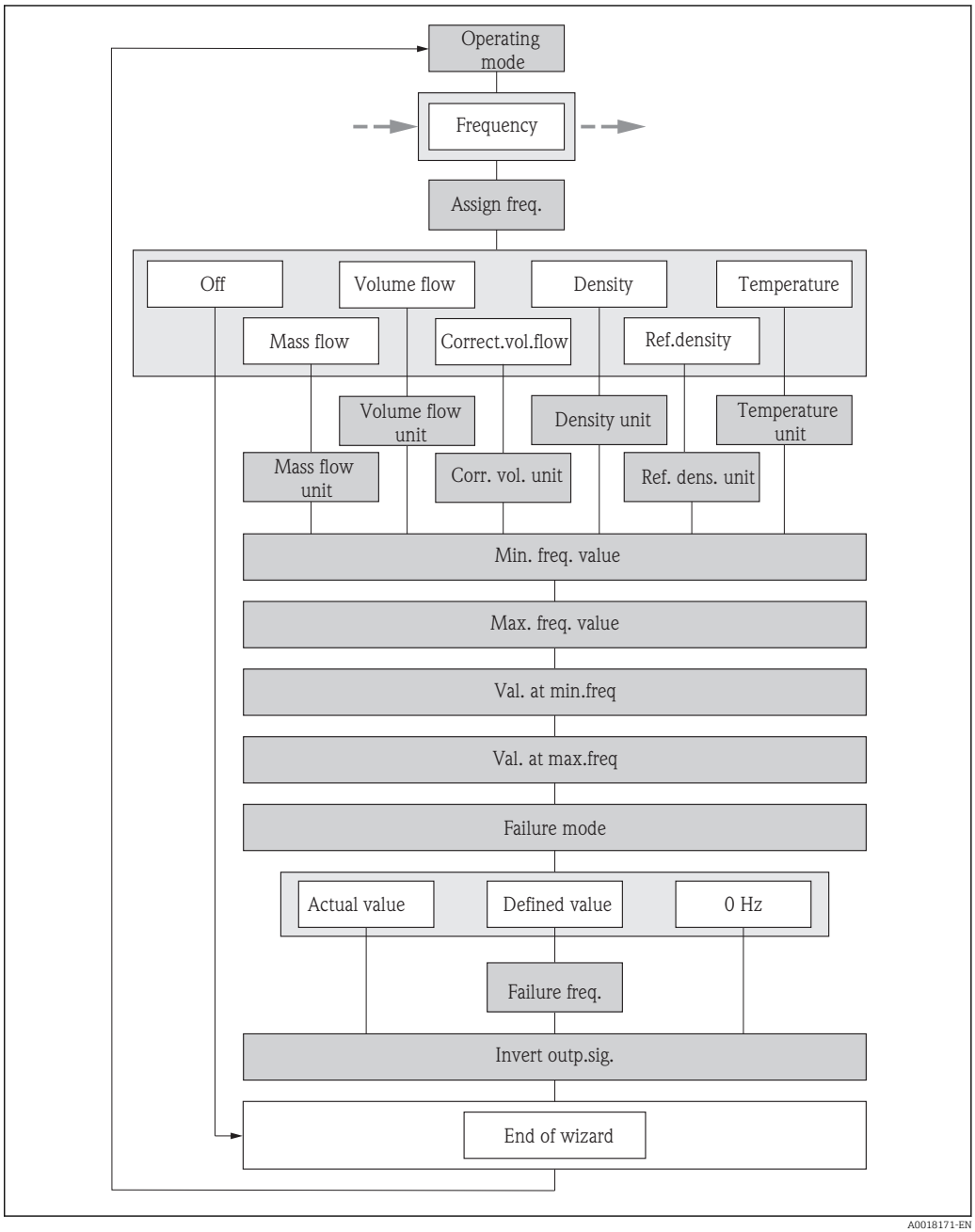
Parameter	Prerequsite	Description	Selection / User entry	Factory setting
Operating mode	–	Define the output as a pulse, frequency or switch output.	▪ Pulse ▪ Frequency ▪ Switch	Pulse
Assign pulse output	–	Select process variable for pulse output.	▪ Off ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow	Off

Parameter	Prerequsite	Description	Selection / User entry	Factory setting
Mass unit	–	Select mass unit. *Result* The selected unit is taken from: **Mass flow unit** parameter	Unit choose list	Country-specific: ▪ kg ▪ lb
Volume unit	–	Select volume unit. **Result** The selected unit is taken from: **Volume flow unit** parameter	Unit choose list	Country-specific: ▪ l ▪ gal (us)
Corrected volume unit	–	Select corrected volume unit. **Result** The selected unit is taken from: **Corrected volume flow unit** parameter	Unit choose list	Country-specific: ▪ Nl ▪ Sft³
Corrected volume flow calculation	–	Select reference density for calculating the corrected volume flow.	▪ Fixed reference density ▪ Calculated reference density	Calculated reference density
Reference density unit	–	Select reference density unit.	Unit choose list	kg/Nl
Fixed reference density	The following option is selected in the **Corrected volume flow calculation** parameter: Fixed reference density	Enter fixed value for reference density.	Positive floating-point number	1 kg/Nl
Linear expansion coefficient	The following option is selected in the **Corrected volume flow calculation** parameter: Calculated reference density	Enter linear, medium-specific expansion coefficient for calculating the reference density.	Signed floating-point number	0.0
Square expansion coefficient	–	For media with a non-linear expansion pattern: enter the quadratic, medium-specific expansion coefficient for calculating the reference density.	Signed floating-point number	0.0
Temperature unit	–	Select temperature unit. *Result* The selected unit applies for: ▪ Output ▪ Reference temperature ▪ Simulation process variable	Unit choose list	Country-specific: ▪ °C (Celsius) ▪ °F (Fahrenheit)
Reference temperature	The following option is selected in the **Corrected volume flow calculation** parameter: Calculated reference density	Enter reference temperature for calculating the reference density.	−273.15 to 99 999 °C	20 °C
Value per pulse	–	Enter measured value at which a pulse is output.	Signed floating-point number	0
Pulse width	–	Define time width of the output pulse.	5 to 2 000 ms	100 ms
Failure mode	–	Define output behavior in alarm condition.	▪ Actual value ▪ No pulses	No pulses
Invert output signal	–	Invert the output signal.	▪ No ▪ Yes	No

Configuring the frequency output

Navigation
"Setup" menu → Advanced setup → Pulse/frequency/switch output

Structure of the wizard for the frequency output



19 *"Pulse/frequency/switch output" wizard in the "Setup" menu: "Frequency" operating mode*

Parameter overview with brief description

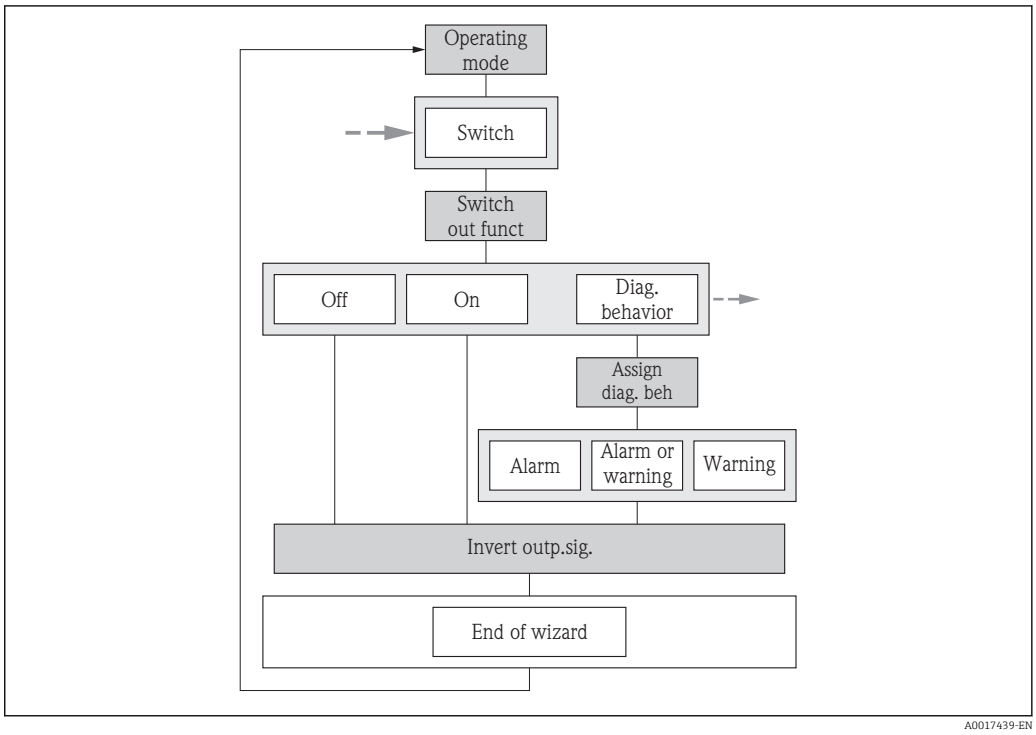
Parameter	Description	Selection / User entry	Factory setting
Operating mode	Define the output as a pulse, frequency or switch output.	▪ Pulse ▪ Frequency ▪ Switch	Pulse
Assign frequency output	Select process variable for frequency output.	▪ Off ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Carrier pipe temperature ▪ Electronic temperature ▪ Oscillation frequency ▪ Oscillation amplitude ▪ Oscillation damping ▪ Signal asymmetry	Off
Mass flow unit	Select mass flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ kg/h ▪ lb/min
Volume flow unit	Select volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ l/h ▪ gal/min (us)
Corrected volume flow unit	Select corrected volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ Nl/h ▪ Sft³/h
Density unit	Select density unit. *Result* The selected unit applies for: ▪ Output ▪ Simulation process variable ▪ Density adjustment (in **Expert** menu)	Unit choose list	Country-specific: ▪ kg/l ▪ lb/ft³
Reference density unit	Select reference density unit.	Unit choose list	kg/Nl
Temperature unit	Select temperature unit. *Result* The selected unit applies for: ▪ Output ▪ Reference temperature ▪ Simulation process variable	Unit choose list	Country-specific: ▪ °C (Celsius) ▪ °F (Fahrenheit)
Minimum frequency value	Enter minimum frequency.	0.0 to 1 000.0 Hz	0.0 Hz
Maximum frequency value	Enter maximum frequency.	0.0 to 1 000.0 Hz	1 000.0 Hz
Measuring value at minimum frequency	Enter measured value for minmum frequency.	Signed floating-point number	0
Measuring value at maximum frequency	Enter measured value for maximum frequency.	Signed floating-point number	0

Parameter	Description	Selection / User entry	Factory setting
Failure mode	Define output behavior in alarm condition.	▪ Actual value ▪ Defined value ▪ 0 Hz	0 Hz
Failure frequency	Enter frequency output value in alarm condition.	0.0 to 1 250.0 Hz	0.0 Hz
Invert output signal	Invert the output signal.	▪ No ▪ Yes	No

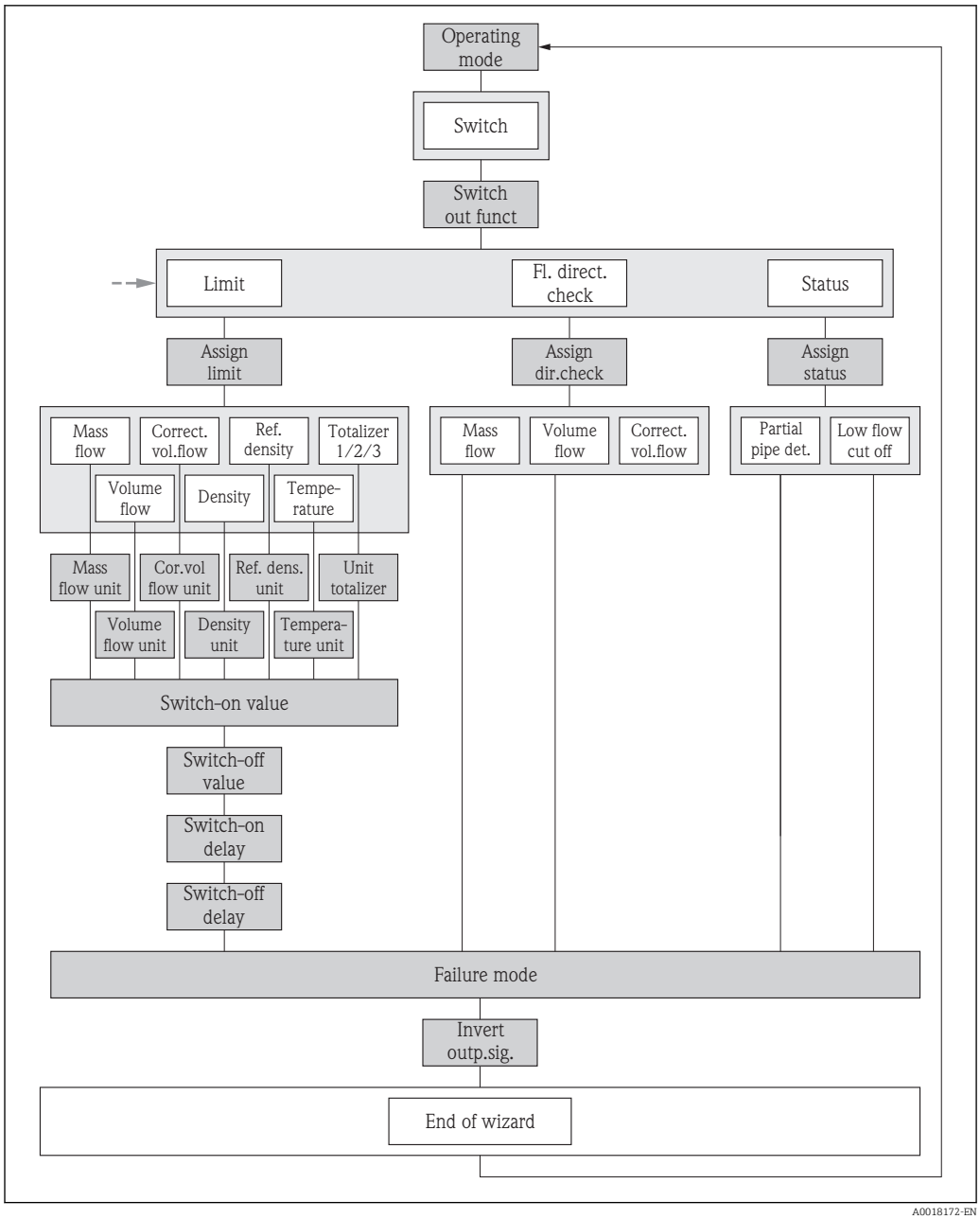
Configuring the switch output

Navigation
"Setup" menu → Advanced setup → Pulse/frequency/switch output

Structure of the wizard for the switch output



20 "Pulse/frequency/switch output" wizard in the "Setup" menu: "Switch" operating mode (Part 1)



21 "Pulse/frequency/switch output" wizard in the "Setup" menu: "Switch" operating mode (Part 2)

Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Operating mode	Define the output as a pulse, frequency or switch output.	▪ Pulse ▪ Frequency ▪ Switch	Pulse
Switch output function	Select function for switch output.	▪ Off ▪ On ▪ Diagnostic behavior ▪ Limit ▪ Flow direction check ▪ Status	Off
Assign diagnostic behavior	Select diagnostic behavior for switch output.	▪ Alarm ▪ Alarm or warning ▪ Warning	Alarm

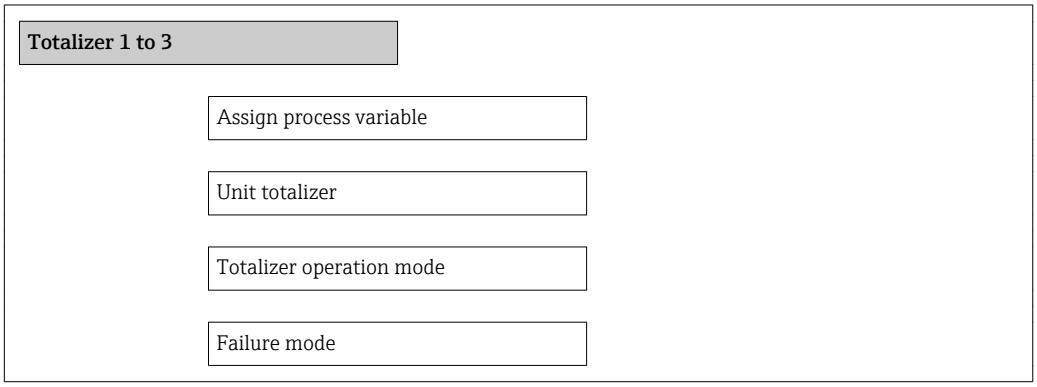
Parameter	Description	Selection / User entry	Factory setting
Assign limit	Select process variable for limit function.	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Totalizer 1 ▪ Totalizer 2 ▪ Totalizer 3	Mass flow
Assign flow direction check	Select process variable for flow direction monitoring.	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow	Mass flow
Assign status	Select device status for switch output.	▪ Partially filled pipe detection ▪ Low flow cut off ▪ Digital output 6	Partially filled pipe detection
Mass flow unit	Select mass flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ kg/h ▪ lb/min
Volume flow unit	Select volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ l/h ▪ gal/min (us)
Corrected volume flow unit	Select corrected volume flow unit. *Result* The selected unit applies for: ▪ Output ▪ Low flow cut off ▪ Simulation process variable	Unit choose list	Country-specific: ▪ Nl/h ▪ Sft³/h
Density unit	Select density unit. *Result* The selected unit applies for: ▪ Output ▪ Simulation process variable ▪ Density adjustment (in **Expert** menu)	Unit choose list	Country-specific: ▪ kg/l ▪ lb/ft³
Reference density unit	Select reference density unit.	Unit choose list	kg/Nl
Temperature unit	Select temperature unit. *Result* The selected unit applies for: ▪ Output ▪ Reference temperature ▪ Simulation process variable	Unit choose list	Country-specific: ▪ °C (Celsius) ▪ °F (Fahrenheit)
Unit totalizer	Select process variable totalizer unit.	Unit choose list	kg
Switch-on value	Enter measured value for the switch-on point.	Signed floating-point number	0 kg/h
Switch-off value	Enter measured value for the switch-off point.	Signed floating-point number	0 kg/h
Switch-on delay	Define delay for the switch-on of status output.	0.0 to 100.0 s	0.0 s
Switch-off delay	Define delay for the switch-off of status output.	0.0 to 100.0 s	0.0 s

Parameter	Description	Selection / User entry	Factory setting
Failure mode	Define output behavior in alarm condition.	▪ Actual status ▪ Open ▪ Closed	Open
Invert output signal	Invert the output signal.	▪ No ▪ Yes	No

10.5.3 Configuring the totalizer

In the **"Totalizer 1 to 3" submenu** the individual totalizers can be configured.

Navigation
"Setup" menu → Advanced setup → Totalizer 1 to 3



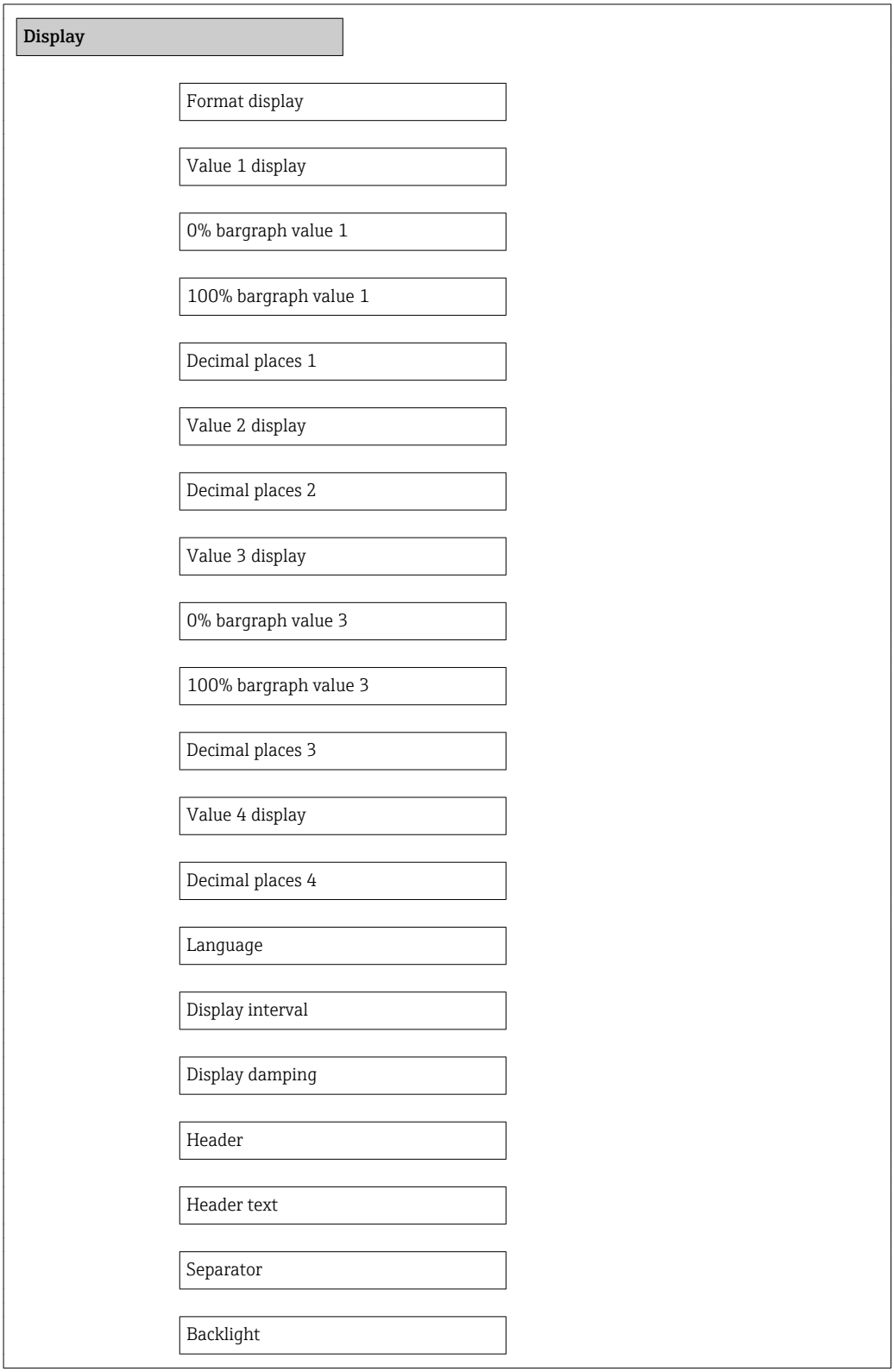
Parameter overview with brief description

Parameter	Description	Selection	Factory setting
Assign process variable	Select process variable for totalizer.	▪ Off ▪ Volume flow ▪ Mass flow ▪ Corrected volume flow	Mass flow
Unit totalizer	Select process variable totalizer unit.	Unit choose list	kg
Totalizer operation mode	Select totalizer calculation mode.	▪ Net flow total ▪ Forward flow total ▪ Reverse flow total	Net flow total
Failure mode	Define totalizer behavior in alarm condition.	▪ Stop ▪ Actual value ▪ Last valid value	Stop

10.5.4 Carrying out additional display configurations

In the **"Display" submenu** you can set all the parameters involved in the configuration of the local display.

Navigation
"Setup" menu → Advanced setup → Display



Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Format display	Select how measured values are shown on the display.	▪ 1 value, max. size ▪ 1 bargraph + 1 value ▪ 2 values ▪ 1 value large + 2 values ▪ 4 values	1 value, max. size
Value 1 display	Select the measured value that is shown on the local display.	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Totalizer 1 ▪ Totalizer 2 ▪ Totalizer 3	Mass flow
0% bargraph value 1	Enter 0% value for bar graph display.	Signed floating-point number	0 kg/h
100% bargraph value 1	Enter 100% value for bar graph display.	Signed floating-point number	2.5 kg/h
Decimal places 1	Select the number of decimal places for the display value.	▪ x ▪ x.x ▪ x.xx ▪ x.xxx ▪ x.xxxx	x.xx
Value 2 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None
Decimal places 2	Select the number of decimal places for the display value.	▪ x ▪ x.x ▪ x.xx ▪ x.xxx ▪ x.xxxx	x.xx
Value 3 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None
0% bargraph value 3	Enter 0% value for bar graph display.	Signed floating-point number	0
100% bargraph value 3	Enter 100% value for bar graph display.	Signed floating-point number	0
Decimal places 3	Select the number of decimal places for the display value.	▪ x ▪ x.x ▪ x.xx ▪ x.xxx ▪ x.xxxx	x.xx
Value 4 display	Select the measured value that is shown on the local display.	Picklist (see 1st display value)	None
Decimal places 4	Select the number of decimal places for the display value.	▪ x ▪ x.x ▪ x.xx ▪ x.xxx ▪ x.xxxx	x.xx

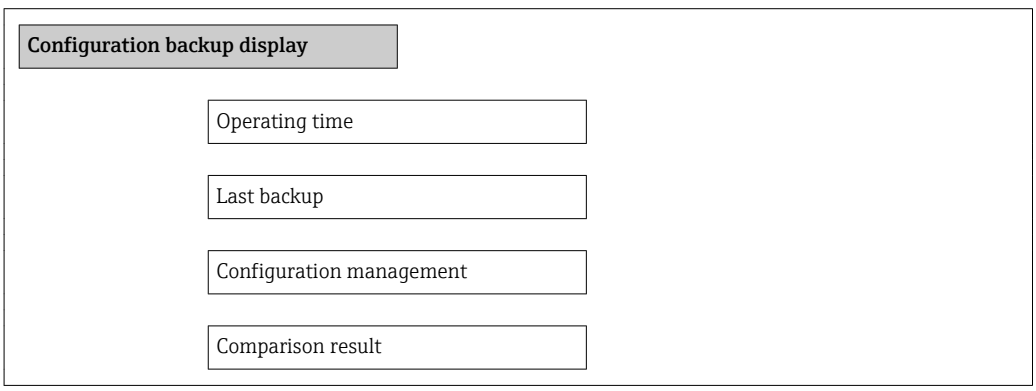
Parameter	Description	Selection / User entry	Factory setting
Language	Set display language.	▪ English ▪ Deutsch ▪ Français ▪ Español ▪ Italiano ▪ Nederlands ▪ Portuguesa ▪ Polski ▪ русский язык (Russian) ▪ Svenska ▪ Türkçe ▪ 中文 (Chinese) ▪ 日本語 (Japanese) ▪ 한국어 (Korean) ▪ العَرَبيّة (Arabic) ▪ Bahasa Indonesia ▪ ภาษาไทย (Thai) ▪ tiếng Việt (Vietnamese) ▪ čeština (Czech)	English (alternatively, the ordered language is preset in the device)
Display interval	Set time measured values are shown on display if display alternates between values.	1 to 10 s	5 s
Display damping	Set display reaction time to fluctuations in the measured value.	0.0 to 999.9 s	0.0 s
Header	Select header contents on local display.	▪ Device tag ▪ Free text	Device tag
Header text	Enter display header text.		----------
Separator	Select decimal separator for displaying numerical values.	▪ . ▪ ,	.
Backlight	Switch the local display backlight on and off.	▪ Disable ▪ Enable	Disable

10.6 Configuration management

After commissioning, you can save the current device configuration, copy it to another measuring point or restore the previous device configuration.

You can do so using the **"Configuration management" parameter** and the related options found in the **"Configuration backup display" submenu**.

Navigation
"Setup" menu → Advanced setup → Configuration backup display



Parameter overview with brief description

Parameter	Description	User interface / Selection	Factory setting
Operating time	Indicates how long the device has been in operation.	Days (d), hours (h), minutes (m), seconds (s)	–
Last backup	Indicates when the last data backup was saved to the display module.	Days (d), hours (h), minutes (m), seconds (s)	–
Configuration management	Select action for managing the device data in the display module.	▪ Cancel ▪ Execute backup ▪ Restore ▪ Duplicate ▪ Compare ▪ Clear backup data	Cancel
Comparison result	Comparison between present device data and display backup.	▪ Settings identical ▪ Settings not identical ▪ No backup available ▪ Backup settings corrupt ▪ Check not done ▪ Dataset incompatible	Check not done

10.6.1 Function scope of the ""Configuration management" parameter" parameter

Options	Description
Execute backup	The current device configuration is backed up from the integrated HistoROM to the device's display module. The backup copy includes the transmitter data of the device.
Restore	The last backup copy of the device configuration is restored from the display module to the device's integrated HistoROM. The backup copy includes the transmitter data of the device.
Duplicate	The transmitter configuration from another device is duplicated to the device using the display module.
Compare	The device configuration saved in the display module is compared with the current device configuration of the integrated HistoROM.
Clear backup data	The backup copy of the device configuration is deleted from the display module of the device.

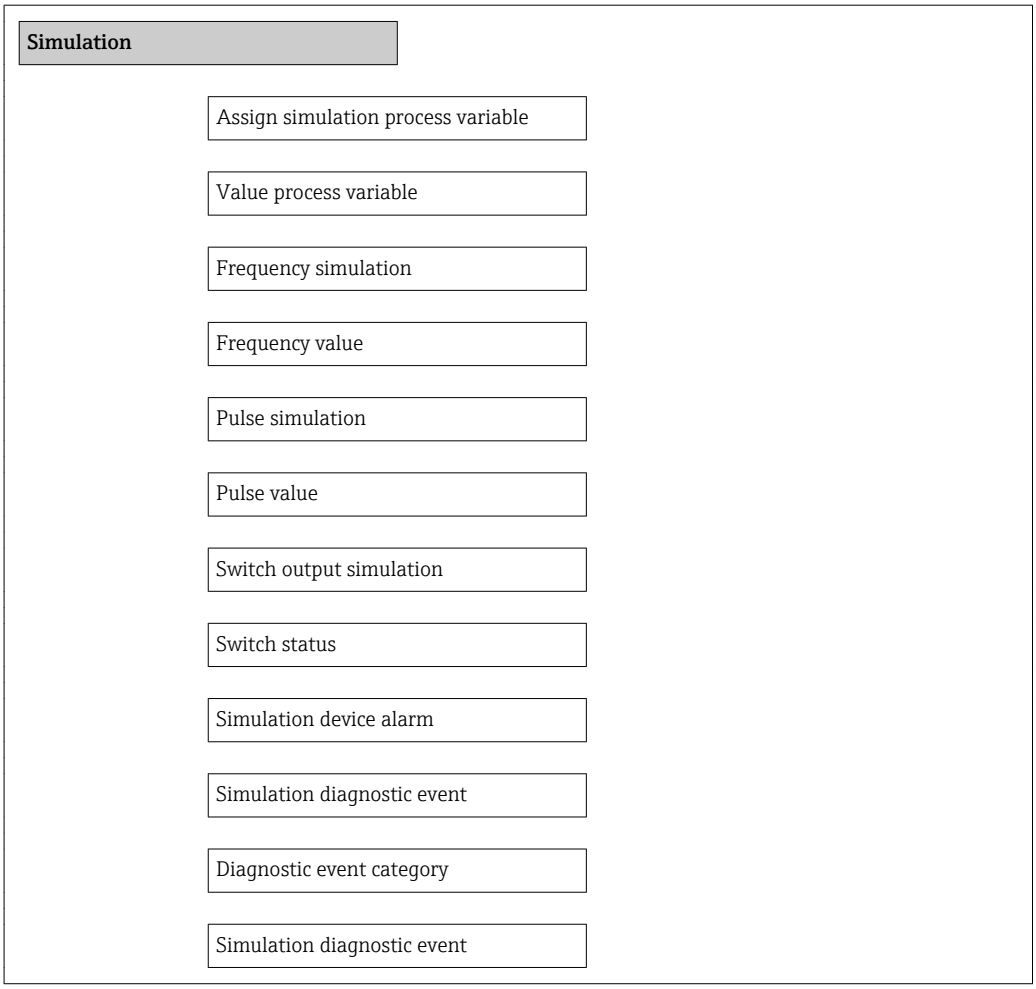
Integrated HistoROM
A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

While this action is in progress, the configuration cannot be edited via the local display and a message on the processing status appears on the display.

10.7 Simulation

The **"Simulation" submenu** enables you to simulate, without a real flow situation, various process variables in the process and the device alarm mode and to verify downstream signal chains (switching valves or closed-control loops).

Navigation
"Diagnostics" menu → Simulation



Parameter overview with brief description

Parameter	Prerequsite	Description	Selection / User entry	Factory setting
Assign simulation process variable	–	Select a process variable for the simulation process that is activated.	▪ Off ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature	Off
Value process variable	A process variable is selected in the **Assign simulation process variable** parameter.	Enter the simulation value for the selected process variable.	Signed floating-point number	0
Frequency simulation	–	Switch simulation of the frequency output on and off.	▪ Off ▪ On	Off
Frequency value	The **On** option is selected in the **Frequency output simulation** parameter.	Enter the frequency value for simulation.	0.0 to 1250.0 Hz	0.0 Hz
Pulse simulation	The **Down-count. val.** option is selected in the **Simulation pulse output** parameter.	Switch simulation of the pulse output on and off. If the **Fixed value** option is selected, the **Pulse width** parameter defines the pulse width of the pulses output.	▪ Off ▪ Fixed value ▪ Down-counting value	Off

Parameter	Prerequsite	Description	Selection / User entry	Factory setting
Pulse value	The **Down-count. val.** option is selected in the **Simulation pulse output** parameter.	Enter the number of pulses for simulation.	0 to 65 535	0
Switch output simulation	–	Switch simulation of switch output on and off.	▪ Off ▪ On	Off
Switch status	The **On** option is selected in the **Switch output simulation** parameter.	Select the status of the status output for the simulation.	▪ Open ▪ Closed	Open
Simulation device alarm	–	Switch the device alarm on and off.	▪ Off ▪ On	Off
Simulation diagnostic event	–	Switch simulation of the diagnostic event on and off. For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter.	▪ Off ▪ Picklist Diagnostic events (depends on the selected category)	Off
Diagnostic event category	–	Select the category of the diagnostic event.	▪ Sensor ▪ Electronics ▪ Configuration ▪ Process	Process
Simulation diagnostic event	–	Switch simulation of the diagnostic event on and off. For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter.	▪ Off ▪ Picklist Diagnostic events (depends on the selected category)	Off

10.8 Protecting settings from unauthorized access

The following options exist for protecting the configuration of the measuring device from unintentional modification after commissioning:
- Write protection via access code (→ 80)
- Write protection via write protection switch (→ 81)
- Write protection via keypad lock (→ 44)
- Write protection via block operation (→ 82)

10.8.1 Write protection via access code

With the customer-specific access code, the parameters for the measuring device configuration are write-protected and their values can no longer be changed via local operation.

Navigation
"Setup" menu → Advanced setup → Administration → Define access code

Structure of the submenu

Define access code	→	Define access code
		Confirm access code

Defining the access code via local display

1. Navigate to the **Enter access code** parameter.
2. Define a max. 4-digit numeric code as an access code.
3. Enter the access code again to confirm the code.
   ↳ The 🔒-symbol appears in front of all write-protected parameters.

The device automatically locks the write-protected parameters again if a key is not pressed for 10 minutes in the navigation and editing view. The device locks the write-protected parameters automatically after 60 s if the user skips back to the operational display mode from the navigation and editing view.

- If write access is activated via access code, it can be also be deactivated only via the access code (→ 📄 44).
- The user role with which the user is currently logged on via the local display is indicated by the **Access status display** parameter. Navigation path: "Operation" menu → Access status display.

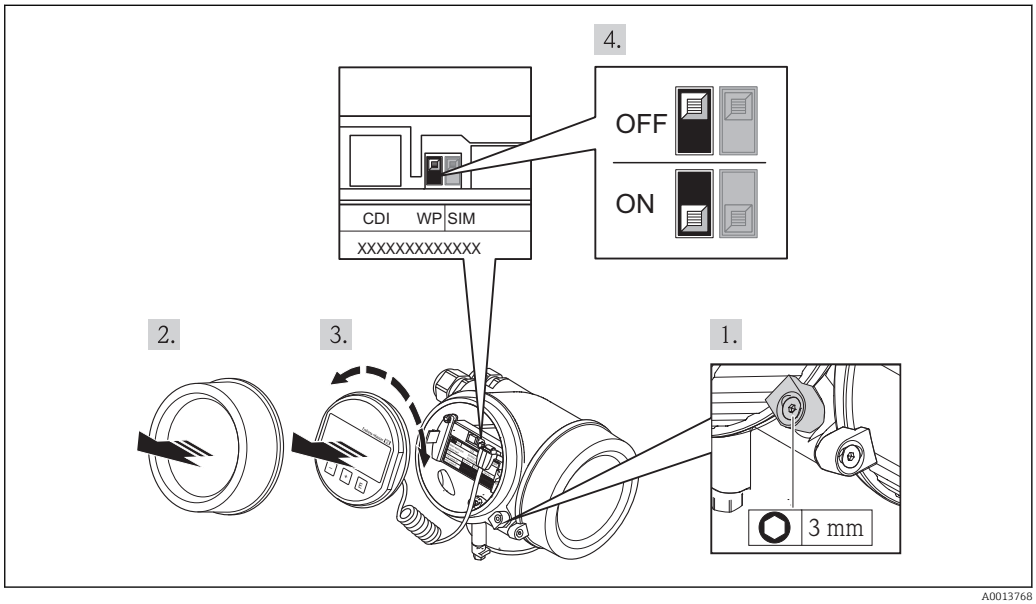
Parameters which can always be modified via the local display

Certain parameters that do not affect the measurement are excepted from write protection via the local display. Despite the defined access code, these parameters can always be modified even if the other parameters are locked.

10.8.2 Write protection via write protection switch

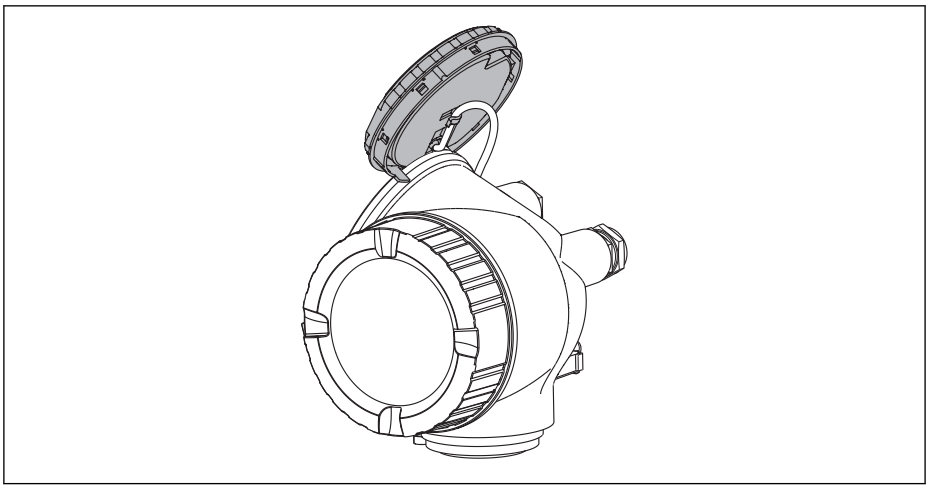
Unlike write protection via user-specific access code, this allows write access to the entire operating menu - other than the **"Contrast display" parameter** - to be locked.

The parameter values are now read only and cannot be edited any more (exception **"Contrast display" parameter**):
Via local display



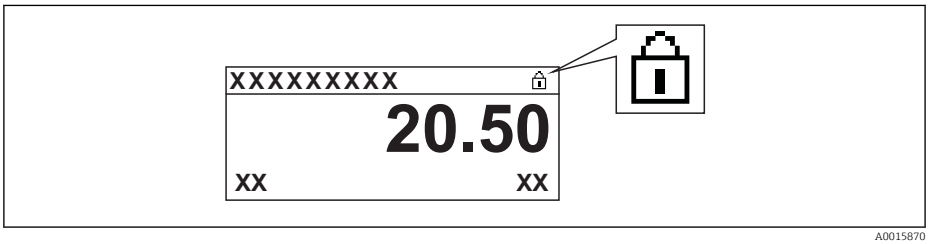
A0013768

1. Loosen the securing clamp.
2. Unscrew the electronics compartment cover.
3. Pull out the display module with a gentle rotational movement. To make it easier to access the lock switch, attach the display module to the edge of the electronics compartment.
   ↳ Display module is attached to the edge of the electronics compartment.



A0013909

4. Setting the write protection switch (WP) on the main electronics module to the ON position enables the hardware write protection. Setting the write protection switch (WP) on the main electronics module to the OFF position (factory setting) disables the hardware write protection.
   ↳ If hardware write protection is enabled, the **Hardware locked** option is displayed in the **Locking status** parameter (→ 86). In addition, on the local display the -symbol appears in front of the parameters in the header of the operational display and in the navigation view.



A0015870

   If hardware write protection is disabled, no option is displayed in the **Locking status** parameter (→ 86). On the local display, the -symbol disappears from in front of the parameters in the header of the operational display and in the navigation view.

5. Feed the cable into the gap between the housing and main electronics module and plug the display module into the electronics compartment in the desired direction until it engages.

6. Reverse the removal procedure to reassemble the transmitter.

10.8.3 Write protection via block operation

Locking via block operation:
- Block: **DISPLAY (TRDDISP)**; parameter: **Define access code**
- Block: **EXPERT_CONFIG (TRDEXP)**; parameter: **Enter access code**

10.9 Configuring the measuring device via FOUNDATION Fieldbus

10.9.1 Block configuration

Preparation

The correct Cff and device description files are needed for preparatory purposes.

1. Switch on the device.
2. Make a note of the **DEVICE_ID**.
3. Open the configuration program.
4. Load Cff and device description files into the host system or the configuration program.
5. Identify the device using the **DEVICE_ID**.
6. Assign the desired tag name to the device via the **Pd-tag/FF_PD_TAG** parameter.

Configuring the Resource Block

1. Open the Resource Block.
2. Disable the lock for device operation.
3. Change the block name (optional). Factory setting: RS-xxxxxxxxxxx (RB2)
4. Assign a description to the block via the **Description of the identification tag/ TAG_DESC** parameter.
5. Change other parameters as required.

Configuring the Transducer Blocks

The measurement and the display module are configured via the Transducer Blocks.

The basic procedure is the same for all Transducer Blocks.

1. Open the specific Transducer Block.
2. Change the block name (optional).
3. Set the block mode to **OOS** via the **Block mode/MODE_BLK** parameter, **TARGET** element.
4. Configure the device in accordance with the measuring task
5. Set the block mode to **Auto** via the **Block mode/MODE_BLK** parameter, **TARGET** element.

The block mode must be set to **Auto** to ensure the smooth operation of the device.

Configuring the Analog Input Blocks

1. Open the Analog Input Block.
2. Change the block name (optional).
3. Set the block mode to **OOS** via the **Block mode/MODE_BLK** parameter, **TARGET** element.
4. Via the **Channel/CHANNEL** parameter, select the process variable which should be used as the input value for the Analog Input Block.

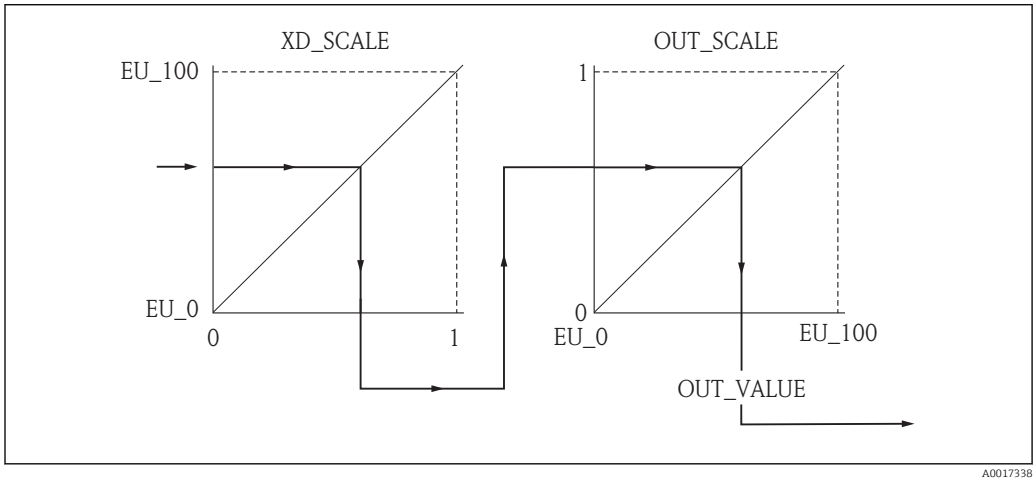
5. Via the **Transducer scale/XD_SCALE** parameter, select the desired unit and the block input range for the process variable. The selected unit must suit the selected process variable. If the process variable does not suit the unit, the **Block error/ BLOCK_ERR** parameter reports *Block Configuration Error* and the block mode cannot be set to **Auto**.
6. Via the **Linearization type/L_TYPE** parameter, select the type of linearization for the input variable (factory setting: **Direct**). In the **Direct** linearization mode, the settings for the **Transducer scale/XD_SCALE** and **Output scale/OUT_SCALE** parameters must be identical. If the values do not suit the units, the **Block error/ BLOCK_ERR** parameter reports *Block Configuration Error* and the block mode cannot be set to **Auto**.
7. Enter the alarms and critical alarm messages via the **High alarm limit/ HI_HI_LIM**, **High early warning limit/HI_LIM**, **Low alarm limit/ LO_LO_LIM** and **Low early warning limit/LO_LIM** parameters. The limit values entered must be within the value range specified for the **Output scale/OUT_SCALE** parameter.
8. Specify the alarm priorities via the **Priority for high limit value alarm/HI_HI_PRI**, **Priority for high early warning/HI_PRI**, **Priority for low limit value alarm/ LO_LO_PRI** and **Priority for low limit value early warning/LO_PRI** parameters. Reporting to the field host system only takes place with alarms with a priority greater than 2.
9. Set the block mode to **Auto** via the **Block mode/MODE_BLK** parameter, **TARGET** element. For this purpose, the Resource Block must also be set to the **Auto** block mode.

Additional configuration

1. Link the function blocks and output blocks.
2. After specifying the active LAS, download all the data and parameters to the field device.

10.9.2 Scaling the measured value in the Analog Input Block

The measured value can be scaled if the **L_TYPE = Indirect** linearization type has been selected in the Analog Input Block. **XD_SCALE** defines the input range with the **EU_0** and **EU_100** elements. This is mapped linearly to the output range, defined by **OUT_SCALE** also with the elements **EU_0** and **EU_100**.



22 Scaling the measured value in the Analog Input Block

- If you have selected the **Direct** mode in the **L_TYPE** parameter, you cannot change the values and units for **XD_SCALE** and **OUT_SCALE**.
- The **L_TYPE, XD_SCALE** and **OUT_SCALE** parameters can only be changed in the **OOS** block mode.

11 Operation

11.1 Reading device locking status

The write protection types that are currently active can be determined using the **Locking status** parameter.

Navigation
"Operation" menu → Locking status

Function scope of "Locking status" parameter

Options	Description
None	The access status displayed in **"Access status display" parameter** applies (→ 🖹 44). Only appears on local display.
Hardware locked	The DIP switch for hardware locking is activated on the main electronics module. This prevents write access to the parameters (→ 🖹 81).
Temporarily locked	Due to internal processing in the device (e.g. up-/downloading of data, reset), write access to the parameters is blocked for a short time. Once the internal processing has been completed, the parameters can be changed once again.

11.2 Adjusting the operating language

Information (→ 🖹 54)

For information on the operating languages supported by the measuring device (→ 🖹 134)

11.3 Configuring the display

- Basic settings for local display (→ 🖹 60)
- Advanced settings for local display (→ 🖹 75)

11.4 Reading measured values

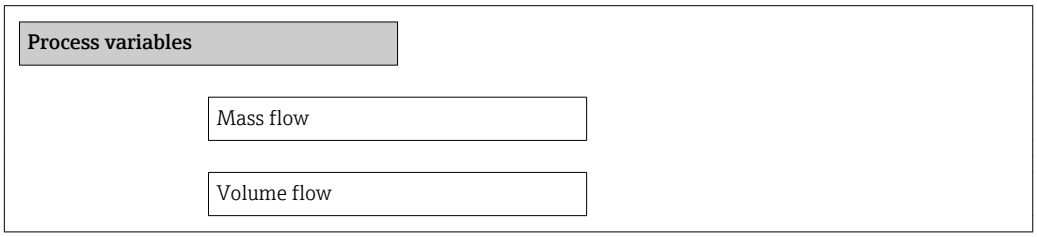
Using the **Measured values** submenu , it is possible to read all the measured values.

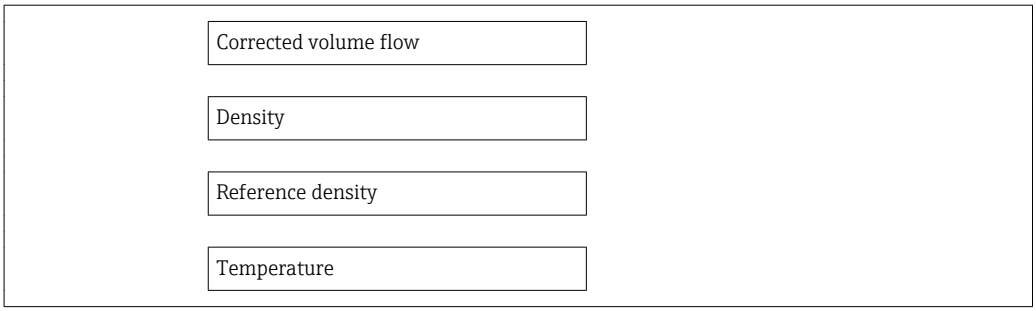
"Diagnostics" menu → Measured values

11.4.1 Process variables

The **Process variables** submenu contains all the parameters needed to display the current measured values for every process variable.

Navigation
"Diagnostics" menu → Measured values → Process variables





Parameter overview with brief description

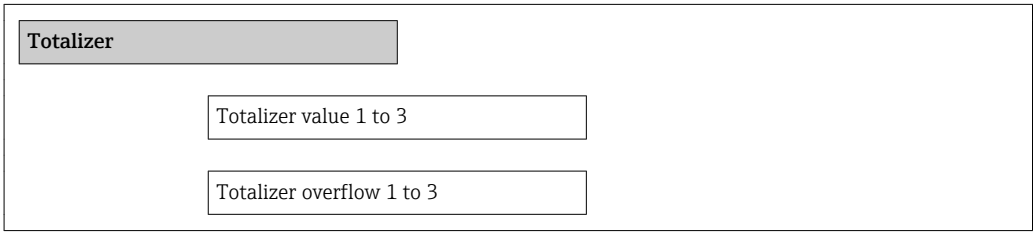
Parameter	Description	User interface
Mass flow	Displays the mass flow currently measured.	Signed floating-point number
Volume flow	Displays the volume flow currently measured.	Signed floating-point number
Corrected volume flow	Displays the corrected volume flow currently calculated.	Signed floating-point number
Density	Displays the density currently measured.	Positive floating-point number
Reference density	Displays the density currently measured at reference temperature.	Positive floating-point number
Temperature	Displays the medium temperature currently measured.	Positive floating-point number

11.4.2 Totalizer

The **"Totalizer" submenu** contains all the parameters needed to display the current measured values for every totalizer.

Navigation

"Diagnostics" menu → Measured values → Totalizer



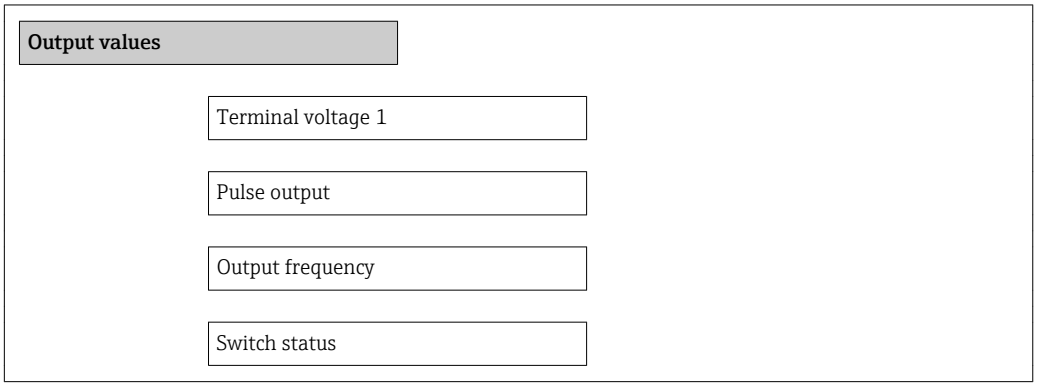
Parameter overview with brief description

Parameter	Prerequsite	Description	User interface	Factory setting
Totalizer value 1 to 3	In the **Assign process variable** parameter of **Totalizer 1 to 3** submenu one of the following options is selected: ▪ Volume flow ▪ Mass flow ▪ Corrected volume flow	Displays the current totalizer counter value.	Signed floating-point number	0 kg
Totalizer overflow 1 to 3	In the **Assign process variable** parameter of **Totalizer 1 to 3** submenu one of the following options is selected: ▪ Volume flow ▪ Mass flow ▪ Corrected volume flow	Displays the current totalizer overflow.	−32 000.0 to 32 000.0	0

11.4.3 Output values

The **"Output values" submenu** contains all the parameters needed to display the current measured values for every output.

Navigation
"Diagnostics" menu → Measured values → Output values



Parameter overview with brief description

Parameter	Description	User interface	Factory setting
Terminal voltage 1	Displays the current terminal voltage that is applied at the current output.	0.0 to 50.0 V	0 V
Pulse output	Displays the value currently measured for the pulse output.	Positive floating-point number	0 Hz
Output frequency	Displays the value currently measured for the frequency output.	0.0 to 1 250.0 Hz	0.0 Hz
Switch status	Displays the current switch output status.	▪ Open ▪ Closed	Open

11.5 Adapting the measuring device to the process conditions

The following are available for this purpose:
- Basic settings using the **Setup** menu(→ 54)
- Advanced settings using the **Advanced setup** submenu(→ 65)

11.6 Performing a totalizer reset

In the **Operation** submenu the totalizers are reset:
- Control Totalizer
- Reset all totalizers

Function scope of "Control Totalizer " parameter

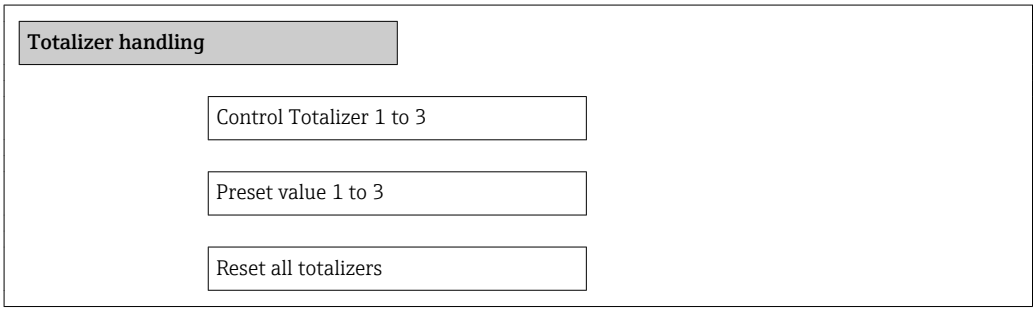
Options	Description
Totalize	The totalizer is started.
Stop	Totalizing is stopped.
Reset + hold	The totaling process is stopped and the totalizer is reset to 0.
Preset + hold	The totaling process is stopped and the totalizer is set to its defined start value from the **Preset value** parameter.

Options	Description
Reset + totalize	The totalizer is reset to 0 and the totaling process is restarted.
Preset + totalize	The totalizer is set to the defined start value in **Preset value** parameterand the totaling process is restarted.

Function scope of "Reset all totalizers" parameter

Options	Description
Reset + totalize	Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totalized.

Navigation
"Operation" menu → Operation



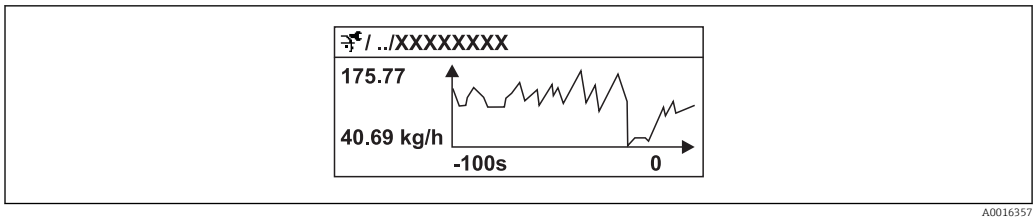
Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Control Totalizer 1 to 3	Control totalizer value.	▪ Totalize ▪ Reset + hold ▪ Preset + hold ▪ Reset + totalize ▪ Preset + totalize	Totalize
Preset value 1 to 3	Specify start value for totalizer.	Signed floating-point number	0 kg
Reset all totalizers	Reset all totalizers to 0 and start.	▪ Cancel ▪ Reset + totalize	Cancel

11.7 Showing data logging

In the device, the extended function of the HistoROM must be enabled (order option) so that the **"Data logging" submenu** appears. This contains all the parameters for the measured value history.

Function scope
- A total of 1000 measured values can be stored
- 4 logging channels
- Adjustable logging interval for data logging
- Display of the measured value trend for each logging channel in the form of a chart



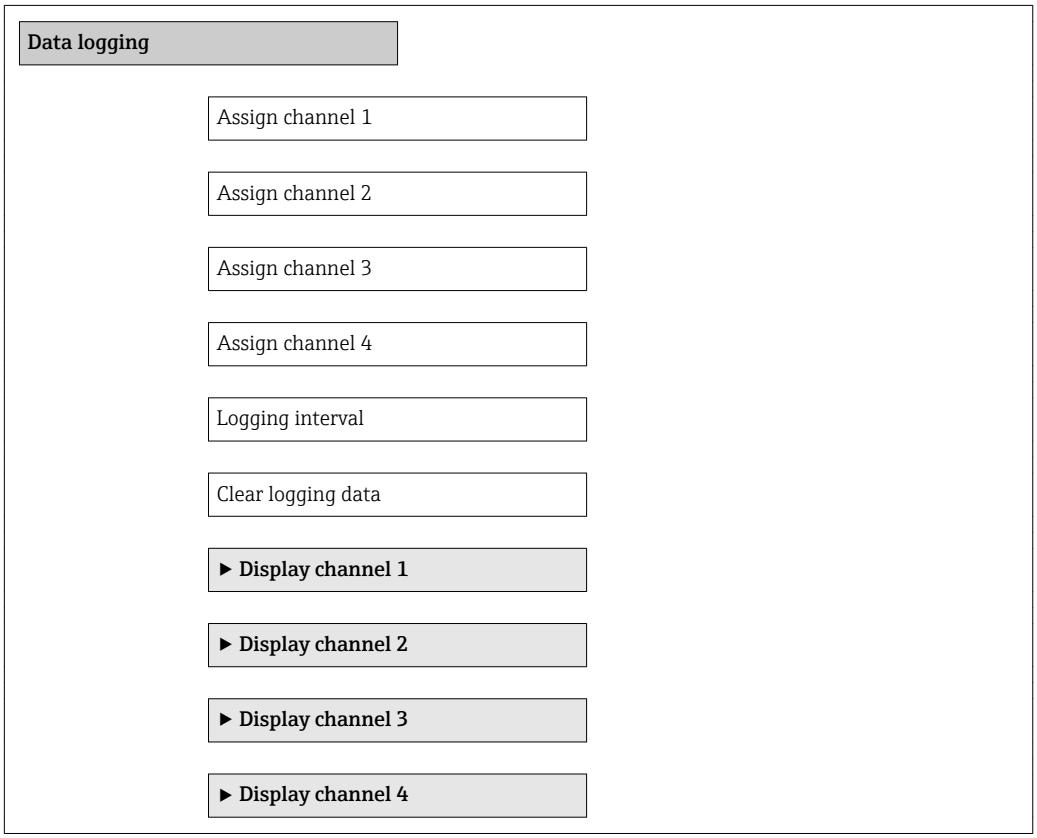
23 Chart of a measured value trend

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

If the length of the logging interval or the assignment of the process variables to the channels is changed, the content of the data logging is deleted.

Navigation
"Diagnostics" menu → Data logging

"Data logging" submenu



Parameter overview with brief description

Parameter	Description	Selection / User entry	Factory setting
Assign channel 1 to 4	Assign process variable to logging channel.	▪ Off ▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature ▪ Carrier pipe temperature ▪ Electronic temperature ▪ Oscillation frequency ▪ Oscillation amplitude ▪ Oscillation damping ▪ Signal asymmetry	Off
Logging interval	Define the logging interval for data logging. This value defines the time interval between the individual data points in the memory.	1.0 to 3 600.0 s	10.0 s
Clear logging data	Clear the entire logging data.	▪ Cancel ▪ Clear data	Cancel

12 Diagnostics and troubleshooting

12.1 General troubleshooting

For local display

Problem	Possible causes	Remedy
Local display dark and no output signals	Supply voltage does not match that specified on the nameplate.	Apply the correct supply voltage .
Local display dark and no output signals	Supply voltage has incorrect polarity.	Reverse polarity of supply voltage.
Local display dark and no output signals	No contact between connecting cables and terminals.	Check the connection of the cables and correct if necessary.
Local display dark and no output signals	Terminals are not plugged into the I/O electronics module correctly.	Check terminals.
Local display dark and no output signals	I/O electronics module is defective.	Order spare part (→ 🖹 110).
Local display is dark, but signal output is within the valid range	Display is set too bright or too dark.	▪ Set the display brighter by simultaneously pressing ⊞ + Ⓔ. ▪ Set the display darker by simultaneously pressing ⊟ + Ⓔ.
Local display is dark, but signal output is within the valid range	The cable of the display module is not plugged in correctly.	Insert the plug correctly into the main electronics module and display module.
Local display is dark, but signal output is within the valid range	Display module is defective.	Order spare part (→ 🖹 110).
Backlighting of local display is red	Diagnostic event with "Alarm" diagnostic behavior has occurred.	Take remedial measures (→ 🖹 101)
Text on local display appears in a foreign language and cannot be understood.	Incorrect operating language is configured.	1. Press ⊟ + ⊞ for 2 s ("home position"). 2. Press Ⓔ. 3. Set the desired language in the **Language** parameter.
Message on local display: "Communication Error" "Check Electronics"	Communication between the display module and the electronics is interrupted.	▪ Check the cable and the connector between the main electronics module and display module. ▪ Order spare part (→ 🖹 110).

For output signals

Problem	Possible causes	Remedy
Signal output outside the valid range	Main electronics module is defective.	Order spare part (→ 🖹 110).
Device shows correct value on local display, but signal output is incorrect, though in the valid range.	Configuration error	Check and correct parameter configuration.
Device measures incorrectly.	Configuration error or device is operated outside the application.	1. Check and correct parameter configuration. 2. Observe limit values specified in the "Technical Data".

For access

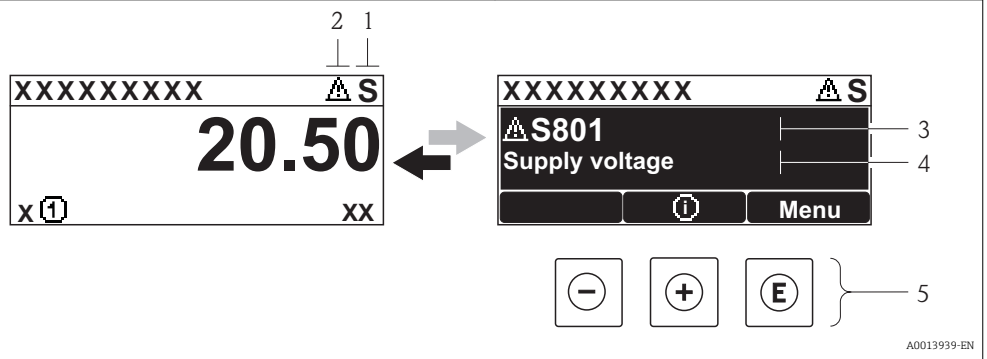
Problem	Possible causes	Remedy
No write access to parameters	Hardware write protection enabled	Set the write protection switch on the main electronics module to the OFF position (→ 🖹 81).
No write access to parameters	Current user role has limited access authorization	1. Check user role (→ 🖹 44). 2. Enter correct customer-specific access code (→ 🖹 44).
No connection via service interface	Incorrect configuration of USB interface on PC or driver not installed correctly.	Observe the documentation for the Commubox. FXA291: Document "Technical Information" TI00405C

12.2 Diagnostic information on local display

12.2.1 Diagnostic message

Faults detected by the self-monitoring system of the measuring device are displayed as a diagnostic message in alternation with the operational display.

Operational display in alarm condition	Diagnostic message



1 *Status signal*
2 *Diagnostic behavior*
3 *Diagnostic behavior with diagnostic code*
4 *Short text*
5 *Operating elements*

If two or more diagnostic events are pending simultaneously, only the message of the diagnostic event with the highest priority is shown.

Other diagnostic events that have occurred can be called up in the **Diagnostics** menu:
- Via parameters (→ 103)
- Via submenus (→ 104)

Status signals

The status signals provide information on the state and reliability of the device by categorizing the cause of the diagnostic information (diagnostic event).

The status signals are categorized according to VDI/VDE 2650 and NAMUR Recommendation NE 107: F = Failure, C = Function Check, S = Out of Specification, M = Maintenance Required

Symbol	Meaning
F A0013956	**Failure** A device error has occurred. The measured value is no longer valid.
C A0013959	**Function check** The device is in service mode (e.g. during a simulation).
S A0013958	**Out of specification** The device is operated: Outside its technical specification limits (e.g. outside the process temperature range)
M A0013957	**Maintenance required** Maintenance is required. The measured value remains valid.

Diagnostic behavior

Symbol	Meaning
 A0013961	**Alarm** ▪ Measurement is interrupted. ▪ Signal outputs and totalizers assume the defined alarm condition. ▪ A diagnostic message is generated. ▪ For local display with touch control: the background lighting changes to red.
 A0013962	**Warning** Measurement is resumed. The signal outputs and totalizers are not affected. A diagnostic message is generated.

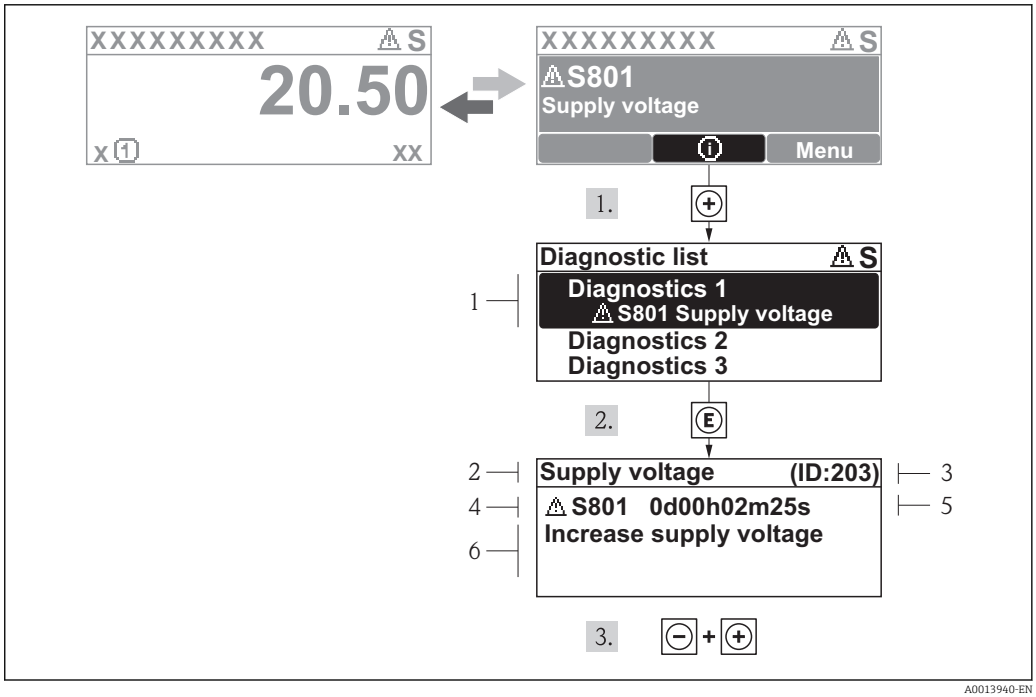
Diagnostic information

The fault can be identified using the diagnostic information. The short text helps you by providing information about the fault. In addition, the corresponding symbol for the diagnostic behavior is displayed in front of the diagnostic information on the local display.

Operating elements

Key	Meaning
 A0013970	**Plus key** *In a menu, submenu* Opens the message about the remedial measures.
 A0013952	**Enter key** *In a menu, submenu* Opens the operating menu.

12.2.2 Calling up remedial measures



24 Message for remedial measures

1 Diagnostic information
2 Short text
3 Service ID
4 Diagnostic behavior with diagnostic code
5 Operation time of occurrence
6 Remedial measures

The user is in the diagnostic message.

1. Press ⊞ (ⓘ symbol).
   ↳ The **Diagnostic list** submenu opens.
2. Select the desired diagnostic event with ⊞ or ⊟ and press Ⓔ .
   ↳ The message for the remedial measures for the selected diagnostic event opens.
3. Press ⊟ + ⊞ simultaneously.
   ↳ The message for the remedial measures closes.

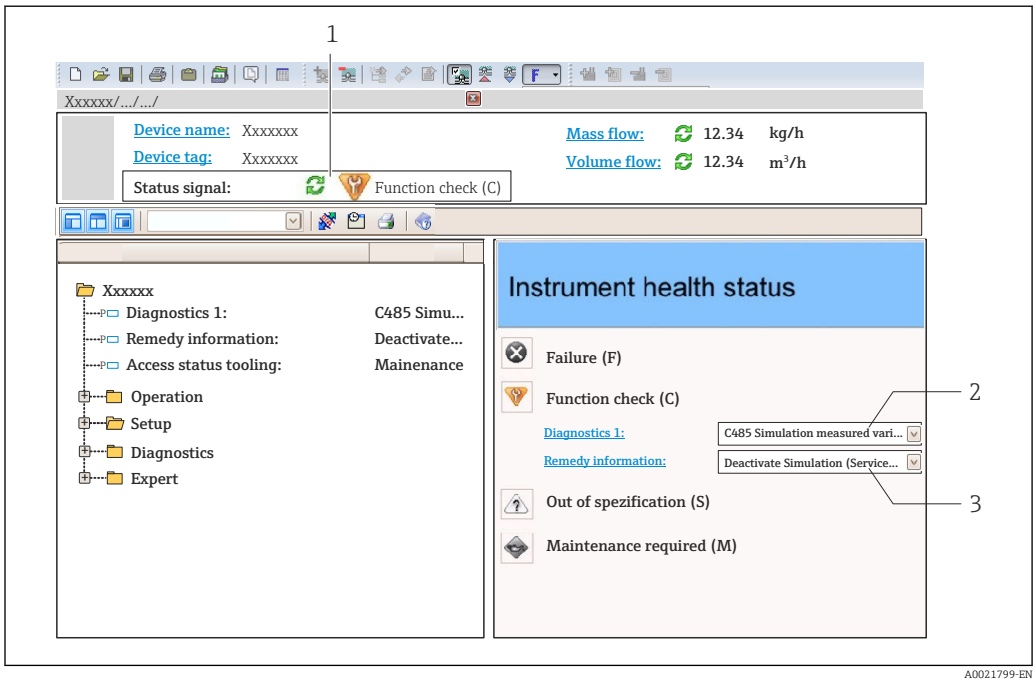
The user is in the **Diagnostics** menu at an entry for a diagnostics event, e.g. in the **Diagnostic list** submenu or the **Previous diagnostics** parameter.

1. Press Ⓔ.
   ↳ The message for the remedial measures for the selected diagnostic event opens.
2. Press ⊟ + ⊞ simultaneously.
   ↳ The message for the remedial measures closes.

12.3 Diagnostic information in FieldCare

12.3.1 Diagnostic options

Any faults detected by the measuring device are displayed on the home page of the operating tool once the connection has been established.



1 Status area with status signal (→ 🖹 94)
2 Diagnostic information (→ 🖹 95)
3 Remedial measures with Service ID

Furthermore, diagnostic events that have occurred can be viewed in the **Diagnostics** menu:
- Via parameters (→ 🖹 103)
- Via submenu (→ 🖹 104)

Diagnostic information

The fault can be identified using the diagnostic information. The short text helps you by providing information about the fault. In addition, the corresponding symbol for the diagnostic behavior is displayed in front of the diagnostic information on the local display.

12.3.2 Calling up remedy information

Remedy information is provided for every diagnostic event to ensure that problems can be rectified quickly:
- On the home page
  Remedy information is displayed in a separate field below the diagnostics information.
- In the **Diagnostics** menu
  Remedy information can be called up in the working area of the user interface.

The user is in the **Diagnostics** menu.

1. Call up the desired parameter.
2. On the right in the working area, mouse over the parameter.
   ↳ A tool tip with remedy information for the diagnostic event appears.

12.4 Adapting the diagnostic information

12.4.1 Adapting the diagnostic behavior

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for certain diagnostic information in the **Diagnostic behavior** submenu .

"Expert" menu → System → Diagnostic handling → Diagnostic behavior

12.4.2 Adapting the status signal

Each item of diagnostic information is assigned a specific status signal at the factory. The user can change this assignment for certain diagnostic information in the **Diagnostic event category** submenu .

"Expert" menu → Communication → Diagnostic event category

Available status signals

Configuration as per FOUNDATION Fieldbus Specification (FF912), in accordance with NAMUR NE107.

Symbol	Meaning
F A0013956	**Failure** A device error has occurred. The measured value is no longer valid.
C A0013959	**Function check** The device is in service mode (e.g. during a simulation).
S A0013958	**Out of specification** The device is operated: ▪ Outside its technical specification limits (e.g. outside the process temperature range) ▪ Outside of the configuration carried out by the user (e.g. maximum flow in parameter **20 mA value**)
M A0013957	**Maintenance required** Maintenance is required. The measured value remains valid.

Enabling the configuration of the diagnostic information according to FF912

For compatibility reasons, the configuration of the diagnostic information according to FOUNDATION Fieldbus Specification FF912 is not enabled when the device is delivered from the factory.

Enabling the configuration of the diagnostic information according to FOUNDATION Fieldbus Specification FF912

1. Open the Resource Block.
2. In the **FEATURE_SEL** parameter select the **Multi-bit Alarm Support** option.
   ↳ The diagnostic information can be configured according to FOUNDATION Fieldbus Specification FF912.

Grouping the diagnostic information

Diagnostic information is assigned to different groups. The groups differ depending on the weighting (severity) of the diagnostic event:
- Highest weighting
- High weighting
- Low weighting

Assignment of the diagnostic information (default value)

The assignment of the diagnostic information ex-works is indicated in the following tables.

The individual ranges of the diagnostic information can be assigned to another status signal (→ 99).

Some diagnostic information can be assigned individually, irrespective of their range (→ 100)

Overview and description of all diagnostic information (→ 101)

Weighting	Status signal (factory setting)	Allocation	Diagnostic information range
Highest weighting	Failure (F)	Sensor	F000 to 199
		Electronics	F200 to 399
		Configuration	F400 to 700
		Process	F800 to 999

Weighting	Status signal (factory setting)	Allocation	Diagnostic information range
High weighting	Function check (C)	Sensor	C000 to 199
		Electronics	C200 to 399
		Configuration	C400 to 700
		Process	C800 to 999

Weighting	Status signal (factory setting)	Allocation	Diagnostic information range
Low weighting	Out of specification (S)	Sensor	S000 to 199
		Electronics	S200 to 399
		Configuration	S400 to 700
		Process	S800 to 999

Weighting	Status signal (factory setting)	Allocation	Diagnostic information range
Low weighting	Maintenance required (M)	Sensor	M000 to 199
		Electronics	M200 to 399
		Configuration	M400 to 700
		Process	M800 to 999

Changing the assignment of the diagnostic information

The individual ranges of the diagnostic information can be assigned to another status signal. This is done by changing the bit in the associated parameter. The bit change always applies for the entire range of the diagnostic information.

Some diagnostic information can be assigned individually, irrespective of their range (→ 100)

Each status signal has a parameter in the Resource Block in which it is possible to define the diagnostic event for which the status signal is transmitted:
- Failure (F): **FD_FAIL_MAP** parameter
- Function check (C): **FD_CHECK_MAP** parameter
- Out of specification (S): **FD_OFFSPEC_MAP** parameter
- Maintenance required (M): **FD_MAINT_MAP** parameter

Structure and assignment of the parameters for the status signals (factory setting)

Weighting	Allocation	Bit	FD_FAIL_MAP	FD_CHECK_MAP	FD_OFFSPEC_MAP	FD_MAINT_MAP
Highest weighting	Sensor	31	**1**	0	0	0
	Electronics	30	**1**	0	0	0
	Configuration	29	**1**	0	0	0
	Process	28	**1**	0	0	0
High weighting	Sensor	27	0	**1**	0	0
	Electronics	26	0	**1**	0	0
	Configuration	25	0	**1**	0	0
	Process	24	0	**1**	0	0
Low weighting	Sensor	23	0	0	**1**	0
	Electronics	22	0	0	**1**	0
	Configuration	21	0	0	**1**	0
	Process	20	0	0	**1**	0
Low weighting	Sensor	19	0	0	0	**1**
	Electronics	18	0	0	0	**1**
	Configuration	17	0	0	0	**1**
	Process	16	0	0	0	**1**
Configurable range (→ 100)		15 to 1	0	0	0	0
Reserved (Fieldbus Foundation)		0	0	0	0	0

Changing the status signal for a range of diagnostic information

Example: The status signal for the diagnostic information for electronics with the "Highest weighting" is to be changed from failure (F) to function check (C).

1. Set the Resource Block to the **OOS** block mode.
2. Open the **FD_FAIL_MAP** parameter in the Resource Block.
3. Change **Bit 30** to **0** in the parameter.
4. Open the **FD_CHECK_MAP** parameter in the Resource Block.
5. Change **Bit 26** to **1** in the parameter.
   ↳ If a diagnostic event occurs for electronics with the "Highest weighting", the diagnostic information to this effect is displayed with the function check (C) status signal.
6. Set the Resource Block to the **AUTO** block mode.

NOTICE

No status signal is assigned to an area of diagnostic information.
If a diagnostic event occurs in this area, no status signal is transmitted to the control system.
▶ If you are changing the parameters, make sure that a status signal is assigned to all areas.

If FieldCare is used, the status signal is enabled/disabled using the check box of the particular parameter.

Assigning diagnostic information individually to a status signal

Some diagnostic information can be individually assigned to a status signal, irrespective of their original range.

Assigning diagnostic information individually to a status signal via FieldCare

1. In the FieldCare navigation window: **Expert** → **Communication** → **Field diagnostics** → **Alarm detection enable**
2. Select the desired diagnostic information from one of the fields **Configurable Area Bits 1** to **Configurable Area Bits 15**.
3. Press Enter to confirm.
4. When selecting the desired status signal (e.g. Offspec Map), also select the **Configurable Area Bit 1** to **Configurable Area Bit 15** that was assigned previously to the diagnostic information (step 2).
5. Press Enter to confirm.
   ↳ The diagnostic event of the selected diagnostic information is recorded.
6. In the FieldCare navigation window: **Expert** → **Communication** → **Field diagnostics** → **Alarm broadcast enable**
7. Select the desired diagnostic information from one of the fields **Configurable Area Bits 1** to **Configurable Area Bits 15**.
8. Press Enter to confirm.
9. When selecting the desired status signal (e.g. Offspec Map), also select the **Configurable Area Bit 1** to **Configurable Area Bit 15** that was assigned previously to the diagnostic information (step 7).
10. Press Enter to confirm.
    ↳ The selected diagnostic information is transmitted over the bus when a diagnostic event to this effect occurs.

A status signal change does not affect diagnostic information that already exists. The new status signal is only assigned if this error occurs again after the change has been made.

Transmitting the diagnostic information over the bus

Prioritizing diagnostic information for transmission over the bus

Diagnostic information is only transmitted over the bus if its priority is between 2 and 15. Priority 1-events are displayed but are not transmitted over the bus. Diagnostic information with priority 0 (default value) is ignored.

It is possible to change the priority individually for the different status signals. The following parameters of the Resource Block are used for this purpose:
- FD_FAIL_PRI
- FD_CHECK_PRI
- FD_OFFSPEC_PRI
- FD_MAINT_PRI

Suppressing certain diagnostic information

It is possible to suppress certain events during transmission over the bus using a mask. While these events are displayed they are not transmitted over the bus. This mask is in FieldCare **Expert** → **Communication** → **Field diagnostics** → **Alarm broadcast enable**. The mask is a negative selection mask, i.e. if a field is selected the associated diagnostic information is not transmitted over the bus.

12.5 Overview of diagnostic information

The amount of diagnostic information and the number of measured variables affected increase if the measuring device has one or more application packages.

Diagnostic number	Short text	Remedy instructions	Status signal [from the factory]	Diagnostic behavior [from the factory]
Diagnostic of sensor				
022	Sensor temperature	1.Change main electronic module 2.Change sensor	F	Alarm
046	Sensor limit exceeded	1. Inspect sensor 2. Check process condition	S	Warning [1)]
062	Sensor connection	1.Change main electronic module 2.Change sensor	F	Alarm
082	Data storage	1.Change main electronic module 2.Change sensor	F	Alarm
083	Memory content	1. Restart device 2. Restore S-Dat data 3. Change sensor	F	Alarm
140	Sensor signal	1.Check or change main electronics 2.Change sensor	S	Warning [1)]
Diagnostic of electronic				
242	Software incompatible	1. Check software 2. Flash or change main electronics module	F	Alarm
252	Modules incompatible	1. Check electronic modules 2. Change I/O or main electronic module	F	Alarm
261	Electronic modules	1. Restart device 2. Check electronic modules 3. Change I/O Modul or main electronics	F	Alarm

Diagnostic number	Short text	Remedy instructions	Status signal [from the factory]	Diagnostic behavior [from the factory]
262	Module connection	1. Check module connections 2. Change electronic modules	F	Alarm
270	Main electronic failure	Change main electronic module	F	Alarm
271	Main electronic failure	1. Restart device 2. Change main electronic module	F	Alarm
272	Main electronic failure	1. Restart device 2. Contact service	F	Alarm
273	Main electronic failure	1. Emergency operation via display 2. Change main electronics	F	Alarm
274	Main electronic failure	Unstable measurement 1. Change main electronics	S	Warning [1)]
275	I/O module failure	Change I/O module	F	Alarm
276	I/O module failure	1. Restart device 2. Change I/O module	F	Alarm
282	Data storage	1. Restart device 2. Contact service	F	Alarm
283	Memory content	1. Transfer data or reset device 2. Contact service	F	Alarm
302	Device verification active	Device verification active, please wait.	C	Warning
311	Electronic failure	1. Transfer data or reset device 2. Contact service	F	Alarm
311	Electronic failure	Maintenance required! 1. Do not perform reset 2. Contact service	M	Warning
362	Main electronic failure	1.Change main electronic module 2.Change sensor	F	Alarm
Diagnostic of configuration				
410	Data transfer	1. Check connection 2. Retry data transfer	F	Alarm
412	Processing Download	Download active, please wait	C	Warning
437	Configuration incompatible	1. Restart device 2. Contact service	F	Alarm
438	Dataset	1. Check data set file 2. Check device configuration 3. Up- and download new configuration	M	Warning
442	Frequency output	1. Check process 2. Check frequency output settings	S	Warning [1)]
443	Pulse output	1. Check process 2. Check pulse output settings	S	Warning [1)]
453	Flow override	Deactivate flow override	C	Warning
482	Block in OOS	Set Block in AUTO mode	F	Alarm
484	Simulation failure mode	Deactivate simulation	C	Alarm
485	Simulation measured variable	Deactivate simulation	C	Warning
492	Simulation frequency output	Deactivate simulation frequency output	C	Warning
493	Simulation pulse output	Deactivate simulation pulse output	C	Warning

Diagnostic number	Short text	Remedy instructions	Status signal [from the factory]	Diagnostic behavior [from the factory]
494	Switch output simulation	Deactivate simulation switch output	C	Warning
495	Simulation diagnostic event	Deactivate simulation	C	Warning
497	Simulation block output	Deactivate simulation	C	Warning
Diagnostic of process				
801	Supply voltage too low	Increase supply voltage	S	Warning [1)]
830	Sensor temperature too high	Reduce ambient temp. around the sensor housing	S	Warning [1)]
831	Sensor temperature too low	Increase ambient temp. around the sensor housing	S	Warning [1)]
832	Electronic temperature too high	Reduce ambient temperature	S	Warning [1)]
833	Electronic temperature too low	Increase ambient temperature	S	Warning [1)]
834	Process temperature too high	Reduce process temperature	S	Warning [1)]
835	Process temperature too low	Increase process temperature	S	Warning [1)]
842	Process limit	Low flow cut off active! 1. Check low flow cut off configuration	S	Warning
862	Partly filled pipe	1.Check for gas in process 2. Adjust detection limits	S	Warning [1)]
882	Input signal	1. Check input configuration 2. Check external device or process conditions	F	Alarm
910	Tubes not oscillating	1. Check process conditions 2. Increase supply 3. Check main electronic or sensor	F	Alarm
912	Medium inhomogeneous	1. Check process cond. 2. Increase system pressure	S	Warning [1)]
913	Medium unsuitable	1. Check process conditions 2. Increase supply 3. Check main electronic or sensor	S	Warning [1)]

1) Diagnostic status is changeable.

12.6 Pending diagnostic events

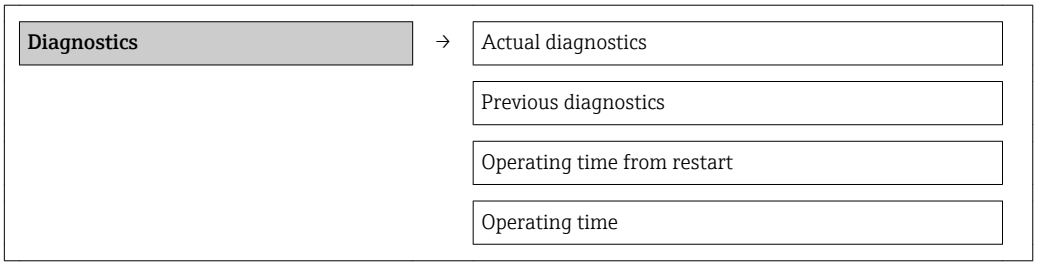
The **Diagnostics** menu allows the user to view the current diagnostic event and the previous diagnostic event separately.

To call up the measures to rectify a diagnostic event:
- Via local display (→ 95)
- Via "FieldCare" operating tool (→ 97)

Other pending diagnostic events can be displayed in the **Diagnostic list** submenu(→ 104)

Navigation
"Diagnostics" menu

Structure of the submenu



Parameter overview with brief description

Parameter	Prerequsite	Description	User interface	Factory setting
Actual diagnostics	1 diagnostic event has occurred.	Displays the current diagnostic event along with the diagnostic information. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.	Symbol for diagnostic behavior, diagnostic code and short message.	–
Previous diagnostics	2 diagnostic events have already occurred.	Displays the diagnostic event that occurred prior to the current diagnostic event along with the diagnostic information.	Symbol for diagnostic behavior, diagnostic code and short message.	–
Operating time from restart	–	Shows the time the device has been in operation since the last device restart.	Days (d), hours (h), minutes (m), seconds (s)	
Operating time	–	Indicates how long the device has been in operation.	Days (d), hours (h), minutes (m), seconds (s)	–

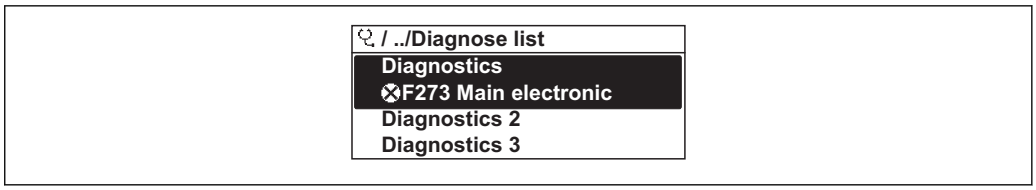
12.7 Diagnostic messages in the DIAGNOSTIC Transducer Block

- The **Actual Diagnostics** parameter shows the message with the highest priority.
- You can view a list of the active alarms via the **Diagnostics 1** to **Diagnostics 5** parameters. If more than 5 messages are pending, the messages with the highest priority are shown on the display.
- You can view the last alarm that is no longer active via the **Previous Diagnostics** parameter.

12.8 Diagnostic list

In the **Diagnostic list** submenu, up to 5 currently pending diagnostic events can be displayed along with the related diagnostic information. If more than 5 diagnostic events are pending, the events with the highest priority are shown on the display.

Navigation path
Diagnostics menu→**Diagnostic list** submenu

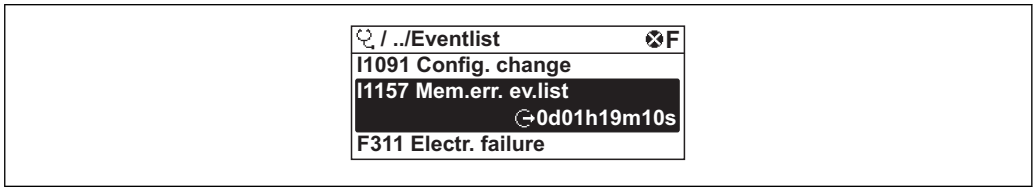


25 *Illustrated using the example of the local display*

To call up the measures to rectify a diagnostic event:
- Via local display (→ 95)
- Via "FieldCare" operating tool (→ 97)

12.9 Event logbook

12.9.1 Event history



26 *Illustrated using the example of the local display*

To call up the measures to rectify a diagnostic event:
- Via local display (→ 95)
- Via "FieldCare" operating tool (→ 97)

For filtering the displayed event messages (→ 105)

12.9.2 Filtering the event logbook

Using the **Filter options** parameter, you can define which category of event messages is displayed in the **Events list** submenu.

Navigation path
"Diagnostics" menu → Event logbook → Filter options

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

12.9.3 Overview of information events

Unlike a diagnostic event, an information event is displayed in the event logbook only and not in the diagnostic list.

Info number	Info name
I1000	--------(Device ok)
I1079	Sensor changed

Info number	Info name
I1089	Power on
I1090	Configuration reset
I1091	Configuration changed
I1092	Trend data deleted
I1110	Write protection switch changed
I1111	Density adjust failure
I1137	Electronic changed
I1151	History reset
I1154	Reset terminal voltage min/max
I1155	Reset electronic temperature
I1156	Memory error trend
I1157	Memory error event list
I1185	Display backup done
I1186	Restore via display done
I1187	Settings downloaded with display
I1188	Display data cleared
I1189	Backup compared
I1209	Density adjustment ok
I1221	Zero point adjust failure
I1222	Zero point adjustment ok
I1227	Sensor emergency mode activated
I1228	Sensor emergency mode failed
I1256	Display: access status changed
I1264	Safety sequence aborted
I1335	Firmware changed
I1397	Fieldbus: access status changed
I1398	CDI: access status changed
I1512	Download started
I1513	Download finished
I1514	Upload started
I1515	Upload finished

12.10 Resetting the measuring device

Using the **Device reset** parameter it is possible to reset the entire device configuration or some of the configuration to a defined state.

"Setup" menu → Advanced setup → Administration

Function scope of "Device reset" parameter

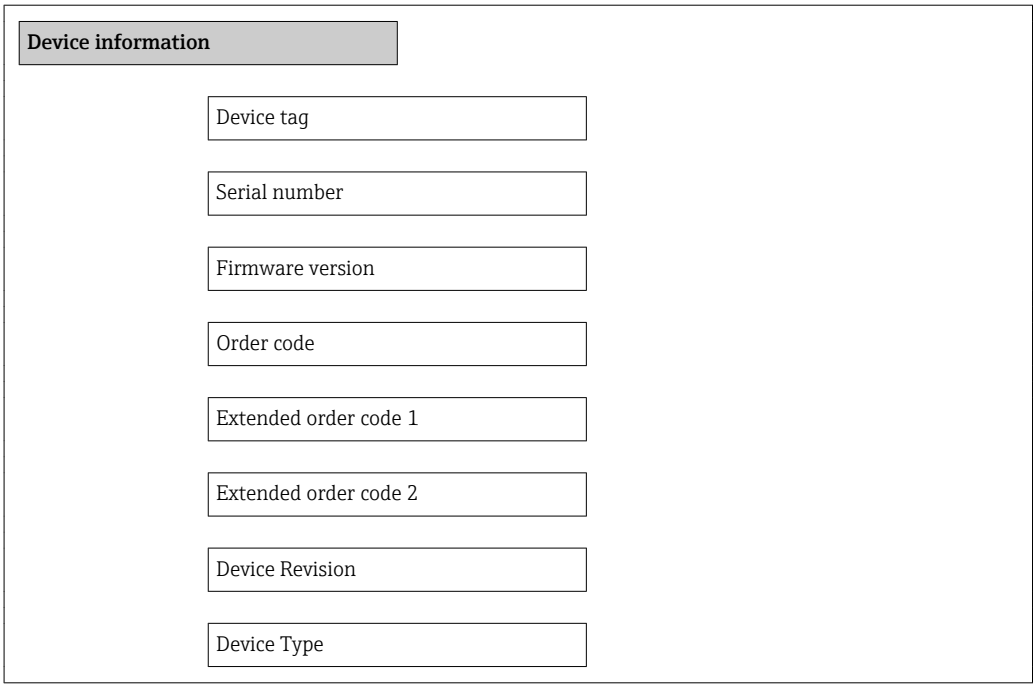
Options	Description
Cancel	No action is executed and the user exits the parameter.
To delivery settings	Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting. This option is not visible if no customer-specific settings have been ordered.
Restart device	The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.
History reset	Every parameter is reset to its factory setting.

12.11 Device information

The **Device information** submenu contains all the parameters that display different information for identifying the device.

Navigation

"Diagnostics" menu → Device information



Parameter overview with brief description

Parameter	Description	User entry / User interface	Factory setting
Device tag	Enter the name for the measuring point.	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /)	Promass 200
Serial number	Shows the serial number of the measuring device.	Max. 11-digit character string comprising letters and numbers.	

Parameter	Description	User entry / User interface	Factory setting
Firmware version	Shows the device firmware version installed.	Character string in the format: xx.yy.zz	
Order code	Extended order code 1.	Character string	–
Extended order code 1	Extended order code 2.	Character string	–
Extended order code 2	Extended order code 3.	Character string	–
Device Type	Displays the device type.	Promass 200	Promass 200
Device Revision	Manufacturer revision number associated with the resource - used by an interface device to locate the DD file for the resource.	0 to 255	1

12.12 Firmware history

Release date	Firmware version	Order code for "Firmware version"	Firmware changes	Documentation type	Documentation
07.2014	01.00.zz	Option **74**	Original firmware	Operating Instructions	BA01314D/06/EN/01.14

Flashing the firmware to the current version or to the previous version is possible via the service interface (CDI) (→ 132).

For the compatibility of the firmware version with the previous version, the installed device description files and operating tools, observe the information about the device in the "Manufacturer's information" document.

The manufacturer's information is available:
- In the Download Area of the Endress+Hauser Internet site: www.endress.com → Download
- Specify the following details:
  - Product root, e.g. 8E2B
  - Text search: Manufacturer's information
  - Search range: documentation

13 Maintenance

13.1 Maintenance tasks

No special maintenance work is required.

13.1.1 Exterior cleaning

When cleaning the exterior of measuring devices, always use cleaning agents that do not attack the surface of the housing or the seals.

13.1.2 Interior cleaning

Observe the following points for CIP and SIP cleaning:
- Use only cleaning agents to which the process-wetted materials are adequately resistant.
- Observe the maximum permitted medium temperature for the measuring device (→ 127).

13.2 Measuring and test equipment

Endress+Hauser offers a wide variety of measuring and test equipment, such as W@M or device tests.

Your Endress+Hauser Sales Center can provide detailed information on the services.

For a list of some of the measuring and test equipment, refer to the "Accessories" chapter of the "Technical Information" document for the device.

13.3 Endress+Hauser services

Endress+Hauser offers a wide variety of services for maintenance such as recalibration, maintenance service or device tests.

Your Endress+Hauser Sales Center can provide detailed information on the services.

14 Repair

14.1 General notes

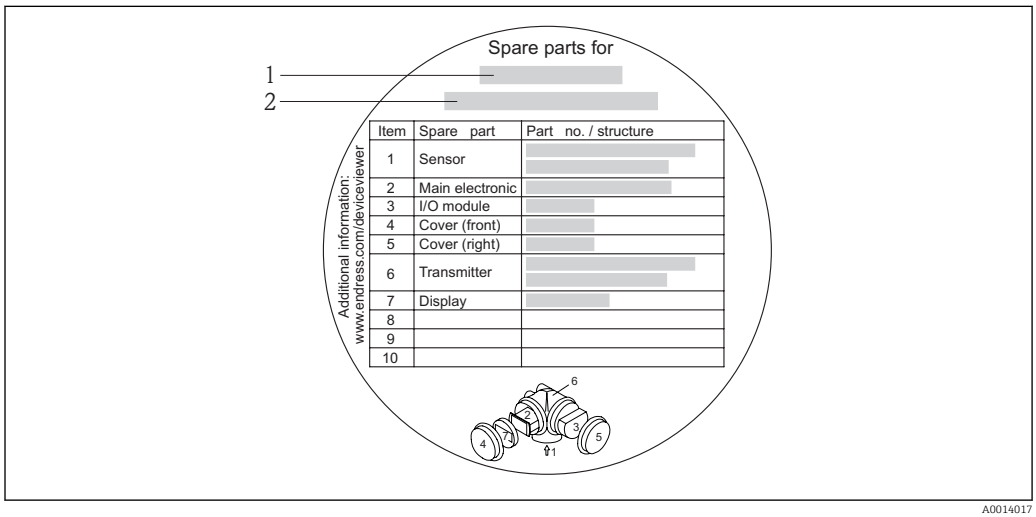
Repair and conversion concept
The Endress+Hauser repair and conversion concept provides for the following:
- The measuring devices have a modular design.
- Spare parts are grouped into logical kits with the associated Installation Instructions.
- Repairs are carried out by Endress+Hauser Service or by correspondingly trained customers.
- Certified devices can be converted into other certified devices by Endress+Hauser Service or at the factory only.

Notes for repair and conversion
For repair and modification of a measuring device, observe the following notes:
- Use only original Endress+Hauser spare parts.
- Carry out the repair according to the Installation Instructions.
- Observe the applicable standards, federal/national regulations, Ex documentation (XA) and certificates.
- Document every repair and each conversion and enter them into the *W@M* life cycle management database.

14.2 Spare parts

Some interchangeable measuring device components are listed on an overview sign in the connection compartment cover.

The spare part overview sign contains the following information:
- A list of the most important spare parts for the measuring device, including their ordering information.
- The URL for the *W@M Device Viewer* (www.endress.com/deviceviewer):
  All the spare parts for the measuring device, along with the order code, are listed here and can be ordered. If available, users can also download the associated Installation Instructions.



27 *Example for "Spare part overview sign" in connection compartment cover*

1 *Measuring device name*
2 *Measuring device serial number*

Measuring device serial number:
- Is located on the device nameplate and the spare part overview sign.
- Can be read out via the **Serial number** parameter in the **Device information** submenu (→ 107).

14.3 Endress+Hauser services

Contact your Endress+Hauser Sales Center for information on services and spare parts.

14.4 Return

The measuring device must be returned if repairs or a factory calibration are required, or if the wrong measuring device has been ordered or delivered. According to legal regulations, Endress+Hauser, as an ISO-certified company, is required to follow certain procedures when handling returned products that are in contact with medium.

To ensure swift, safe and professional device returns, please read the return procedures and conditions on the Endress+Hauser website at
www.services.endress.com/return-material

14.5 Disposal

14.5.1 Removing the measuring device

1. Switch off the device.
2. **WARNING!** Danger to persons from process conditions. Beware of hazardous process conditions such as pressure in the measuring device, high temperatures or aggressive fluids.
   Carry out the mounting and connection steps from the chapters "Mounting the measuring device" and "Connecting the measuring device" in the logically reverse sequence. Observe the safety instructions.

14.5.2 Disposing of the measuring device

⚠ WARNING

Danger to personnel and environment from fluids that are hazardous to health.

- ▶ Ensure that the measuring device and all cavities are free of fluid residues that are hazardous to health or the environment, e.g. substances that have permeated into crevices or diffused through plastic.

Observe the following notes during disposal:
- Observe valid federal/national regulations.
- Ensure proper separation and reuse of the device components.

15 Accessories

Various accessories, which can be ordered with the device or subsequently from Endress +Hauser, are available for the device. Detailed information on the order code in question is available from your local Endress+Hauser sales center or on the product page of the Endress+Hauser website: www.endress.com.

15.1 Device-specific accessories

15.1.1 For the transmitter

Accessories	Description
Promass 200 transmitter	Transmitter for replacement or for stock. Use the order code to define the following specifications: ▪ Approvals ▪ Output ▪ Display / operation ▪ Housing ▪ Software For details, see Installation Instructions EA00104D
Remote display FHX50	FHX50 housing to accommodate a display module (→ 133). ▪ FHX50 housing suitable for: – SD02 display module (push buttons) – SD03 display module (touch control) ▪ Housing material: – Plastic PBT – 316L ▪ Length of connecting cable: up to max. 60 m (196 ft) (cable lengths available for order: 5 m (16 ft), 10 m (32 ft), 20 m (65 ft), 30 m (98 ft)) The measuring device can be ordered with the FHX50 housing and a display module. The following options must be selected in the separate order codes: ▪ Order code for measuring device, feature 030: Option L or M "Prepared for FHX50 display" ▪ Order code for FHX50 housing, feature 050 (device version): Option A "Prepared for FHX50 display" ▪ Order code for FHX50 housing, depends on the desired display module in feature 020 (display, operation): – Option C: for an SD02 display module (push buttons) – Option E: for an SD03 display module (touch control) The FHX50 housing can also be ordered as a retrofit kit. The measuring device display module is used in the FHX50 housing. The following options must be selected in the order code for the FHX50 housing: ▪ Feature 050 (measuring device version): option B "Not prepared for FHX50 display" ▪ Feature 020 (display, operation): option A "None, existing displayed used" For details, see Special Documentation SD01007F
Overvoltage protection for 2-wire devices	Ideally, the overvoltage protection module should be ordered directly with the device. See product structure, characteristic 610 "Accessory mounted", option NA "Overvoltage protection". Separate order necessary only if retrofitting. ▪ OVP10: For 1-channel devices (characteristic 020, option A): ▪ OVP20: For 2-channel devices (characteristic 020, options B, C, E or G) For details, see Special Documentation SD01090F.
Weather protection cover	Is used to protect the measuring device from the effects of the weather: e.g. rainwater, excess heating from direct sunlight or extreme cold in winter. For details, see Special Documentation SD00333F

15.1.2 For the sensor

Accessories	Description
Heating jacket	Is used to stabilize the temperature of the fluids in the sensor. Water, water vapor and other non-corrosive liquids are permitted for use as fluids. If using oil as a heating medium, please consult with Endress+Hauser. Heating jackets cannot be used with sensors fitted with a rupture disk. For details, see Operating Instructions BA00099D

15.2 Communication-specific accessories

Accessories	Description
Commubox FXA291	Connects Endress+Hauser field devices with a CDI interface (= Endress+Hauser Common Data Interface) and the USB port of a computer or laptop. For details, see the "Technical Information" document TI405C/07
Field Xpert SFX350	Field Xpert SFX350 is a mobile computer for commissioning and maintenance. It enables efficient device configuration and diagnostics for HART and FOUNDATION Fieldbus devices in the **non-Ex area**. For details, see Operating Instructions BA01202S
Field Xpert SFX370	Field Xpert SFX370 is a mobile computer for commissioning and maintenance. It enables efficient device configuration and diagnostics for HART and FOUNDATION Fieldbus devices in the **non-Ex area** and the **Ex area**. For details, see Operating Instructions BA01202S

15.3 Service-specific accessories

Accessories	Description
Applicator	Software for selecting and sizing Endress+Hauser measuring devices: ▪ Calculation of all the necessary data for identifying the optimum flowmeter: e.g. nominal diameter, pressure loss, accuracy or process connections. ▪ Graphic illustration of the calculation results Administration, documentation and access to all project-related data and parameters over the entire life cycle of a project. Applicator is available: ▪ Via the Internet: https://wapps.endress.com/applicator ▪ On CD-ROM for local PC installation.
W@M	Life cycle management for your plant W@M supports you with a wide range of software applications over the entire process: from planning and procurement, to the installation, commissioning and operation of the measuring devices. All the relevant device information, such as the device status, spare parts and device-specific documentation, is available for every device over the entire life cycle. The application already contains the data of your Endress+Hauser device. Endress +Hauser also takes care of maintaining and updating the data records. W@M is available: ▪ Via the Internet: www.endress.com/lifecyclemanagement ▪ On CD-ROM for local PC installation.
FieldCare	FDT-based plant asset management tool from Endress+Hauser. It can configure all smart field units in your system and helps you manage them. By using the status information, it is also a simple but effective way of checking their status and condition. For details, see Operating Instructions BA00027S and BA00059S

15.4 System components

Accessories	Description
Memograph M graphic display recorder	The Memograph M graphic display recorder provides information on all relevant measured variables. Measured values are recorded correctly, limit values are monitored and measuring points analyzed. The data are stored in the 256 MB internal memory and also on a SD card or USB stick. For details, see "Technical Information" TI00133R and Operating Instructions BA00247R
Cerabar M	The pressure transmitter for measuring the absolute and gauge pressure of gases, steam and liquids. It can be used to read in the operating pressure value. For details, see "Technical Information" TI00426P, TI00436P and Operating Instructions BA00200P, BA00382P
Cerabar S	The pressure transmitter for measuring the absolute and gauge pressure of gases, steam and liquids. It can be used to read in the operating pressure value. For details, see "Technical Information" TI00383P and Operating Instructions BA00271P

16 Technical data

16.1 Application

The measuring device is suitable for flow measurement of liquids and gases only.

Depending on the version ordered, the measuring device can also measure potentially explosive, flammable, poisonous and oxidizing media.

To ensure that the device remains in proper operating condition for its service life, use the measuring device only for media against which the process-wetted materials are adequately resistant.

16.2 Function and system design

Measuring principle

Mass flow measurement based on the Coriolis measuring principle

Measuring system

The device consists of a transmitter and a sensor.

One device version is available: compact version, transmitter and sensor form a mechanical unit.

For information on the structure of the device (→ 12)

16.3 Input

Measured variable

Direct measured variables

- Mass flow
- Density
- Temperature

Calculated measured variables

- Volume flow
- Corrected volume flow
- Reference density

Measuring range

Measuring ranges for liquids

DN		Measuring range full scale values $\dot{m}_{min(F)}$ to $\dot{m}_{max(F)}$	
[mm]	[in]	[kg/h]	[lb/min]
8	⅜	0 to 2 000	0 to 73.50
15	½	0 to 6 500	0 to 238.9
25	1	0 to 18 000	0 to 661.5
40	1½	0 to 45 000	0 to 1 654
50	2	0 to 70 000	0 to 2 573

Measuring ranges for gases

The full scale values depend on the density of the gas and can be calculated with the formula below:
$\dot{m}_{max(G)} = \dot{m}_{max(F)} \cdot \rho_G : x$

$\dot{m}_{max(G)}$	Maximum full scale value for gas [kg/h]
$\dot{m}_{max(F)}$	Maximum full scale value for liquid [kg/h]
$\dot{m}_{max(G)} < \dot{m}_{max(F)}$	$\dot{m}_{max(G)}$ can never be greater than $\dot{m}_{max(F)}$
ρ_G	Gas density in [kg/m³] at operating conditions

DN		x
[mm]	[in]	[kg/m³]
8	⅜	85
15	½	110
25	1	125
40	1½	125
50	2	125

Calculation example for gas

- Sensor: Promass E, DN 50
- Gas: Air with a density of 60.3 kg/m³ (at 20 °C and 50 bar)
- Measuring range (liquid):70 000 kg/h
- x = 125 kg/m³ (for Promass E, DN 50)

Maximum possible full scale value:
$\dot{m}_{max(G)} = \dot{m}_{max(F)} \cdot \rho_G : x = 70\,000 \text{ kg/h} \cdot 60.3 \text{ kg/m}^3 : 125 \text{ kg/m}^3 = 33\,800 \text{ kg/h}$

Recommended measuring range

"Flow limit" section (→ 127)

Operable flow range

Over 1000 : 1.

Flow rates above the preset full scale value are not overridden by the electronics unit, with the result that the totalizer values are registered correctly.

Input signal

External measured values

To increase the accuracy of certain measured variables or to calculate the corrected volume flow for gases, the automation system can continuously write the operating pressure to the measuring device. Endress+Hauser recommends the use of a pressure transmitter for absolute pressure, e.g. Cerabar M or Cerabar S.

Various pressure transmitters and temperature measuring devices can be ordered from Endress+Hauser: see "Accessories" section (→ 114)

It is recommended to read in external measured values to calculate the following measured variables:

- Mass flow
- Corrected volume flow

Fieldbus

The measured values are written from the automation system to the measuring device via FOUNDATION Fieldbus.

16.4 Output

Output signal

Pulse/frequency/switch output

Function	Can be set to pulse, frequency or switch output
Version	Passive, open collector
Maximum input values	▪ DC 35 V ▪ 50 mA
Voltage drop	▪ For ≤2 mA: 2 V ▪ For 10 mA: 8 V
Residual current	≤0.05 mA
Pulse output	
Pulse width	Adjustable: 5 to 2 000 ms
Maximum pulse rate	100 Impulse/s
Pulse value	Adjustable
Assignable measured variables	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow
Frequency output	
Output frequency	Adjustable: 0 to 1 000 Hz
Damping	Adjustable: 0 to 999 s
Pulse/pause ratio	1:1
Assignable measured variables	▪ Mass flow ▪ Volume flow ▪ Corrected volume flow ▪ Density ▪ Reference density ▪ Temperature
Switch output	
Switching behavior	Binary, conductive or non-conductive
Switching delay	Adjustable: 0 to 100 s
Number of switching cycles	Unlimited
Assignable functions	▪ Off ▪ On ▪ Diagnostic behavior ▪ Limit value – Mass flow – Volume flow – Corrected volume flow – Density – Reference density – Temperature – Totalizer 1-3 ▪ Flow direction monitoring ▪ Status – Partially filled pipe detection – Low flow cut off

FOUNDATION Fieldbus

Signal encoding	Manchester Bus Powered (MBP)
Data transfer	31.25 KBit/s, Voltage mode

Signal on alarm

Depending on the interface, failure information is displayed as follows:

Pulse/frequency/switch output

Pulse output	
Failure mode	Choose from: ▪ Actual value ▪ No pulses
Frequency output	
Failure mode	Choose from: ▪ Actual value ▪ Defined value: 0 to 1 250 Hz ▪ 0 Hz
Switch output	
Failure mode	Choose from: ▪ Current status ▪ Open ▪ Closed

FOUNDATION Fieldbus

Status and alarm messages	Diagnostics in accordance with FF-912
Error current FDE (Fault Disconnection Electronic)	0 mA

Local display

Plain text display	With information on cause and remedial measures
Backlight	Additionally for device version with SD03 local display: red lighting indicates a device error.

Status signal as per NAMUR recommendation NE 107

Operating tool

- Via digital communication:
  FOUNDATION Fieldbus
- Via service interface

Plain text display	With information on cause and remedial measures

Low flow cut off

The switch points for low flow cut off are user-selectable.

Galvanic isolation

All outputs are galvanically isolated from one another.

Protocol-specific data

FOUNDATION Fieldbus

Manufacturer ID	0x452B48
Ident number	0x1054
Device revision	1

DD revision	Information and files under: ▪ www.endress.com ▪ www.fieldbus.org
CFF revision	
Device Tester Version (ITK version)	6.1.1
ITK Test Campaign Number	IT094200
Link Master capability (LAS)	Yes
Choice of "Link Master" and "Basic Device"	Yes Factory setting: Basic Device
Node address	Factory setting: 247 (0xF7)
Supported functions	The following methods are supported: ▪ Restart ▪ ENP Restart ▪ Diagnostic
Virtual Communication Relationships (VCRs)	
Number of VCRs	44
Number of link objects in VFD	50
Permanent entries	1
Client VCRs	0
Server VCRs	10
Source VCRs	43
Sink VCRs	0
Subscriber VCRs	43
Publisher VCRs	43
Device Link Capabilities	
Slot time	4
Min. delay between PDU	8
Max. response delay	Min. 5

Transducer Blocks

Block	Contents	Output values
Setup Transducer Block (TRDSUP)	All parameters for standard commissioning.	No output values
Advanced Setup Transducer Block (TRDASUP)	All parameters for more accurate measurement configuration.	No output values
Display Transducer Block (TRDDISP)	Parameters for configuring the local display.	No output values
HistoROM Transducer Block (TRDHROM)	Parameters for using the HistoROM function.	No output values
Diagnostic Transducer Block (TRDDIAG)	Diagnostics information.	Process variables (AI Channel) ▪ Mass flow (11) ▪ Volume flow (9) ▪ Corrected volume flow (13) ▪ Density (14) ▪ Reference density (15) ▪ Temperature (7)

Block	Contents	Output values
Expert Configuration Transducer Block (TRDEXP)	Parameters that require the user to have in-depth knowledge of the operation of the device in order to configure the parameters appropriately.	No output values
Expert Information Transducer Block (TRDEXPIN)	Parameters that provide information about the state of the device.	No output values
Service Sensor Transducer Block (TRDSRVS)	Parameters that can only be accessed by Endress +Hauser Service.	No output values
Service Information Transducer Block (TRDSRVIF)	Parameters that provide Endress+Hauser Service with information about the state of the device.	No output values
Total Inventory Counter Transducer Block (TRDTIC)	Parameters for configuring all the totalizers and the inventory counter.	Process variables (AI Channel) ▪ Totalizer 1 (16) ▪ Totalizer 2 (17) ▪ Totalizer 3 (18)
Heartbeat Technology Transducer Block (TRDHBT)	Parameters for the configuration and comprehensive information about the results of the verification.	No output values
Heartbeat Results 1 Transducer Block (TRDHBTR1)	Information about the results of the verification.	No output values
Heartbeat Results 2 Transducer Block (TRDHBTR2)	Information about the results of the verification.	No output values
Heartbeat Results 3 Transducer Block (TRDHBTR3)	Information about the results of the verification.	No output values
Heartbeat Results 4 Transducer Block (TRDHBTR4)	Information about the results of the verification.	No output values

Function blocks

Block	Number of Blocks	Contents	Process variables (Channel)
Resource Block (RB)	1	This Block (extended functionality) contains all the data that uniquely identify the device; it is the equivalent of an electronic nameplate for the device.	–
Analog Input Block (AI)	6	This Block (extended functionality) receives the measurement data provided by the Sensor Block (can be selected via a channel number) and makes the data available for other blocks at the output. **Execution time:** 27 ms	▪ Temperature (7) ▪ Volume flow (9) ▪ Mass flow (11) ▪ Corrected volume flow (13) ▪ Density (14) ▪ Reference density (15) ▪ Totalizer 1 (16) ▪ Totalizer 2 (17) ▪ Totalizer 3 (18)
Discrete Input Block (DI)	1	This Block (standard functionality) receives a discrete value (e.g. indicator that measuring range has been exceeded) and makes the value available for other blocks at the output. **Execution time:** 19 ms	▪ Status switch output (101) ▪ Low flow cutoff (103) ▪ Empty pipe detection (104) ▪ Status verification (105)

Block	Number of Blocks	Contents	Process variables (Channel)
PID Block (PID)	1	This Block (standard functionality) acts as a proportional-integral-differential controller and can be used universally for control in the field. It enables cascading and feedforward control. **Execution time:** 25 ms	–
Multiple Analog Output Block (MAO)	1	This Block (standard functionality) receives several analog values and makes them available for other blocks at the output. **Execution time:** 22 ms	Channel_0 (121) ▪ Value 1: Pressure ▪ Value 2 to 8: Not assigned The pressure must be transmitted to the device in the SI basic unit.
Multiple Digital Output Block (MDO)	1	This Block (standard functionality) receives several discrete values and makes them available for other blocks at the output. **Execution time:** 19 ms	Channel_DO (122) ▪ Value 1: Reset totalizer 1 ▪ Value 2: Reset totalizer 2 ▪ Value 3: Reset totalizer 3 ▪ Value 4: Flow override ▪ Value 5: Start heartbeat verification ▪ Value 6: Status switch output ▪ Value 7: Start zero point adjustment ▪ Value 8: Not assigned
Integrator Block (IT)	1	This Block (standard functionality) integrates a measured variable over time or totalizes the pulses from a Pulse Input Block. The Block can be used as a totalizer that totalizes until a reset, or as a batch totalizer whereby the integrated value is compared against a target value generated before or during the control routine and generates a binary signal when the target value is reached. **Execution time:** 21 ms	–

16.5 Power supply

Terminal assignment

(→ 27)

Supply voltage

Transmitter

An external power supply is required for each output. The following supply voltage values apply for FOUNDATION Fieldbus and the pulse/frequency/switch output:

Order code for "Output"	Minimum terminal voltage	Maximum terminal voltage
Option **E** [1] : FOUNDATION Fieldbus, pulse/frequency/switch output	≥DC 9 V	DC 32 V

1) For device versions with local display SD03: The terminal voltage must be increased by DC 0.5 V if backlighting is used.

Power consumption

Transmitter

Order code for "Output"	Maximum power consumption
Option **E**: FOUNDATION Fieldbus, pulse/ frequency/switch output	▪ Operation with output 1: 512 mW ▪ Operation with output 1 and 2: 2 512 mW

Current consumption

FOUNDATION Fieldbus

18 mA

Power supply failure

- Totalizers stop at the last value measured.
- Configuration is retained in the device memory (HistoROM).
- Error messages (incl. total operated hours) are stored.

Electrical connection

(→ 29)

Potential equalization

Requirements

Please consider the following to ensure correct measurement:
- Same electrical potential for the fluid and sensor
- Company-internal grounding concepts
- Pipe material and grounding

For devices intended for use in hazardous locations, please observe the guidelines in the Ex documentation (XA).

Terminals

- For device version without integrated overvoltage protection: plug-in spring terminals for wire cross-sections 0.5 to 2.5 mm² (20 to 14 AWG)
- For device version with integrated overvoltage protection: screw terminals for wire cross-sections 0.2 to 2.5 mm² (24 to 14 AWG)

Cable entries

- Cable gland: M20 × 1.5 with cable ϕ6 to 12 mm (0.24 to 0.47 in)
- Thread for cable entry:
  - NPT ½"
  - G ½"

Cable specification

(→ 26)

Overvoltage protection

The device can be ordered with integrated overvoltage protection for diverse approvals:
Order code for "Accessory mounted", option NA "Overvoltage protection"

Input voltage range	Values correspond to supply voltage specifications (→ 28) [1]
Resistance per channel	2 ·0.5 Ω max
DC sparkover voltage	400 to 700 V
Trip surge voltage	<800 V
Capacitance at 1 MHz	<1.5 pF
Nominal discharge current (8/20 µs)	10 kA
Temperature range	−40 to +85 °C (−40 to +185 °F)

1) The voltage is reduced by the amount of the internal resistance $I_{min} \cdot R_i$

Depending on the temperature class, restrictions apply to the ambient temperature for device versions with overvoltage protection .

For detailed information on the temperature tables, see the separate document entitled "Safety Instructions" (XA) for the device.

16.6 Performance characteristics

Reference operating conditions

- Error limits based on ISO 11631
- Water with +15 to +45 °C (+59 to +113 °F) at2 to 6 bar (29 to 87 psi)
- Specifications as per calibration protocol
- Accuracy based on accredited calibration rigs that are traced to ISO 17025.

To obtain measured errors, use the *Applicator* sizing tool (→ 136)

Maximum measured error

o.r. = of reading; 1 g/cm³ = 1 kg/l; T = medium temperature

Base accuracy

Mass flow and volume flow (liquids)
±0.25 % o.r.

Mass flow (gases)
±0.75 % o.r.

Design fundamentals (→ 125)

Density (liquids)
- Reference conditions:±0.0005 g/cm³
- Standard density calibration:±0.02 g/cm³
  (valid over the entire temperature range and density range)

Temperature
±0.5 °C ± 0.005 · T °C (±0.9 °F ± 0.003 · (T − 32) °F)

Zero point stability

DN		Zero point stability	
[mm]	[in]	[kg/h]	[lb/min]
8	⅜	0.24	0.0088
15	½	0.78	0.0287
25	1	2.16	0.0794
40	1½	5.40	0.1985
50	2	8.40	0.3087

Flow values

Flow values as turndown parameter depending on nominal diameter.

SI units

DN [mm]	1:1 [kg/h]	1:10 [kg/h]	1:20 [kg/h]	1:50 [kg/h]	1:100 [kg/h]	1:500 [kg/h]
8	2000	200	100	40	20	4
15	6500	650	325	130	65	13
25	18000	1800	900	360	180	36
40	45000	4500	2250	900	450	90
50	70000	7000	3500	1400	700	140

US units

DN [inch]	1:1 [lb/min]	1:10 [lb/min]	1:20 [lb/min]	1:50 [lb/min]	1:100 [lb/min]	1:500 [lb/min]
⅜	73.50	7.350	3.675	1.470	0.735	0.147
½	238.9	23.89	11.95	4.778	2.389	0.478
1	661.5	66.15	33.08	13.23	6.615	1.323
1½	1654	165.4	82.70	33.08	16.54	3.308
2	2573	257.3	128.7	51.46	25.73	5.146

Repeatability

o.r. = of reading; 1 g/cm³ = 1 kg/l; T = medium temperature

Base repeatability

Mass flow and volume flow (liquids)
±0.125 % o.r.

Mass flow (gases)
±0.35 % o.r.

Design fundamentals (→ 125)

Density (liquids)
±0.00025 g/cm³

Temperature
±0.25 °C ± 0.0025 · T °C (±0.45 °F±0.0015 · (T−32) °F)

Response time

- The response time depends on the configuration (damping).
- Response time in the event of erratic changes in the measured variable: after 500 ms→ 95 % of the full scale value

Influence of ambient temperature

o.r. = of reading; o.f.s. = of full scale value

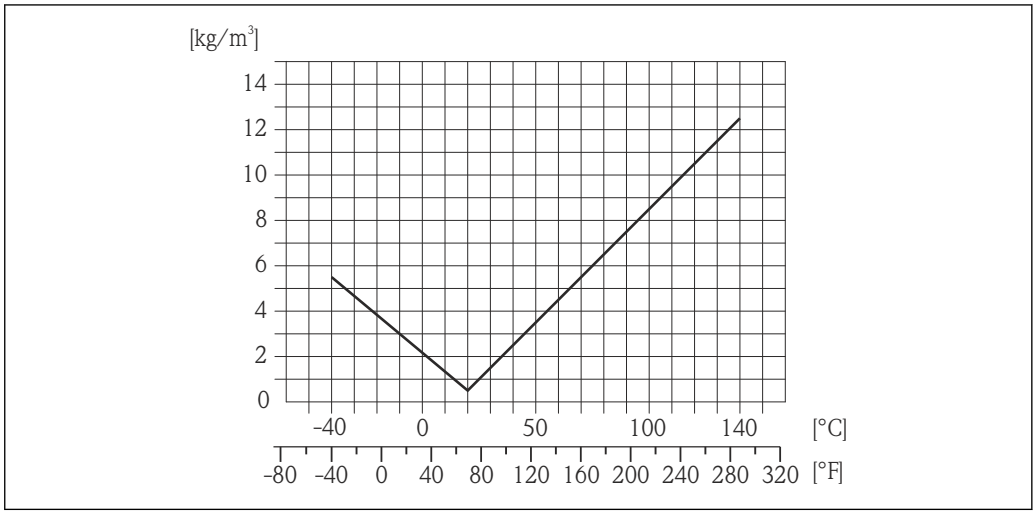
Pulse/frequency output

Temperature coefficient	Max. ±100 ppm o.r.

Influence of medium temperature

Mass flow and volume flow
When there is a difference between the temperature for zero point adjustment and the process temperature, the typical measured error of the sensor is ±0.0002 % of the full scale value/°C (±0.0001 % of the full scale value/°F).

Density
When there is a difference between the density calibration temperature and the process temperature, the typical measured error of the sensor is
±0.0001 g/cm³ /°C (±0.00005 g/cm³ /°F). Field density calibration is possible.



28 *Field density calibration, for example at +20 °C (+68 °F)*

Temperature
±0.005 · T °C (±0.005 · (T – 32) °F)

Influence of medium pressure

The table below shows the effect on accuracy of mass flow due to a difference between calibration pressure and process pressure.

o.r. = of reading

DN		[% o.r./bar]	[% o.r./psi]
[mm]	[in]		
8	⅜	no influence	
15	½	no influence	
25	1	no influence	
40	1½	no influence	
50	2	−0.009	−0.0006

Design fundamentals

o.r. = of reading, o.f.s. = of full scale value

BaseAccu = base accuracy in % o.r., BaseRepeat = base repeatability in % o.r.

MeasValue = measured value; ZeroPoint = zero point stability

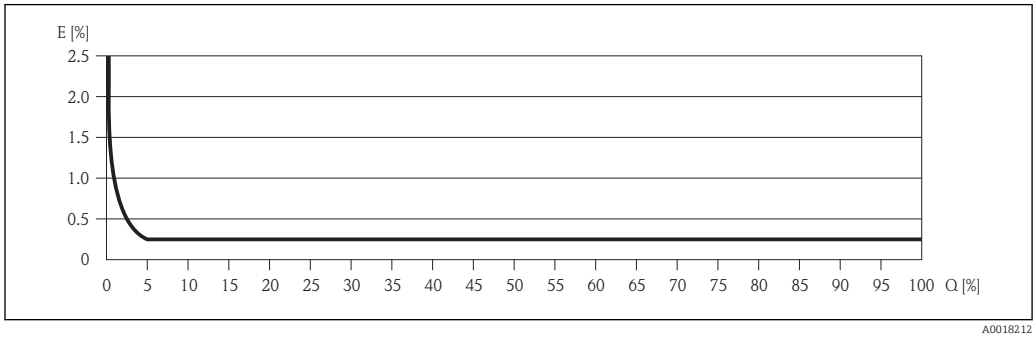
Calculation of the maximum measured error as a function of the flow rate

Flow rate	Maximum measured error in % o.r.
$\geq \frac{\text{ZeroPoint}}{\text{BaseAccu}} \cdot 100$ A0021332	± BaseAccu A0021339
$< \frac{\text{ZeroPoint}}{\text{BaseAccu}} \cdot 100$ A0021333	$\pm \frac{\text{ZeroPoint}}{\text{MeasValue}} \cdot 100$ A0021334

Calculation of the maximum repeatability as a function of the flow rate

Flow rate	Maximum repeatability in % o.r.
$\geq \frac{4/3 \cdot \text{ZeroPoint}}{\text{BaseAccu}} \cdot 100$ A0021341	$\pm 1/2 \cdot \text{BaseAccu}$ A0021343
$< \frac{4/3 \cdot \text{ZeroPoint}}{\text{BaseAccu}} \cdot 100$ A0021342	$\pm 2/3 \cdot \frac{\text{ZeroPoint}}{\text{MeasValue}} \cdot 100$ A0021344

Example for max. measured error



29 Maximum measured error in % o.r. (example: DN 25)

Design fundamentals (→ 125)

16.7 Installation

"Mounting requirements" (→ 19)

16.8 Environment

Ambient temperature range	(→ 21) **Temperature tables** Observe the interdependencies between the permitted ambient and fluid temperatures when operating the device in hazardous areas. For detailed information on the temperature tables, see the separate document entitled "Safety Instructions" (XA) for the device.
Storage temperature	–40 to +80 °C (–40 to +176 °F), preferably at +20 °C (+68 °F)
Climate class	DIN EN 60068-2-38 (test Z/AD)
Degree of protection	**Transmitter** ▪ As standard: IP66/67, type 4X enclosure ▪ When housing is open: IP20, type 1 enclosure ▪ Display module: IP20, type 1 enclosure

	Sensor IP66/67, type 4X enclosure
Shock resistance	As per IEC/EN 60068-2-31
Vibration resistance	Acceleration up to 1 g, 10 to 150 Hz, based on IEC/EN 60068-2-6
Interior cleaning	▪ Sterilization in place (SIP) ▪ Cleaning in place (CIP)
Electromagnetic compatibility (EMC)	As per IEC/EN 61326 and NAMUR Recommendation 21 (NE 21) For details refer to the Declaration of Conformity.

16.9 Process

Medium temperature range	**Sensor** −40 to +140 °C (−40 to +284 °F) **Seals** No internal seals
Density	0 to 2 000 kg/m³ (0 to 125 lb/cf)
Pressure-temperature ratings	An overview of the pressure-temperature ratings for the process connections is provided in the "Technical Information" document
Secondary containment pressure rating	The sensor housing is filled with dry nitrogen and protects the electronics and mechanics inside. The housing does not have pressure vessel classification. Reference value for the pressure loading capacity of the sensor housing: 16 bar (232 psi) For the dimensions and installation lengths of the device, see the "Technical Information" document, "Mechanical construction" section
Rupture disk	To increase the level of safety, a device version with a rupture disk with a triggering pressure of 10 to 15 bar (145 to 217.5 psi) can be used. Special mounting instructions: (→ 22) Rupture disks cannot be combined with the separately available heating jacket (→ 112) (→ 112).
Flow limit	Select the nominal diameter by optimizing between the required flow range and permissible pressure loss. For an overview of the measuring range full scale values, see the "Measuring range" section (→ 115)

- The minimum recommended full scale value is approx. 1/20 of the maximum full scale value
- In most applications, 20 to 50 % of the maximum full scale value can be considered ideal
- Select a lower full scale value for abrasive substances (such as liquids with entrained solids): flow velocity <1 m/s (<3 ft/s).
- For gas measurement the following rules apply:
  - The flow velocity in the measuring tubes should not exceed half the sonic velocity (0.5 Mach).
  - The maximum mass flow depends on the density of the gas: formula (→ 116)

Pressure loss

To calculate the pressure loss, use the *Applicator* sizing tool (→ 136)

16.10 Mechanical construction

Design, dimensions

For the dimensions and installation lengths of the device, see the "Technical Information" document, "Mechanical construction" section

Weight

Compact version

Weight in SI units

All values (weight) refer to devices with EN/DIN PN 40 flanges. Weight information in [kg].

DN [mm]	Weight [kg]	
	Order code for "Housing", option C Aluminum coated	Order code for "Housing", option B 1.4404 (316L)
8	6	8.5
15	6.5	9
25	8	10.5
40	13	15.5
50	22	24.5

Weight in US units

All values (weight) refer to devices with EN/DIN PN 40 flanges. Weight information in [lbs].

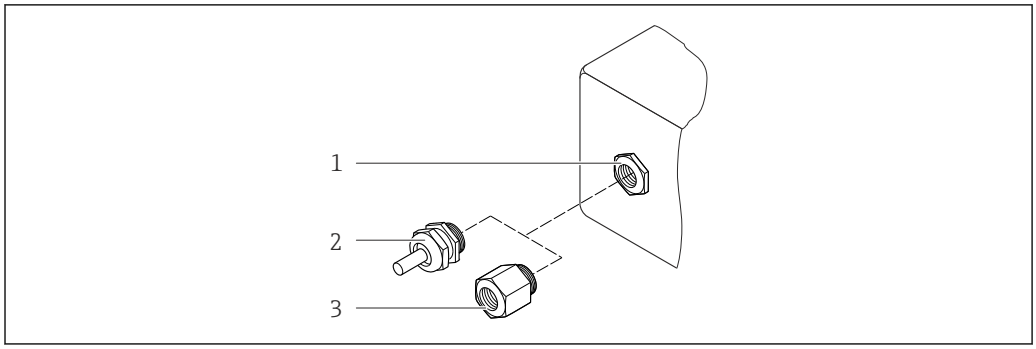
DN [in]	Weight [lbs]	
	Order code for "Housing", option C Aluminum coated	Order code for "Housing", option B 1.4404 (316L)
⅜	13.2	18.7
½	14.3	19.8
1	17.6	23.2
1 ½	28.7	34.2
2	48.5	54.0

Materials

Transmitter housing

- Order code for "Housing", option **B**: stainless steel 1.4404 (316L)
- Order code for "Housing", option **C**: aluminum, AlSi10Mg, coated
- Window material: glass

Cable entries/cable glands



30 Possible cable entries/cable glands

1 Cable entry in transmitter housing, wall-mount housing or connection housing with internal thread M20 x 1.5
2 Cable gland M20 x 1.5
3 Adapter for cable entry with internal thread G ½" or NPT ½"

Order code for "Housing", option B "GT18 two-chamber, 316L"

Cable entry/cable gland	Type of protection	Material
Cable gland M20 × 1.5	▪ Non-Ex ▪ Ex ia ▪ Ex ic ▪ Ex nA ▪ Ex tb	Stainless steel ,1.4404
Adapter for cable entry with internal thread G ½"	For non-Ex and Ex (except for CSA Ex d/XP)	Stainless steel, 1.4404 (316L)
Adapter for cable entry with internal thread NPT ½"	For non-Ex and Ex	

Order code for "Housing", option C "GT20 two-chamber, aluminum coated"

Cable entry/cable gland	Type of protection	Material
Cable gland M20 × 1.5	▪ Non-Ex ▪ Ex ia ▪ Ex ic	Plastic
	Adapter for cable entry with internal thread G ½"	Nickel-plated brass
Adapter for cable entry with internal thread NPT ½"	For non-Ex and Ex (except for CSA Ex d/XP)	Nickel-plated brass
Thread NPT ½" via adapter	For non-Ex and Ex	

Sensor housing

- Acid and alkali-resistant outer surface
- Stainless steel 1.4301 (304)

Measuring tubes

Stainless steel, 1.4539 (904L); manifold: stainless steel, 1.4404 (316L)

Surface quality:

- Not polished
- Ra_{max} = 0.8 µm (32 µin)
- Ra_{max} = 0.4 µm (16 µin)

Process connections

- Flanges according to EN 1092-1 (DIN2501) / according to ASME B 16.5 / as per JIS B2220:
  Stainless steel, 1.4404 (F316/F316L)
- All other process connections:
  Stainless steel, 1.4404 (316/316L)

List of all available process connections (→ 131)

Seals

Welded process connections without internal seals

Accessories

Weather protection cover

Stainless steel 1.4404 (316L)

Process connections

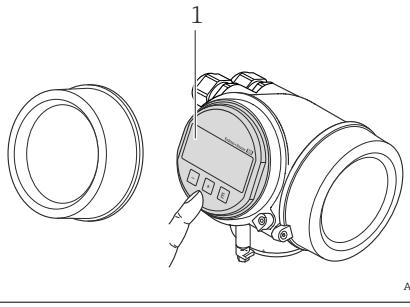
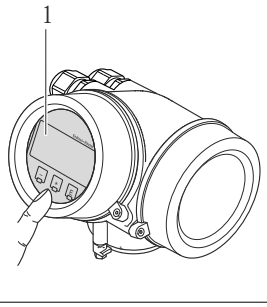
- Flanges:
  - EN 1092-1 (DIN 2501)
  - EN 1092-1 (DIN 2512N)
  - Namur lengths in accordance with NE 132
  - ASME B16.5
  - JIS B2220
- VCO connections
- Tri-Clamp (OD tubes)
- Threaded hygienic connection:
  - DIN 11851
  - SMS 1145
  - ISO 2853
  - DIN 11864-1 Form A
- Flange:
  DIN 11864-2 Form A

For information on the materials of the process connections (→ 131)

16.11 Operability

Local operation

Via display module

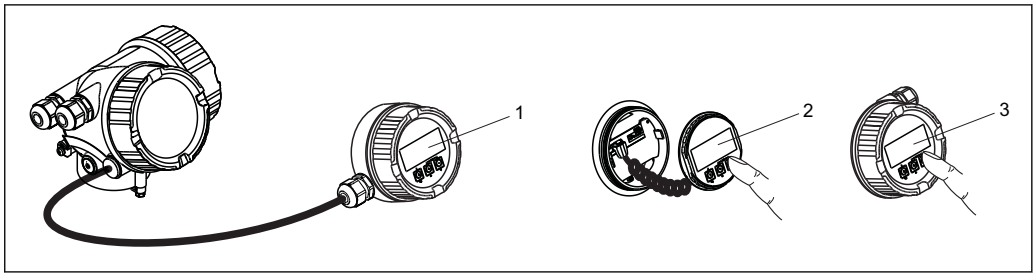
Order code for "Display; Operation", option **C** "SD02"	Order code for "Display; Operation", option **E** "SD03"
	
1 Operation with pushbuttons	*1 Operation with touch control*

Display elements
- 4-line display
- With order code for "Display; operation", option **E**:
  White background lighting; switches to red in event of device errors
- Format for displaying measured variables and status variables can be individually configured
- Permitted ambient temperature for the display: –20 to +60 °C (–4 to +140 °F)
  The readability of the display may be impaired at temperatures outside the temperature range.

Operating elements
- With order code for "Display; operation", option **C**:
  Local operation with 3 push buttons: ⊕, ⊖, Ⓔ
- With order code for "Display; operation", option **E**:
  External operation via touch control; 3 optical keys: ⊕, ⊖, Ⓔ
- Operating elements also accessible in various hazardous areas

Additional functionality
- Data backup function
  The device configuration can be saved in the display module.
- Data comparison function
  The device configuration saved in the display module can be compared to the current device configuration.
- Data transfer function
  The transmitter configuration can be transmitted to another device using the display module.

Via remote display and operating module FHX50

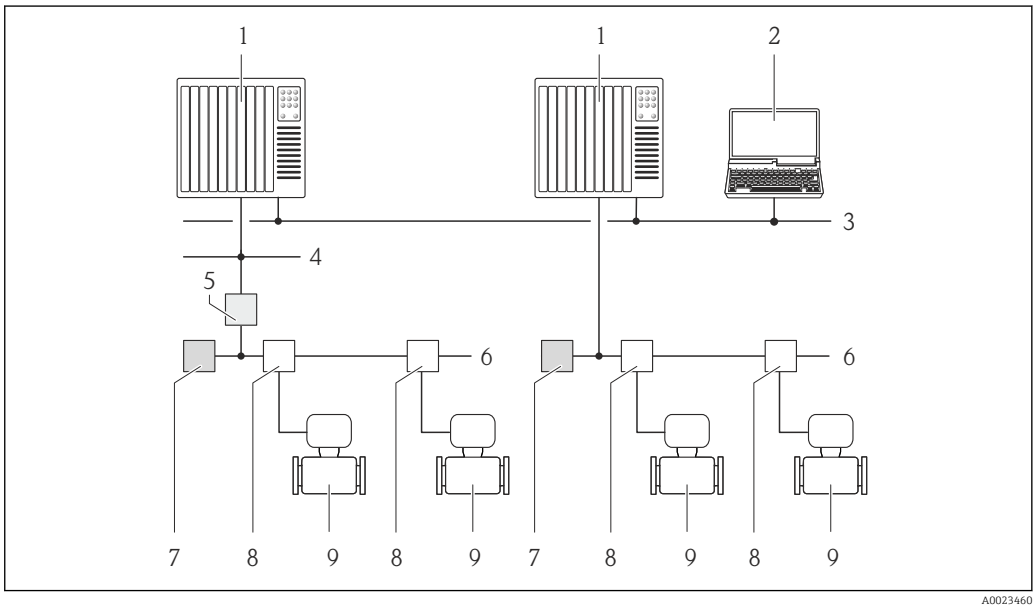


31 *Operating options via FHX50*

1 *Housing of remote display and operating module FHX50*
2 *SD02 display and operating module, push buttons: cover must be opened for operation*
3 *SD03 display and operating module, optical buttons: operation possible through cover glass*

Remote operation

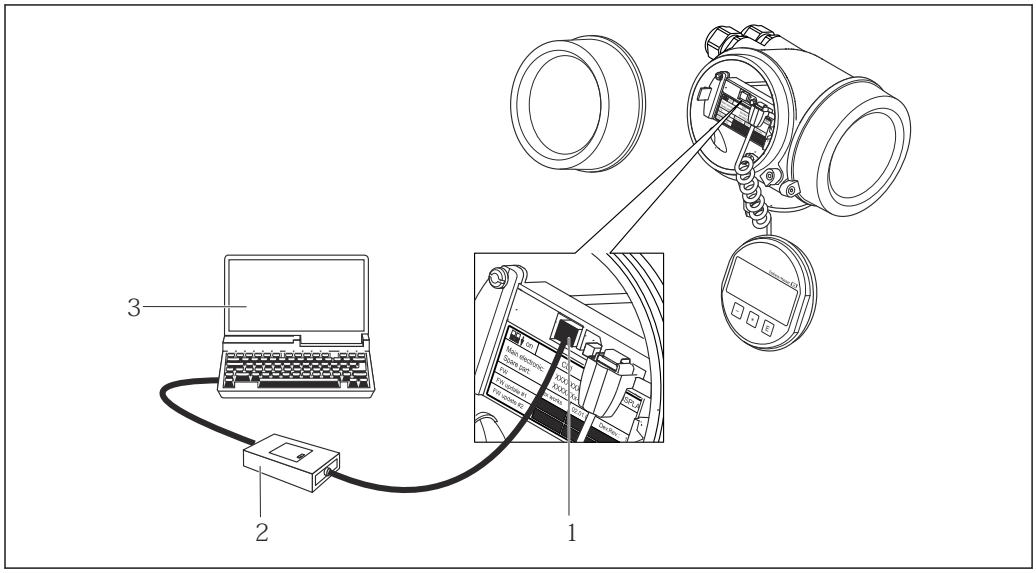
Via FOUNDATION Fieldbus network



1 *Automation system*
2 *Computer with FOUNDATION Fieldbus network card*
3 *Industry network*
4 *High Speed Ethernet FF-HSE network*
5 *Segment coupler FF-HSE/FF-H1*
6 *FOUNDATION Fieldbus FF-H1 network*
7 *Power supply FF-H1 network*
8 *T-box*
9 *Measuring device*

Service interface

Service interface (CDI)



1 Service interface (CDI = Endress+Hauser Common Data Interface) of the measuring device
2 Commubox FXA291
3 Computer with "FieldCare" operating tool with COM DTM "CDI Communication FXA291"

Languages

Can be operated in the following languages:
- Via local display:
  English, German, French, Spanish, Italian, Dutch, Portuguese, Polish, Russian, Swedish, Turkish, Chinese, Japanese, Korean, Bahasa (Indonesian), Vietnamese, Czech
- Via "FieldCare" operating tool:
  English, German, French, Spanish, Italian, Chinese, Japanese

16.12 Certificates and approvals

CE mark

The measuring system is in conformity with the statutory requirements of the applicable EC Directives. These are listed in the corresponding EC Declaration of Conformity along with the standards applied.

Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

C-Tick symbol

The measuring system meets the EMC requirements of the "Australian Communications and Media Authority (ACMA)".

Ex approval

The devices are certified for use in hazardous areas and the relevant safety instructions are provided in the separate "Safety Instructions" (XA) document. Reference is made to this document on the nameplate.

Hygienic compatibility

3A approval

FOUNDATION Fieldbus certification	**FOUNDATION Fieldbus interface** The measuring device is certified and registered by the Fieldbus FOUNDATION. The measuring system meets all the requirements of the following specifications: ▪ Certified in accordance with FOUNDATION Fieldbus H1 ▪ Interoperability Test Kit (ITK), revision version 6.1.1 (certificate available on request) ▪ Physical Layer Conformance Test ▪ The device can also be operated with certified devices of other manufacturers (interoperability)
Pressure Equipment Directive	▪ With the PED/G1/x (x = category) marking on the sensor nameplate, Endress+Hauser confirms compliance with the "Essential Safety Requirements" specified in Annex I of the Pressure Equipment Directive 97/23/EC. ▪ Devices not bearing this marking (PED) are designed and manufactured according to good engineering practice. They meet the requirements of Art.3 Section 3 of the Pressure Equipment Directive 97/23/EC. The range of application is indicated in tables 6 to 9 in Annex II of the Pressure Equipment Directive.
Other standards and guidelines	▪ EN 60529 Degrees of protection provided by enclosures (IP code) ▪ IEC/EN 60068-2-6 Environmental influences: Test procedure - Test Fc: vibrate (sinusoidal). ▪ IEC/EN 60068-2-31 Environmental influences: Test procedure - Test Ec: shocks due to rough handling, primarily for devices. ▪ EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use ▪ IEC/EN 61326 Emission in accordance with Class A requirements. Electromagnetic compatibility (EMC requirements). ▪ IEC 61508 Functional safety of electrical/electronic/programmable electronic safety-related systems ▪ NAMUR NE 21 Electromagnetic compatibility (EMC) of industrial process and laboratory control equipment ▪ NAMUR NE 32 Data retention in the event of a power failure in field and control instruments with microprocessors ▪ NAMUR NE 43 Standardization of the signal level for the breakdown information of digital transmitters with analog output signal. ▪ NAMUR NE 53 Software of field devices and signal-processing devices with digital electronics ▪ NAMUR NE 80 The application of the pressure equipment directive to process control devices ▪ NAMUR NE 105 Specifications for integrating fieldbus devices in engineering tools for field devices ▪ NAMUR NE 107 Self-monitoring and diagnosis of field devices ▪ NAMUR NE 131 Requirements for field devices for standard applications ▪ NAMUR NE 132 Coriolis mass meter

16.13 Application packages

Many different application packages are available to enhance the functionality of the device. Such packages might be needed to address safety aspects or specific application requirements.

The application packages can be ordered from Endress+Hauser either directly with the device or subsequently. Detailed information on the order code in question is available from your local Endress+Hauser sales center or on the product page of the Endress+Hauser website: www.endress.com.

Detailed information on the application packages:
Special Documentation on the device (→ 137)

16.14 Accessories

Overview of accessories available for order (→ 112)

16.15 Supplementary documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:
- The CD-ROM provided for the device (depending on the device version, the CD-ROM might not be part of the delivery!)
- The *W@M Device Viewer* : Enter the serial number from the nameplate (www.endress.com/deviceviewer)
- The *Endress+Hauser Operations App*: Enter the serial number from the nameplate or scan the 2-D matrix code (QR code) on the nameplate.

Standard documentation

Brief Operating Instructions

Measuring device	Documentation code
Promass E 200	KA00050D

Technical Information

Measuring device	Documentation code
Promass E 200	TI01009D

Supplementary device-dependent documentation

Safety Instructions

Contents	Documentation code
ATEX/IECEx Ex i	XA00144D
ATEX/IECEx Ex d	XA00143D
ATEX/IECEx Ex nA	XA00145D
cCSAus IS	XA00151D
cCSAus XP	XA00152D
INMETRO Ex i	XA01300D
INMETRO Ex d	XA01305D
INMETRO Ex nA	XA01306D
NEPSI Ex i	XA00156D

Contents	Documentation code
NEPSI Ex d	XA00155D
NEPSI Ex nA	XA00157D

Special Documentation

Contents	Documentation code
Information on the Pressure Equipment Directive	SD00142D
Heartbeat Technology	SD01300D

Installation Instructions

Contents	Documentation code
Installation Instructions for spare part sets	Overview of accessories available for order (→ 112)

17 Appendix

The manufacturer-specific device parameters are listed in the index tables.

FOUNDATION Fieldbus parameters:
"Guideline - FOUNDATION Fieldbus Function Blocks" document (BA062S), available via www.endress.com

17.1 Endress+Hauser FOUNDATION Fieldbus Parameter

17.1.1 Resource Block 2

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	RB2_DevType	Device Type	ENUM16	Static	2		
12	RB2_DevRev	Device Revision	UINT8	Static	1		
13	RB2_DdRev	DD Revision	UINT8	Static	1		
14	RB2_GrantDeny	Grant Deny	Standard	Static	2		X
	RB2_GrantDeny_Grant	Grant	BIT_ENUM8	Static	1	AUTO	X
	RB2_GrantDeny_Deny	Deny	BIT_ENUM8	Static	1	AUTO	X
15	RB2_HardTypes	Hard Types	BIT_ENUM16	Static	2		
16	RB2_Restart	Restart	ENUM8	Dynamic	1	AUTO	X
17	RB2_Features	Features	BIT_ENUM16	Static	2		
18	RB2_FeatureSel	Feature Selection	BIT_ENUM16	Static	2	AUTO	X
19	RB2_CycleType	Cycle Type	BIT_ENUM16	Static	2		
20	RB2_CycleSel	Cycle Selection	BIT_ENUM16	Static	2	AUTO	X
21	RB2_MinCycleT	Minumum Cycle Time	UINT32	Static	4		
22	RB2_MemorySize	Memory Size	UINT16	Static	2		
23	RB2_NvCycleT	Nonvolatile Cycle Time	UINT32	Static	4		
24	RB2_FreeSpace	Free Space	FLOAT	Dynamic	4		
25	RB2_FreeTime	Free Time	FLOAT	Dynamic	4		
26	RB2_ShedRcas	Shed Remote Cascade	UINT32	Static	4	AUTO	X
27	RB2_ShedRout	Shed Remote Out	UINT32	Static	4	AUTO	X
28	RB2_FaultState	Fault State	ENUM8	Dynamic	1		
29	RB2_SetFstate	Set Fault State	ENUM8	Dynamic	1	AUTO	X
30	RB2_ClrFstate	Clear Fault State	ENUM8	Dynamic	1	AUTO	X
31	RB2_MaxNotify	Max Notify	UINT8	Static	1		
32	RB2_LimNotify	Limit Notify	UINT8	Static	1	AUTO	X
33	RB2_ConfirmTime	Confirm Time	UINT32	Static	4	AUTO	X
34	RB2_WriteLock	Write Lock	ENUM8	Static	1	AUTO	
35	RB2_UpdateEvt	Update Event	Standard	Dynamic	14		
	RB2_UpdateEvt_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_UpdateEvt_UpdateState	Update State	ENUM8	Dynamic	1		
	RB2_UpdateEvt_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_UpdateEvt_StaticRevision	Static revision	UINT16	Dynamic	2		
	RB2_UpdateEvt_RelativeIndex	Relative Index	UINT16	Dynamic	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
36	RB2_BlockAlm	Block Alarm	Standard	Dynamic	13		
	RB2_BlockAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_BlockAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_BlockAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_BlockAlm_SubCode	Subcode	ENUM16	Dynamic	2		
	RB2_BlockAlm_Value	Value	UINT8	Dynamic	1		
37	RB2_AlarmSum	Alarm Summary	Standard	Static	8		
	RB2_AlarmSum_Current	Current	BIT_ENUM16	Static	2		
	RB2_AlarmSum_Unacknowledged	Unacknowledged	BIT_ENUM16	Static	2		
	RB2_AlarmSum_Unreported	Unreported	BIT_ENUM16	Static	2		
	RB2_AlarmSum_Disabled	Disabled	BIT_ENUM16	Static	2	AUTO	X
38	RB2_AckOption	Acknowledge Option	BIT_ENUM16	Static	2	AUTO	X
39	RB2_WritePri	Write Priority	UINT8	Static	1	AUTO	X
40	RB2_WriteAlm	Write Alarm	Standard	Dynamic	13		
	RB2_WriteAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_WriteAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_WriteAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_WriteAlm_SubCode	Subcode	ENUM16	Dynamic	2		
	RB2_WriteAlm_Value	Discrete Value	ENUM8	Dynamic	1		
41	RB2_ItkVer	ITK Version	UINT16	Static	2		
42	RB2_CapabilityLev		UINT8	Static	1		
43	RB2_CompatibilityRev		UINT8	Static	1		
44	RB2_EnpVersion	ENP version	STRING	Static	32		
45	RB2_EnpDeviceTag	Device tag	STRING	Static	32	AUTO	X
46	RB2_SerialNumber	Serial number	STRING	Static	16		
47	RB2_OrderCodeExt	Extended order code 1	STRING	Static	32	AUTO	X
48	RB2_OrderCodeExtPart2	Extended order code 2	STRING	Static	32	AUTO	X
49	RB2_OrderCode	Order code	STRING	Static	32	AUTO	X
50	RB2_FirmwareVersion	Firmware version	STRING	Static	32		
51	RB2_AccessCode	Enter access code	UINT16	Static	2	AUTO	X
52	RB2_AccessLevel	Access status tooling	ENUM16	Static	2		
53	RB2_UdlFeature	UDL features	BIT_ENUM16	Static	2		
54	RB2_UdlOpCode	UDL operation	ENUM16	Dynamic	2	AUTO	
55	RB2_UdlStatus	UDL status	ENUM16	Static	2		
56	RB2_UdlVeriDelay	UDL verify delay	UINT16	Static	2		
57	RB2_UdlRevision		UINT16	Static	2		
58	RB2_UdlHeader		BYTEARRAY	Dynamic	96	AUTO	
59	RB2_UdlConfig		BYTEARRAY	Dynamic	118	AUTO	
60	RB2_UdlData		BYTEARRAY	Dynamic	118	AUTO	
61	RB2_FdVer	Revision	UINT16	Static	2		
62	RB2_FdFailActive	Fail Active	BIT_ENUM32	Dynamic	4		
63	RB2_FdOffspecActive	Offspec Active	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
64	RB2_FdMaintActive	Maintenance Active	BIT_ENUM32	Dynamic	4		
65	RB2_FdCheckActive	Check Active	BIT_ENUM32	Dynamic	4		
66	RB2_FdFailMap	Fail Map	BIT_ENUM32	Static	4	AUTO	X
67	RB2_FdOffspecMap	Offspec Map	BIT_ENUM32	Static	4	AUTO	X
68	RB2_FdMaintMap	Maintenance Map	BIT_ENUM32	Static	4	AUTO	X
69	RB2_FdCheckMap	Check Map	BIT_ENUM32	Static	4	AUTO	
70	RB2_FdFailMask	Fail Mask	BIT_ENUM32	Static	4	AUTO	X
71	RB2_FdOffspecMask	Offspec Mask	BIT_ENUM32	Static	4	AUTO	X
72	RB2_FdMaintMask	Maintenance Mask	BIT_ENUM32	Static	4	AUTO	X
73	RB2_FdCheckMask	Check Mask	BIT_ENUM32	Static	4	AUTO	X
74	RB2_FdFailAlm	Fail Diagnostic Alarm	Standard	Dynamic	15		
	RB2_FdFailAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_FdFailAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_FdFailAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_FdFailAlm_SubCode	Subcode	UINT32	Dynamic	4		
	RB2_FdFailAlm_Value	Value	UINT8	Dynamic	1		
75	RB2_FdOffspecAlm	Offspec Alarm	Standard	Dynamic	15		
	RB2_FdOffspecAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_FdOffspecAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_FdOffspecAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_FdOffspecAlm_SubCode	Subcode	UINT32	Dynamic	4		
	RB2_FdOffspecAlm_Value	Value	UINT8	Dynamic	1		
76	RB2_FdMaintAlm	Maintenance Alarm	Standard	Dynamic	15		
	RB2_FdMaintAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_FdMaintAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_FdMaintAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_FdMaintAlm_SubCode	Subcode	UINT32	Dynamic	4		
	RB2_FdMaintAlm_Value	Value	UINT8	Dynamic	1		
77	RB2_FdCheckAlm	Check Alarm	Standard	Dynamic	15		
	RB2_FdCheckAlm_Unacknowledged	Unacknowledged	ENUM8	Dynamic	1	AUTO	X
	RB2_FdCheckAlm_AlarmState	Alarm State	ENUM8	Dynamic	1		
	RB2_FdCheckAlm_TimeStamp	Time Stamp	TimeValue	Dynamic	8		
	RB2_FdCheckAlm_SubCode	Subcode	UINT32	Dynamic	4		
	RB2_FdCheckAlm_Value	Value	UINT8	Dynamic	1		
78	RB2_FdFailPri	Fail Priority	UINT8	Static	1	AUTO	X
79	RB2_FdOffspecPri	Offspec Priority	UINT8	Static	1	AUTO	X
80	RB2_FdMaintPri	Maintenance Priority	UINT8	Static	1	AUTO	X
81	RB2_FdCheckPri	Check Priority	UINT8	Static	1	AUTO	X
82	RB2_FdSimulate	Field Diagnostic Simulate	Standard	Dynamic	9		
	RB2_FdSimulate_DiagnosSimulateValue	Diagnostic Simulate Value	BIT_ENUM32	Dynamic	4	AUTO	X
	RB2_FdSimulate_DiagnosticValue	Diagnostic Value	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	RB2_FdSimulate_EnableDisable	Simulate En/Disable	ENUM8	Dynamic	1	AUTO	X
83	RB2_FdRecommenAct	Recommended Action	ENUM16	Dynamic	2		
84	RB2_HardwareVersion	Hardware revision	STRING	Static	16		
85	RB2_FfCommVersion		STRING	Static	16		
86	RB2_RestartEnable	Restart enable	BIT_ENUM16	Static	2	AUTO	
87	RB2_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
88	RB2_ResDir	Resource Directory	UINT16	Static	2		
	RB2_View1	Resource 2 View 1	VIEW1	Dynamic	76		
	RB2_StRev	Static Revision	UINT16	Static	2		
	RB2_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	RB2_RsState	Resource State	ENUM8	Dynamic	1		
	RB2_FreeTime	Free Time	FLOAT	Dynamic	4		
	RB2_FaultState	Fault State	ENUM8	Dynamic	1		
	RB2_EnpDeviceTag	Device tag	STRING	Static	32	AUTO	X
	RB2_FdFailActive	Fail Active	BIT_ENUM32	Dynamic	4		
	RB2_FdOffspecActive	Offspec Active	BIT_ENUM32	Dynamic	4		
	RB2_FdMaintActive	Maintenance Active	BIT_ENUM32	Dynamic	4		
	RB2_FdCheckActive	Check Active	BIT_ENUM32	Dynamic	4		
	RB2_FdRecommenAct	Recommended Action	ENUM16	Dynamic	2		
	RB2_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	RB2_View2	Resource 2 View 2	VIEW2	Dynamic	30		
	RB2_StRev	Static Revision	UINT16	Static	2		
	RB2_FeatureSel	Feature Selection	BIT_ENUM16	Static	2	AUTO	X
	RB2_CycleSel	Cycle Selection	BIT_ENUM16	Static	2	AUTO	X
	RB2_NvCycleT	Nonvolatile Cycle Time	UINT32	Static	4		
	RB2_FreeSpace	Free Space	FLOAT	Dynamic	4		
	RB2_ShedRcas	Shed Remote Cascade	UINT32	Static	4	AUTO	X
	RB2_ShedRout	Shed Remote Out	UINT32	Static	4	AUTO	X
	RB2_LimNotify	Limit Notify	UINT8	Static	1	AUTO	X
	RB2_ConfirmTime	Confirm Time	UINT32	Static	4	AUTO	X
	RB2_WriteLock	Write Lock	ENUM8	Static	1	AUTO	
	RB2_View3	Resource 2 View 3	VIEW3	Dynamic	85		
	RB2_StRev	Static Revision	UINT16	Static	2		
	RB2_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	RB2_RsState	Resource State	ENUM8	Dynamic	1		
	RB2_FreeTime	Free Time	FLOAT	Dynamic	4		
	RB2_FaultState	Fault State	ENUM8	Dynamic	1		
	RB2_EnpDeviceTag	Device tag	STRING	Static	32	AUTO	X
	RB2_FdFailActive	Fail Active	BIT_ENUM32	Dynamic	4		
	RB2_FdOffspecActive	Offspec Active	BIT_ENUM32	Dynamic	4		
	RB2_FdMaintActive	Maintenance Active	BIT_ENUM32	Dynamic	4		
	RB2_FdCheckActive	Check Active	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	RB2_FdRecommenAct	Recommended Action	ENUM16	Dynamic	2		
	RB2_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	RB2_View4	Resource 2 View 4	VIEW4	Static	103		
	RB2_StRev	Static Revision	UINT16	Static	2		
	RB2_Strategy	Strategy	UINT16	Static	2	AUTO	X
	RB2_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	RB2_ManufacId	Manufacturer Id	ENUM32	Static	4		
	RB2_DevType	Device Type	ENUM16	Static	2		
	RB2_DevRev	Device Revision	UINT8	Static	1		
	RB2_DdRev	DD Revision	UINT8	Static	1		
	RB2_HardTypes	Hard Types	BIT_ENUM16	Static	2		
	RB2_Features	Features	BIT_ENUM16	Static	2		
	RB2_CycleType	Cycle Type	BIT_ENUM16	Static	2		
	RB2_MinCycleT	Minumum Cycle Time	UINT32	Static	4		
	RB2_MemorySize	Memory Size	UINT16	Static	2		
	RB2_MaxNotify	Max Notify	UINT8	Static	1		
	RB2_AckOption	Acknowledge Option	BIT_ENUM16	Static	2	AUTO	X
	RB2_WritePri	Write Priority	UINT8	Static	1	AUTO	X
	RB2_ItkVer	ITK Version	UINT16	Static	2		
	RB2_CapabilityLev		UINT8	Static	1		
	RB2_CompatibilityRev		UINT8	Static	1		
	RB2_FdVer	Revision	UINT16	Static	2		
	RB2_FdFailMap	Fail Map	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdOffspecMap	Offspec Map	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdMaintMap	Maintenance Map	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdCheckMap	Check Map	BIT_ENUM32	Static	4	AUTO	
	RB2_FdFailMask	Fail Mask	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdOffspecMask	Offspec Mask	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdMaintMask	Maintenance Mask	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdCheckMask	Check Mask	BIT_ENUM32	Static	4	AUTO	X
	RB2_FdFailPri	Fail Priority	UINT8	Static	1	AUTO	X
	RB2_FdOffspecPri	Offspec Priority	UINT8	Static	1	AUTO	X
	RB2_FdMaintPri	Maintenance Priority	UINT8	Static	1	AUTO	X
	RB2_FdCheckPri	Check Priority	UINT8	Static	1	AUTO	X
	RB2_HardwareVersion	Hardware revision	STRING	Static	16		
	RB2_FfCommVersion		STRING	Static	16		

17.1.2 Transducer Block Advanced Setup

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDASUP_TransducerTypeVer		UINT16	Static	2		
12	TRDASUP_XdError	Transducer Error	ENUM8	Dynamic	1		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
13	TRDASUP_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDASUP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDASUP_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDASUP_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDASUP_FLOW_InstallationDirection_1	Installation direction	ENUM16	Static	2	AUTO	X
18	TRDASUP_CFM_ZeroPointAdjustControl_1	Zero point adjustment control	ENUM16	Static	2	AUTO	X
19	TRDASUP_CFM_ZeroPointAdjustProgress_1	Adjustment in progress	UINT8	Static	1		
20	TRDASUP_CFM_ZeroPointAdjustState_1	Zeropoint adjust state	ENUM16	Static	2		
21	TRDASUP_PFS_OperatingMode_1	Operating mode	ENUM16	Static	2	AUTO	X
22	TRDASUP_PFS_PulseInputSelector_1	Assign pulse output	ENUM16	Static	2	AUTO	X
23	TRDASUP_PFS_PulseValue_1	Value per pulse	FLOAT	Static	4	AUTO	X
24	TRDASUP_PFS_PulseWidth_1	Pulse width	FLOAT	Static	4	AUTO	X
25	TRDASUP_PFS_PulseMeasuringMode_1	Measuring mode	ENUM16	Static	2	AUTO	X
26	TRDASUP_PFS_PulseFailsafeMode_1	Failure mode	ENUM16	Static	2	AUTO	X
27	TRDASUP_PFS_PulseOutValue_1	Pulse output	FLOAT	Dynamic	4		
28	TRDASUP_PFS_FrequencyInputSelector_1	Assign frequency output	ENUM16	Static	2	AUTO	X
29	TRDASUP_PFS_FrequencyMinFrequency_1	Minimum frequency value	FLOAT	Static	4	AUTO	X
30	TRDASUP_PFS_FrequencyMaxFrequency_1	Maximum frequency value	FLOAT	Static	4	AUTO	X
31	TRDASUP_PFS_FrequencyMinValue_1	Measuring value at minimum frequency	FLOAT	Static	4	AUTO	X
32	TRDASUP_PFS_FrequencyMaxValue_1	Measuring value at maximum frequency	FLOAT	Static	4	AUTO	X
33	TRDASUP_PFS_FrequencyMeasuringMode_1	Measuring mode	ENUM16	Static	2	AUTO	X
34	TRDASUP_PFS_FrequencyDamping_1	Damping output	FLOAT	Static	4	AUTO	X
35	TRDASUP_PFS_OverallSignalDamping_1	Response time	FLOAT	Static	4		
36	TRDASUP_PFS_FrequencyFailsafeMode_1	Failure mode	ENUM16	Static	2	AUTO	X
37	TRDASUP_PFS_FrequencyFailsafeValue_1	Failure frequency	FLOAT	Static	4	AUTO	X
38	TRDASUP_PFS_FrequencyOutValue_1	Output frequency	FLOAT	Dynamic	4		
39	TRDASUP_PFS_StateMode_1	Switch output function	ENUM16	Static	2	AUTO	X
40	TRDASUP_PFS_MessageSelector_1	Assign diagnostic behavior	ENUM16	Static	2	AUTO	X
41	TRDASUP_PFS_LimitCheckSelector_1	Assign limit	ENUM16	Static	2	AUTO	X
42	TRDASUP_PFS_StateSwitchOnValue_1	Switch-on value	FLOAT	Static	4	AUTO	X
43	TRDASUP_PFS_StateSwitchOffValue_1	Switch-off value	FLOAT	Static	4	AUTO	X
44	TRDASUP_PFS_DirectionCheckSelector_1	Assign flow direction check	ENUM16	Static	2	AUTO	X
45	TRDASUP_PFS_StateValueSelector_1	Assign status	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
46	TRDASUP_PFS_StateSwitchOnDelay_1	Switch-on delay	FLOAT	Static	4	AUTO	X
47	TRDASUP_PFS_StateSwitchOffDelay_1	Switch-off delay	FLOAT	Static	4	AUTO	X
48	TRDASUP_PFS_StateFailsafeMode_1	Failure mode	ENUM16	Static	2	AUTO	X
49	TRDASUP_PFS_StateOutValue_1	Switch status	ENUM16	Dynamic	2		
50	TRDASUP_PFS_OutSignalInvert_1	Invert output signal	ENUM16	Static	2	AUTO	X
51	TRDASUP_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
52	TRDASUP_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
53	TRDASUP_SU_Mass_1	Mass unit	ENUM16	Static	2	AUTO	X
54	TRDASUP_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
55	TRDASUP_SU_Volume_1	Volume unit	ENUM16	Static	2	AUTO	X
56	TRDASUP_SU_CorrVolume_1	Corrected volume unit	ENUM16	Static	2	AUTO	X
57	TRDASUP_SU_CorrVolumeFlow_1	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
58	TRDASUP_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
59	TRDASUP_SU_RefDensity_1	Reference density unit	ENUM16	Static	2	AUTO	X
60	TRDASUP_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
61	TRDASUP_TIC_Channel_1	Assign process variable	ENUM16	Static	2	AUTO	X
62	TRDASUP_TIC_TotUnit_1	Unit totalizer	ENUM16	Static	2	AUTO	X
63	TRDASUP_TIC_Channel_2	Assign process variable	ENUM16	Static	2	AUTO	X
64	TRDASUP_TIC_TotUnit_2	Unit totalizer	ENUM16	Static	2	AUTO	X
65	TRDASUP_TIC_Channel_3	Assign process variable	ENUM16	Static	2	AUTO	X
66	TRDASUP_TIC_TotUnit_3	Unit totalizer	ENUM16	Static	2	AUTO	X
67	TRDASUP_SU_Pressure_1	Pressure unit	ENUM16	Static	2	AUTO	X
68	TRDASUP_CFM_MeasCarrTubeTemp_1	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
69	TRDASUP_SU_Length_1	Length unit	ENUM16	Static	2	AUTO	X
	TRDASUP_View1	View -1-	VIEW1	Dynamic	25		
	TRDASUP_StRev	Static Revision	UINT16	Static	2		
	TRDASUP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDASUP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDASUP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDASUP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	PFS_PulseOutValue	Pulse output	FLOAT	Dynamic	4		
	PFS_FrequencyOutValue	Output frequency	FLOAT	Dynamic	4		
	TRDASUP_View2	View -2-	VIEW2	Static	26		
	TRDASUP_StRev	Static Revision	UINT16	Static	2		
	TRDASUP_TransducerType	Transducer Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Mass	Mass unit	ENUM16	Static	2	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Volume	Volume unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolume	Corrected volume unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolumeFlow	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_RefDensity	Reference density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	SU_Pressure	Pressure unit	ENUM16	Static	2	AUTO	X
	SU_Length	Length unit	ENUM16	Static	2	AUTO	X
	TRDASUP_View3	View -3-	VIEW3	Dynamic	17		
	TRDASUP_StRev	Static Revision	UINT16	Static	2		
	TRDASUP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDASUP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDASUP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDASUP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDASUP_View4	View -4-	VIEW4	Static	101		
	TRDASUP_StRev	Static Revision	UINT16	Static	2		
	TRDASUP_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDASUP_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDASUP_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	PFS_OperatingMode	Operating mode	ENUM16	Static	2	AUTO	X
	PFS_PulseInputSelector	Assign pulse output	ENUM16	Static	2	AUTO	X
	PFS_PulseValue	Value per pulse	FLOAT	Static	4	AUTO	X
	PFS_PulseWidth	Pulse width	FLOAT	Static	4	AUTO	X
	PFS_PulseMeasuringMode	Measuring mode	ENUM16	Static	2	AUTO	X
	PFS_PulseFailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	PFS_FrequencyInputSelector	Assign frequency output	ENUM16	Static	2	AUTO	X
	PFS_FrequencyMinFrequency	Minimum frequency value	FLOAT	Static	4	AUTO	X
	PFS_FrequencyMaxFrequency	Maximum frequency value	FLOAT	Static	4	AUTO	X
	PFS_FrequencyMinValue	Measuring value at minimum frequency	FLOAT	Static	4	AUTO	X
	PFS_FrequencyMaxValue	Measuring value at maximum frequency	FLOAT	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	PFS_FrequencyMeasuringMode	Measuring mode	ENUM16	Static	2	AUTO	X
	PFS_FrequencyDamping	Damping output	FLOAT	Static	4	AUTO	X
	PFS_FrequencyFailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	PFS_FrequencyFailsafeValue	Failure frequency	FLOAT	Static	4	AUTO	X
	PFS_StateMode	Switch output function	ENUM16	Static	2	AUTO	X
	PFS_MessageSelector	Assign diagnostic behavior	ENUM16	Static	2	AUTO	X
	PFS_LimitCheckSelector	Assign limit	ENUM16	Static	2	AUTO	X
	PFS_StateSwitchOnValue	Switch-on value	FLOAT	Static	4	AUTO	X
	PFS_StateSwitchOffValue	Switch-off value	FLOAT	Static	4	AUTO	X
	PFS_DirectionCheckSelector	Assign flow direction check	ENUM16	Static	2	AUTO	X
	PFS_StateValueSelector	Assign status	ENUM16	Static	2	AUTO	X
	PFS_StateSwitchOnDelay	Switch-on delay	FLOAT	Static	4	AUTO	X
	PFS_StateSwitchOffDelay	Switch-off delay	FLOAT	Static	4	AUTO	X
	PFS_StateFailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	PFS_OutSignalInvert	Invert output signal	ENUM16	Static	2	AUTO	X
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X

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Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDDIAG_TransducerTypeVer		UINT16	Static	2		
12	TRDDIAG_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDDIAG_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDDIAG_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDDIAG_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDDIAG_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
17	TRDDIAG_SPV_CurrentEventCategory_1	Status signal	ENUM8	Static	1		
18	TRDDIAG_SPV_CurrentEventId_1	Actual diagnostics	UINT16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
19	TRDDIAG_SPV_CurrentEventSpecificData_1	Actual diag channel	UINT8	Static	1		
20	TRDDIAG_SPV_CurrentTimestamp_1	Timestamp	STRING	Static	14		
21	TRDDIAG_SPV_PreviousEventCategory_1	Event category	ENUM8	Static	1		
22	TRDDIAG_SPV_PreviousEventId_1	Previous diagnostics	UINT16	Static	2		
23	TRDDIAG_SPV_PreviousEventSpecificData_1	Previous diag channel	UINT8	Static	1		
24	TRDDIAG_SPV_PreviousTimestamp_1	Timestamp	STRING	Static	14		
25	TRDDIAG_SPV_OperationHoursSinceReset_1	Operating time from restart	STRING	Dynamic	14		
26	TRDDIAG_SPV_OperationHours_1	Operating time	STRING	Dynamic	14		
27	TRDDIAG_SPV_DiagItem1EventCategory_1	Event category 1	ENUM8	Static	1		
28	TRDDIAG_SPV_DiagItem1EventId_1	Diagnostics 1	UINT16	Static	2		
29	TRDDIAG_SPV_DiagItem1EventSpecificData_1	Diagnostics 1 channel	UINT8	Static	1		
30	TRDDIAG_SPV_DiagItem1Timestamp_1	Timestamp	STRING	Static	14		
31	TRDDIAG_SPV_DiagItem2EventCategory_1	Event category 2	ENUM8	Static	1		
32	TRDDIAG_SPV_DiagItem2EventId_1	Diagnostics 2	UINT16	Static	2		
33	TRDDIAG_SPV_DiagItem2EventSpecificData_1	Diagnostics 2 channel	UINT8	Static	1		
34	TRDDIAG_SPV_DiagItem2Timestamp_1	Timestamp	STRING	Static	14		
35	TRDDIAG_SPV_DiagItem3EventCategory_1	Event category 3	ENUM8	Static	1		
36	TRDDIAG_SPV_DiagItem3EventId_1	Diagnostics 3	UINT16	Static	2		
37	TRDDIAG_SPV_DiagItem3EventSpecificData_1	Diagnostics 3 channel	UINT8	Static	1		
38	TRDDIAG_SPV_DiagItem3Timestamp_1	Timestamp	STRING	Static	14		
39	TRDDIAG_SPV_DiagItem4EventCategory_1	Event category 4	ENUM8	Static	1		
40	TRDDIAG_SPV_DiagItem4EventId_1	Diagnostics 4	UINT16	Static	2		
41	TRDDIAG_SPV_DiagItem4EventSpecificData_1	Diagnostics 4 channel	UINT8	Static	1		
42	TRDDIAG_SPV_DiagItem4Timestamp_1	Timestamp	STRING	Static	14		
43	TRDDIAG_SPV_DiagItem5EventCategory_1	Event category 5	ENUM8	Static	1		
44	TRDDIAG_SPV_DiagItem5EventId_1	Diagnostics 5	UINT16	Static	2		
45	TRDDIAG_SPV_DiagItem5EventSpecificData_1	Diagnostics 5 channel	UINT8	Static	1		
46	TRDDIAG_SPV_DiagItem5Timestamp_1	Timestamp	STRING	Static	14		
47	TRDDIAG_SPV_FilterOptions_1	Filter options	ENUM8	Static	1	AUTO	X
48	TRDDIAG_SPV_ClearEventList_1	Clear event list	ENUM16	Static	2	AUTO	X
49	TRDDIAG_SPV_AlarmDelay_1	Alarm delay	FLOAT	Static	4	AUTO	X
50	TRDDIAG_SPV_ClampingVoltage_1	Terminal voltage 1	FLOAT	Dynamic	4		
51	TRDDIAG_MassFlowInput	Mass flow	Standard	Dynamic	5		
	TRDDIAG_Out1Status	Status	ENUM8	Dynamic	1		
	FLOW_MassFlow	Mass flow	FLOAT	Dynamic	4		
52	TRDDIAG_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
53	TRDDIAG_VolumeFlowInput	Volume flow	Standard	Dynamic	5		
	TRDDIAG_Out2Status	Status	ENUM8	Dynamic	1		
	FLOW_VolumeFlow	Volume flow	FLOAT	Dynamic	4		
54	TRDDIAG_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
55	TRDDIAG_CorrVolumeFlowInput	Corrected volume flow	Standard	Dynamic	5		
	TRDDIAG_Out3Status	Status	ENUM8	Dynamic	1		
	FLOW_CorrVolumeFlow	Corrected volume flow	FLOAT	Dynamic	4		
56	TRDDIAG_SU_CorrVolumeFlow_1	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
57	TRDDIAG_DensityInput	Density	Standard	Dynamic	5		
	TRDDIAG_Out4Status	Status	ENUM8	Dynamic	1		
	FLOW_Density	Density	FLOAT	Dynamic	4		
58	TRDDIAG_RefDensityInput	Reference density	Standard	Dynamic	5		
	TRDDIAG_Out5Status	Status	ENUM8	Dynamic	1		
	FLOW_RefDensity	Reference density	FLOAT	Dynamic	4		
59	TRDDIAG_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
60	TRDDIAG_TemperatureInput	Temperature	Standard	Dynamic	5		
	TRDDIAG_Out6Status	Status	ENUM8	Dynamic	1		
	FLOW_Temperature	Temperature	FLOAT	Dynamic	4		
61	TRDDIAG_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
62	TRDDIAG_FLOW_SimulationSelector_1	Assign simulation process variable	ENUM16	Static	2	AUTO	X
63	TRDDIAG_FLOW_SimulationValue_1	Value process variable	FLOAT	Static	4	AUTO	X
64	TRDDIAG_PFS_OperatingMode_1	Operating mode	ENUM16	Static	2	AUTO	X
65	TRDDIAG_PFS_PulseSimulationMode_1	Pulse simulation	ENUM16	Static	2	AUTO	X
66	TRDDIAG_PFS_PulseSimulationValue_1	Pulse value	UINT16	Static	2	AUTO	X
67	TRDDIAG_PFS_PulseOutValue_1	Pulse output	FLOAT	Dynamic	4		
68	TRDDIAG_PFS_FrequencySimulationMode_1	Frequency simulation	ENUM16	Static	2	AUTO	X
69	TRDDIAG_PFS_FrequencySimulationValue_1	Frequency value	FLOAT	Static	4	AUTO	X
70	TRDDIAG_PFS_FrequencyOutValue_1	Output frequency	FLOAT	Dynamic	4		
71	TRDDIAG_PFS_StateSimulationMode_1	Switch output simulation	ENUM16	Static	2	AUTO	X
72	TRDDIAG_PFS_StateSimulationValue_1	Switch status	ENUM16	Static	2	AUTO	X
73	TRDDIAG_PFS_StateOutValue_1	Switch status	ENUM16	Dynamic	2		
74	TRDDIAG_SPV_SimulationFailsafeMode_1	Simulation device alarm	ENUM16	Static	2	AUTO	X
75	TRDDIAG_SPV_SimulationEvent_1	Simulation diagnostic event	UINT32	Static	4	AUTO	X
76	TRDDIAG_SPV_SimulateDiagCodeGroup_1	Diagnostic event category	ENUM8	Static	1	AUTO	X
77	TRDDIAG_SPV_SimulateDiagCode_1	Simulation diagnostic event	ENUM32	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
78	TRDDIAG_HB_InputSelector1_1	Assign channel 1	ENUM16	Static	2	AUTO	X
79	TRDDIAG_HB_InputSelector2_1	Assign channel 2	ENUM16	Static	2	AUTO	X
80	TRDDIAG_HB_InputSelector3_1	Assign channel 3	ENUM16	Static	2	AUTO	X
81	TRDDIAG_HB_InputSelector4_1	Assign channel 4	ENUM16	Static	2	AUTO	X
82	TRDDIAG_HB_TrendInterval_1	Logging interval	FLOAT	Static	4	AUTO	X
83	TRDDIAG_HB_TrendClear_1	Clear logging data	ENUM16	Static	2	AUTO	X
84	TRDDIAG_FF912ConfigArea	CA	Standard	Static	30		X
	TRDDIAG_FF912ConfigArea_1	Configurable Area Bit 1	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_2	Configurable Area Bit 2	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_3	Configurable Area Bit 3	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_4	Configurable Area Bit 4	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_5	Configurable Area Bit 5	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_6	Configurable Area Bit 6	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_7	Configurable Area Bit 7	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_8	Configurable Area Bit 8	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_9	Configurable Area Bit 9	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_10	Configurable Area Bit 10	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_11	Configurable Area Bit 11	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_12	Configurable Area Bit 12	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_13	Configurable Area Bit 13	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_14	Configurable Area Bit 14	UINT16	Static	2	AUTO	X
	TRDDIAG_FF912ConfigArea_15	Configurable Area Bit 15	UINT16	Static	2	AUTO	X
85	TRDDIAG_FF912StatusSelect	Assign status of diagnostic number 044	ENUM8	Static	1	AUTO	X
86	TRDDIAG_FF912StatusSelect_2	Assign status of diagnostic number 046	ENUM8	Static	1	AUTO	X
87	TRDDIAG_FF912StatusSelect_3	Assign status of diagnostic number 274	ENUM8	Static	1	AUTO	X
88	TRDDIAG_FF912StatusSelect_6	Assign status of diagnostic number 801	ENUM8	Static	1	AUTO	X
89	TRDDIAG_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
90	TRDDIAG_FF912StatusSelect_11	Assign status of diagnostic number 830	ENUM8	Static	1	AUTO	X
91	TRDDIAG_FF912StatusSelect_12	Assign status of diagnostic number 831	ENUM8	Static	1	AUTO	X
92	TRDDIAG_FF912StatusSelect_7	Assign status of diagnostic number 832	ENUM8	Static	1	AUTO	X
93	TRDDIAG_FF912StatusSelect_8	Assign status of diagnostic number 833	ENUM8	Static	1	AUTO	X
94	TRDDIAG_FF912StatusSelect_9	Assign status of diagnostic number 834	ENUM8	Static	1	AUTO	X
95	TRDDIAG_FF912StatusSelect_10	Assign status of diagnostic number 835	ENUM8	Static	1	AUTO	X
96	TRDDIAG_FF912StatusSelect_13	Assign status of diagnostic number 862	ENUM8	Static	1	AUTO	X
97	TRDDIAG_FF912StatusSelect_14	Assign status of diagnostic number 912	ENUM8	Static	1	AUTO	X
98	TRDDIAG_FF912StatusSelect_15	Assign status of diagnostic number 913	ENUM8	Static	1	AUTO	X
99	TRDDIAG_SPV_EventClassFrequencyLimit_1	Assign behavior of diagnostic no. 046	ENUM16	Static	2	AUTO	X
100	TRDDIAG_SPV_EventClassElDynSensor_1	Assign behavior of diagnostic no. 140	ENUM16	Static	2	AUTO	X
101	TRDDIAG_SPV_EventClassIncompHWConfiguration_1	Assign behavior of diagnostic no. 252	ENUM16	Static	2	AUTO	X
102	TRDDIAG_SPV_EventClassZPCorrection_1	Assign behavior of diagnostic no. 274	ENUM16	Static	2	AUTO	X
103	TRDDIAG_SPV_EventClassRangeFrequencyOut_1	Assign behavior of diagnostic no. 442	ENUM16	Static	2	AUTO	X
104	TRDDIAG_SPV_EventClassRangePulseOut_1	Assign behavior of diagnostic no. 443	ENUM16	Static	2	AUTO	X
105	TRDDIAG_SPV_EventClassTerminalVoltageLow_1	Assign behavior of diagnostic no. 801	ENUM16	Static	2	AUTO	X
106	TRDDIAG_SPV_EventClassCarrTempHigh_1	Assign behavior of diagnostic no. 830	ENUM16	Static	2	AUTO	X
107	TRDDIAG_SPV_EventClassCarrTempLow_1	Assign behavior of diagnostic no. 831	ENUM16	Static	2	AUTO	X
108	TRDDIAG_SPV_EventClassElecTempHigh_1	Assign behavior of diagnostic no. 832	ENUM16	Static	2	AUTO	X
109	TRDDIAG_SPV_EventClassElecTempLow_1	Assign behavior of diagnostic no. 833	ENUM16	Static	2	AUTO	X
110	TRDDIAG_SPV_EventClassFluidTempHigh_1	Assign behavior of diagnostic no. 834	ENUM16	Static	2	AUTO	X
111	TRDDIAG_SPV_EventClassFluidTempLow_1	Assign behavior of diagnostic no. 835	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
112	TRDDIAG_SPV_EventClassDensityMonitoring_1	Assign behavior of diagnostic no. 862	ENUM16	Static	2	AUTO	X
113	TRDDIAG_SPV_EventClassFluidInhomogeneous_1	Assign behavior of diagnostic no. 912	ENUM16	Static	2	AUTO	X
114	TRDDIAG_SPV_EventClassOscAmpLimit_1	Assign behavior of diagnostic no. 913	ENUM16	Static	2	AUTO	X
115	TRDDIAG_CFM_MeasCarrTubeTemp_1	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
116	TRDDIAG_SPV_DiagListItem5Union_1	Diagnostics 5	UINT32	Static	4		
117	TRDDIAG_SPV_DiagListItem4Union_1	Diagnostics 4	UINT32	Static	4		
118	TRDDIAG_SPV_DiagListItem3Union_1	Diagnostics 3	UINT32	Static	4		
119	TRDDIAG_SPV_DiagListItem2Union_1	Diagnostics 2	UINT32	Static	4		
120	TRDDIAG_SPV_DiagListItem1Union_1	Diagnostics 1	UINT32	Static	4		
121	TRDDIAG_SPV_PreviousSysConditionUnion_1	Previous diagnostics	UINT32	Static	4		
122	TRDDIAG_SPV_CurrentSysConditionUnion_1	Actual diagnostics	UINT32	Static	4		
123	TRDDIAG_SPV_CurrentEventCategorySeparated_1	Status signal	ENUM8	Dynamic	1		
124	TRDDIAG_SPV_DiagnoseListeItemsNeedUpdate_1		UINT32	Dynamic	4		
125	TRDDIAG_SU_RefDensity_1	Reference density unit	ENUM16	Static	2	AUTO	X
126	TRDDIAG_SU_Pressure_1	Pressure unit	ENUM16	Static	2	AUTO	X
	TRDDIAG_View1	View -1-	VIEW1	Dynamic	84		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	TRDDIAG_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDDIAG_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDDIAG_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDDIAG_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	SPV_OperationHoursSinceReset	Operating time from restart	STRING	Dynamic	14		
	SPV_OperationHours	Operating time	STRING	Dynamic	14		
	SPV_ClampingVoltage	Terminal voltage 1	FLOAT	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	SPV_CurrentEventCategorySeparated	Status signal	ENUM8	Dynamic	1		
	SPV_DiagnoseListeItemsNeedUpdate		UINT32	Dynamic	4		
	TRDDIAG_View2	View -2-	VIEW2	Static	99		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	TRDDIAG_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	SPV_CurrentTimestamp	Timestamp	STRING	Static	14		
	SPV_DiagItem1Timestamp	Timestamp	STRING	Static	14		
	SPV_DiagItem2Timestamp	Timestamp	STRING	Static	14		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SPV_DiagItem3Timestamp	Timestamp	STRING	Static	14		
	TRDDIAG_FF912StatusSelect	Assign status of diagnostic number 044	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_2	Assign status of diagnostic number 046	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_3	Assign status of diagnostic number 274	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_6	Assign status of diagnostic number 801	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_11	Assign status of diagnostic number 830	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_12	Assign status of diagnostic number 831	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_7	Assign status of diagnostic number 832	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_8	Assign status of diagnostic number 833	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_9	Assign status of diagnostic number 834	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_10	Assign status of diagnostic number 835	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_13	Assign status of diagnostic number 862	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_14	Assign status of diagnostic number 912	ENUM8	Static	1	AUTO	X
	TRDDIAG_FF912StatusSelect_15	Assign status of diagnostic number 913	ENUM8	Static	1	AUTO	X
	SPV_DiagListItem3Union	Diagnostics 3	UINT32	Static	4		
	SPV_DiagListItem2Union	Diagnostics 2	UINT32	Static	4		
	SPV_DiagListItem1Union	Diagnostics 1	UINT32	Static	4		
	SPV_PreviousSysConditionUnion	Previous diagnostics	UINT32	Static	4		
	SPV_CurrentSysConditionUnion	Actual diagnostics	UINT32	Static	4		
	TRDDIAG_View3	View -3-	VIEW3	Dynamic	50		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	TRDDIAG_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDDIAG_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDDIAG_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDDIAG_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SPV_OperationHoursSinceReset	Operating time from restart	STRING	Dynamic	14		
	SPV_OperationHours	Operating time	STRING	Dynamic	14		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	SPV_CurrentEventCategorySeparated	Status signal	ENUM8	Dynamic	1		
	SPV_DiagnoseListeItemsNeedUpdate		UINT32	Dynamic	4		
	TRDDIAG_View4	View -4-	VIEW4	Static	95		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	TRDDIAG_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDDIAG_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDDIAG_TransducerType	Transducer Type	ENUM16	Static	2		
	SPV_DiagItem4Timestamp	Timestamp	STRING	Static	14		
	SPV_DiagItem5Timestamp	Timestamp	STRING	Static	14		
	SPV_FilterOptions	Filter options	ENUM8	Static	1	AUTO	X
	SPV_ClearEventList	Clear event list	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolumeFlow	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	FLOW_SimulationSelector	Assign simulation process variable	ENUM16	Static	2	AUTO	X
	FLOW_SimulationValue	Value process variable	FLOAT	Static	4	AUTO	X
	PFS_OperatingMode	Operating mode	ENUM16	Static	2	AUTO	X
	PFS_PulseSimulationMode	Pulse simulation	ENUM16	Static	2	AUTO	X
	PFS_PulseSimulationValue	Pulse value	UINT16	Static	2	AUTO	X
	PFS_FrequencySimulationMode	Frequency simulation	ENUM16	Static	2	AUTO	X
	PFS_FrequencySimulationValue	Frequency value	FLOAT	Static	4	AUTO	X
	PFS_StateSimulationMode	Switch output simulation	ENUM16	Static	2	AUTO	X
	PFS_StateSimulationValue	Switch status	ENUM16	Static	2	AUTO	X
	SPV_SimulationFailsafeMode	Simulation device alarm	ENUM16	Static	2	AUTO	X
	SPV_SimulationEvent	Simulation diagnostic event	UINT32	Static	4	AUTO	X
	SPV_SimulateDiagCodeGroup	Diagnostic event category	ENUM8	Static	1	AUTO	X
	SPV_SimulateDiagCode	Simulation diagnostic event	ENUM32	Static	4	AUTO	X
	CFM_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
	SPV_DiagListItem5Union	Diagnostics 5	UINT32	Static	4		
	SPV_DiagListItem4Union	Diagnostics 4	UINT32	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SU_RefDensity	Reference density unit	ENUM16	Static	2	AUTO	X
	SU_Pressure	Pressure unit	ENUM16	Static	2	AUTO	X
	TRDDIAG_View4_2	View -4-1	VIEW4	Static	92		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	SPV_CurrentEventCategory	Status signal	ENUM8	Static	1		
	SPV_CurrentEventId	Actual diagnostics	UINT16	Static	2		
	SPV_CurrentEventSpecificData	Actual diag channel	UINT8	Static	1		
	SPV_PreviousEventCategory	Event category	ENUM8	Static	1		
	SPV_PreviousEventId	Previous diagnostics	UINT16	Static	2		
	SPV_PreviousEventSpecificData	Previous diag channel	UINT8	Static	1		
	SPV_PreviousTimestamp	Timestamp	STRING	Static	14		
	SPV_DiagItem1EventCategory	Event category 1	ENUM8	Static	1		
	SPV_DiagItem1EventId	Diagnostics 1	UINT16	Static	2		
	SPV_DiagItem1EventSpecificData	Diagnostics 1 channel	UINT8	Static	1		
	SPV_DiagItem2EventCategory	Event category 2	ENUM8	Static	1		
	SPV_DiagItem2EventId	Diagnostics 2	UINT16	Static	2		
	SPV_DiagItem2EventSpecificData	Diagnostics 2 channel	UINT8	Static	1		
	SPV_DiagItem3EventCategory	Event category 3	ENUM8	Static	1		
	SPV_DiagItem3EventId	Diagnostics 3	UINT16	Static	2		
	SPV_DiagItem3EventSpecificData	Diagnostics 3 channel	UINT8	Static	1		
	SPV_DiagItem4EventCategory	Event category 4	ENUM8	Static	1		
	SPV_DiagItem4EventId	Diagnostics 4	UINT16	Static	2		
	SPV_DiagItem4EventSpecificData	Diagnostics 4 channel	UINT8	Static	1		
	SPV_DiagItem5EventCategory	Event category 5	ENUM8	Static	1		
	SPV_DiagItem5EventId	Diagnostics 5	UINT16	Static	2		
	SPV_DiagItem5EventSpecificData	Diagnostics 5 channel	UINT8	Static	1		
	SPV_AlarmDelay	Alarm delay	FLOAT	Static	4	AUTO	X
	HB_InputSelector1	Assign channel 1	ENUM16	Static	2	AUTO	X
	HB_InputSelector2	Assign channel 2	ENUM16	Static	2	AUTO	X
	HB_InputSelector3	Assign channel 3	ENUM16	Static	2	AUTO	X
	HB_InputSelector4	Assign channel 4	ENUM16	Static	2	AUTO	X
	HB_TrendInterval	Logging interval	FLOAT	Static	4	AUTO	X
	HB_TrendClear	Clear logging data	ENUM16	Static	2	AUTO	X
	TRDDIAG_View4_3	View -4-2	VIEW4	Static	34		
	TRDDIAG_StRev	Static Revision	UINT16	Static	2		
	SPV_EventClassFrequencyLimit	Assign behavior of diagnostic no. 046	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SPV_EventClassElDynSensor	Assign behavior of diagnostic no. 140	ENUM16	Static	2	AUTO	X
	SPV_EventClassIncompHWConfiguration	Assign behavior of diagnostic no. 252	ENUM16	Static	2	AUTO	X
	SPV_EventClassZPCorrection	Assign behavior of diagnostic no. 274	ENUM16	Static	2	AUTO	X
	SPV_EventClassRangeFrequencyOut	Assign behavior of diagnostic no. 442	ENUM16	Static	2	AUTO	X
	SPV_EventClassRangePulseOut	Assign behavior of diagnostic no. 443	ENUM16	Static	2	AUTO	X
	SPV_EventClassTerminalVoltageLow	Assign behavior of diagnostic no. 801	ENUM16	Static	2	AUTO	X
	SPV_EventClassCarrTempHigh	Assign behavior of diagnostic no. 830	ENUM16	Static	2	AUTO	X
	SPV_EventClassCarrTempLow	Assign behavior of diagnostic no. 831	ENUM16	Static	2	AUTO	X
	SPV_EventClassElecTempHigh	Assign behavior of diagnostic no. 832	ENUM16	Static	2	AUTO	X
	SPV_EventClassElecTempLow	Assign behavior of diagnostic no. 833	ENUM16	Static	2	AUTO	X
	SPV_EventClassFluidTempHigh	Assign behavior of diagnostic no. 834	ENUM16	Static	2	AUTO	X
	SPV_EventClassFluidTempLow	Assign behavior of diagnostic no. 835	ENUM16	Static	2	AUTO	X
	SPV_EventClassDensityMonitoring	Assign behavior of diagnostic no. 862	ENUM16	Static	2	AUTO	X
	SPV_EventClassFluidInhomogeneous	Assign behavior of diagnostic no. 912	ENUM16	Static	2	AUTO	X
	SPV_EventClassOscAmpLimit	Assign behavior of diagnostic no. 913	ENUM16	Static	2	AUTO	X

17.1.4 Transducer Block Display

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDDISP_TransducerTypeVer		UINT16	Static	2		
12	TRDDISP_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDDISP_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDDISP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDDISP_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDDISP_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDDISP_DISP_LockingState_1	Locking status	ENUM16	Static	2		
18	TRDDISP_DISP_UserLevel_1	Access status display	ENUM16	Static	2		
19	TRDDISP_DISP_AccessCode_1	Enter access code	UINT16	Static	2	AUTO	X
20	TRDDISP_DISP_PrivateCode_1	Define access code	UINT16	Static	2	AUTO	X
21	TRDDISP_DISP_Language_1	Language	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
22	TRDDISP_DISP_MainMeasFormat_1	Format display	ENUM16	Static	2	AUTO	X
23	TRDDISP_DISP_InputSelector01_1	Value 1 display	ENUM16	Static	2	AUTO	X
24	TRDDISP_DISP_DecimalPlaces01_1	Decimal places 1	ENUM16	Static	2	AUTO	X
25	TRDDISP_DISP_InputSelector02_1	Value 2 display	ENUM16	Static	2	AUTO	X
26	TRDDISP_DISP_DecimalPlaces02_1	Decimal places 2	ENUM16	Static	2	AUTO	X
27	TRDDISP_DISP_InputSelector03_1	Value 3 display	ENUM16	Static	2	AUTO	X
28	TRDDISP_DISP_DecimalPlaces03_1	Decimal places 3	ENUM16	Static	2	AUTO	X
29	TRDDISP_DISP_InputSelector04_1	Value 4 display	ENUM16	Static	2	AUTO	X
30	TRDDISP_DISP_DecimalPlaces04_1	Decimal places 4	ENUM16	Static	2	AUTO	X
31	TRDDISP_DISP_AlternatingTime_1	Display interval	FLOAT	Static	4	AUTO	X
32	TRDDISP_DISP_DampingTime_1	Display damping	FLOAT	Static	4	AUTO	X
33	TRDDISP_DISP_MainMeasDesignation_1	Header	ENUM16	Static	2	AUTO	X
34	TRDDISP_DISP_FreeText_1	Header text	STRING	Static	12	AUTO	X
35	TRDDISP_DISP_SeparationCharacter_1	Separator	ENUM16	Static	2	AUTO	X
36	TRDDISP_DISP_VisuFormat_1		ENUM16	Static	2	AUTO	X
37	TRDDISP_DISP_Contrast_1	Contrast display	FLOAT	Static	4	AUTO	X
38	TRDDISP_DISP_BackLight_1	Backlight	ENUM16	Static	2	AUTO	X
39	TRDDISP_SPV_OperationHours_1	Operating time	STRING	Dynamic	14		
40	TRDDISP_DISP_DeviceDateTimestamp_1	Last backup	STRING	Static	14	AUTO	
41	TRDDISP_DISP_BackupAction_1	Configuration management	ENUM16	Static	2	AUTO	X
42	TRDDISP_DISP_StateOfCompDisplayAndDevice_1	Comparison result	ENUM16	Static	2	AUTO	
43	TRDDISP_DISP_IsBacklightAvailable_1	Backlight	ENUM16	Static	2	AUTO	
44	TRDDISP_DISP_IsCloneAvailable_1	Is clone available	UINT8	Static	1	AUTO	X
45	TRDDISP_DISP_IsRestoreAvailable_1	Is restore available	UINT8	Static	1	AUTO	X
46	TRDDISP_DISP_BackupStatus_1	Backup state	ENUM16	Dynamic	2	AUTO	
47	TRDDISP_DISP_FixDisplayedInput_1		ENUM16	Static	2	AUTO	X
48	TRDDISP_STD_LanguagesSupported_1	Languages supported	BIT_ENUM32	Static	4		
49	TRDDISP_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
50	TRDDISP_MDI_ModuleID_4	Module ID	UINT16	Static	2	AUTO	
51	TRDDISP_MDI_ModuleAvailable_4	Resource available	UINT8	Static	1		
52	TRDDISP_MDI_ModuleFirmwareRevision_4	Software revision	UINT32	Static	4		
53	TRDDISP_DISP_Value01_0Percent_1	0% bargraph value 1	FLOAT	Static	4	AUTO	X
54	TRDDISP_DISP_Value01_100Percent_1	100% bargraph value 1	FLOAT	Static	4	AUTO	X
55	TRDDISP_DISP_Value03_0Percent_1	0% bargraph value 3	FLOAT	Static	4	AUTO	X
56	TRDDISP_DISP_Value03_100Percent_1	100% bargraph value 3	FLOAT	Static	4	AUTO	X
57	TRDDISP_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
58	TRDDISP_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
59	TRDDISP_SU_CorrVolumeFlow_1	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
60	TRDDISP_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
61	TRDDISP_SU_RefDensity_1	Reference density unit	ENUM16	Static	2	AUTO	X
62	TRDDISP_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
63	TRDDISP_SU_Pressure_1	Pressure unit	ENUM16	Static	2	AUTO	X
64	TRDDISP_TIC_Channel_1	Assign process variable	ENUM16	Static	2	AUTO	X
65	TRDDISP_TIC_TotUnit_1	Unit totalizer	ENUM16	Static	2	AUTO	X
66	TRDDISP_TIC_Channel_2	Assign process variable	ENUM16	Static	2	AUTO	X
67	TRDDISP_TIC_TotUnit_2	Unit totalizer	ENUM16	Static	2	AUTO	X
68	TRDDISP_TIC_Channel_3	Assign process variable	ENUM16	Static	2	AUTO	X
69	TRDDISP_TIC_TotUnit_3	Unit totalizer	ENUM16	Static	2	AUTO	X
	TRDDISP_View1	View -1-	VIEW1	Dynamic	19		
	TRDDISP_StRev	Static Revision	UINT16	Static	2		
	TRDDISP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDDISP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDDISP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDDISP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	DISP_BackupStatus	Backup state	ENUM16	Dynamic	2	AUTO	
	TRDDISP_View2	View -2-	VIEW2	Static	62		
	TRDDISP_StRev	Static Revision	UINT16	Static	2		
	TRDDISP_TransducerType	Transducer Type	ENUM16	Static	2		
	DISP_UserLevel	Access status display	ENUM16	Static	2		
	DISP_AccessCode	Enter access code	UINT16	Static	2	AUTO	X
	DISP_PrivateCode	Define access code	UINT16	Static	2	AUTO	X
	DISP_Language	Language	ENUM16	Static	2	AUTO	X
	DISP_MainMeasFormat	Format display	ENUM16	Static	2	AUTO	X
	DISP_AlternatingTime	Display interval	FLOAT	Static	4	AUTO	X
	DISP_DampingTime	Display damping	FLOAT	Static	4	AUTO	X
	DISP_MainMeasDesignation	Header	ENUM16	Static	2	AUTO	X
	DISP_FreeText	Header text	STRING	Static	12	AUTO	X
	DISP_SeparationCharacter	Separator	ENUM16	Static	2	AUTO	X
	DISP_VisuFormat		ENUM16	Static	2	AUTO	X
	DISP_Contrast	Contrast display	FLOAT	Static	4	AUTO	X
	DISP_BackLight	Backlight	ENUM16	Static	2	AUTO	X
	DISP_BackupAction	Configuration management	ENUM16	Static	2	AUTO	X
	DISP_StateOfCompDisplayAndDevice	Comparison result	ENUM16	Static	2	AUTO	

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	DISP_IsBacklightAvailable	Backlight	ENUM16	Static	2	AUTO	
	DISP_IsCloneAvailable	Is clone available	UINT8	Static	1	AUTO	X
	DISP_IsRestoreAvailable	Is restore available	UINT8	Static	1	AUTO	X
	DISP_FixDisplayedInput		ENUM16	Static	2	AUTO	X
	STD_LanguagesSupported	Languages supported	BIT_ENUM32	Static	4		
	MDI_ModuleID	Module ID	UINT16	Static	2	AUTO	
	TRDDISP_View3	View -3-	VIEW3	Dynamic	31		
	TRDDISP_StRev	Static Revision	UINT16	Static	2		
	TRDDISP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDDISP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDDISP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDDISP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	SPV_OperationHours	Operating time	STRING	Dynamic	14		
	TRDDISP_View4	View -4-	VIEW4	Static	86		
	TRDDISP_StRev	Static Revision	UINT16	Static	2		
	TRDDISP_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDDISP_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDDISP_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	DISP_LockingState	Locking status	ENUM16	Static	2		
	DISP_InputSelector01	Value 1 display	ENUM16	Static	2	AUTO	X
	DISP_DecimalPlaces01	Decimal places 1	ENUM16	Static	2	AUTO	X
	DISP_InputSelector02	Value 2 display	ENUM16	Static	2	AUTO	X
	DISP_DecimalPlaces02	Decimal places 2	ENUM16	Static	2	AUTO	X
	DISP_InputSelector03	Value 3 display	ENUM16	Static	2	AUTO	X
	DISP_DecimalPlaces03	Decimal places 3	ENUM16	Static	2	AUTO	X
	DISP_InputSelector04	Value 4 display	ENUM16	Static	2	AUTO	X
	DISP_DecimalPlaces04	Decimal places 4	ENUM16	Static	2	AUTO	X
	DISP_DeviceDateTimestamp	Last backup	STRING	Static	14	AUTO	
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	MDI_ModuleAvailable	Resource available	UINT8	Static	1		
	MDI_ModuleFirmwareRevision	Software revision	UINT32	Static	4		
	DISP_Value01_0Percent	0% bargraph value 1	FLOAT	Static	4	AUTO	X
	DISP_Value01_100Percent	100% bargraph value 1	FLOAT	Static	4	AUTO	X
	DISP_Value03_0Percent	0% bargraph value 3	FLOAT	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	DISP_Value03_100Percent	100% bargraph value 3	FLOAT	Static	4	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolumeFlow	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_RefDensity	Reference density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	SU_Pressure	Pressure unit	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X

17.1.5 Transducer Block Expert

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDEXP_TransducerTypeVer		UINT16	Static	2		
12	TRDEXP_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDEXP_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDEXP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDEXP_STD_AccessCode_1	Enter access code	UINT16	Static	2	AUTO	
16	TRDEXP_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
17	TRDEXP_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
18	TRDEXP_STD_LicenseCode_1	Activate SW option	UINT32	Static	4	AUTO	X
19	TRDEXP_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
20	TRDEXP_FLOW_FlowDampingTime_1	Flow damping	FLOAT	Static	4	AUTO	X
21	TRDEXP_FLOW_DensityDampingTime_1	Density damping	FLOAT	Static	4	AUTO	X
22	TRDEXP_FLOW_PositivZeroReturn_1	Flow override	ENUM16	Static	2	AUTO	X
23	TRDEXP_FLOW_TemperatureDampingTime_1	Temperature damping	FLOAT	Static	4	AUTO	X
24	TRDEXP_FLOW_DensityMonitoringSelector_1	Assign process variable	ENUM16	Static	2	AUTO	X
25	TRDEXP_CFM_DampingMax_1	Maximum damping partial filled pipe det.	FLOAT	Static	4	AUTO	X
26	TRDEXP_FLOW_MassFlowOffset_1	Mass flow offset	FLOAT	Static	4	AUTO	X
27	TRDEXP_FLOW_MassFlowScale_1	Mass flow factor	FLOAT	Static	4	AUTO	X
28	TRDEXP_FLOW_VolumeFlowOffset_1	Volume flow offset	FLOAT	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
29	TRDEXP_FLOW_VolumeFlowScale_1	Volume flow factor	FLOAT	Static	4	AUTO	X
30	TRDEXP_FLOW_CorrVolumeFlowOffset_1	Corrected volume flow offset	FLOAT	Static	4	AUTO	X
31	TRDEXP_FLOW_CorrVolumeFlowScale_1	Corrected volume flow factor	FLOAT	Static	4	AUTO	X
32	TRDEXP_FLOW_DensityOffset_1	Density offset	FLOAT	Static	4	AUTO	X
33	TRDEXP_FLOW_DensityScale_1	Density factor	FLOAT	Static	4	AUTO	X
34	TRDEXP_FLOW_RefDensityOffset_1	Reference density offset	FLOAT	Static	4	AUTO	X
35	TRDEXP_FLOW_RefDensityScale_1	Reference density factor	FLOAT	Static	4	AUTO	X
36	TRDEXP_FLOW_TemperatureOffset_1	Temperature offset	FLOAT	Static	4	AUTO	X
37	TRDEXP_FLOW_TemperatureScale_1	Temperature factor	FLOAT	Static	4	AUTO	X
38	TRDEXP_CFM_ResetMinMaxRecords_1	Reset min/max values	ENUM16	Static	2	AUTO	X
39	TRDEXP_SPV_ClampingVoltagePointerMin_1	Minimum value	FLOAT	Static	4	AUTO	
40	TRDEXP_SPV_ClampingVoltagePointerMax_1	Maximum value	FLOAT	Static	4	AUTO	
41	TRDEXP_SPV_ClampingVoltagePointerAverage_1	Average value	FLOAT	Dynamic	4		
42	TRDEXP_CFM_ElecTempMin_1	Minimum value	FLOAT	Static	4	AUTO	
43	TRDEXP_CFM_ElecTempMax_1	Maximum value	FLOAT	Static	4	AUTO	
44	TRDEXP_SPV_TemperaturePointerMin_1	Minimum value	FLOAT	Static	4	AUTO	
45	TRDEXP_SPV_TemperaturePointerMax_1	Maximum value	FLOAT	Static	4	AUTO	
46	TRDEXP_SPV_TemperaturPointerAverage_1	Average value	FLOAT	Dynamic	4		
47	TRDEXP_CFM_MeasTempMin_1	Minimum value	FLOAT	Static	4	AUTO	
48	TRDEXP_CFM_MeasTempMax_1	Maximum value	FLOAT	Static	4	AUTO	
49	TRDEXP_CFM_MeasCarrTubeTemp_1	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
50	TRDEXP_CFM_CarrTempMin_1	Minimum value	FLOAT	Static	4	AUTO	
51	TRDEXP_CFM_CarrTempMax_1	Maximum value	FLOAT	Static	4	AUTO	
52	TRDEXP_CFM_FrequencyMin_1	Minimum value	FLOAT	Dynamic	4		
53	TRDEXP_CFM_FrequencyMax_1	Maximum value	FLOAT	Dynamic	4		
54	TRDEXP_CFM_AmplitudeMin_1	Minimum value	FLOAT	Dynamic	4		
55	TRDEXP_CFM_AmplitudeMax_1	Maximum value	FLOAT	Dynamic	4		
56	TRDEXP_CFM_OscDampingMin_1	Minimum value	FLOAT	Dynamic	4		
57	TRDEXP_CFM_OscDampingMax_1	Maximum value	FLOAT	Dynamic	4		
58	TRDEXP_CFM_AsymmetryMin_1	Minimum value	FLOAT	Dynamic	4		
59	TRDEXP_CFM_AsymmetryMax_1	Maximum value	FLOAT	Dynamic	4		
60	TRDEXP_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDEXP_View1	View -1-	VIEW1	Dynamic	17		
	TRDEXP_StRev	Static Revision	UINT16	Static	2		
	TRDEXP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDEXP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDEXP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDEXP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDEXP_View2	View -2-	VIEW2	Static	54		
	TRDEXP_StRev	Static Revision	UINT16	Static	2		
	TRDEXP_TransducerType	Transducer Type	ENUM16	Static	2		
	CFM_DampingMax	Maximum damping partial filled pipe det.	FLOAT	Static	4	AUTO	X
	CFM_ResetMinMaxRecords	Reset min/max values	ENUM16	Static	2	AUTO	X
	SPV_ClampingVoltagePointerMin	Minimum value	FLOAT	Static	4	AUTO	
	SPV_ClampingVoltagePointerMax	Maximum value	FLOAT	Static	4	AUTO	
	CFM_ElecTempMin	Minimum value	FLOAT	Static	4	AUTO	
	CFM_ElecTempMax	Maximum value	FLOAT	Static	4	AUTO	
	SPV_TemperaturePointerMin	Minimum value	FLOAT	Static	4	AUTO	
	SPV_TemperaturePointerMax	Maximum value	FLOAT	Static	4	AUTO	
	CFM_MeasTempMin	Minimum value	FLOAT	Static	4	AUTO	
	CFM_MeasTempMax	Maximum value	FLOAT	Static	4	AUTO	
	CFM_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
	CFM_CarrTempMin	Minimum value	FLOAT	Static	4	AUTO	
	CFM_CarrTempMax	Maximum value	FLOAT	Static	4	AUTO	
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDEXP_View3	View -3-	VIEW3	Dynamic	53		
	TRDEXP_StRev	Static Revision	UINT16	Static	2		
	TRDEXP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDEXP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDEXP_XdError	Transducer Error	ENUM8	Dynamic	1		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	SPV_ClampingVoltagePointerAverage	Average value	FLOAT	Dynamic	4		
	SPV_TemperaturPointerAverage	Average value	FLOAT	Dynamic	4		
	CFM_FrequencyMin	Minimum value	FLOAT	Dynamic	4		
	CFM_FrequencyMax	Maximum value	FLOAT	Dynamic	4		
	CFM_AmplitudeMin	Minimum value	FLOAT	Dynamic	4		
	CFM_AmplitudeMax	Maximum value	FLOAT	Dynamic	4		
	CFM_OscDampingMin	Minimum value	FLOAT	Dynamic	4		
	CFM_OscDampingMax	Maximum value	FLOAT	Dynamic	4		
	CFM_AsymmetryMin	Minimum value	FLOAT	Dynamic	4		
	CFM_AsymmetryMax	Maximum value	FLOAT	Dynamic	4		
	TRDEXP_View4	View -4-	VIEW4	Static	71		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDEXP_StRev	Static Revision	UINT16	Static	2		
	TRDEXP_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDEXP_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDEXP_TransducerType	Transducer Type	ENUM16	Static	2		
	FLOW_FlowDampingTime	Flow damping	FLOAT	Static	4	AUTO	X
	FLOW_DensityDampingTime	Density damping	FLOAT	Static	4	AUTO	X
	FLOW_PositivZeroReturn	Flow override	ENUM16	Static	2	AUTO	X
	FLOW_TemperatureDampingTime	Temperature damping	FLOAT	Static	4	AUTO	X
	FLOW_DensityMonitoringSelector	Assign process variable	ENUM16	Static	2	AUTO	X
	FLOW_MassFlowOffset	Mass flow offset	FLOAT	Static	4	AUTO	X
	FLOW_MassFlowScale	Mass flow factor	FLOAT	Static	4	AUTO	X
	FLOW_VolumeFlowOffset	Volume flow offset	FLOAT	Static	4	AUTO	X
	FLOW_VolumeFlowScale	Volume flow factor	FLOAT	Static	4	AUTO	X
	FLOW_CorrVolumeFlowOffset	Corrected volume flow offset	FLOAT	Static	4	AUTO	X
	FLOW_CorrVolumeFlowScale	Corrected volume flow factor	FLOAT	Static	4	AUTO	X
	FLOW_DensityOffset	Density offset	FLOAT	Static	4	AUTO	X
	FLOW_DensityScale	Density factor	FLOAT	Static	4	AUTO	X
	FLOW_RefDensityOffset	Reference density offset	FLOAT	Static	4	AUTO	X
	FLOW_RefDensityScale	Reference density factor	FLOAT	Static	4	AUTO	X
	FLOW_TemperatureOffset	Temperature offset	FLOAT	Static	4	AUTO	X
	FLOW_TemperatureScale	Temperature factor	FLOAT	Static	4	AUTO	X

17.1.6 Transducer Block Expert Info

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDEXPIN_TransducerTypeVer		UINT16	Static	2		
12	TRDEXPIN_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDEXPIN_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDEXPIN_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDEXPIN_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDEXPIN_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDEXPIN_STD_LicenseCode_1	Activate SW option	UINT32	Static	4	AUTO	X
18	TRDEXPIN_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
19	TRDEXPIN_SPV_PowerOnCounter_1	Power on	UINT32	Static	4	AUTO	
20	TRDEXPIN_STD_GeniXMLBuildNumber_1	XML build number	UINT32	Static	4		
21	TRDEXPIN_CFM_EmergencyModeValidity_1		ENUM16	Static	2		
22	TRDEXPIN_CFM_SensorEmergencyMode_1	Activate sensor emergency mode	ENUM16	Static	2	AUTO	X
	TRDEXPIN_View1	View -1-	VIEW1	Dynamic	17		
	TRDEXPIN_StRev	Static Revision	UINT16	Static	2		
	TRDEXPIN_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDEXPIN_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDEXPIN_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDEXPIN_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDEXPIN_View2	View -2-	VIEW2	Static	26		
	TRDEXPIN_StRev	Static Revision	UINT16	Static	2		
	TRDEXPIN_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_LicenseCode	Activate SW option	UINT32	Static	4	AUTO	X
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	SPV_PowerOnCounter	Power on	UINT32	Static	4	AUTO	
	STD_GeniXMLBuildNumber	XML build number	UINT32	Static	4		
	CFM_EmergencyModeValidity		ENUM16	Static	2		
	CFM_SensorEmergencyMode	Activate sensor emergency mode	ENUM16	Static	2	AUTO	X
	TRDEXPIN_View3	View -3-	VIEW3	Dynamic	17		
	TRDEXPIN_StRev	Static Revision	UINT16	Static	2		
	TRDEXPIN_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDEXPIN_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDEXPIN_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDEXPIN_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDEXPIN_View4	View -4-	VIEW4	Static	7		
	TRDEXPIN_StRev	Static Revision	UINT16	Static	2		
	TRDEXPIN_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDEXPIN_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDEXPIN_TransducerType	Transducer Type	ENUM16	Static	2		

17.1.7 Transducer Block Heartbeat

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHBT_TransducerTypeVer		UINT16	Static	2		
12	TRDHBT_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHBT_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHBT_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHBT_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDHBT_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDHBT_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
18	TRDHBT_HBT_VerificationVersion_1	Verification version	UINT8	Static	1		
19	TRDHBT_HBT_PerformVerification_1	Start verification	ENUM16	Static	2	AUTO	X
20	TRDHBT_HBT_VerificationDateTime_1	Date/time	STRING	Static	20		
21	TRDHBT_HBT_VerificationCounter_1	Verification ID	UINT16	Static	2	AUTO	
22	TRDHBT_HBT_VerificationOverallResult_1	Overall result	ENUM16	Static	2		
23	TRDHBT_HBT_VerificationSensorResult_1	Sensor	ENUM16	Static	2		
24	TRDHBT_HBT_VerificationSensElectronicResult_1	Main electronic module	ENUM16	Static	2		
25	TRDHBT_HBT_VerificationInputOutputResult_1	I/O module	ENUM16	Static	2		
26	TRDHBT_HBT_OperationHours_1	Operating time	STRING	Static	14		
27	TRDHBT_HBT_VerificationStatus_1	Status	ENUM16	Dynamic	2		
28	TRDHBT_HBT_ExternalDeviceInfo_1	External device information	STRING	Static	32	AUTO	X
29	TRDHBT_HBT_VerificationMode_1	Verification mode	ENUM16	Static	2	AUTO	X
30	TRDHBT_HBT_MeasuredValueOut_1	Measured values	FLOAT	Static	4	AUTO	X
31	TRDHBT_HBT_SetValueOut_1	Output values	FLOAT	Static	4		
32	TRDHBT_Dev_CustomerName_1	Plant operator	STRING	Static	32	AUTO	X
33	TRDHBT_Dev_PlantSection_1	Location	STRING	Static	32	AUTO	X
34	TRDHBT_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
35	TRDHBT_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
36	TRDHBT_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
	TRDHBT_View1	View -1-	VIEW1	Dynamic	19		
	TRDHBT_StRev	Static Revision	UINT16	Static	2		
	TRDHBT_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBT_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBT_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBT_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	HBT_VerificationStatus	Status	ENUM16	Dynamic	2		
	TRDHBT_View2	View -2-	VIEW2	Static	73		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDHBT_StRev	Static Revision	UINT16	Static	2		
	TRDHBT_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	HBT_VerificationVersion	Verification version	UINT8	Static	1		
	HBT_PerformVerification	Start verification	ENUM16	Static	2	AUTO	X
	HBT_VerificationDateTime	Date/time	STRING	Static	20		
	HBT_VerificationCounter	Verification ID	UINT16	Static	2	AUTO	
	HBT_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBT_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBT_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBT_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBT_OperationHours	Operating time	STRING	Static	14		
	HBT_VerificationMode	Verification mode	ENUM16	Static	2	AUTO	X
	HBT_MeasuredValueOut	Measured values	FLOAT	Static	4	AUTO	X
	HBT_SetValueOut	Output values	FLOAT	Static	4		
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	TRDHBT_View3	View -3-	VIEW3	Dynamic	11		
	TRDHBT_StRev	Static Revision	UINT16	Static	2		
	TRDHBT_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBT_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBT_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBT_View4	View -4-	VIEW4	Static	103		
	TRDHBT_StRev	Static Revision	UINT16	Static	2		
	TRDHBT_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHBT_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHBT_TransducerType	Transducer Type	ENUM16	Static	2		
	HBT_ExternalDeviceInfo	External device information	STRING	Static	32	AUTO	X
	Dev_CustomerName	Plant operator	STRING	Static	32	AUTO	X
	Dev_PlantSection	Location	STRING	Static	32	AUTO	X

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Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHBTR1_TransducerTypeVer		UINT16	Static	2		
12	TRDHBTR1_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHBTR1_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHBTR1_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHBTR1_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDHBTR1_HBTR_VerificationDateTime_1	Date/time	STRING	Static	20		
17	TRDHBTR1_HBTR_VerificationCounter_1	Verification ID	UINT16	Static	2		
18	TRDHBTR1_HBTR_OperationHours_1	Operating time	STRING	Static	14		
19	TRDHBTR1_HBTR_VerificationOverallResult_1	Overall result	ENUM16	Static	2		
20	TRDHBTR1_HBTR_VerificationSensorResult_1	Sensor	ENUM16	Static	2		
21	TRDHBTR1_HBTR_VerificationSensElectronicResult_1	Main electronic module	ENUM16	Static	2		
22	TRDHBTR1_HBTR_VerificationInputOutputResult_1	I/O module	ENUM16	Static	2		
23	TRDHBTR1_HBTR_VerificationSupplyVoltageResult_1	Supply voltage	ENUM16	Static	2		
24	TRDHBTR1_HBTR_ExternalDeviceInfo_1	External device information	STRING	Static	32		
25	TRDHBTR1_HBTR_InputOutputSlot2Type_1	Slot 2 Modul Type	ENUM16	Static	2		
26	TRDHBTR1_HBTR_InputOutputSlot2Data1Value_1	Output 2 actual value 1	FLOAT	Static	4		
27	TRDHBTR1_HBTR_InputOutputSlot2Data1Result_1	Output 2	ENUM16	Static	2		
28	TRDHBTR1_HBTR_ExternVerificationFlags_1	External verification flags	BIT_ENUM32	Static	4		
29	TRDHBTR1_HBTR_VerificationDateTime_2	Date/time	STRING	Static	20		
30	TRDHBTR1_HBTR_VerificationCounter_2	Verification ID	UINT16	Static	2		
31	TRDHBTR1_HBTR_OperationHours_2	Operating time	STRING	Static	14		
32	TRDHBTR1_HBTR_VerificationOverallResult_2	Overall result	ENUM16	Static	2		
33	TRDHBTR1_HBTR_VerificationSensorResult_2	Sensor	ENUM16	Static	2		
34	TRDHBTR1_HBTR_VerificationSensElectronicResult_2	Main electronic module	ENUM16	Static	2		
35	TRDHBTR1_HBTR_VerificationInputOutputResult_2	I/O module	ENUM16	Static	2		
36	TRDHBTR1_HBTR_VerificationSupplyVoltageResult_2	Supply voltage	ENUM16	Static	2		
37	TRDHBTR1_HBTR_ExternalDeviceInfo_2	External device information	STRING	Static	32		
38	TRDHBTR1_HBTR_InputOutputSlot2Type_2	Slot 2 Modul Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
39	TRDHBTR1_HBTR_InputOutputSlot2Data1Value_2	Output 2 actual value 1	FLOAT	Static	4		
40	TRDHBTR1_HBTR_InputOutputSlot2Data1Result_2	Output 2	ENUM16	Static	2		
41	TRDHBTR1_HBTR_ExternVerificationFlags_2	External verification flags	BIT_ENUM32	Static	4		
42	TRDHBTR1_HBTR_VerificationCarrTempSensorResult_1	Carrier tube temperature sensor	ENUM16	Static	2		
43	TRDHBTR1_HBTR_VerificationProcTempSensResult_1	Measuring tube temperature sensor	ENUM16	Static	2		
44	TRDHBTR1_HBTR_VerificationSensorCoilResult_1	Pickup coil	ENUM16	Static	2		
45	TRDHBTR1_HBTR_VerificationSensorSymmetryResult_1	Pickup coil symmetry	ENUM16	Static	2		
46	TRDHBTR1_HBTR_VerificationSensorLeakageResult_1	Sensor circuit leakage	ENUM16	Static	2		
47	TRDHBTR1_HBTR_VerificationLatSensorFreqResult_1	Frequency lateral mode	ENUM16	Static	2		
48	TRDHBTR1_HBTR_VerificationZeroTrackingResult_1	Zero point tracking	ENUM16	Static	2		
49	TRDHBTR1_HBTR_VerificationReferenceClockResult_1	Reference clock	ENUM16	Static	2		
50	TRDHBTR1_HBTR_VerificationReferenceTempResult_1	Reference temperature	ENUM16	Static	2		
51	TRDHBTR1_HBTR_SensorSymmetryDeviation_1	Pickup coils symmetry deviation	FLOAT	Static	4		
52	TRDHBTR1_HBTR_ZeroTrackingDeviation_1	Zero point tracking deviation	FLOAT	Static	4		
53	TRDHBTR1_HBTR_LateralSensorFreqDeviation_1	Actual frequency lateral mode	FLOAT	Static	4		
54	TRDHBTR1_HBTR_ReferenceClockDeviation_1	Reference clock deviation	FLOAT	Static	4		
55	TRDHBTR1_HBTR_ReferenceTempDeviation_1	Reference temperature deviation	FLOAT	Static	4		
56	TRDHBTR1_HBTR_MeasCarrTubeTemp_1	Carrier Temperature Measure supported	ENUM16	Static	2		
57	TRDHBTR1_HBTR_DampingActual_1	Damping verification value	FLOAT	Static	4		
58	TRDHBTR1_HBTR_DensityActual_1	Density verification value	FLOAT	Static	4		
59	TRDHBTR1_HBTR_TemperatureActual_1	Process temperature verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
60	TRDHBTR1_HBTR_MassFlowActual_1	Mass flow verification value	FLOAT	Static	4		
61	TRDHBTR1_HBTR_ElectronicTemperatureActual_1	Electronic temperature	FLOAT	Static	4		
62	TRDHBTR1_HBTR_CFMVoltages_1	Supply voltage 0	FLOAT	Static	4		
69	TRDHBTR1_HBTR_VerificationCarrTempSensorResult_2	Carrier tube temperature sensor	ENUM16	Static	2		
70	TRDHBTR1_HBTR_VerificationProcTempSensResult_2	Measuring tube temperature sensor	ENUM16	Static	2		
71	TRDHBTR1_HBTR_VerificationSensorCoilResult_2	Pickup coil	ENUM16	Static	2		
72	TRDHBTR1_HBTR_VerificationSensorSymmetryResult_2	Pickup coil symmetry	ENUM16	Static	2		
73	TRDHBTR1_HBTR_VerificationSensorLeakageResult_2	Sensor circuit leakage	ENUM16	Static	2		
74	TRDHBTR1_HBTR_VerificationLatSensorFreqResult_2	Frequency lateral mode	ENUM16	Static	2		
75	TRDHBTR1_HBTR_VerificationZeroTrackingResult_2	Zero point tracking	ENUM16	Static	2		
76	TRDHBTR1_HBTR_VerificationReferenceClockResult_2	Reference clock	ENUM16	Static	2		
77	TRDHBTR1_HBTR_VerificationReferenceTempResult_2	Reference temperature	ENUM16	Static	2		
78	TRDHBTR1_HBTR_SensorSymmetryDeviation_2	Pickup coils symmetry deviation	FLOAT	Static	4		
79	TRDHBTR1_HBTR_ZeroTrackingDeviation_2	Zero point tracking deviation	FLOAT	Static	4		
80	TRDHBTR1_HBTR_LateralSensorFreqDeviation_2	Actual frequency lateral mode	FLOAT	Static	4		
81	TRDHBTR1_HBTR_ReferenceClockDeviation_2	Reference clock deviation	FLOAT	Static	4		
82	TRDHBTR1_HBTR_ReferenceTempDeviation_2	Reference temperature deviation	FLOAT	Static	4		
83	TRDHBTR1_HBTR_MeasCarrTubeTemp_2	Carrier Temperature Measure supported	ENUM16	Static	2		
84	TRDHBTR1_HBTR_DampingActual_2	Damping verification value	FLOAT	Static	4		
85	TRDHBTR1_HBTR_DensityActual_2	Density verification value	FLOAT	Static	4		
86	TRDHBTR1_HBTR_TemperatureActual_2	Process temperature verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
87	TRDHBTR1_HBTR_MassFlowActual_2	Mass flow verification value	FLOAT	Static	4		
88	TRDHBTR1_HBTR_ElectronicTemperatureActual_2	Electronic temperature	FLOAT	Static	4		
89	TRDHBTR1_HBTR_CFMVoltages_2	Supply voltage 0	FLOAT	Static	4		
96	TRDHBTR1_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
97	TRDHBTR1_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
98	TRDHBTR1_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
99	TRDHBTR1_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
100	TRDHBTR1_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
101	TRDHBTR1_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
	TRDHBTR1_View1	View -1-	VIEW1	Dynamic	17		
	TRDHBTR1_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR1_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR1_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR1_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBTR1_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR1_View2	View -2-	VIEW2	Static	112		
	TRDHBTR1_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR1_TransducerType	Transducer Type	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	TRDHBTR1_View3	View -3-	VIEW3	Dynamic	13		
	TRDHBTR1_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR1_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR1_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR1_XdError	Transducer Error	ENUM8	Dynamic	1		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR1_View4	View -4-	VIEW4	Static	101		
	TRDHBTR1_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR1_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHBTR1_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHBTR1_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	TRDHBTR1_View4_2	View -4-1	VIEW4	Static	114		
	TRDHBTR1_StRev	Static Revision	UINT16	Static	2		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		

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Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHBTR2_TransducerTypeVer		UINT16	Static	2		
12	TRDHBTR2_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHBTR2_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHBTR2_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHBTR2_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
16	TRDHBTR2_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
17	TRDHBTR2_HBTR_VerificationDateTime_3	Date/time	STRING	Static	20		
18	TRDHBTR2_HBTR_VerificationCounter_3	Verification ID	UINT16	Static	2		
19	TRDHBTR2_HBTR_OperationHours_3	Operating time	STRING	Static	14		
20	TRDHBTR2_HBTR_VerificationOverallResult_3	Overall result	ENUM16	Static	2		
21	TRDHBTR2_HBTR_VerificationSensorResult_3	Sensor	ENUM16	Static	2		
22	TRDHBTR2_HBTR_VerificationSensElectronicResult_3	Main electronic module	ENUM16	Static	2		
23	TRDHBTR2_HBTR_VerificationInputOutputResult_3	I/O module	ENUM16	Static	2		
24	TRDHBTR2_HBTR_VerificationSupplyVoltageResult_3	Supply voltage	ENUM16	Static	2		
25	TRDHBTR2_HBTR_ExternalDeviceInfo_3	External device information	STRING	Static	32		
26	TRDHBTR2_HBTR_InputOutputSlot2Type_3	Slot 2 Modul Type	ENUM16	Static	2		
27	TRDHBTR2_HBTR_InputOutputSlot2Data1Value_3	Output 2 actual value 1	FLOAT	Static	4		
28	TRDHBTR2_HBTR_InputOutputSlot2Data1Result_3	Output 2	ENUM16	Static	2		
29	TRDHBTR2_HBTR_ExternVerificationFlags_3	External verification flags	BIT_ENUM32	Static	4		
30	TRDHBTR2_HBTR_VerificationCarrTempSensorResult_3	Carrier tube temperature sensor	ENUM16	Static	2		
31	TRDHBTR2_HBTR_VerificationProcTempSensResult_3	Measuring tube temperature sensor	ENUM16	Static	2		
32	TRDHBTR2_HBTR_VerificationSensorCoilResult_3	Pickup coil	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
33	TRDHBTR2_HBTR_VerificationSensorSymmetryResult_3	Pickup coil symmetry	ENUM16	Static	2		
34	TRDHBTR2_HBTR_VerificationSensorLeakageResult_3	Sensor circuit leakage	ENUM16	Static	2		
35	TRDHBTR2_HBTR_VerificationLatSensorFreqResult_3	Frequency lateral mode	ENUM16	Static	2		
36	TRDHBTR2_HBTR_VerificationZeroTrackingResult_3	Zero point tracking	ENUM16	Static	2		
37	TRDHBTR2_HBTR_VerificationReferenceClockResult_3	Reference clock	ENUM16	Static	2		
38	TRDHBTR2_HBTR_VerificationReferenceTempResult_3	Reference temperature	ENUM16	Static	2		
39	TRDHBTR2_HBTR_SensorSymmetryDeviation_3	Pickup coils symmetry deviation	FLOAT	Static	4		
40	TRDHBTR2_HBTR_ZeroTrackingDeviation_3	Zero point tracking deviation	FLOAT	Static	4		
41	TRDHBTR2_HBTR_LateralSensorFreqDeviation_3	Actual frequency lateral mode	FLOAT	Static	4		
42	TRDHBTR2_HBTR_ReferenceClockDeviation_3	Reference clock deviation	FLOAT	Static	4		
43	TRDHBTR2_HBTR_ReferenceTempDeviation_3	Reference temperature deviation	FLOAT	Static	4		
44	TRDHBTR2_HBTR_MeasCarrTubeTemp_3	Carrier Temperature Measure supported	ENUM16	Static	2		
45	TRDHBTR2_HBTR_DampingActual_3	Damping verification value	FLOAT	Static	4		
46	TRDHBTR2_HBTR_DensityActual_3	Density verification value	FLOAT	Static	4		
47	TRDHBTR2_HBTR_TemperatureActual_3	Process temperature verification value	FLOAT	Static	4		
48	TRDHBTR2_HBTR_MassFlowActual_3	Mass flow verification value	FLOAT	Static	4		
49	TRDHBTR2_HBTR_ElectronicTemperatureActual_3	Electronic temperature	FLOAT	Static	4		
50	TRDHBTR2_HBTR_CFMVoltages_3	Supply voltage 0	FLOAT	Static	4		
57	TRDHBTR2_HBTR_VerificationDateTime_4	Date/time	STRING	Static	20		
58	TRDHBTR2_HBTR_VerificationCounter_4	Verification ID	UINT16	Static	2		
59	TRDHBTR2_HBTR_OperationHours_4	Operating time	STRING	Static	14		
60	TRDHBTR2_HBTR_VerificationOverallResult_4	Overall result	ENUM16	Static	2		
61	TRDHBTR2_HBTR_VerificationSensorResult_4	Sensor	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
62	TRDHBTR2_HBTR_VerificationSensElectronicResult_4	Main electronic module	ENUM16	Static	2		
63	TRDHBTR2_HBTR_VerificationInputOutputResult_4	I/O module	ENUM16	Static	2		
64	TRDHBTR2_HBTR_VerificationSupplyVoltageResult_4	Supply voltage	ENUM16	Static	2		
65	TRDHBTR2_HBTR_ExternalDeviceInfo_4	External device information	STRING	Static	32		
66	TRDHBTR2_HBTR_InputOutputSlot2Type_4	Slot 2 Modul Type	ENUM16	Static	2		
67	TRDHBTR2_HBTR_InputOutputSlot2Data1Value_4	Output 2 actual value 1	FLOAT	Static	4		
68	TRDHBTR2_HBTR_InputOutputSlot2Data1Result_4	Output 2	ENUM16	Static	2		
69	TRDHBTR2_HBTR_ExternVerificationFlags_4	External verification flags	BIT_ENUM32	Static	4		
70	TRDHBTR2_HBTR_VerificationCarrTempSensorResult_4	Carrier tube temperature sensor	ENUM16	Static	2		
71	TRDHBTR2_HBTR_VerificationProcTempSensResult_4	Measuring tube temperature sensor	ENUM16	Static	2		
72	TRDHBTR2_HBTR_VerificationSensorCoilResult_4	Pickup coil	ENUM16	Static	2		
73	TRDHBTR2_HBTR_VerificationSensorSymmetryResult_4	Pickup coil symmetry	ENUM16	Static	2		
74	TRDHBTR2_HBTR_VerificationSensorLeakageResult_4	Sensor circuit leakage	ENUM16	Static	2		
75	TRDHBTR2_HBTR_VerificationLatSensorFreqResult_4	Frequency lateral mode	ENUM16	Static	2		
76	TRDHBTR2_HBTR_VerificationZeroTrackingResult_4	Zero point tracking	ENUM16	Static	2		
77	TRDHBTR2_HBTR_VerificationReferenceClockResult_4	Reference clock	ENUM16	Static	2		
78	TRDHBTR2_HBTR_VerificationReferenceTempResult_4	Reference temperature	ENUM16	Static	2		
79	TRDHBTR2_HBTR_SensorSymmetryDeviation_4	Pickup coils symmetry deviation	FLOAT	Static	4		
80	TRDHBTR2_HBTR_ZeroTrackingDeviation_4	Zero point tracking deviation	FLOAT	Static	4		
81	TRDHBTR2_HBTR_LateralSensorFreqDeviation_4	Actual frequency lateral mode	FLOAT	Static	4		
82	TRDHBTR2_HBTR_ReferenceClockDeviation_4	Reference clock deviation	FLOAT	Static	4		
83	TRDHBTR2_HBTR_ReferenceTempDeviation_4	Reference temperature deviation	FLOAT	Static	4		
84	TRDHBTR2_HBTR_MeasCarrTubeTemp_4	Carrier Temperature Measure supported	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
85	TRDHBTR2_HBTR_DampingActual_4	Damping verification value	FLOAT	Static	4		
86	TRDHBTR2_HBTR_DensityActual_4	Density verification value	FLOAT	Static	4		
87	TRDHBTR2_HBTR_TemperatureActual_4	Process temperature verification value	FLOAT	Static	4		
88	TRDHBTR2_HBTR_MassFlowActual_4	Mass flow verification value	FLOAT	Static	4		
89	TRDHBTR2_HBTR_ElectronicTemperatureActual_4	Electronic temperature	FLOAT	Static	4		
90	TRDHBTR2_HBTR_CFMVoltages_4	Supply voltage 0	FLOAT	Static	4		
97	TRDHBTR2_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
98	TRDHBTR2_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
99	TRDHBTR2_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
100	TRDHBTR2_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
101	TRDHBTR2_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR2_View1	View -1-	VIEW1	Dynamic	17		
	TRDHBTR2_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR2_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR2_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR2_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBTR2_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR2_View2	View -2-	VIEW2	Static	112		
	TRDHBTR2_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR2_TransducerType	Transducer Type	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	TRDHBTR2_View3	View -3-	VIEW3	Dynamic	13		
	TRDHBTR2_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR2_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR2_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR2_XdError	Transducer Error	ENUM8	Dynamic	1		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR2_View4	View -4-	VIEW4	Static	101		
	TRDHBTR2_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR2_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHBTR2_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHBTR2_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR2_View4_2	View -4-1	VIEW4	Static	114		
	TRDHBTR2_StRev	Static Revision	UINT16	Static	2		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		

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Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHBTR3_TransducerTypeVer		UINT16	Static	2		
12	TRDHBTR3_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHBTR3_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHBTR3_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHBTR3_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDHBTR3_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
17	TRDHBTR3_HBTR_VerificationDateTime_5	Date/time	STRING	Static	20		
18	TRDHBTR3_HBTR_VerificationCounter_5	Verification ID	UINT16	Static	2		
19	TRDHBTR3_HBTR_OperationHours_5	Operating time	STRING	Static	14		
20	TRDHBTR3_HBTR_VerificationOverallResult_5	Overall result	ENUM16	Static	2		
21	TRDHBTR3_HBTR_VerificationSensorResult_5	Sensor	ENUM16	Static	2		
22	TRDHBTR3_HBTR_VerificationSensElectronicResult_5	Main electronic module	ENUM16	Static	2		
23	TRDHBTR3_HBTR_VerificationInputOutputResult_5	I/O module	ENUM16	Static	2		
24	TRDHBTR3_HBTR_VerificationSupplyVoltageResult_5	Supply voltage	ENUM16	Static	2		
25	TRDHBTR3_HBTR_ExternalDeviceInfo_5	External device information	STRING	Static	32		
26	TRDHBTR3_HBTR_InputOutputSlot2Type_5	Slot 2 Modul Type	ENUM16	Static	2		
27	TRDHBTR3_HBTR_InputOutputSlot2Data1Value_5	Output 2 actual value 1	FLOAT	Static	4		
28	TRDHBTR3_HBTR_InputOutputSlot2Data1Result_5	Output 2	ENUM16	Static	2		
29	TRDHBTR3_HBTR_ExternVerificationFlags_5	External verification flags	BIT_ENUM32	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
30	TRDHBTR3_HBTR_VerificationCarrTempSensorResult_5	Carrier tube temperature sensor	ENUM16	Static	2		
31	TRDHBTR3_HBTR_VerificationProcTempSensResult_5	Measuring tube temperature sensor	ENUM16	Static	2		
32	TRDHBTR3_HBTR_VerificationSensorCoilResult_5	Pickup coil	ENUM16	Static	2		
33	TRDHBTR3_HBTR_VerificationSensorSymmetryResult_5	Pickup coil symmetry	ENUM16	Static	2		
34	TRDHBTR3_HBTR_VerificationSensorLeakageResult_5	Sensor circuit leakage	ENUM16	Static	2		
35	TRDHBTR3_HBTR_VerificationLatSensorFreqResult_5	Frequency lateral mode	ENUM16	Static	2		
36	TRDHBTR3_HBTR_VerificationZeroTrackingResult_5	Zero point tracking	ENUM16	Static	2		
37	TRDHBTR3_HBTR_VerificationReferenceClockResult_5	Reference clock	ENUM16	Static	2		
38	TRDHBTR3_HBTR_VerificationReferenceTempResult_5	Reference temperature	ENUM16	Static	2		
39	TRDHBTR3_HBTR_SensorSymmetryDeviation_5	Pickup coils symmetry deviation	FLOAT	Static	4		
40	TRDHBTR3_HBTR_ZeroTrackingDeviation_5	Zero point tracking deviation	FLOAT	Static	4		
41	TRDHBTR3_HBTR_LateralSensorFreqDeviation_5	Actual frequency lateral mode	FLOAT	Static	4		
42	TRDHBTR3_HBTR_ReferenceClockDeviation_5	Reference clock deviation	FLOAT	Static	4		
43	TRDHBTR3_HBTR_ReferenceTempDeviation_5	Reference temperature deviation	FLOAT	Static	4		
44	TRDHBTR3_HBTR_MeasCarrTubeTemp_5	Carrier Temperature Measure supported	ENUM16	Static	2		
45	TRDHBTR3_HBTR_DampingActual_5	Damping verification value	FLOAT	Static	4		
46	TRDHBTR3_HBTR_DensityActual_5	Density verification value	FLOAT	Static	4		
47	TRDHBTR3_HBTR_TemperatureActual_5	Process temperature verification value	FLOAT	Static	4		
48	TRDHBTR3_HBTR_MassFlowActual_5	Mass flow verification value	FLOAT	Static	4		
49	TRDHBTR3_HBTR_ElectronicTemperatureActual_5	Electronic temperature	FLOAT	Static	4		
50	TRDHBTR3_HBTR_CFMVoltages_5	Supply voltage 0	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
57	TRDHBTR3_HBTR_VerificationDateTime_6	Date/time	STRING	Static	20		
58	TRDHBTR3_HBTR_VerificationCounter_6	Verification ID	UINT16	Static	2		
59	TRDHBTR3_HBTR_OperationHours_6	Operating time	STRING	Static	14		
60	TRDHBTR3_HBTR_VerificationOverallResult_6	Overall result	ENUM16	Static	2		
61	TRDHBTR3_HBTR_VerificationSensorResult_6	Sensor	ENUM16	Static	2		
62	TRDHBTR3_HBTR_VerificationSensElectronicResult_6	Main electronic module	ENUM16	Static	2		
63	TRDHBTR3_HBTR_VerificationInputOutputResult_6	I/O module	ENUM16	Static	2		
64	TRDHBTR3_HBTR_VerificationSupplyVoltageResult_6	Supply voltage	ENUM16	Static	2		
65	TRDHBTR3_HBTR_ExternalDeviceInfo_6	External device information	STRING	Static	32		
66	TRDHBTR3_HBTR_InputOutputSlot2Type_6	Slot 2 Modul Type	ENUM16	Static	2		
67	TRDHBTR3_HBTR_InputOutputSlot2Data1Value_6	Output 2 actual value 1	FLOAT	Static	4		
68	TRDHBTR3_HBTR_InputOutputSlot2Data1Result_6	Output 2	ENUM16	Static	2		
69	TRDHBTR3_HBTR_ExternVerificationFlags_6	External verification flags	BIT_ENUM32	Static	4		
70	TRDHBTR3_HBTR_VerificationCarrTempSensorResult_6	Carrier tube temperature sensor	ENUM16	Static	2		
71	TRDHBTR3_HBTR_VerificationProcTempSensResult_6	Measuring tube temperature sensor	ENUM16	Static	2		
72	TRDHBTR3_HBTR_VerificationSensorCoilResult_6	Pickup coil	ENUM16	Static	2		
73	TRDHBTR3_HBTR_VerificationSensorSymmetryResult_6	Pickup coil symmetry	ENUM16	Static	2		
74	TRDHBTR3_HBTR_VerificationSensorLeakageResult_6	Sensor circuit leakage	ENUM16	Static	2		
75	TRDHBTR3_HBTR_VerificationLatSensorFreqResult_6	Frequency lateral mode	ENUM16	Static	2		
76	TRDHBTR3_HBTR_VerificationZeroTrackingResult_6	Zero point tracking	ENUM16	Static	2		
77	TRDHBTR3_HBTR_VerificationReferenceClockResult_6	Reference clock	ENUM16	Static	2		
78	TRDHBTR3_HBTR_VerificationReferenceTempResult_6	Reference temperature	ENUM16	Static	2		
79	TRDHBTR3_HBTR_SensorSymmetryDeviation_6	Pickup coils symmetry deviation	FLOAT	Static	4		
80	TRDHBTR3_HBTR_ZeroTrackingDeviation_6	Zero point tracking deviation	FLOAT	Static	4		
81	TRDHBTR3_HBTR_LateralSensorFreqDeviation_6	Actual frequency lateral mode	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
82	TRDHBTR3_HBTR_ReferenceClockDeviation_6	Reference clock deviation	FLOAT	Static	4		
83	TRDHBTR3_HBTR_ReferenceTempDeviation_6	Reference temperature deviation	FLOAT	Static	4		
84	TRDHBTR3_HBTR_MeasCarrTubeTemp_6	Carrier Temperature Measure supported	ENUM16	Static	2		
85	TRDHBTR3_HBTR_DampingActual_6	Damping verification value	FLOAT	Static	4		
86	TRDHBTR3_HBTR_DensityActual_6	Density verification value	FLOAT	Static	4		
87	TRDHBTR3_HBTR_TemperatureActual_6	Process temperature verification value	FLOAT	Static	4		
88	TRDHBTR3_HBTR_MassFlowActual_6	Mass flow verification value	FLOAT	Static	4		
89	TRDHBTR3_HBTR_ElectronicTemperatureActual_6	Electronic temperature	FLOAT	Static	4		
90	TRDHBTR3_HBTR_CFMVoltages_6	Supply voltage 0	FLOAT	Static	4		
97	TRDHBTR3_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
98	TRDHBTR3_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
99	TRDHBTR3_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
100	TRDHBTR3_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
101	TRDHBTR3_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR3_View1	View -1-	VIEW1	Dynamic	17		
	TRDHBTR3_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR3_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR3_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR3_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBTR3_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR3_View2	View -2-	VIEW2	Static	112		
	TRDHBTR3_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR3_TransducerType	Transducer Type	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	TRDHBTR3_View3	View -3-	VIEW3	Dynamic	13		
	TRDHBTR3_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR3_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR3_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR3_XdError	Transducer Error	ENUM8	Dynamic	1		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR3_View4	View -4-	VIEW4	Static	101		
	TRDHBTR3_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR3_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHBTR3_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHBTR3_TransducerType	Transducer Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR3_View4_2	View -4-1	VIEW4	Static	114		
	TRDHBTR3_StRev	Static Revision	UINT16	Static	2		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		

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Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHBTR4_TransducerTypeVer		UINT16	Static	2		
12	TRDHBTR4_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHBTR4_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHBTR4_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHBTR4_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDHBTR4_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
17	TRDHBTR4_HBTR_VerificationDateTime_7	Date/time	STRING	Static	20		
18	TRDHBTR4_HBTR_VerificationCounter_7	Verification ID	UINT16	Static	2		
19	TRDHBTR4_HBTR_OperationHours_7	Operating time	STRING	Static	14		
20	TRDHBTR4_HBTR_VerificationOverallResult_7	Overall result	ENUM16	Static	2		
21	TRDHBTR4_HBTR_VerificationSensorResult_7	Sensor	ENUM16	Static	2		
22	TRDHBTR4_HBTR_VerificationSensElectronicResult_7	Main electronic module	ENUM16	Static	2		
23	TRDHBTR4_HBTR_VerificationInputOutputResult_7	I/O module	ENUM16	Static	2		
24	TRDHBTR4_HBTR_VerificationSupplyVoltageResult_7	Supply voltage	ENUM16	Static	2		
25	TRDHBTR4_HBTR_ExternalDeviceInfo_7	External device information	STRING	Static	32		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
26	TRDHBTR4_HBTR_InputOutputSlot2Type_7	Slot 2 Modul Type	ENUM16	Static	2		
27	TRDHBTR4_HBTR_InputOutputSlot2Data1Value_7	Output 2 actual value 1	FLOAT	Static	4		
28	TRDHBTR4_HBTR_InputOutputSlot2Data1Result_7	Output 2	ENUM16	Static	2		
29	TRDHBTR4_HBTR_ExternVerificationFlags_7	External verification flags	BIT_ENUM32	Static	4		
30	TRDHBTR4_HBTR_VerificationCarrTempSensorResult_7	Carrier tube temperature sensor	ENUM16	Static	2		
31	TRDHBTR4_HBTR_VerificationProcTempSensResult_7	Measuring tube temperature sensor	ENUM16	Static	2		
32	TRDHBTR4_HBTR_VerificationSensorCoilResult_7	Pickup coil	ENUM16	Static	2		
33	TRDHBTR4_HBTR_VerificationSensorSymmetryResult_7	Pickup coil symmetry	ENUM16	Static	2		
34	TRDHBTR4_HBTR_VerificationSensorLeakageResult_7	Sensor circuit leakage	ENUM16	Static	2		
35	TRDHBTR4_HBTR_VerificationLatSensorFreqResult_7	Frequency lateral mode	ENUM16	Static	2		
36	TRDHBTR4_HBTR_VerificationZeroTrackingResult_7	Zero point tracking	ENUM16	Static	2		
37	TRDHBTR4_HBTR_VerificationReferenceClockResult_7	Reference clock	ENUM16	Static	2		
38	TRDHBTR4_HBTR_VerificationReferenceTempResult_7	Reference temperature	ENUM16	Static	2		
39	TRDHBTR4_HBTR_SensorSymmetryDeviation_7	Pickup coils symmetry deviation	FLOAT	Static	4		
40	TRDHBTR4_HBTR_ZeroTrackingDeviation_7	Zero point tracking deviation	FLOAT	Static	4		
41	TRDHBTR4_HBTR_LateralSensorFreqDeviation_7	Actual frequency lateral mode	FLOAT	Static	4		
42	TRDHBTR4_HBTR_ReferenceClockDeviation_7	Reference clock deviation	FLOAT	Static	4		
43	TRDHBTR4_HBTR_ReferenceTempDeviation_7	Reference temperature deviation	FLOAT	Static	4		
44	TRDHBTR4_HBTR_MeasCarrTubeTemp_7	Carrier Temperature Measure supported	ENUM16	Static	2		
45	TRDHBTR4_HBTR_DampingActual_7	Damping verification value	FLOAT	Static	4		
46	TRDHBTR4_HBTR_DensityActual_7	Density verification value	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
47	TRDHBTR4_HBTR_TemperatureActual_7	Process temperature verification value	FLOAT	Static	4		
48	TRDHBTR4_HBTR_MassFlowActual_7	Mass flow verification value	FLOAT	Static	4		
49	TRDHBTR4_HBTR_ElectronicTemperatureActual_7	Electronic temperature	FLOAT	Static	4		
50	TRDHBTR4_HBTR_CFMVoltages_7	Supply voltage 0	FLOAT	Static	4		
57	TRDHBTR4_HBTR_VerificationDateTime_8	Date/time	STRING	Static	20		
58	TRDHBTR4_HBTR_VerificationCounter_8	Verification ID	UINT16	Static	2		
59	TRDHBTR4_HBTR_OperationHours_8	Operating time	STRING	Static	14		
60	TRDHBTR4_HBTR_VerificationOverallResult_8	Overall result	ENUM16	Static	2		
61	TRDHBTR4_HBTR_VerificationSensorResult_8	Sensor	ENUM16	Static	2		
62	TRDHBTR4_HBTR_VerificationSensElectronicResult_8	Main electronic module	ENUM16	Static	2		
63	TRDHBTR4_HBTR_VerificationInputOutputResult_8	I/O module	ENUM16	Static	2		
64	TRDHBTR4_HBTR_VerificationSupplyVoltageResult_8	Supply voltage	ENUM16	Static	2		
65	TRDHBTR4_HBTR_ExternalDeviceInfo_8	External device information	STRING	Static	32		
66	TRDHBTR4_HBTR_InputOutputSlot2Type_8	Slot 2 Modul Type	ENUM16	Static	2		
67	TRDHBTR4_HBTR_InputOutputSlot2Data1Value_8	Output 2 actual value 1	FLOAT	Static	4		
68	TRDHBTR4_HBTR_InputOutputSlot2Data1Result_8	Output 2	ENUM16	Static	2		
69	TRDHBTR4_HBTR_ExternVerificationFlags_8	External verification flags	BIT_ENUM32	Static	4		
70	TRDHBTR4_HBTR_VerificationCarrTempSensorResult_8	Carrier tube temperature sensor	ENUM16	Static	2		
71	TRDHBTR4_HBTR_VerificationProcTempSensResult_8	Measuring tube temperature sensor	ENUM16	Static	2		
72	TRDHBTR4_HBTR_VerificationSensorCoilResult_8	Pickup coil	ENUM16	Static	2		
73	TRDHBTR4_HBTR_VerificationSensorSymmetryResult_8	Pickup coil symmetry	ENUM16	Static	2		
74	TRDHBTR4_HBTR_VerificationSensorLeakageResult_8	Sensor circuit leakage	ENUM16	Static	2		
75	TRDHBTR4_HBTR_VerificationLatSensorFreqResult_8	Frequency lateral mode	ENUM16	Static	2		
76	TRDHBTR4_HBTR_VerificationZeroTrackingResult_8	Zero point tracking	ENUM16	Static	2		
77	TRDHBTR4_HBTR_VerificationReferenceClockResult_8	Reference clock	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
78	TRDHBTR4_HBTR_VerificationReferenceTempResult_8	Reference temperature	ENUM16	Static	2		
79	TRDHBTR4_HBTR_SensorSymmetryDeviation_8	Pickup coils symmetry deviation	FLOAT	Static	4		
80	TRDHBTR4_HBTR_ZeroTrackingDeviation_8	Zero point tracking deviation	FLOAT	Static	4		
81	TRDHBTR4_HBTR_LateralSensorFreqDeviation_8	Actual frequency lateral mode	FLOAT	Static	4		
82	TRDHBTR4_HBTR_ReferenceClockDeviation_8	Reference clock deviation	FLOAT	Static	4		
83	TRDHBTR4_HBTR_ReferenceTempDeviation_8	Reference temperature deviation	FLOAT	Static	4		
84	TRDHBTR4_HBTR_MeasCarrTubeTemp_8	Carrier Temperature Measure supported	ENUM16	Static	2		
85	TRDHBTR4_HBTR_DampingActual_8	Damping verification value	FLOAT	Static	4		
86	TRDHBTR4_HBTR_DensityActual_8	Density verification value	FLOAT	Static	4		
87	TRDHBTR4_HBTR_TemperatureActual_8	Process temperature verification value	FLOAT	Static	4		
88	TRDHBTR4_HBTR_MassFlowActual_8	Mass flow verification value	FLOAT	Static	4		
89	TRDHBTR4_HBTR_ElectronicTemperatureActual_8	Electronic temperature	FLOAT	Static	4		
90	TRDHBTR4_HBTR_CFMVoltages_8	Supply voltage 0	FLOAT	Static	4		
97	TRDHBTR4_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
98	TRDHBTR4_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
99	TRDHBTR4_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
100	TRDHBTR4_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
101	TRDHBTR4_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR4_View1	View -1-	VIEW1	Dynamic	17		
	TRDHBTR4_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR4_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR4_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHBTR4_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHBTR4_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR4_View2	View -2-	VIEW2	Static	112		
	TRDHBTR4_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR4_TransducerType	Transducer Type	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	HBTR_VerificationDateTime	Date/time	STRING	Static	20		
	HBTR_VerificationCounter	Verification ID	UINT16	Static	2		
	HBTR_OperationHours	Operating time	STRING	Static	14		
	HBTR_VerificationOverallResult	Overall result	ENUM16	Static	2		
	HBTR_VerificationSensorResult	Sensor	ENUM16	Static	2		
	HBTR_VerificationSensElectronicResult	Main electronic module	ENUM16	Static	2		
	HBTR_VerificationInputOutputResult	I/O module	ENUM16	Static	2		
	HBTR_VerificationSupplyVoltageResult	Supply voltage	ENUM16	Static	2		
	HBTR_ExternVerificationFlags	External verification flags	BIT_ENUM32	Static	4		
	HBTR_VerificationCarrTempSensorResult	Carrier tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationLatSensorFreqResult	Frequency lateral mode	ENUM16	Static	2		
	TRDHBTR4_View3	View -3-	VIEW3	Dynamic	13		
	TRDHBTR4_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR4_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHBTR4_TransducerType	Transducer Type	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDHBTR4_XdError	Transducer Error	ENUM8	Dynamic	1		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHBTR4_View4	View -4-	VIEW4	Static	101		
	TRDHBTR4_StRev	Static Revision	UINT16	Static	2		
	TRDHBTR4_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHBTR4_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHBTR4_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	HBTR_ExternalDeviceInfo	External device information	STRING	Static	32		
	HBTR_InputOutputSlot2Type	Slot 2 Modul Type	ENUM16	Static	2		
	HBTR_InputOutputSlot2Data1Value	Output 2 actual value 1	FLOAT	Static	4		
	HBTR_InputOutputSlot2Data1Result	Output 2	ENUM16	Static	2		
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHBTR4_View4_2	View -4-1	VIEW4	Static	114		
	TRDHBTR4_StRev	Static Revision	UINT16	Static	2		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		
	HBTR_VerificationProcTempSensResult	Measuring tube temperature sensor	ENUM16	Static	2		
	HBTR_VerificationSensorCoilResult	Pickup coil	ENUM16	Static	2		
	HBTR_VerificationSensorSymmetryResult	Pickup coil symmetry	ENUM16	Static	2		
	HBTR_VerificationSensorLeakageResult	Sensor circuit leakage	ENUM16	Static	2		
	HBTR_VerificationZeroTrackingResult	Zero point tracking	ENUM16	Static	2		
	HBTR_VerificationReferenceClockResult	Reference clock	ENUM16	Static	2		
	HBTR_VerificationReferenceTempResult	Reference temperature	ENUM16	Static	2		
	HBTR_SensorSymmetryDeviation	Pickup coils symmetry deviation	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	HBTR_ZeroTrackingDeviation	Zero point tracking deviation	FLOAT	Static	4		
	HBTR_LateralSensorFreqDeviation	Actual frequency lateral mode	FLOAT	Static	4		
	HBTR_ReferenceClockDeviation	Reference clock deviation	FLOAT	Static	4		
	HBTR_ReferenceTempDeviation	Reference temperature deviation	FLOAT	Static	4		
	HBTR_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2		
	HBTR_DampingActual	Damping verification value	FLOAT	Static	4		
	HBTR_DensityActual	Density verification value	FLOAT	Static	4		
	HBTR_TemperatureActual	Process temperature verification value	FLOAT	Static	4		
	HBTR_MassFlowActual	Mass flow verification value	FLOAT	Static	4		
	HBTR_ElectronicTemperatureActual	Electronic temperature	FLOAT	Static	4		

17.1.12 Transducer Block HistoROM

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDHROM_TransducerTypeVer		UINT16	Static	2		
12	TRDHROM_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDHROM_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDHROM_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDHROM_SPV_CurrentSysConditionUnion_1	Actual diagnostics	UINT32	Static	4		
16	TRDHROM_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
17	TRDHROM_BDT_Prepare_1		BYTEARRAY	Static	25	AUTO	
18	TRDHROM_BDT_Status_1		BYTEARRAY	Static	25		
19	TRDHROM_BDT_CfgReadWrite_1		BYTEARRAY	Static	3	AUTO	
20	TRDHROM_BDT_Data_1		BYTEARRAY	Static	64	AUTO	
21	TRDHROM_BDT_DataTransferred_1		BYTEARRAY	Static	4	AUTO	
22	TRDHROM_HB_OperationHours_1		UINT32	Static	4		
23	TRDHROM_HB_TrendPackageSize_1		UINT8	Static	1	AUTO	

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
24	TRDHROM_HB_TrendStorageTime_1	Trend storage time	UINT32	Static	4		
25	TRDHROM_HB_TrendSupportedPackageSize_1		UINT8	Static	1		
26	TRDHROM_HB_MaxTrendEntries_1		UINT16	Static	2		
27	TRDHROM_STD_CustomizedData_1	Customized	UINT8	Static	1		
28	TRDHROM_STD_DeleteCustomizedData_1	Reset ordered configuration	ENUM16	Static	2	AUTO	X
29	TRDHROM_STD_FactoryDataValid_1		UINT8	Static	1		
30	TRDHROM_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
31	TRDHROM_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
32	TRDHROM_SU_CorrVolumeFlow_1	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
33	TRDHROM_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
34	TRDHROM_SU_RefDensity_1	Reference density unit	ENUM16	Static	2	AUTO	X
35	TRDHROM_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
36	TRDHROM_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
37	TRDHROM_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
38	TRDHROM_STD_FunctionBlockTable_1		UINT32	Static	4		
41	TRDHROM_STD_FieldbusType_1	Fieldbus Type	ENUM8	Static	1		
42	TRDHROM_PrepareCtrl	BDT Prepare Ctrl	Standard	Static	52		
	TRDHROM_TransactionId	Transaction ID	UINT8	Static	1	AUTO	
	TRDHROM_Version	Version	UINT8	Static	1	AUTO	
	TRDHROM_BdtChannel	Channel	UINT8	Static	1	AUTO	
	TRDHROM_DataId	Data ID	UINT8	Static	1	AUTO	
	TRDHROM_U8Entry1	uint8Entry 1	UINT8	Static	1	AUTO	
	TRDHROM_U8Entry2	uint8Entry 2	UINT8	Static	1	AUTO	
	TRDHROM_U8Entry3	uint8Entry 3	UINT8	Static	1	AUTO	
	TRDHROM_U8Entry4	uint8Entry 4	UINT8	Static	1	AUTO	
	TRDHROM_U8Entry5	uint8Entry 5	UINT8	Static	1	AUTO	
	TRDHROM_U16Entry1	uint16Entry 1	UINT16	Static	2	AUTO	
	TRDHROM_U16Entry2	uint16Entry 2	UINT16	Static	2	AUTO	
	TRDHROM_U16Entry3	uint16Entry 3	UINT16	Static	2	AUTO	
	TRDHROM_U16Entry4	uint16Entry 4	UINT16	Static	2	AUTO	
	TRDHROM_U16Entry5	uint16Entry 5	UINT16	Static	2	AUTO	
	TRDHROM_U32Entry1	uint32Entry 1	UINT32	Static	4	AUTO	
	TRDHROM_U32Entry2	uint32Entry 2	UINT32	Static	4	AUTO	
	TRDHROM_U32Entry3	uint32Entry 3	UINT32	Static	4	AUTO	
	TRDHROM_U32Entry4	uint32Entry 4	UINT32	Static	4	AUTO	
	TRDHROM_F32Entry1	floatEntry 1	FLOAT	Static	4	AUTO	
	TRDHROM_F32Entry2	floatEntry 2	FLOAT	Static	4	AUTO	
	TRDHROM_F32Entry3	floatEntry 3	FLOAT	Static	4	AUTO	

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDHROM_F32Entry4	floatEntry 4	FLOAT	Static	4	AUTO	
	TRDHROM_Trigger	Trigger	UINT8	Static	1	AUTO	
43	TRDHROM_StatusPrepareCtrl	Status Prepare Ctrl	Standard	Static	52		
	TRDHROM_StatusTransactionId		UINT8	Static	1		
	TRDHROM_StatusBdtVersion		UINT8	Static	1		
	TRDHROM_StatusChannel		UINT8	Static	1		
	TRDHROM_StatusDataId		UINT8	Static	1		
	TRDHROM_StatusU8Item1		UINT8	Static	1		
	TRDHROM_StatusU8Item2		UINT8	Static	1		
	TRDHROM_StatusU8Item3		UINT8	Static	1		
	TRDHROM_StatusU8Item4		UINT8	Static	1		
	TRDHROM_StatusU8Item5		UINT8	Static	1		
	TRDHROM_StatusU16Item1		UINT16	Static	2		
	TRDHROM_StatusU16Item2		UINT16	Static	2		
	TRDHROM_StatusU16Item3		UINT16	Static	2		
	TRDHROM_StatusU16Item4		UINT16	Static	2		
	TRDHROM_StatusU16Item5		UINT16	Static	2		
	TRDHROM_StatusU32Item1		UINT32	Static	4		
	TRDHROM_StatusU32Item2		UINT32	Static	4		
	TRDHROM_StatusU32Item3		UINT32	Static	4		
	TRDHROM_StatusU32Item4		UINT32	Static	4		
	TRDHROM_StatusF32Item1		FLOAT	Static	4		
	TRDHROM_StatusF32Item2		FLOAT	Static	4		
	TRDHROM_StatusF32Item3		FLOAT	Static	4		
	TRDHROM_StatusF32Item4		FLOAT	Static	4		
	TRDHROM_StatusTrigger		UINT8	Static	1		
44	TRDHROM_BDT_CfgReadWriteCtrl_1		UINT16	Static	2	AUTO	
45	TRDHROM_BDT_DataTransferredCtrl_1		UINT8	Static	1	AUTO	
46	TRDHROM_BdtDataCtrl		UINT16	Static	2	AUTO	
47	TRDHROM_BdtSampledata		FLOAT	Static	4	AUTO	
48	TRDHROM_BdtEventData		Standard	Static	95		
	TRDHROM_TimeStamp1		STRING	Static	14		
	TRDHROM_EventId1		UINT16	Static	2		
	TRDHROM_EventSpecificData1		UINT8	Static	1		
	TRDHROM_EventCategory1		UINT8	Static	1		
	TRDHROM_EventClass1		UINT8	Static	1		
	TRDHROM_TimeStamp2		STRING	Static	14		
	TRDHROM_EventId2		UINT16	Static	2		
	TRDHROM_EventSpecificData2		UINT8	Static	1		
	TRDHROM_EventCategory2		UINT8	Static	1		
	TRDHROM_EventClass2		UINT8	Static	1		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDHROM_TimeStamp3		STRING	Static	14		
	TRDHROM_EventId3		UINT16	Static	2		
	TRDHROM_EventSpecificData3		UINT8	Static	1		
	TRDHROM_EventCategory3		UINT8	Static	1		
	TRDHROM_EventClass3		UINT8	Static	1		
	TRDHROM_TimeStamp4		STRING	Static	14		
	TRDHROM_EventId4		UINT16	Static	2		
	TRDHROM_EventSpecificData4		UINT8	Static	1		
	TRDHROM_EventCategory4		UINT8	Static	1		
	TRDHROM_EventClass4		UINT8	Static	1		
	TRDHROM_TimeStamp5		STRING	Static	14		
	TRDHROM_EventId5		UINT16	Static	2		
	TRDHROM_EventSpecificData5		UINT8	Static	1		
	TRDHROM_EventCategory5		UINT8	Static	1		
	TRDHROM_EventClass5		UINT8	Static	1		
	TRDHROM_View1	View -1-	VIEW1	Dynamic	17		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	TRDHROM_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHROM_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHROM_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHROM_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHROM_View2	View -2-	VIEW2	Static	24		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	TRDHROM_TransducerType	Transducer Type	ENUM16	Static	2		
	HB_TrendPackageSize		UINT8	Static	1	AUTO	
	HB_TrendSupportedPackageSize		UINT8	Static	1		
	HB_MaxTrendEntries		UINT16	Static	2		
	STD_CustomizedData	Customized	UINT8	Static	1		
	STD_DeleteCustomizedData	Reset ordered configuration	ENUM16	Static	2	AUTO	X
	STD_FactoryDataValid		UINT8	Static	1		
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolumeFlow	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_RefDensity	Reference density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDHROM_View3	View -3-	VIEW3	Dynamic	17		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	TRDHROM_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDHROM_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDHROM_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDHROM_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDHROM_View3_2	View -3-1	VIEW3	Static	2		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	TRDHROM_View4	View -4-	VIEW4	Static	53		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	TRDHROM_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDHROM_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDHROM_TransducerType	Transducer Type	ENUM16	Static	2		
	SPV_CurrentSysConditionUnion	Actual diagnostics	UINT32	Static	4		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	BDT_Prepare		BYTEARRAY	Static	25	AUTO	
	HB_OperationHours		UINT32	Static	4		
	HB_TrendStorageTime	Trend storage time	UINT32	Static	4		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	BDT_CfgReadWriteCtrl		UINT16	Static	2	AUTO	
	BDT_DataTransferredCtrl		UINT8	Static	1	AUTO	
	TRDHROM_View4_2	View -4-1	VIEW4	Static	98		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		
	BDT_Status		BYTEARRAY	Static	25		
	BDT_CfgReadWrite		BYTEARRAY	Static	3	AUTO	
	BDT_Data		BYTEARRAY	Static	64	AUTO	
	BDT_DataTransferred		BYTEARRAY	Static	4	AUTO	
	TRDHROM_View4_3	View -4-2	VIEW4	Static	106		
	TRDHROM_StRev	Static Revision	UINT16	Static	2		

17.1.13 Transducer Block Service Info

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDSRVIF_TransducerTypeVer		UINT16	Static	2		
12	TRDSRVIF_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDSRVIF_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDSRVIF_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
15	TRDSRVIF_MDI_ModuleAvailable_1	Resource available	UINT8	Static	1		
16	TRDSRVIF_MDI_ModuleName_1	Module name	STRING	Static	16	AUTO	X
17	TRDSRVIF_MDI_ModuleSerialNumber_1	Serial number	STRING	Static	16	AUTO	X
18	TRDSRVIF_MDI_ModuleBootloaderRevision_1	Bootloader revision	UINT32	Static	4		
19	TRDSRVIF_MDI_ModuleFirmwareBuildNumber_1	Build no. software	UINT16	Static	2		
20	TRDSRVIF_MDI_ModuleFirmwareRevision_1	Software revision	UINT32	Static	4		
21	TRDSRVIF_MDI_ModuleHardwareRevision_1	Hardware revision	STRING	Static	16	AUTO	X
22	TRDSRVIF_MDI_ModuleAvailable_2	Resource available	UINT8	Static	1		
23	TRDSRVIF_MDI_ModuleName_2	Module name	STRING	Static	16	AUTO	X
24	TRDSRVIF_MDI_ModuleSerialNumber_2	Serial number	STRING	Static	16	AUTO	X
25	TRDSRVIF_MDI_ModuleBootloaderRevision_2	Bootloader revision	UINT32	Static	4		
26	TRDSRVIF_MDI_ModuleFirmwareBuildNumber_2	Build no. software	UINT16	Static	2		
27	TRDSRVIF_MDI_ModuleFirmwareRevision_2	Software revision	UINT32	Static	4		
28	TRDSRVIF_MDI_ModuleHardwareRevision_2	Hardware revision	STRING	Static	16	AUTO	X
29	TRDSRVIF_MDI_ModuleAvailable_3	Resource available	UINT8	Static	1		
30	TRDSRVIF_MDI_ModuleName_3	Module name	STRING	Static	16	AUTO	X
31	TRDSRVIF_MDI_ModuleSerialNumber_3	Serial number	STRING	Static	16	AUTO	X
32	TRDSRVIF_MDI_ModuleBootloaderRevision_3	Bootloader revision	UINT32	Static	4		
33	TRDSRVIF_MDI_ModuleFirmwareBuildNumber_3	Build no. software	UINT16	Static	2		
34	TRDSRVIF_MDI_ModuleFirmwareRevision_3	Software revision	UINT32	Static	4		
35	TRDSRVIF_MDI_ModuleHardwareRevision_3	Hardware revision	STRING	Static	16	AUTO	X
36	TRDSRVIF_MDI_ModuleAvailable_4	Resource available	UINT8	Static	1		
37	TRDSRVIF_MDI_ModuleName_4	Module name	STRING	Static	16	AUTO	X
38	TRDSRVIF_MDI_ModuleSerialNumber_4	Serial number	STRING	Static	16	AUTO	X
39	TRDSRVIF_MDI_ModuleBootloaderRevision_4	Bootloader revision	UINT32	Static	4		
40	TRDSRVIF_MDI_ModuleFirmwareBuildNumber_4	Build no. software	UINT16	Static	2		
41	TRDSRVIF_MDI_ModuleFirmwareRevision_4	Software revision	UINT32	Static	4		
42	TRDSRVIF_MDI_ModuleHardwareRevision_4	Hardware revision	STRING	Static	16	AUTO	X
43	TRDSRVIF_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
44	TRDSRVIF_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
45	TRDSRVIF_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
	TRDSRVIF_View1	View -1-	VIEW1	Dynamic	17		
	TRDSRVIF_StRev	Static Revision	UINT16	Static	2		
	TRDSRVIF_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSRVIF_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSRVIF_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDSRVIF_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDSRVIF_View2	View -2-	VIEW2	Static	94		
	TRDSRVIF_StRev	Static Revision	UINT16	Static	2		
	TRDSRVIF_TransducerType	Transducer Type	ENUM16	Static	2		
	MDI_ModuleAvailable	Resource available	UINT8	Static	1		
	MDI_ModuleName	Module name	STRING	Static	16	AUTO	X
	MDI_ModuleSerialNumber	Serial number	STRING	Static	16	AUTO	X
	MDI_ModuleBootloaderRevision	Bootloader revision	UINT32	Static	4		
	MDI_ModuleFirmwareBuildNumber	Build no. software	UINT16	Static	2		
	MDI_ModuleFirmwareRevision	Software revision	UINT32	Static	4		
	MDI_ModuleHardwareRevision	Hardware revision	STRING	Static	16	AUTO	X
	MDI_ModuleAvailable	Resource available	UINT8	Static	1		
	MDI_ModuleName	Module name	STRING	Static	16	AUTO	X
	MDI_ModuleBootloaderRevision	Bootloader revision	UINT32	Static	4		
	MDI_ModuleFirmwareBuildNumber	Build no. software	UINT16	Static	2		
	MDI_ModuleFirmwareRevision	Software revision	UINT32	Static	4		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	TRDSRVIF_View3	View -3-	VIEW3	Dynamic	17		
	TRDSRVIF_StRev	Static Revision	UINT16	Static	2		
	TRDSRVIF_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSRVIF_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSRVIF_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDSRVIF_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDSRVIF_View4	View -4-	VIEW4	Static	102		
	TRDSRVIF_StRev	Static Revision	UINT16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TRDSRVIF_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDSRVIF_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDSRVIF_TransducerType	Transducer Type	ENUM16	Static	2		
	MDI_ModuleSerialNumber	Serial number	STRING	Static	16	AUTO	X
	MDI_ModuleHardwareRevision	Hardware revision	STRING	Static	16	AUTO	X
	MDI_ModuleAvailable	Resource available	UINT8	Static	1		
	MDI_ModuleName	Module name	STRING	Static	16	AUTO	X
	MDI_ModuleSerialNumber	Serial number	STRING	Static	16	AUTO	X
	MDI_ModuleBootloaderRevision	Bootloader revision	UINT32	Static	4		
	MDI_ModuleFirmwareBuildNumber	Build no. software	UINT16	Static	2		
	MDI_ModuleFirmwareRevision	Software revision	UINT32	Static	4		
	MDI_ModuleHardwareRevision	Hardware revision	STRING	Static	16	AUTO	X
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	TRDSRVIF_View4_2	View -4-1	VIEW4	Static	63		
	TRDSRVIF_StRev	Static Revision	UINT16	Static	2		
	MDI_ModuleAvailable	Resource available	UINT8	Static	1		
	MDI_ModuleName	Module name	STRING	Static	16	AUTO	X
	MDI_ModuleSerialNumber	Serial number	STRING	Static	16	AUTO	X
	MDI_ModuleBootloaderRevision	Bootloader revision	UINT32	Static	4		
	MDI_ModuleFirmwareBuildNumber	Build no. software	UINT16	Static	2		
	MDI_ModuleFirmwareRevision	Software revision	UINT32	Static	4		
	MDI_ModuleHardwareRevision	Hardware revision	STRING	Static	16	AUTO	X
	STD_UserLevel	Access status tooling	ENUM16	Static	2		

17.1.14 Transducer Block Service Sensor

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDSRVSB_TransducerTypeVer		UINT16	Static	2		
12	TRDSRVSB_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDSRVSB_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDSRVSB_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDSRVSB_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
16	TRDSRVSB_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDSRVSB_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
18	TRDSRVSB_CFM_DensityAdjustControl_1	Execute density adjustment	ENUM16	Static	2	AUTO	X
19	TRDSRVSB_CFM_DensityAdjustState_1		ENUM16	Static	2		
20	TRDSRVSB_CFM_DensityAdjustMode_1	Density adjustment mode	ENUM16	Static	2	AUTO	X
21	TRDSRVSB_CFM_DensityAdjustProgress_1	Adjustment in progress	FLOAT	Static	4		
22	TRDSRVSB_CFM_DensityAdjustSetValue1_1	Density setpoint 1	FLOAT	Static	4	AUTO	X
23	TRDSRVSB_CFM_DensityAdjustSetValue2_1	Density setpoint 2	FLOAT	Static	4	AUTO	X
24	TRDSRVSB_CFM_DensityFactor_1	Density factor	FLOAT	Static	4	AUTO	X
25	TRDSRVSB_CFM_DensityOffset_1	Density offset	FLOAT	Static	4	AUTO	X
26	TRDSRVSB_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
27	TRDSRVSB_Dev_DateTimeFormat_1	Date/time format	ENUM16	Static	2	AUTO	X
28	TRDSRVSB_CFM_CalibrationFactor_1	Calibration factor	FLOAT	Static	4	AUTO	X
29	TRDSRVSB_CFM_ZeroPoint_1	Zero point	FLOAT	Static	4	AUTO	X
30	TRDSRVSB_Dev_NominalDiameter_1	Nominal diameter	STRING	Static	20	AUTO	X
31	TRDSRVSB_CFM_C0_1	C0	STRING	Static	16	AUTO	X
32	TRDSRVSB_CFM_C1_1	C1	STRING	Static	16	AUTO	X
33	TRDSRVSB_CFM_C2_1	C2	STRING	Static	16	AUTO	X
34	TRDSRVSB_CFM_C3_1	C3	STRING	Static	16	AUTO	X
35	TRDSRVSB_CFM_C4_1	C4	STRING	Static	16	AUTO	X
36	TRDSRVSB_CFM_C5_1	C5	STRING	Static	16	AUTO	X
37	TRDSRVSB_CFM_A_1	A0	FLOAT	Static	4	AUTO	X
42	TRDSRVSB_Dev_CalTimeString_1	Calibration date/ time	STRING	Static	20	AUTO	X
43	TRDSRVSB_Dev_MapCalFactor_1	Calibration factor	FLOAT	Static	4	AUTO	X
44	TRDSRVSB_Dev_CalTimeYear_1	Year	UINT8	Static	1	AUTO	X
45	TRDSRVSB_Dev_CalTimeMonth_1	Month	ENUM16	Static	2	AUTO	X
46	TRDSRVSB_Dev_CalTimeDay_1	Day	UINT8	Static	1	AUTO	X
47	TRDSRVSB_Dev_CalHiLimitDays_1		UINT8	Static	1		
48	TRDSRVSB_Dev_CalTimeHour_1	Hour	UINT8	Static	1	AUTO	X
49	TRDSRVSB_Dev_CalTimeAmPm_1	AM/PM	ENUM16	Static	2	AUTO	X
50	TRDSRVSB_Dev_CalLoLimitHours_1		UINT8	Static	1		
51	TRDSRVSB_Dev_CalHiLimitHours_1		UINT8	Static	1		
52	TRDSRVSB_Dev_CalTimeMinute_1	Minute	UINT8	Static	1	AUTO	X
53	TRDSRVSB_Dev_ConfirmCalibration_1	Confirm settings	ENUM16	Static	2	AUTO	X
54	TRDSRVSB_Dev_CalHistoryCounter_1	Calibration counter	UINT32	Static	4	AUTO	X
55	TRDSRVSB_Dev_CalHistoryEntryNum_1	Select calibration log entry	UINT8	Static	1	AUTO	
56	TRDSRVSB_Dev_CalTimeSelectedEntry_1	Timestamp	STRING	Static	20		
57	TRDSRVSB_Dev_CalFactorSelectedEntry_1	Calibration factor	FLOAT	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
58	TRDSRVSB_CFM_Frequency_1	Oscillation frequency	FLOAT	Dynamic	4		
59	TRDSRVSB_CFM_Amplitude_1	Oscillation amplitude	FLOAT	Dynamic	4		
60	TRDSRVSB_CFM_Damping_1	Oscillation damping	FLOAT	Dynamic	4		
61	TRDSRVSB_CFM_Asymmetry_1	Signal asymmetry	FLOAT	Dynamic	4		
62	TRDSRVSB_CFM_ElectronicsTemperature_1	Electronic temperature	FLOAT	Dynamic	4		
63	TRDSRVSB_CFM_MeasCarrTubeTemp_1	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
64	TRDSRVSB_CFM_CarrierPipeTemperature_1	Carrier pipe temperature	FLOAT	Dynamic	4		
65	TRDSRVSB_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
66	TRDSRVSB_STD_FieldbusType_1	Fieldbus Type	ENUM8	Static	1		
67	TRDSRVSB_HBT_VerificationStatus_1	Status	ENUM16	Dynamic	2		
68	TRDSRVSB_CFM_ZeroPointAdjustControl_1	Zero point adjustment control	ENUM16	Static	2	AUTO	X
69	TRDSRVSB_CFM_ZeroPointAdjustProgress_1	Adjustment in progress	UINT8	Static	1		
70	TRDSRVSB_CFM_ZeroPointAdjustState_1	Zeropoint adjust state	ENUM16	Static	2		
	TRDSRVSB_View1	View -1-	VIEW1	Dynamic	43		
	TRDSRVSB_StRev	Static Revision	UINT16	Static	2		
	TRDSRVSB_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSRVSB_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSRVSB_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDSRVSB_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	CFM_Frequency	Oscillation frequency	FLOAT	Dynamic	4		
	CFM_Amplitude	Oscillation amplitude	FLOAT	Dynamic	4		
	CFM_Damping	Oscillation damping	FLOAT	Dynamic	4		
	CFM_Asymmetry	Signal asymmetry	FLOAT	Dynamic	4		
	CFM_ElectronicsTemperature	Electronic temperature	FLOAT	Dynamic	4		
	CFM_CarrierPipeTemperature	Carrier pipe temperature	FLOAT	Dynamic	4		
	HBT_VerificationStatus	Status	ENUM16	Dynamic	2		
	TRDSRVSB_View2	View -2-	VIEW2	Static	100		
	TRDSRVSB_StRev	Static Revision	UINT16	Static	2		
	TRDSRVSB_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	Dev_DateTimeFormat	Date/time format	ENUM16	Static	2	AUTO	X
	Dev_NominalDiameter	Nominal diameter	STRING	Static	20	AUTO	X
	Dev_CalTimeString	Calibration date/ time	STRING	Static	20	AUTO	X
	Dev_MapCalFactor	Calibration factor	FLOAT	Static	4	AUTO	X
	Dev_CalTimeYear	Year	UINT8	Static	1	AUTO	X
	Dev_CalTimeMonth	Month	ENUM16	Static	2	AUTO	X
	Dev_CalTimeDay	Day	UINT8	Static	1	AUTO	X
	Dev_CalHiLimitDays		UINT8	Static	1		
	Dev_CalTimeHour	Hour	UINT8	Static	1	AUTO	X
	Dev_CalTimeAmPm	AM/PM	ENUM16	Static	2	AUTO	X
	Dev_CalLoLimitHours		UINT8	Static	1		
	Dev_CalHiLimitHours		UINT8	Static	1		
	Dev_CalTimeMinute	Minute	UINT8	Static	1	AUTO	X
	Dev_ConfirmCalibration	Confirm settings	ENUM16	Static	2	AUTO	X
	Dev_CalHistoryCounter	Calibration counter	UINT32	Static	4	AUTO	X
	Dev_CalHistoryEntryNum	Select calibration log entry	UINT8	Static	1	AUTO	
	Dev_CalTimeSelectedEntry	Timestamp	STRING	Static	20		
	Dev_CalFactorSelectedEntry	Calibration factor	FLOAT	Static	4		
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	TRDSRVSB_View3	View -3-	VIEW3	Dynamic	17		
	TRDSRVSB_StRev	Static Revision	UINT16	Static	2		
	TRDSRVSB_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSRVSB_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSRVSB_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDSRVSB_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDSRVSB_View4	View -4-	VIEW4	Static	50		
	TRDSRVSB_StRev	Static Revision	UINT16	Static	2		
	TRDSRVSB_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDSRVSB_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDSRVSB_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	STD_SWOptionActiveOverview	Software option overview	BIT_ENUM32	Static	4		
	CFM_DensityAdjustControl	Execute density adjustment	ENUM16	Static	2	AUTO	X
	CFM_DensityAdjustState		ENUM16	Static	2		
	CFM_DensityAdjustMode	Density adjustment mode	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	CFM_DensityAdjustProgress	Adjustment in progress	FLOAT	Static	4		
	CFM_DensityAdjustSetValue1	Density setpoint 1	FLOAT	Static	4	AUTO	X
	CFM_DensityAdjustSetValue2	Density setpoint 2	FLOAT	Static	4	AUTO	X
	CFM_DensityFactor	Density factor	FLOAT	Static	4	AUTO	X
	CFM_DensityOffset	Density offset	FLOAT	Static	4	AUTO	X
	CFM_ZeroPoint	Zero point	FLOAT	Static	4	AUTO	X
	CFM_MeasCarrTubeTemp	Carrier Temperature Measure supported	ENUM16	Static	2	AUTO	X
	CFM_ZeroPointAdjustControl	Zero point adjustment control	ENUM16	Static	2	AUTO	X
	CFM_ZeroPointAdjustProgress	Adjustment in progress	UINT8	Static	1		
	CFM_ZeroPointAdjustState	Zeropoint adjust state	ENUM16	Static	2		
	TRDSRVSB_View4_2	View -4-1	VIEW4	Static	102		
	TRDSRVSB_StRev	Static Revision	UINT16	Static	2		
	CFM_CalibrationFactor	Calibration factor	FLOAT	Static	4	AUTO	X
	CFM_C0	C0	STRING	Static	16	AUTO	X
	CFM_C1	C1	STRING	Static	16	AUTO	X
	CFM_C2	C2	STRING	Static	16	AUTO	X
	CFM_C3	C3	STRING	Static	16	AUTO	X
	CFM_C4	C4	STRING	Static	16	AUTO	X
	CFM_C5	C5	STRING	Static	16	AUTO	X

17.1.15 Transducer Block Setup

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDSUP_TransducerTypeVer		UINT16	Static	2		
12	TRDSUP_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDSUP_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDSUP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDSUP_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
16	TRDSUP_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
17	TRDSUP_CFM_FluidSelection_1	Select medium	ENUM16	Static	2	AUTO	X
18	TRDSUP_CFM_GasType_1	Select gas type	ENUM16	Static	2	AUTO	X
19	TRDSUP_CFM_RefSoundVelocity_1	Reference sound velocity	FLOAT	Static	4	AUTO	X
20	TRDSUP_CFM_TempCoeffSVel_1	Temperature coefficient sound velocity	FLOAT	Static	4	AUTO	X
21	TRDSUP_CFM_PressureMode_1	Pressure compensation	ENUM16	Static	2	AUTO	X
22	TRDSUP_CFM_FixPressure_1	Pressure value	FLOAT	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
23	TRDSUP_FLOW_RefDensityForcing_1	Corrected volume flow calculation	ENUM16	Static	2	AUTO	X
24	TRDSUP_FLOW_ForcedRefDensity_1	Fixed reference density	FLOAT	Static	4	AUTO	X
25	TRDSUP_FLOW_LinearExpansionCoeff_1	Linear expansion coefficient	FLOAT	Static	4	AUTO	X
26	TRDSUP_FLOW_SquareExpansionCoeff_1	Square expansion coefficient	FLOAT	Static	4	AUTO	X
27	TRDSUP_FLOW_ReferenceTemperature_1	Reference temperature	FLOAT	Static	4	AUTO	X
28	TRDSUP_FLOW_FlowMonitoringSelector_1	Assign process variable	ENUM16	Static	2	AUTO	X
29	TRDSUP_FLOW_LowFlowLimit_1	On value low flow cutoff	FLOAT	Static	4	AUTO	X
30	TRDSUP_FLOW_LowFlowHysteresis_1	Off value low flow cutoff	FLOAT	Static	4	AUTO	X
31	TRDSUP_FLOW_PressureShockSuppression_1	Pressure shock suppression	FLOAT	Static	4	AUTO	X
32	TRDSUP_FLOW_DensityMonitoringSelector_1	Assign process variable	ENUM16	Static	2	AUTO	X
33	TRDSUP_FLOW_MinDensityValue_1	Low value partial filled pipe detection	FLOAT	Static	4	AUTO	X
34	TRDSUP_FLOW_MaxDensityValue_1	High value partial filled pipe detection	FLOAT	Static	4	AUTO	X
35	TRDSUP_FLOW_DensityMonitoringDelay_1	Response time part. filled pipe detect.	FLOAT	Static	4	AUTO	X
36	TRDSUP_SU_MassFlow_1	Mass flow unit	ENUM16	Static	2	AUTO	X
37	TRDSUP_SU_VolumeFlow_1	Volume flow unit	ENUM16	Static	2	AUTO	X
38	TRDSUP_SU_CorrVolumeFlow_1	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
39	TRDSUP_SU_Density_1	Density unit	ENUM16	Static	2	AUTO	X
40	TRDSUP_SU_RefDensity_1	Reference density unit	ENUM16	Static	2	AUTO	X
41	TRDSUP_SU_Temperature_1	Temperature unit	ENUM16	Static	2	AUTO	X
42	TRDSUP_SU_Pressure_1	Pressure unit	ENUM16	Static	2	AUTO	X
	TRDSUP_View1	View -1-	VIEW1	Dynamic	17		
	TRDSUP_StRev	Static Revision	UINT16	Static	2		
	TRDSUP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSUP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSUP_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDSUP_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDSUP_View2	View -2-	VIEW2	Static	84		
	TRDSUP_StRev	Static Revision	UINT16	Static	2		
	TRDSUP_TransducerType	Transducer Type	ENUM16	Static	2		
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	CFM_FluidSelection	Select medium	ENUM16	Static	2	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	CFM_GasType	Select gas type	ENUM16	Static	2	AUTO	X
	CFM_RefSoundVelocity	Reference sound velocity	FLOAT	Static	4	AUTO	X
	CFM_TempCoeffSVel	Temperature coefficient sound velocity	FLOAT	Static	4	AUTO	X
	CFM_PressureMode	Pressure compensation	ENUM16	Static	2	AUTO	X
	CFM_FixPressure	Pressure value	FLOAT	Static	4	AUTO	X
	FLOW_RefDensityForcing	Corrected volume flow calculation	ENUM16	Static	2	AUTO	X
	FLOW_ForcedRefDensity	Fixed reference density	FLOAT	Static	4	AUTO	X
	FLOW_LinearExpansionCoeff	Linear expansion coefficient	FLOAT	Static	4	AUTO	X
	FLOW_SquareExpansionCoeff	Square expansion coefficient	FLOAT	Static	4	AUTO	X
	FLOW_ReferenceTemperature	Reference temperature	FLOAT	Static	4	AUTO	X
	FLOW_FlowMonitoringSelector	Assign process variable	ENUM16	Static	2	AUTO	X
	FLOW_LowFlowLimit	On value low flow cutoff	FLOAT	Static	4	AUTO	X
	FLOW_LowFlowHysteresis	Off value low flow cutoff	FLOAT	Static	4	AUTO	X
	FLOW_PressureShockSuppression	Pressure shock suppression	FLOAT	Static	4	AUTO	X
	FLOW_DensityMonitoringSelector	Assign process variable	ENUM16	Static	2	AUTO	X
	FLOW_MinDensityValue	Low value partial filled pipe detection	FLOAT	Static	4	AUTO	X
	FLOW_MaxDensityValue	High value partial filled pipe detection	FLOAT	Static	4	AUTO	X
	FLOW_DensityMonitoringDelay	Response time part. filled pipe detect.	FLOAT	Static	4	AUTO	X
	SU_MassFlow	Mass flow unit	ENUM16	Static	2	AUTO	X
	SU_VolumeFlow	Volume flow unit	ENUM16	Static	2	AUTO	X
	SU_CorrVolumeFlow	Corrected volume flow unit	ENUM16	Static	2	AUTO	X
	SU_Density	Density unit	ENUM16	Static	2	AUTO	X
	SU_RefDensity	Reference density unit	ENUM16	Static	2	AUTO	X
	SU_Temperature	Temperature unit	ENUM16	Static	2	AUTO	X
	SU_Pressure	Pressure unit	ENUM16	Static	2	AUTO	X
	TRDSUP_View3	View -3-	VIEW3	Dynamic	13		
	TRDSUP_StRev	Static Revision	UINT16	Static	2		
	TRDSUP_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDSUP_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDSUP_XdError	Transducer Error	ENUM8	Dynamic	1		

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDSUP_View4	View -4-	VIEW4	Static	7		
	TRDSUP_StRev	Static Revision	UINT16	Static	2		
	TRDSUP_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDSUP_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDSUP_TransducerType	Transducer Type	ENUM16	Static	2		

17.1.16 Transducer Block Total Inventory Counter

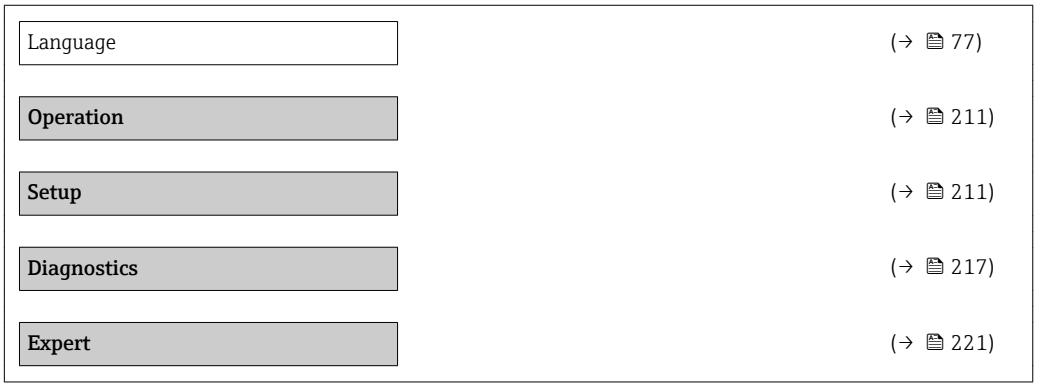
Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
11	TRDTIC_TransducerTypeVer		UINT16	Static	2		
12	TRDTIC_XdError	Transducer Error	ENUM8	Dynamic	1		
13	TRDTIC_CollectionDirectory	Collection Directory	UINT32	Static	4		
14	TRDTIC_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
15	TRDTIC_TIC_Channel_1	Assign process variable	ENUM16	Static	2	AUTO	X
16	TRDTIC_TotalizerValue_1	Totalizer value 1	Standard	Dynamic	5		
	TRDTIC_StateTotalizer_1	Totalizer status	ENUM8	Dynamic	1		
	TIC_Value	Totalizer value	FLOAT	Dynamic	4	AUTO	X
17	TRDTIC_TIC_OverflowValue_1	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
18	TRDTIC_TIC_TotUnit_1	Unit totalizer	ENUM16	Static	2	AUTO	X
19	TRDTIC_TIC_Control_1	Control Totalizer	ENUM16	Static	2	AUTO	X
20	TRDTIC_TIC_PresetQuantity_1	Preset value	FLOAT	Static	4	AUTO	X
21	TRDTIC_TIC_FailsafeMode_1	Failure mode	ENUM16	Static	2	AUTO	X
22	TRDTIC_TIC_SumMode_1	Totalizer operation mode	ENUM16	Static	2	AUTO	X
23	TRDTIC_TIC_Channel_2	Assign process variable	ENUM16	Static	2	AUTO	X
24	TRDTIC_TotalizerValue_2	Totalizer value 2	Standard	Dynamic	5		
	TRDTIC_StateTotalizer_2	Totalizer status 2	ENUM8	Dynamic	1		
	TIC_Value	Totalizer value	FLOAT	Dynamic	4	AUTO	X
25	TRDTIC_TIC_OverflowValue_2	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
26	TRDTIC_TIC_TotUnit_2	Unit totalizer	ENUM16	Static	2	AUTO	X
27	TRDTIC_TIC_Control_2	Control Totalizer	ENUM16	Static	2	AUTO	X
28	TRDTIC_TIC_PresetQuantity_2	Preset value	FLOAT	Static	4	AUTO	X
29	TRDTIC_TIC_FailsafeMode_2	Failure mode	ENUM16	Static	2	AUTO	X
30	TRDTIC_TIC_SumMode_2	Totalizer operation mode	ENUM16	Static	2	AUTO	X
31	TRDTIC_TIC_Channel_3	Assign process variable	ENUM16	Static	2	AUTO	X
32	TRDTIC_TotalizerValue_3	Totalizer value 3	Standard	Dynamic	5		
	TRDTIC_StateTotalizer_3	Totalizer status 3	ENUM8	Dynamic	1		
	TIC_Value	Totalizer value	FLOAT	Dynamic	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
33	TRDTIC_STD_SWOptionActiveOverview_1	Software option overview	BIT_ENUM32	Static	4		
34	TRDTIC_TIC_OverflowValue_3	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
35	TRDTIC_TIC_TotUnit_3	Unit totalizer	ENUM16	Static	2	AUTO	X
36	TRDTIC_TIC_Control_3	Control Totalizer	ENUM16	Static	2	AUTO	X
37	TRDTIC_TIC_PresetQuantity_3	Preset value	FLOAT	Static	4	AUTO	X
38	TRDTIC_TIC_FailsafeMode_3	Failure mode	ENUM16	Static	2	AUTO	X
39	TRDTIC_TIC_SumMode_3	Totalizer operation mode	ENUM16	Static	2	AUTO	X
40	TRDTIC_Dev_ResetAllTotalizers_1	Reset all totalizers	ENUM16	Static	2	AUTO	X
41	TRDTIC_IC_Value_1	Totalizer value	FLOAT	Dynamic	4		
42	TRDTIC_IC_Overflow_1	Totalizer overflow	FLOAT	Dynamic	4		
43	TRDTIC_IC_TotUnit_1	Unit	ENUM16	Static	2	AUTO	
44	TRDTIC_STD_UserLevel_1	Access status tooling	ENUM16	Static	2		
45	TRDTIC_STD_LockingState_1	Locking status	BIT_ENUM16	Dynamic	2		
	TRDTIC_View1	View -1-	VIEW1	Dynamic	52		
	TRDTIC_StRev	Static Revision	UINT16	Static	2		
	TRDTIC_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDTIC_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDTIC_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDTIC_BlockErrDesc_1	Block error description	BIT_ENUM32	Dynamic	4		
	TIC_OverflowValue	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
	TIC_OverflowValue	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
	TIC_OverflowValue	Totalizer overflow	FLOAT	Dynamic	4	AUTO	X
	IC_Value	Totalizer value	FLOAT	Dynamic	4		
	IC_Overflow	Totalizer overflow	FLOAT	Dynamic	4		
	STD_LockingState	Locking status	BIT_ENUM16	Dynamic	2		
	TRDTIC_View2	View -2-	VIEW2	Static	50		
	TRDTIC_StRev	Static Revision	UINT16	Static	2		
	TRDTIC_TransducerType	Transducer Type	ENUM16	Static	2		
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_Control	Control Totalizer	ENUM16	Static	2	AUTO	X
	TIC_PresetQuantity	Preset value	FLOAT	Static	4	AUTO	X
	TIC_FailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	TIC_SumMode	Totalizer operation mode	ENUM16	Static	2	AUTO	X
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_Control	Control Totalizer	ENUM16	Static	2	AUTO	X
	TIC_PresetQuantity	Preset value	FLOAT	Static	4	AUTO	X

Relative Index	Name	Label	Data type	Storage Class	Size (Bytes)	MODE_BLK	Writability
	TIC_FailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	TIC_SumMode	Totalizer operation mode	ENUM16	Static	2	AUTO	X
	TIC_Channel	Assign process variable	ENUM16	Static	2	AUTO	X
	TIC_TotUnit	Unit totalizer	ENUM16	Static	2	AUTO	X
	TIC_Control	Control Totalizer	ENUM16	Static	2	AUTO	X
	TIC_PresetQuantity	Preset value	FLOAT	Static	4	AUTO	X
	TIC_FailsafeMode	Failure mode	ENUM16	Static	2	AUTO	X
	TIC_SumMode	Totalizer operation mode	ENUM16	Static	2	AUTO	X
	IC_TotUnit	Unit	ENUM16	Static	2	AUTO	
	STD_UserLevel	Access status tooling	ENUM16	Static	2		
	TRDTIC_View3	View -3-	VIEW3	Dynamic	11		
	TRDTIC_StRev	Static Revision	UINT16	Static	2		
	TRDTIC_BlockErr	Block Error	BIT_ENUM16	Dynamic	2		
	TRDTIC_TransducerType	Transducer Type	ENUM16	Static	2		
	TRDTIC_XdError	Transducer Error	ENUM8	Dynamic	1		
	TRDTIC_View4	View -4-	VIEW4	Static	7		
	TRDTIC_StRev	Static Revision	UINT16	Static	2		
	TRDTIC_Strategy	Strategy	UINT16	Static	2	AUTO	X
	TRDTIC_AlertKey	Alert Key	UINT8	Static	1	AUTO	X
	TRDTIC_TransducerType	Transducer Type	ENUM16	Static	2		

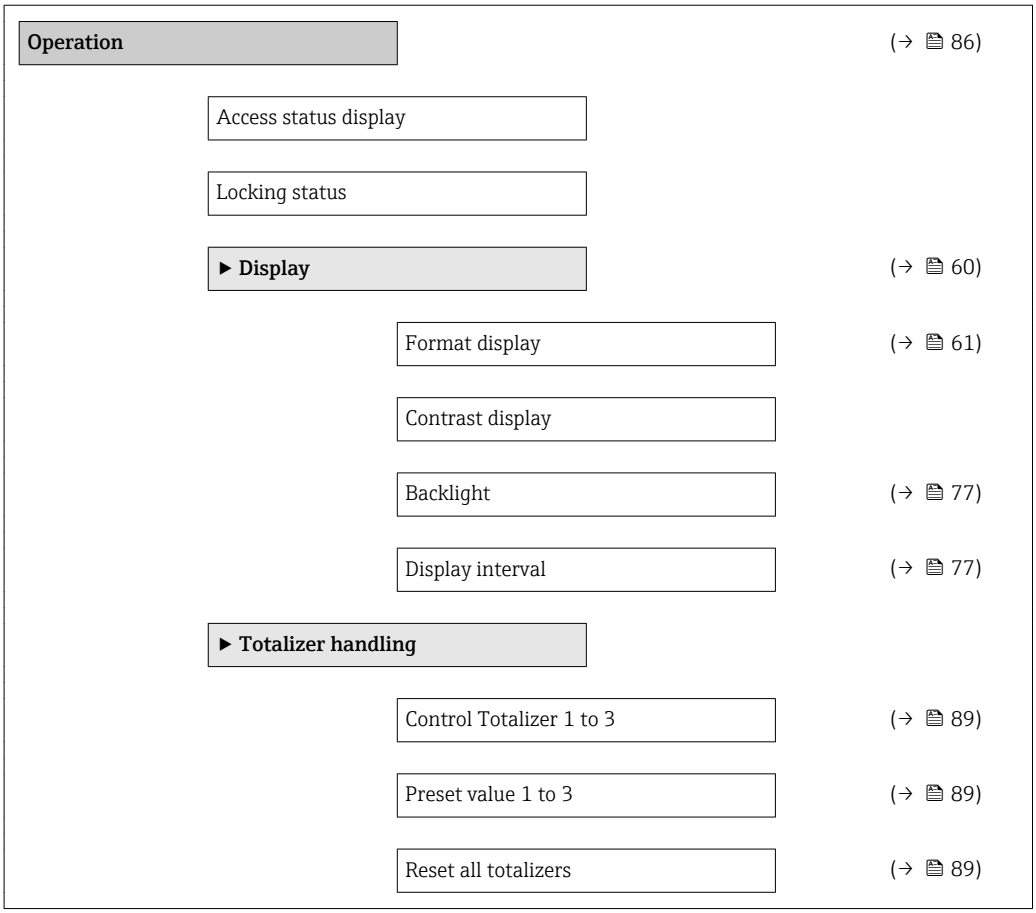
17.2 Overview of the operating menu

The following tables provide an overview of the entire operating menu structure with menus and parameters. The page reference indicates where a description of the parameter can be found in the manual.



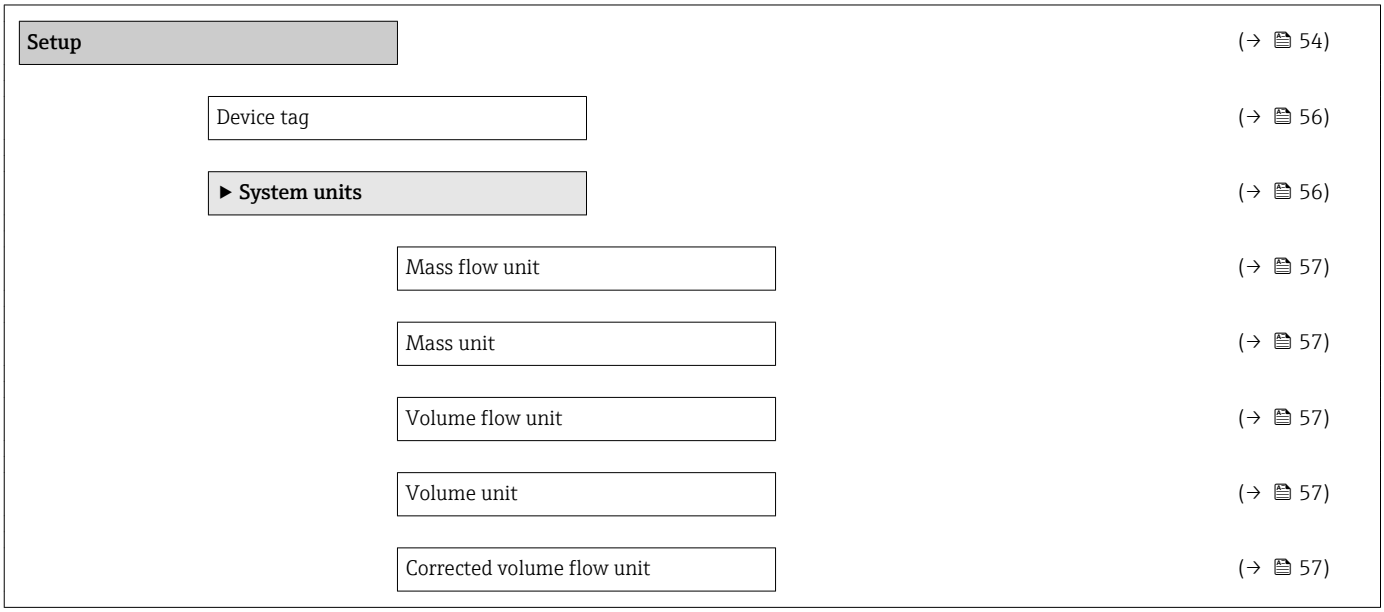
17.2.1 "Operation" menu

Navigation Operation



17.2.2 "Setup" menu

Navigation Setup

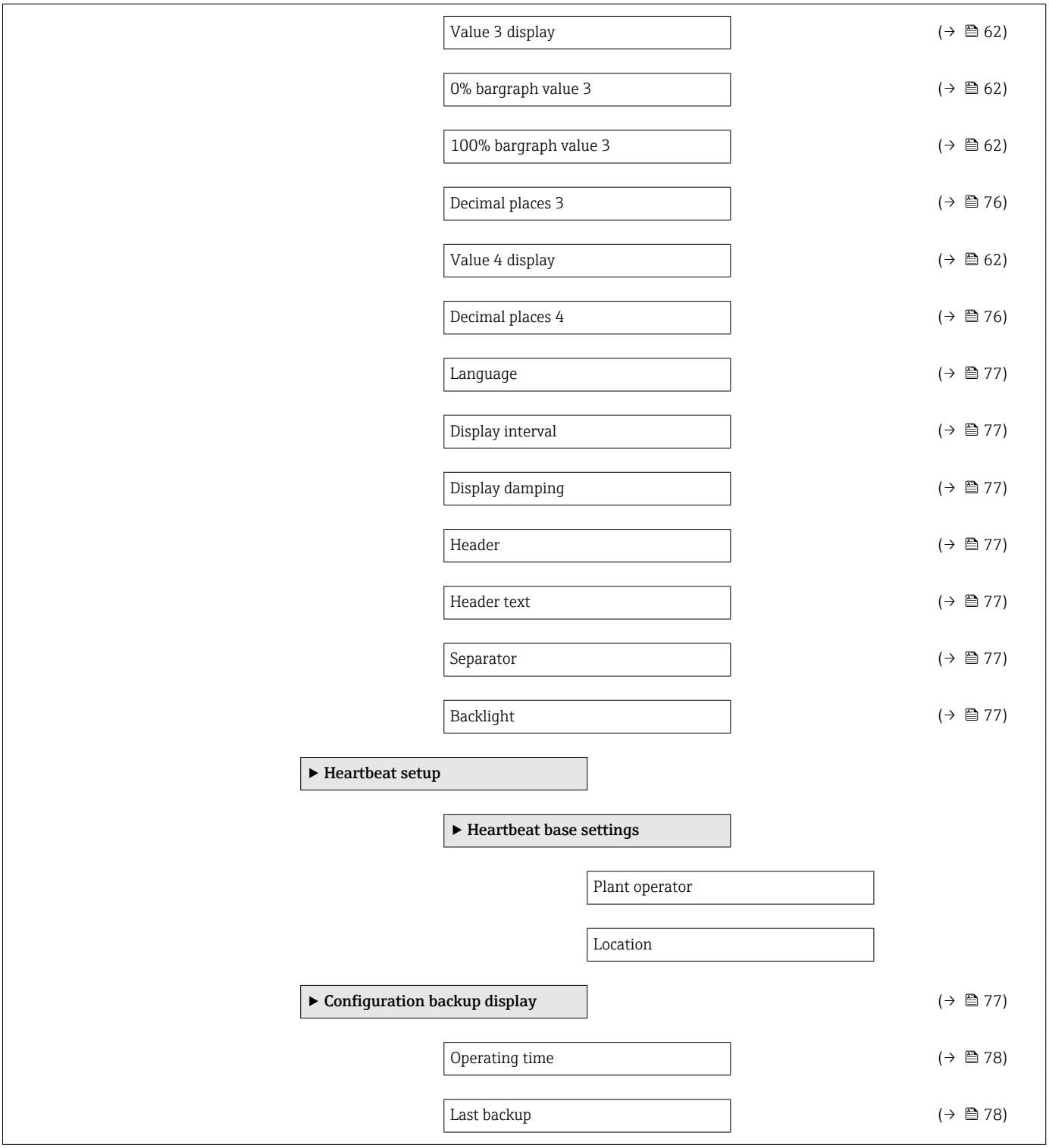


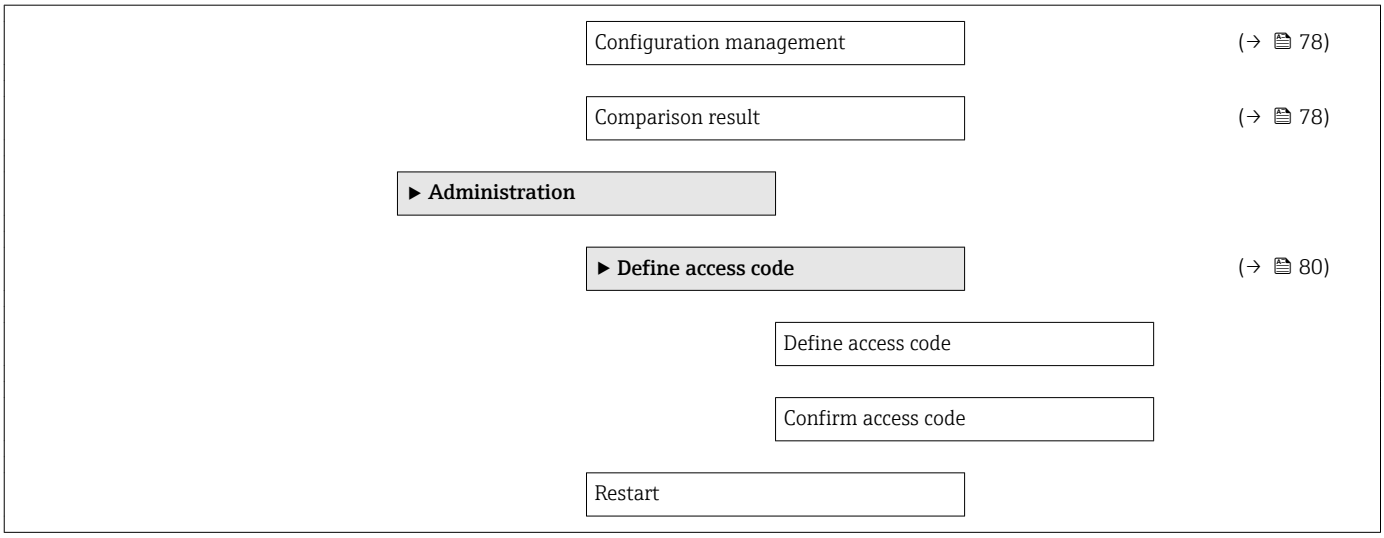
- Corrected volume unit (→ 57)
- Density unit (→ 57)
- Reference density unit (→ 57)
- Temperature unit (→ 57)
- Length unit (→ 57)
- Pressure unit (→ 57)
- **▶ Select medium** (→ 58)
  - Select medium (→ 58)
  - Select gas type (→ 58)
  - Reference sound velocity (→ 58)
  - Temperature coefficient sound velocity (→ 58)
  - Pressure compensation (→ 59)
  - Pressure value (→ 59)
  - External pressure
- **▶ Analog inputs** (→ 60)
  - **▶ Analog input 1 to 6**
    - Block tag (→ 60)
    - Channel (→ 60)
    - Process Value Filter Time (→ 60)
- **▶ Display** (→ 60)
  - Format display (→ 61)
  - Value 1 display (→ 61)
  - 0% bargraph value 1 (→ 61)
  - 100% bargraph value 1 (→ 61)
  - Value 2 display (→ 62)

- Value 3 display (→ 62)
- 0% bargraph value 3 (→ 62)
- 100% bargraph value 3 (→ 62)
- Value 4 display (→ 62)
- ▶ **Low flow cut off** (→ 63)
  - Assign process variable (→ 63)
  - On value low flow cutoff (→ 63)
  - Off value low flow cutoff (→ 63)
  - Pressure shock suppression (→ 63)
- ▶ **Partially filled pipe detection** (→ 64)
  - Assign process variable
  - Low value partial filled pipe detection
  - High value partial filled pipe detection
  - Response time part. filled pipe detect.
- ▶ **Advanced setup** (→ 65)
  - Enter access code
  - ▶ **Sensor adjustment** (→ 66)
    - Installation direction (→ 66)
    - ▶ **Zero point adjustment**
      - Zero point adjustment control
  - ▶ **Pulse/frequency/switch output** (→ 66)
    - Operating mode (→ 67)
    - Assign pulse output (→ 67)
    - Assign frequency output (→ 70)
    - Switch output function (→ 72)

Assign diagnostic behavior	(→ 72)
Assign limit	(→ 73)
Assign flow direction check	(→ 73)
Assign status	(→ 73)
Mass flow unit	(→ 70)
Mass unit	(→ 68)
Volume flow unit	(→ 70)
Volume unit	(→ 68)
Corrected volume flow unit	(→ 70)
Corrected volume unit	(→ 68)
Corrected volume flow calculation	(→ 68)
Density unit	(→ 70)
Unit totalizer	(→ 73)
Unit totalizer	(→ 73)
Unit totalizer	(→ 73)
Reference density unit	(→ 68)
Fixed reference density	(→ 68)
Linear expansion coefficient	(→ 68)
Square expansion coefficient	(→ 68)
Temperature unit	(→ 68)
Reference temperature	(→ 68)
Value per pulse	(→ 68)
Pulse width	(→ 68)
Failure mode	(→ 68)
Minimum frequency value	(→ 70)

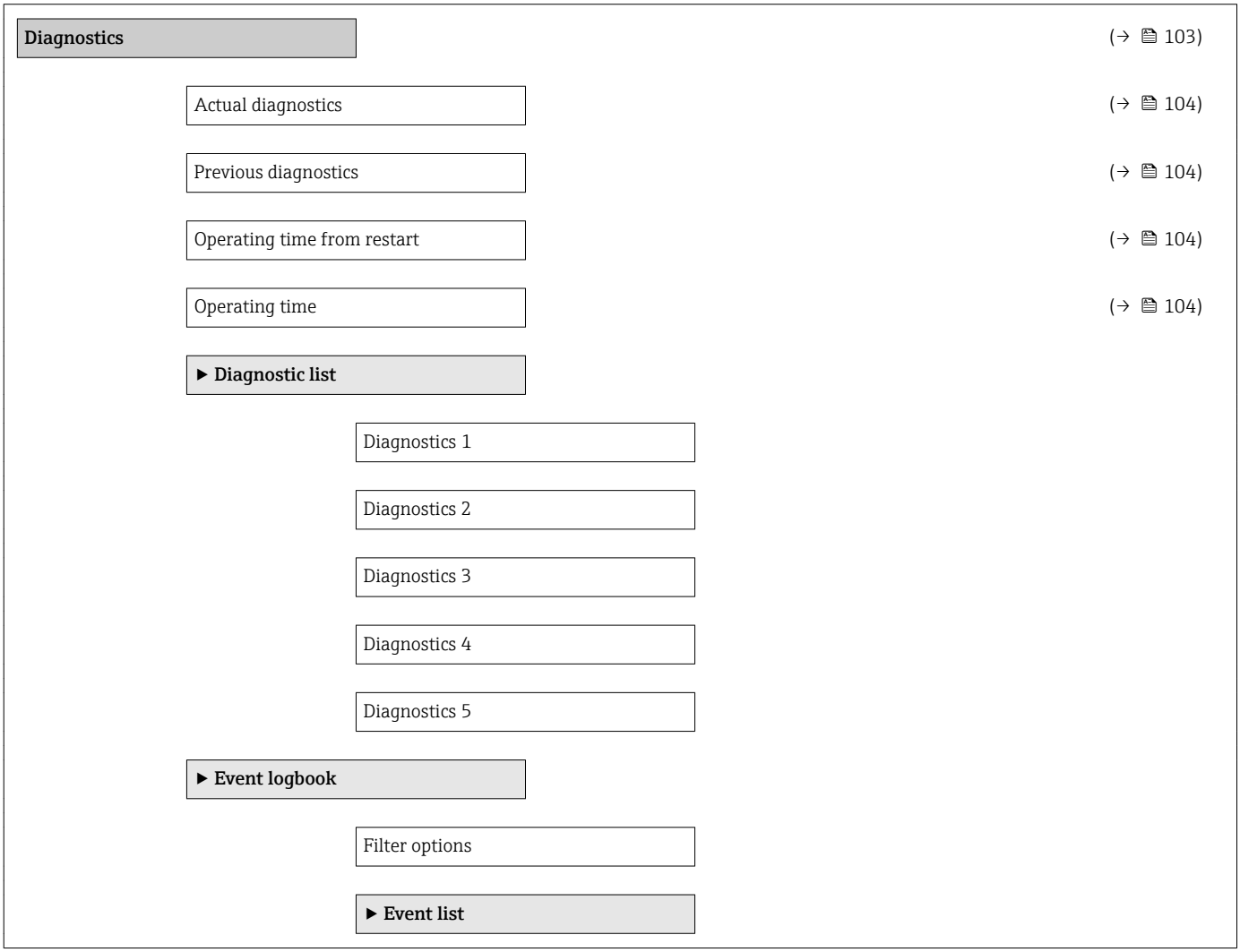
	Maximum frequency value	(→ 70)
	Measuring value at minimum frequency	(→ 70)
	Measuring value at maximum frequency	(→ 70)
	Failure mode	(→ 71)
	Failure frequency	(→ 71)
	Switch-on value	(→ 73)
	Switch-off value	(→ 73)
	Switch-on delay	(→ 73)
	Switch-off delay	(→ 73)
	Failure mode	(→ 74)
	Invert output signal	(→ 68)
▶ **Totalizer 1 to 3**		(→ 74)
	Assign process variable	(→ 74)
	Unit totalizer	(→ 74)
	Totalizer operation mode	(→ 74)
	Failure mode	(→ 74)
▶ **Display**		(→ 60)
	Format display	(→ 61)
	Value 1 display	(→ 61)
	0% bargraph value 1	(→ 61)
	100% bargraph value 1	(→ 61)
	Decimal places 1	(→ 76)
	Value 2 display	(→ 62)
	Decimal places 2	(→ 76)


Value 3 display
(→ 62)
0% bargraph value 3
(→ 62)
100% bargraph value 3
(→ 62)
Decimal places 3
(→ 76)
Value 4 display
(→ 62)
Decimal places 4
(→ 76)
Language
(→ 77)
Display interval
(→ 77)
Display damping
(→ 77)
Header
(→ 77)
Header text
(→ 77)
Separator
(→ 77)
Backlight
(→ 77)
► Heartbeat setup
► Heartbeat base settings
Plant operator
Location
► Configuration backup display
(→ 77)
Operating time
(→ 78)
Last backup
(→ 78)

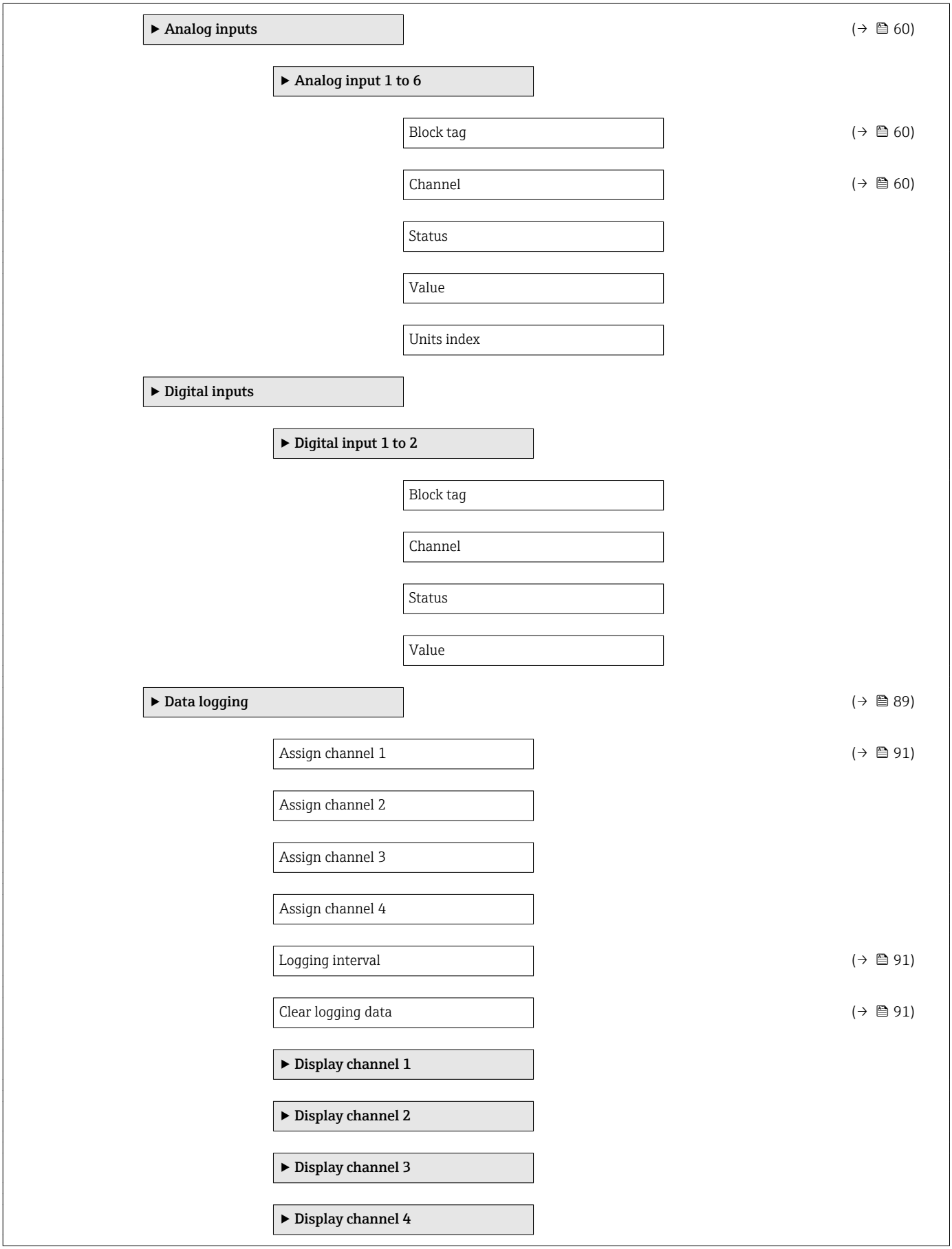


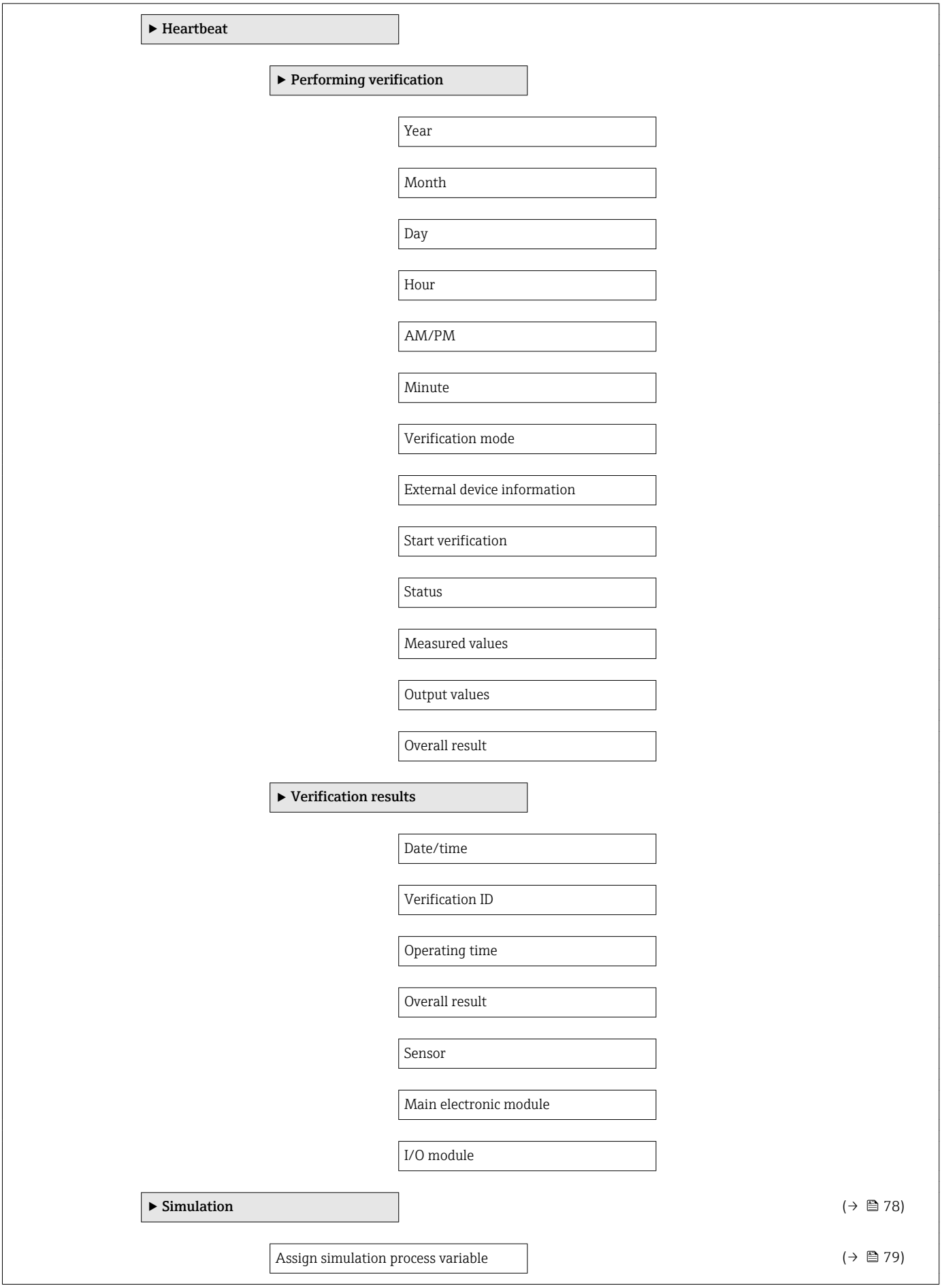
17.2.3 "Diagnostics" menu

Navigation Diagnostics



- ▶ **Device information** (→ 107)
  - Device tag (→ 107)
  - Serial number (→ 107)
  - Firmware version (→ 108)
  - Order code (→ 108)
  - Extended order code 1 (→ 108)
  - Extended order code 2 (→ 108)
  - Device Revision (→ 108)
  - Device Type (→ 108)
- ▶ **Measured values**
  - ▶ **Process variables** (→ 86)
    - Mass flow (→ 87)
    - Volume flow (→ 87)
    - Corrected volume flow (→ 87)
    - Density (→ 87)
    - Reference density (→ 87)
    - Temperature (→ 87)
  - ▶ **Totalizer** (→ 74)
    - Totalizer value 1 to 3 (→ 87)
    - Totalizer overflow 1 to 3 (→ 87)
  - ▶ **Output values** (→ 88)
    - Terminal voltage 1 (→ 88)
    - Pulse output (→ 88)
    - Output frequency (→ 88)
    - Switch status (→ 88)


▶ Analog inputs
(→ 60)
▶ Analog input 1 to 6
Block tag
(→ 60)
Channel
(→ 60)
Status
Value
Units index
▶ Digital inputs
▶ Digital input 1 to 2
Block tag
Channel
Status
Value
▶ Data logging
(→ 89)
Assign channel 1
(→ 91)
Assign channel 2
Assign channel 3
Assign channel 4
Logging interval
(→ 91)
Clear logging data
(→ 91)
▶ Display channel 1
▶ Display channel 2
▶ Display channel 3
▶ Display channel 4


▶ Heartbeat
▶ Performing verification
Year
Month
Day
Hour
AM/PM
Minute
Verification mode
External device information
Start verification
Status
Measured values
Output values
Overall result
▶ Verification results
Date/time
Verification ID
Operating time
Overall result
Sensor
Main electronic module
I/O module
▶ Simulation
(→ 78)
Assign simulation process variable
(→ 79)

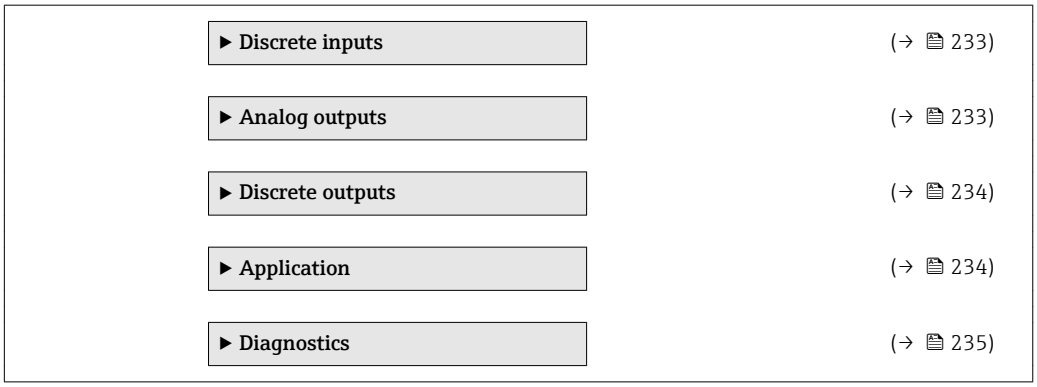
Value process variable	(→ 79)
Frequency simulation	(→ 79)
Frequency value	(→ 79)
Pulse simulation	(→ 79)
Pulse value	(→ 80)
Switch output simulation	(→ 80)
Switch status	(→ 80)
Simulation device alarm	(→ 80)
Simulation diagnostic event	
Diagnostic event category	(→ 80)
Simulation diagnostic event	(→ 0)

17.2.4 "Expert" menu

The following tables provide an overview of the **Expert** menu with its submenus and parameters. The direct access code to the parameter is given in brackets. The page reference indicates where a description of the parameter can be found in the manual.

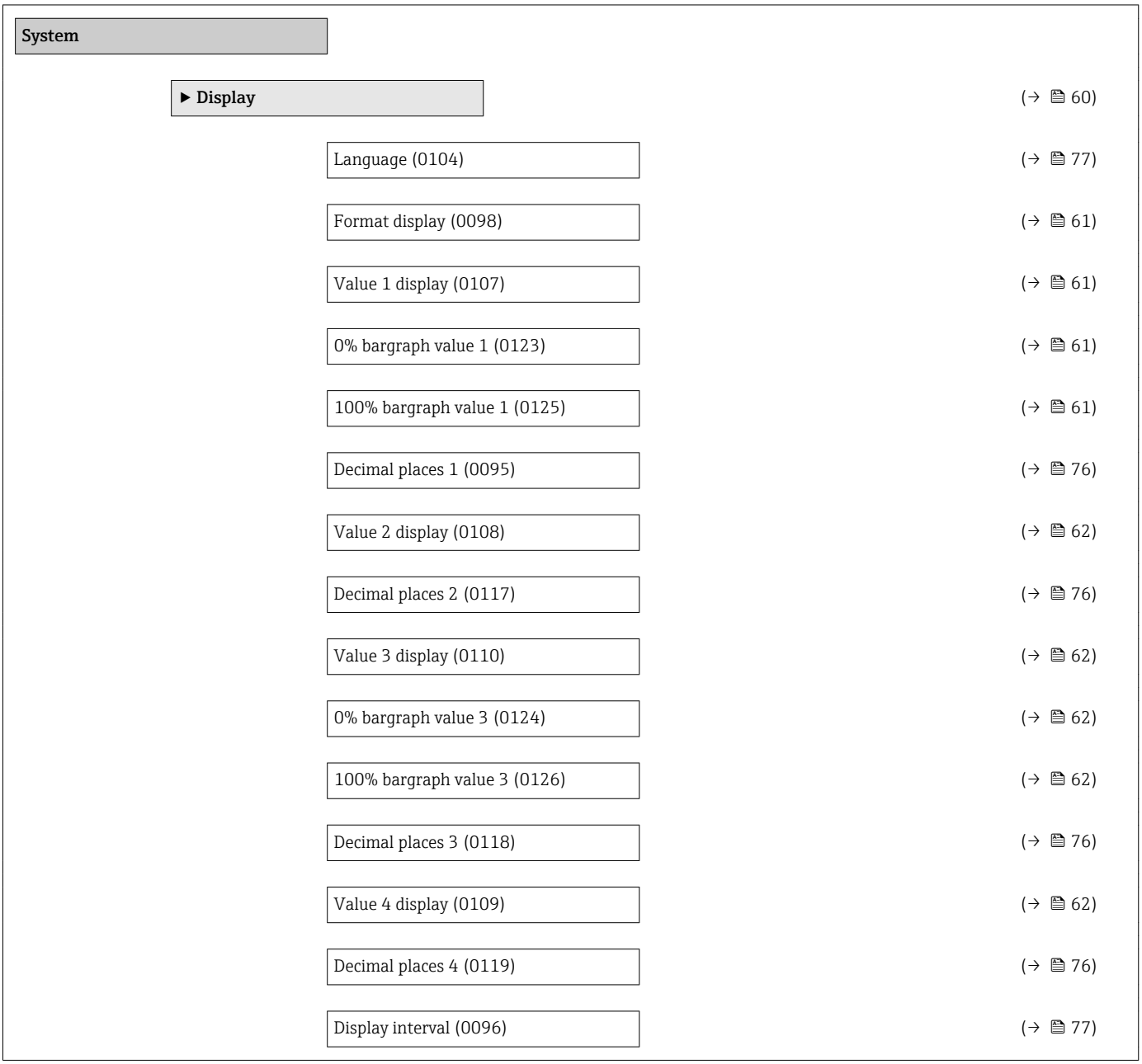
Navigation Expert

Expert	
Direct access (0106)	
Locking status (0004)	
Access status display (0091)	
Enter access code (0092)	
▶ **System**	(→ 222)
▶ **Sensor**	(→ 225)
▶ **Output**	(→ 230)
▶ **Communication**	(→ 232)
▶ **Analog inputs**	(→ 232)



"System" submenu

Navigation Expert → System



Display damping (0094) (→ 77)

Header (0097) (→ 77)

Header text (0112) (→ 77)

Separator (0101) (→ 77)

Contrast display (0105)

Backlight (0111) (→ 77)

Access status display (0091)

▶ **Configuration backup display** (→ 77)

Operating time (0652) (→ 78)

Last backup (0102) (→ 78)

Configuration management (0100) (→ 78)

Comparison result (0103) (→ 78)

▶ **Diagnostic handling**

Alarm delay (0651)

▶ **Diagnostic behavior**

Assign behavior of diagnostic no. 046 (0655)

Assign behavior of diagnostic no. 140 (0723)

Assign behavior of diagnostic no. 252 (0661)

Assign behavior of diagnostic no. 274 (0725)

Assign behavior of diagnostic no. 442 (0658)

Assign behavior of diagnostic no. 443 (0659)

Assign behavior of diagnostic no. 801 (0660)

Assign behavior of diagnostic no. 830 (0715)

Assign behavior of diagnostic no. 831 (0716)

Assign behavior of diagnostic no. 832 (0675)

Assign behavior of diagnostic no. 833 (0676)

Assign behavior of diagnostic no. 834 (0677)

Assign behavior of diagnostic no. 835 (0678)

Assign behavior of diagnostic no. 862 (0679)

Assign behavior of diagnostic no. 912 (0720)

Assign behavior of diagnostic no. 913 (0717)

Assign status of diagnostic number 044 (11041)

Assign status of diagnostic number 046 (11042)

Assign status of diagnostic number 274 (11000)

Assign status of diagnostic number 801 (11001)

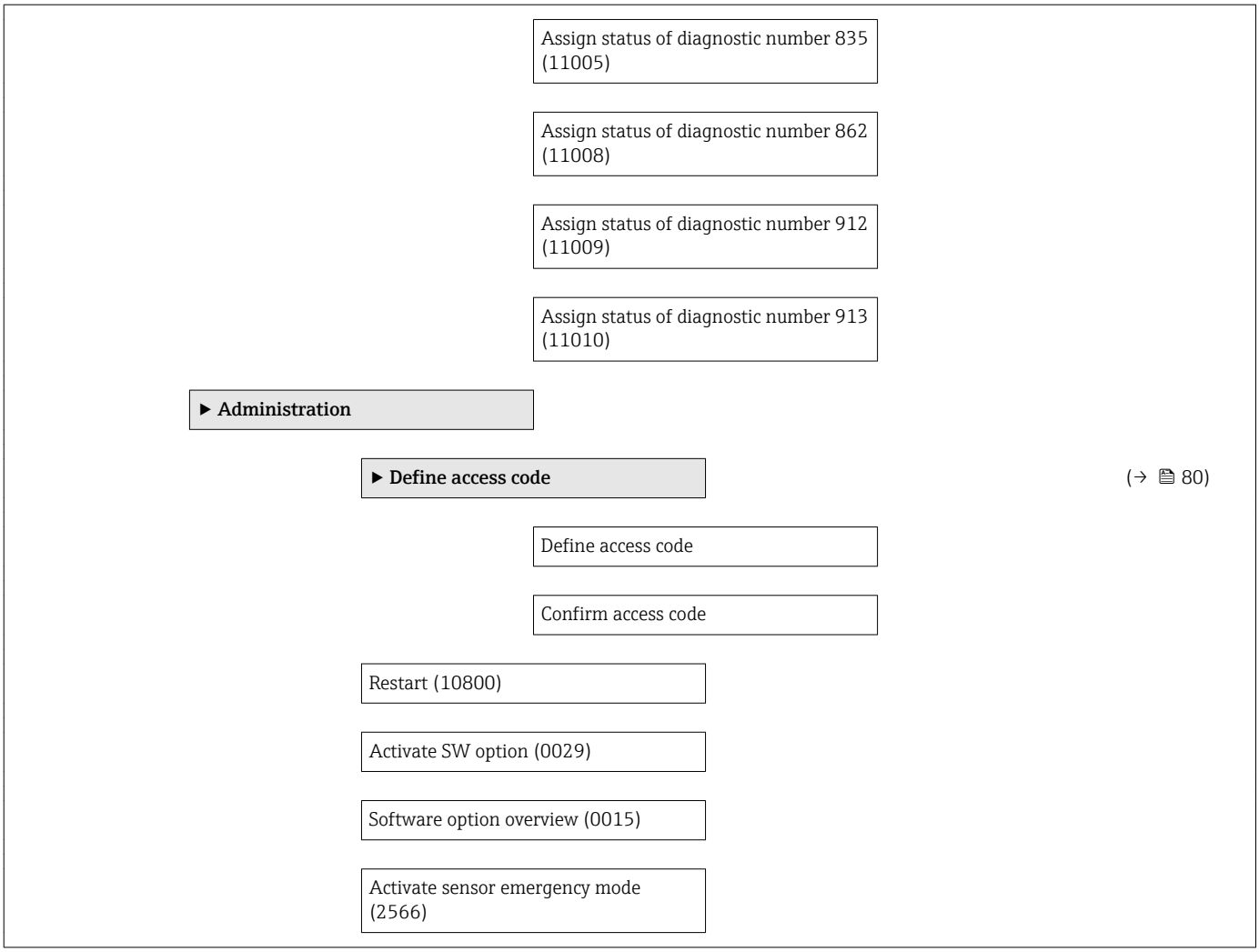
Assign status of diagnostic number 830 (11006)

Assign status of diagnostic number 831 (11007)

Assign status of diagnostic number 832 (11002)

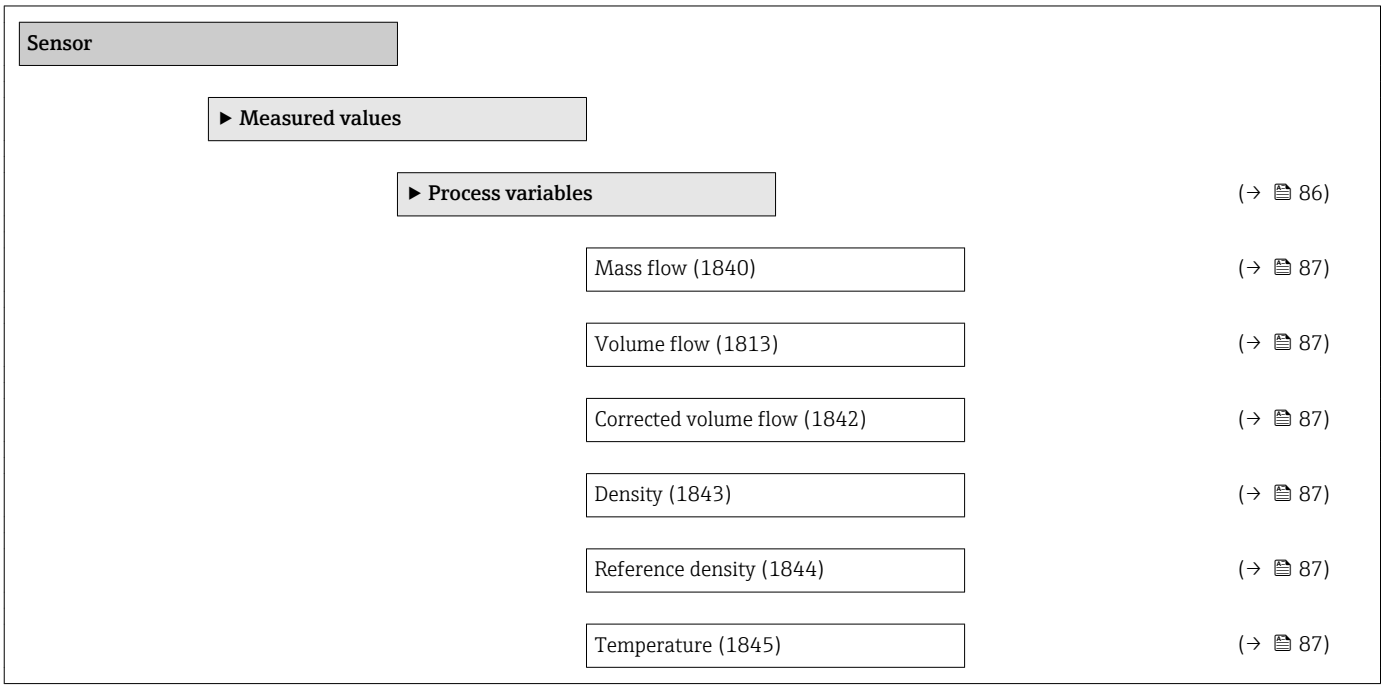
Assign status of diagnostic number 833 (11003)

Assign status of diagnostic number 834 (11004)



"Sensor" submenu

Navigation Expert → Sensor



- ▶ **Totalizer** (→ 74)
  - Totalizer value 1 to 3 (0911–1 to 3) (→ 87)
  - Totalizer overflow 1 to 3 (0910–1 to 3) (→ 87)
- ▶ **Output values** (→ 88)
  - Terminal voltage 1 (0662) (→ 88)
  - Pulse output (0456) (→ 88)
  - Output frequency (0471) (→ 88)
  - Switch status (0461) (→ 88)
- ▶ **System units** (→ 56)
  - Mass flow unit (0554) (→ 57)
  - Mass unit (0574) (→ 57)
  - Volume flow unit (0553) (→ 57)
  - Volume unit (0563) (→ 57)
  - Corrected volume flow unit (0558) (→ 57)
  - Corrected volume unit (0575) (→ 57)
  - Density unit (0555) (→ 57)
  - Reference density unit (0556) (→ 57)
  - Temperature unit (0557) (→ 57)
  - Length unit (0551) (→ 57)
  - Pressure unit (0564) (→ 57)
  - Date/time format (2812)
- ▶ **Process parameters**
  - Flow damping (1801)
  - Density damping (1808)
  - Flow override (1839)

Temperature damping (1807)

▶ **Low flow cut off** (→ 63)

Assign process variable (1837) (→ 63)

On value low flow cutoff (1805) (→ 63)

Off value low flow cutoff (1804) (→ 63)

Pressure shock suppression (1806) (→ 63)

▶ **Partially filled pipe detection** (→ 64)

Assign process variable (1833)

Low value partial filled pipe detection (1834)

High value partial filled pipe detection (1835)

Response time part. filled pipe detect. (1836)

Maximum damping partial filled pipe det. (2492)

▶ **Measurement mode**

Select medium (2513) (→ 58)

Select gas type (2488) (→ 58)

Reference sound velocity (2489) (→ 58)

Temperature coefficient sound velocity (2490) (→ 58)

▶ **Calculated values**

▶ **Corrected volume flow calculation**

Corrected volume flow calculation (1812) (→ 68)

▶ **Reference values**

Fixed reference density (1814) (→ 68)

Reference temperature (1816) (→ 68)

Linear expansion coefficient (1817) (→ 68)

Square expansion coefficient (1818) (→ 68)

▶ **Sensor adjustment** (→ 66)

Installation direction (1809) (→ 66)

▶ **Zero point adjustment**

Zero point adjustment control (2587)

Adjustment in progress (2588) (→ 66)

▶ **Density adjustment**

Density adjustment mode (2477)

Density setpoint 1 (2565)

Density setpoint 2 (2572)

Execute density adjustment (2473)

Adjustment in progress (2556)

Density factor (2573)

Density offset (2584)

▶ **Process variable adjustment**

Mass flow offset (1820)

Mass flow factor (1819)

Volume flow offset (1815)

Volume flow factor (1821)

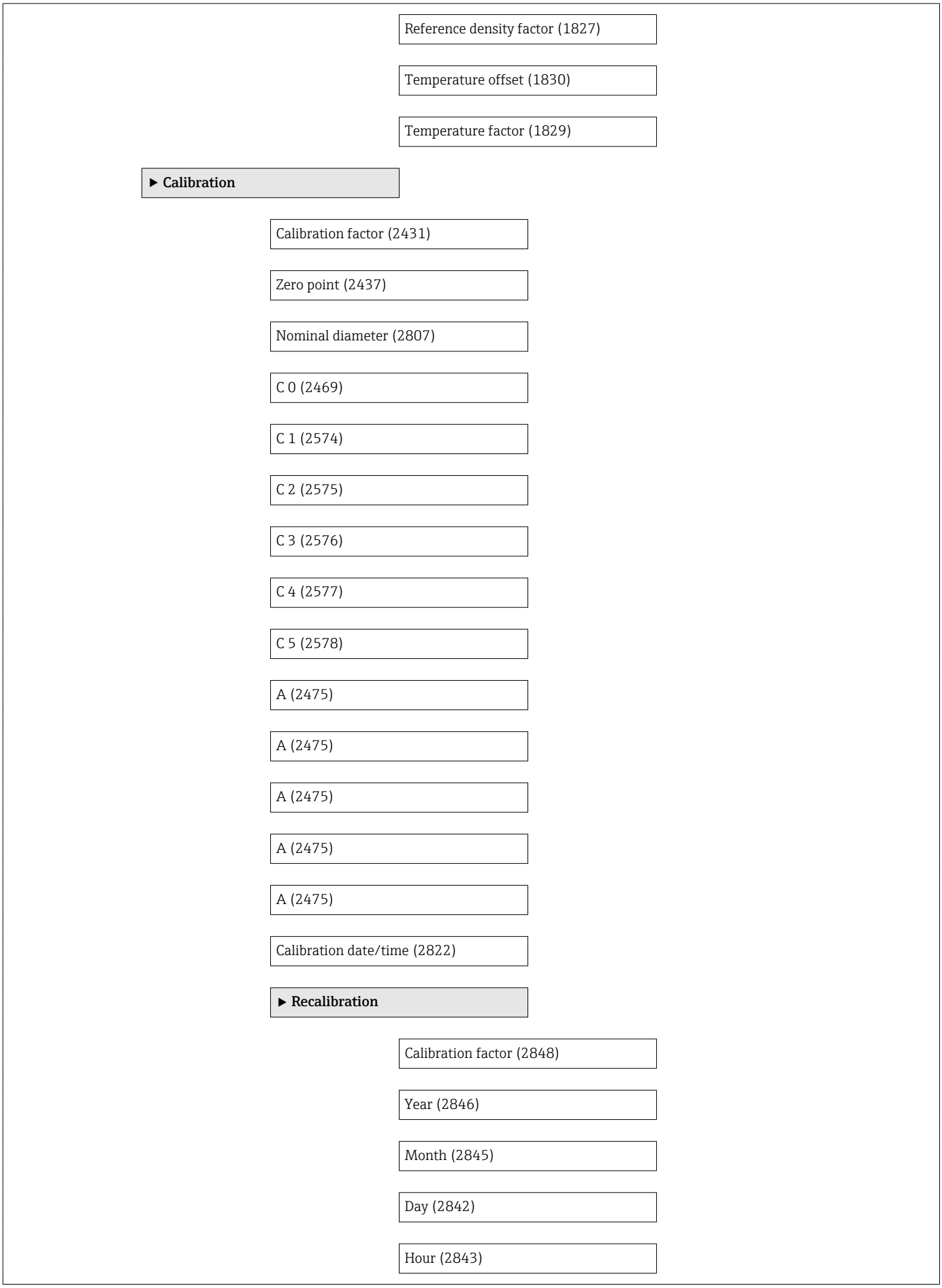
Corrected volume flow offset (1824)

Corrected volume flow factor (1823)

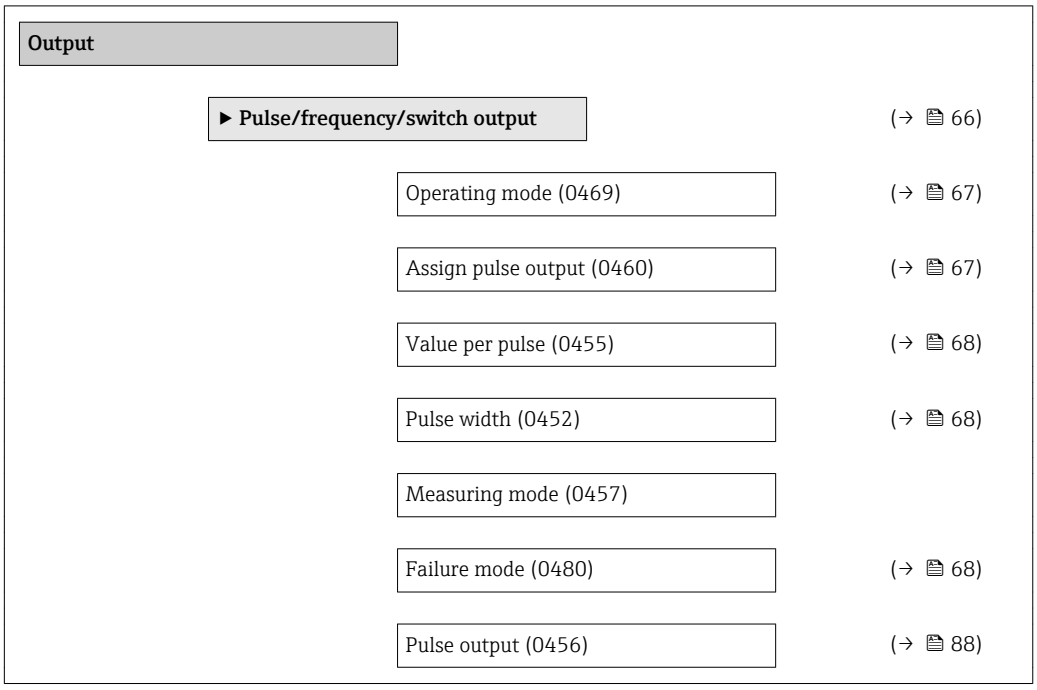
Density offset (1826)

Density factor (1825)

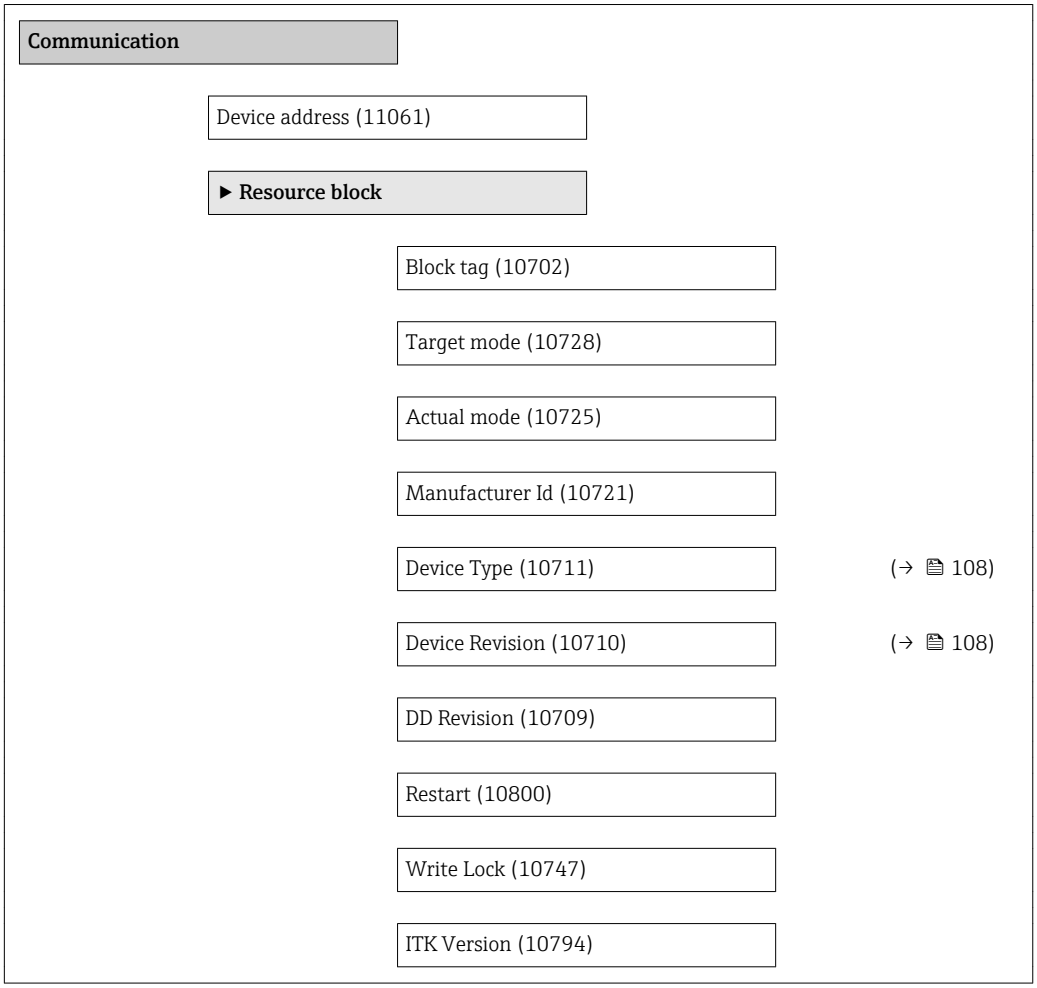
Reference density offset (1828)

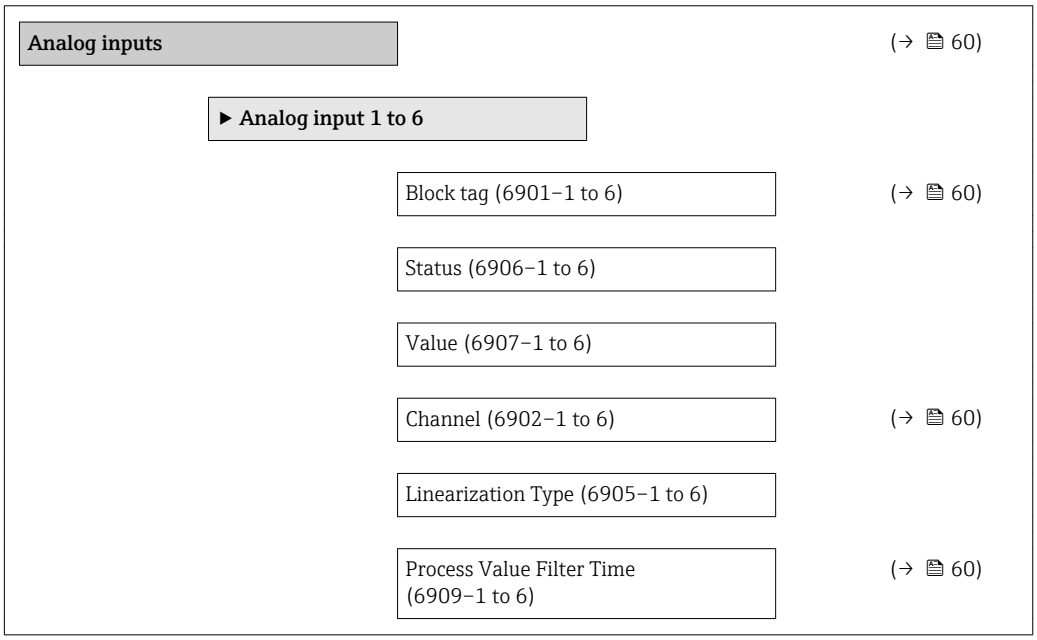

Reference density factor (1827)
Temperature offset (1830)
Temperature factor (1829)
▶ Calibration
Calibration factor (2431)
Zero point (2437)
Nominal diameter (2807)
C 0 (2469)
C 1 (2574)
C 2 (2575)
C 3 (2576)
C 4 (2577)
C 5 (2578)
A (2475)
A (2475)
A (2475)
A (2475)
A (2475)
Calibration date/time (2822)
▶ Recalibration
Calibration factor (2848)
Year (2846)
Month (2845)
Day (2842)
Hour (2843)

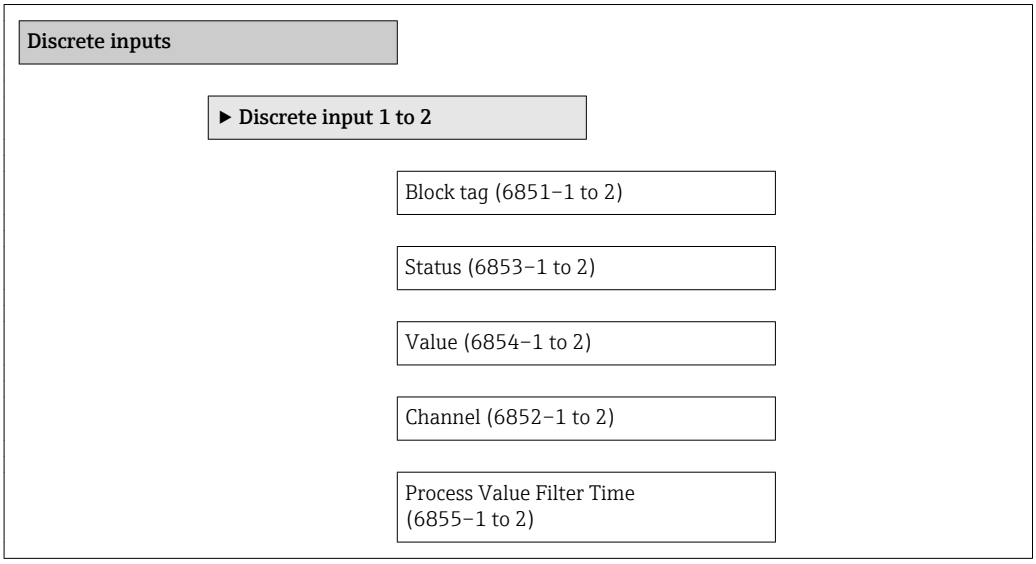

AM/PM (2813)
Minute (2844)
Confirm settings (2847)
▶ Logbook
Calibration counter (2820)
Select calibration log entry (2823)
Timestamp (2824)
Calibration factor (2825)
▶ Testpoints
Oscillation frequency (2515)
Oscillation amplitude (2516)
Oscillation damping (2517)
Signal asymmetry (2514)
Electronic temperature (2518)
Carrier pipe temperature (2550)

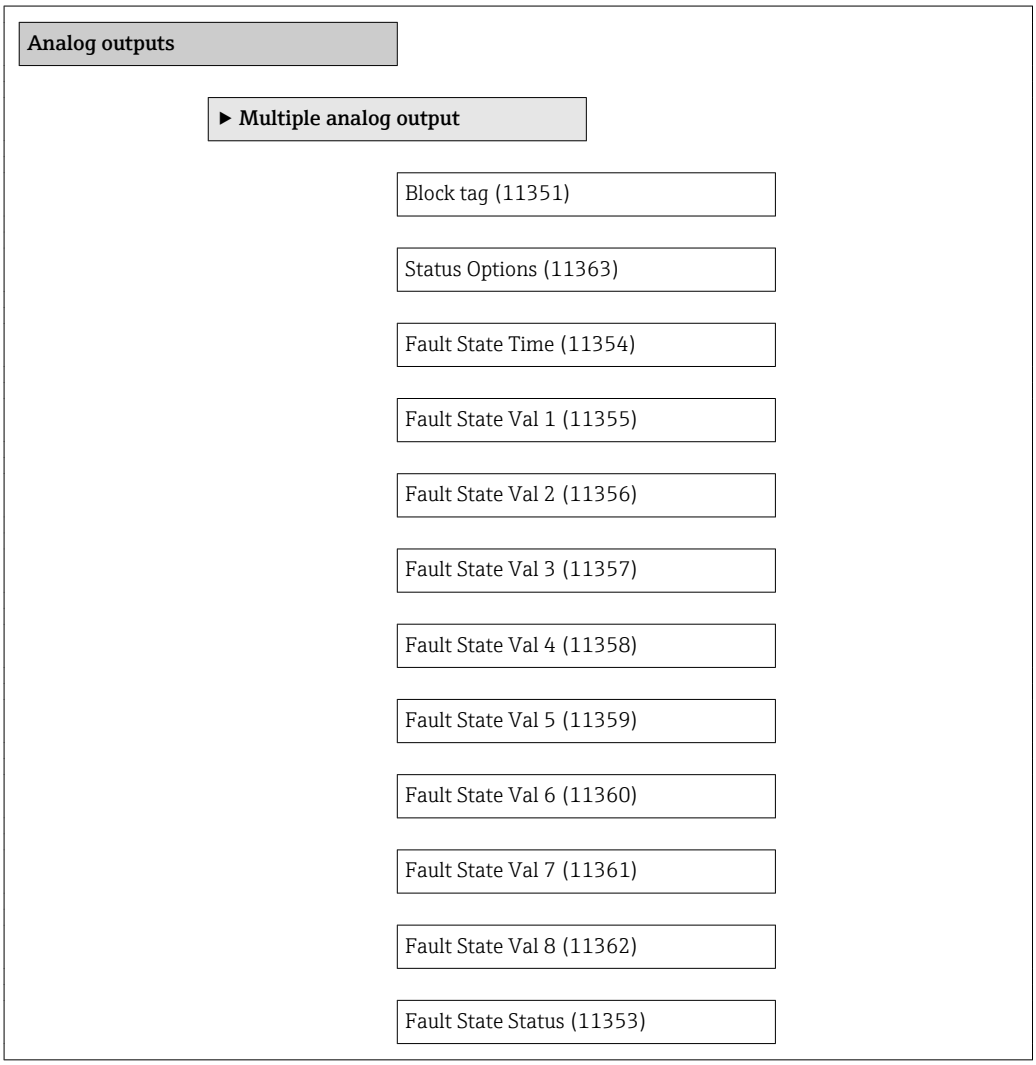

Output
▶ Pulse/frequency/switch output
(→ 66)
Operating mode (0469)
(→ 67)
Assign pulse output (0460)
(→ 67)
Value per pulse (0455)
(→ 68)
Pulse width (0452)
(→ 68)
Measuring mode (0457)
Failure mode (0480)
(→ 68)
Pulse output (0456)
(→ 88)

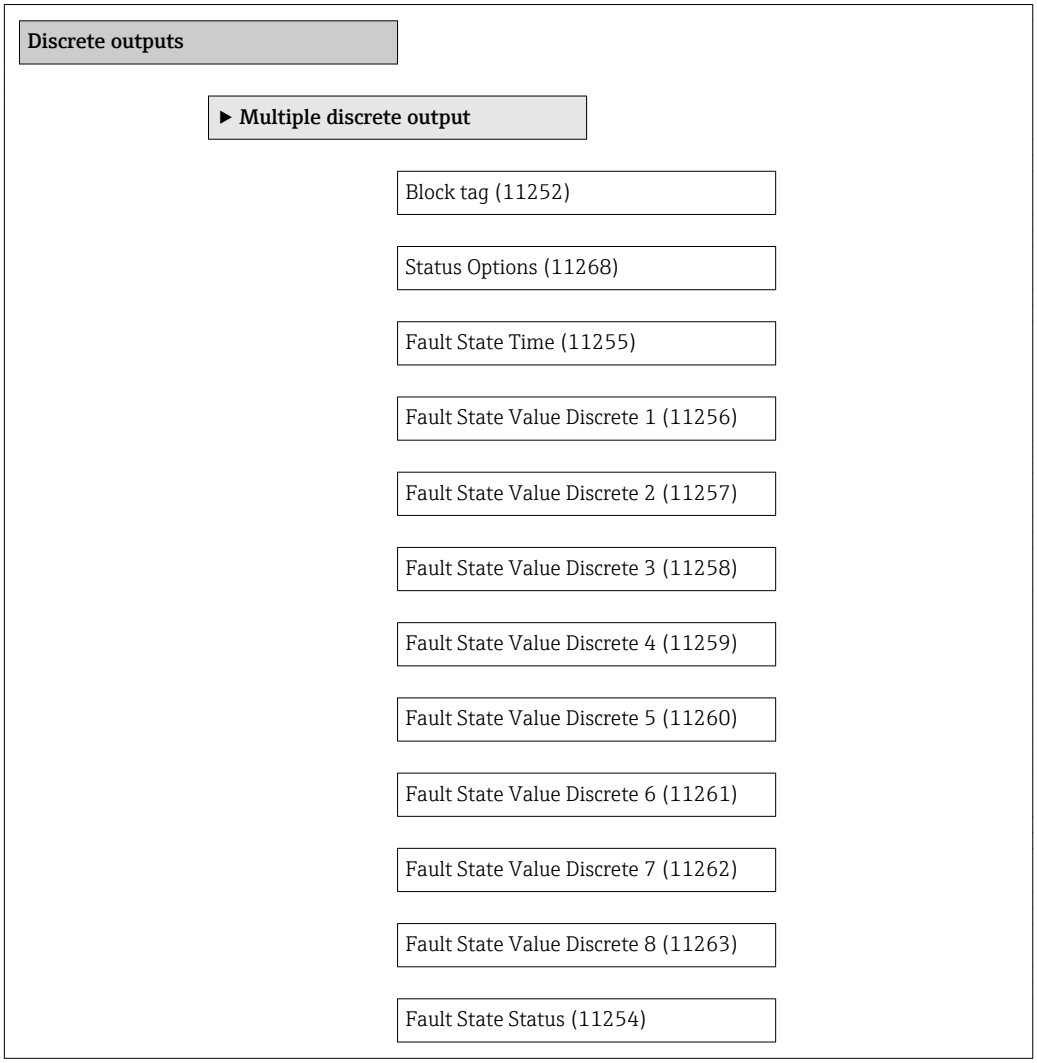
Assign frequency output (0478)	(→ 70)
Minimum frequency value (0453)	(→ 70)
Maximum frequency value (0454)	(→ 70)
Measuring value at minimum frequency (0476)	(→ 70)
Measuring value at maximum frequency (0475)	(→ 70)
Measuring mode (0479)	
Damping output (0477)	
Response time (0491)	
Failure mode (0451)	(→ 71)
Failure frequency (0474)	(→ 71)
Output frequency (0471)	(→ 88)
Switch output function (0481)	(→ 72)
Assign diagnostic behavior (0482)	(→ 72)
Assign limit (0483)	(→ 73)
Switch-on value (0466)	(→ 73)
Switch-off value (0464)	(→ 73)
Assign flow direction check (0484)	(→ 73)
Assign status (0485)	(→ 73)
Switch-on delay (0467)	(→ 73)
Switch-off delay (0465)	(→ 73)
Failure mode (0486)	(→ 74)
Switch status (0461)	(→ 88)
Invert output signal (0470)	(→ 68)

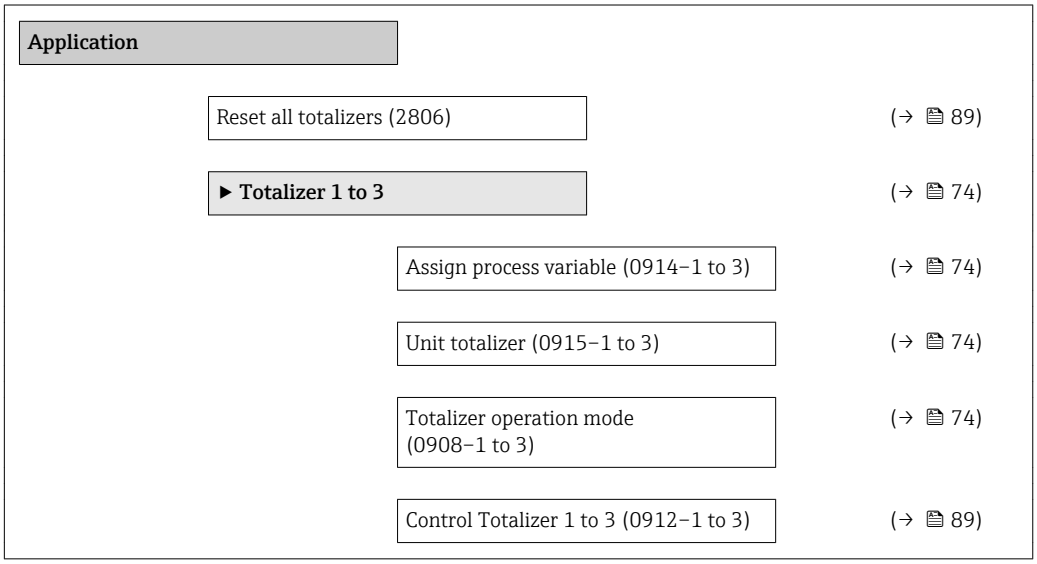

Communication
Device address (11061)
► Resource block
Block tag (10702)
Target mode (10728)
Actual mode (10725)
Manufacturer Id (10721)
Device Type (10711)
(→ 108)
Device Revision (10710)
(→ 108)
DD Revision (10709)
Restart (10800)
Write Lock (10747)
ITK Version (10794)

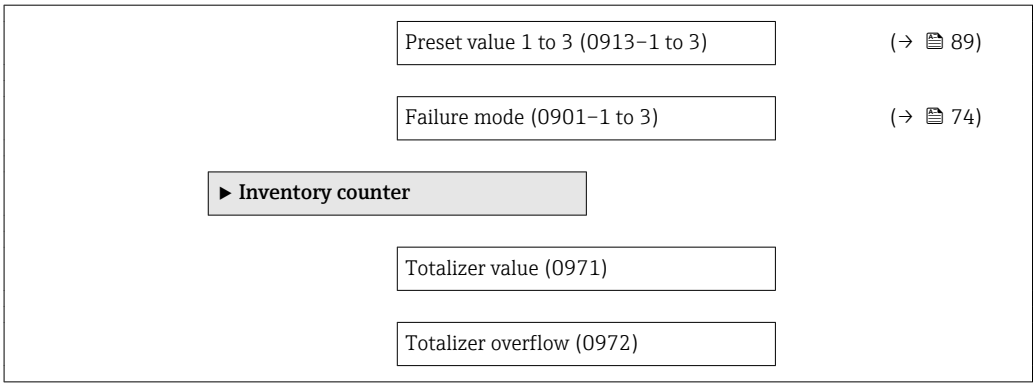

Analog inputs
(→ 60)
► Analog input 1 to 6
Block tag (6901–1 to 6)
(→ 60)
Status (6906–1 to 6)
Value (6907–1 to 6)
Channel (6902–1 to 6)
(→ 60)
Linearization Type (6905–1 to 6)
Process Value Filter Time (6909–1 to 6)
(→ 60)

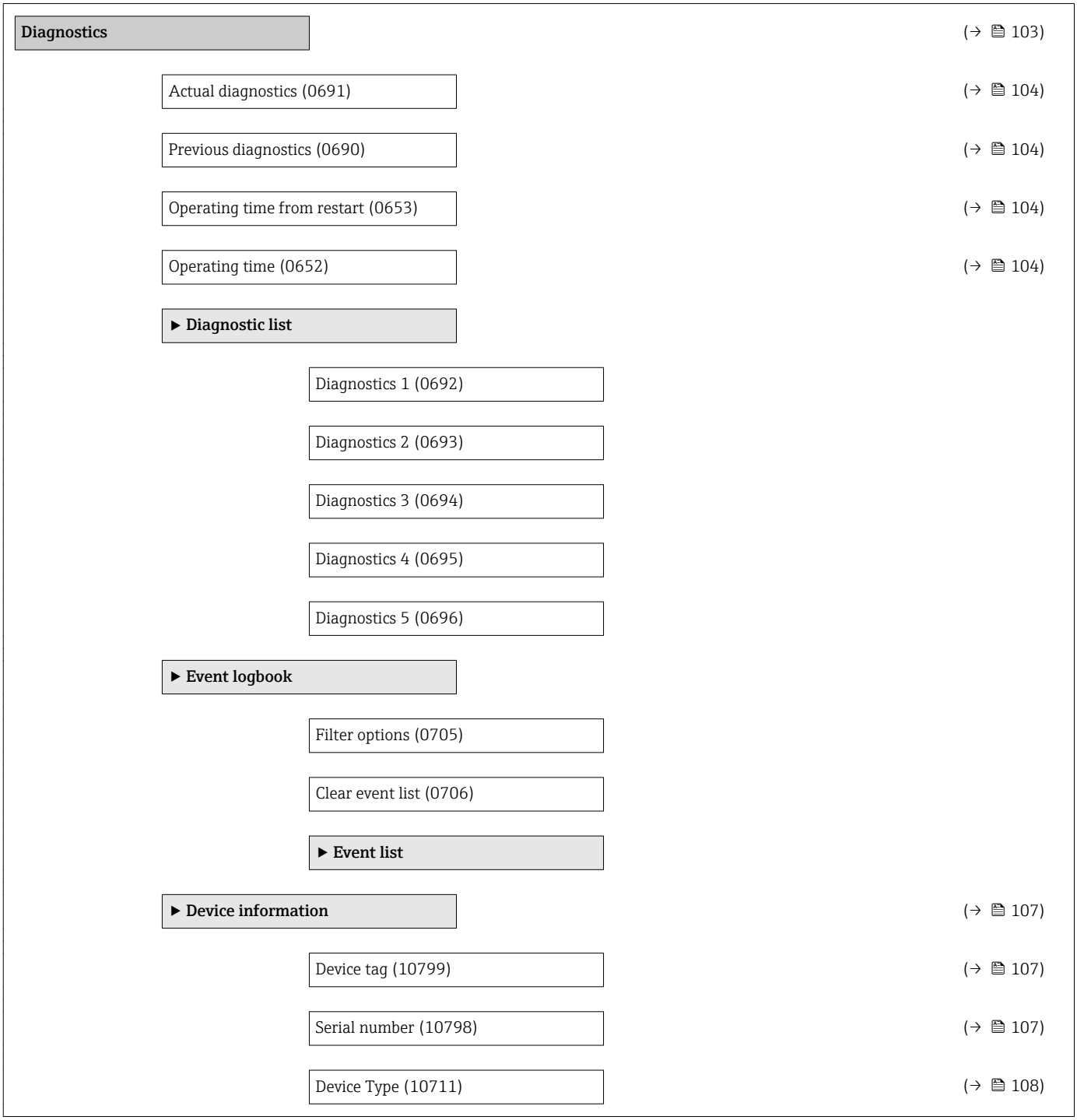

Discrete inputs
▶ Discrete input 1 to 2
Block tag (6851–1 to 2)
Status (6853–1 to 2)
Value (6854–1 to 2)
Channel (6852–1 to 2)
Process Value Filter Time (6855–1 to 2)


Analog outputs
▶ Multiple analog output
Block tag (11351)
Status Options (11363)
Fault State Time (11354)
Fault State Val 1 (11355)
Fault State Val 2 (11356)
Fault State Val 3 (11357)
Fault State Val 4 (11358)
Fault State Val 5 (11359)
Fault State Val 6 (11360)
Fault State Val 7 (11361)
Fault State Val 8 (11362)
Fault State Status (11353)


Discrete outputs
► Multiple discrete output
Block tag (11252)
Status Options (11268)
Fault State Time (11255)
Fault State Value Discrete 1 (11256)
Fault State Value Discrete 2 (11257)
Fault State Value Discrete 3 (11258)
Fault State Value Discrete 4 (11259)
Fault State Value Discrete 5 (11260)
Fault State Value Discrete 6 (11261)
Fault State Value Discrete 7 (11262)
Fault State Value Discrete 8 (11263)
Fault State Status (11254)


Application
Reset all totalizers (2806)
(→ 89)
► Totalizer 1 to 3
(→ 74)
Assign process variable (0914–1 to 3)
(→ 74)
Unit totalizer (0915–1 to 3)
(→ 74)
Totalizer operation mode (0908–1 to 3)
(→ 74)
Control Totalizer 1 to 3 (0912–1 to 3)
(→ 89)


Preset value 1 to 3 (0913–1 to 3)
(→ 89)
Failure mode (0901–1 to 3)
(→ 74)
▶ Inventory counter
Totalizer value (0971)
Totalizer overflow (0972)


Diagnostics
(→ 103)
Actual diagnostics (0691)
(→ 104)
Previous diagnostics (0690)
(→ 104)
Operating time from restart (0653)
(→ 104)
Operating time (0652)
(→ 104)
▶ Diagnostic list
Diagnostics 1 (0692)
Diagnostics 2 (0693)
Diagnostics 3 (0694)
Diagnostics 4 (0695)
Diagnostics 5 (0696)
▶ Event logbook
Filter options (0705)
Clear event list (0706)
▶ Event list
▶ Device information
(→ 107)
Device tag (10799)
(→ 107)
Serial number (10798)
(→ 107)
Device Type (10711)
(→ 108)

Device Revision (10710) (→ 108)

DD Revision (10709)

Firmware version (10792) (→ 108)

Hardware revision (10793)

ITK Version (10794)

Order code (10795) (→ 108)

Extended order code 1 (10796) (→ 108)

Extended order code 2 (10797) (→ 108)

ENP version (10791)

► Sensor module

Hardware revision (0074)

Module name (0077)

Serial number (0071)

► Mainboard module

Software revision (0072)

Build no. software (0079)

Hardware revision (0074)

Module name (0077)

Serial number (0071)

Bootloader revision (0073)

► I/O module

Software revision (0072)

Build no. software (0079)

Hardware revision (0074)

Module name (0077)

Serial number (0071)

Bootloader revision (0073)

▶ **Display module**

Software revision (0072)

Build no. software (0079)

Hardware revision (0074)

Module name (0077)

Serial number (0071)

Bootloader revision (0073)

▶ **Data logging** (→ 89)

Assign channel 1 (0851) (→ 91)

Assign channel 2 (0852)

Assign channel 3 (0853)

Assign channel 4 (0854)

Logging interval (0856) (→ 91)

Clear logging data (0855) (→ 91)

▶ **Display channel 1**

▶ **Display channel 2**

▶ **Display channel 3**

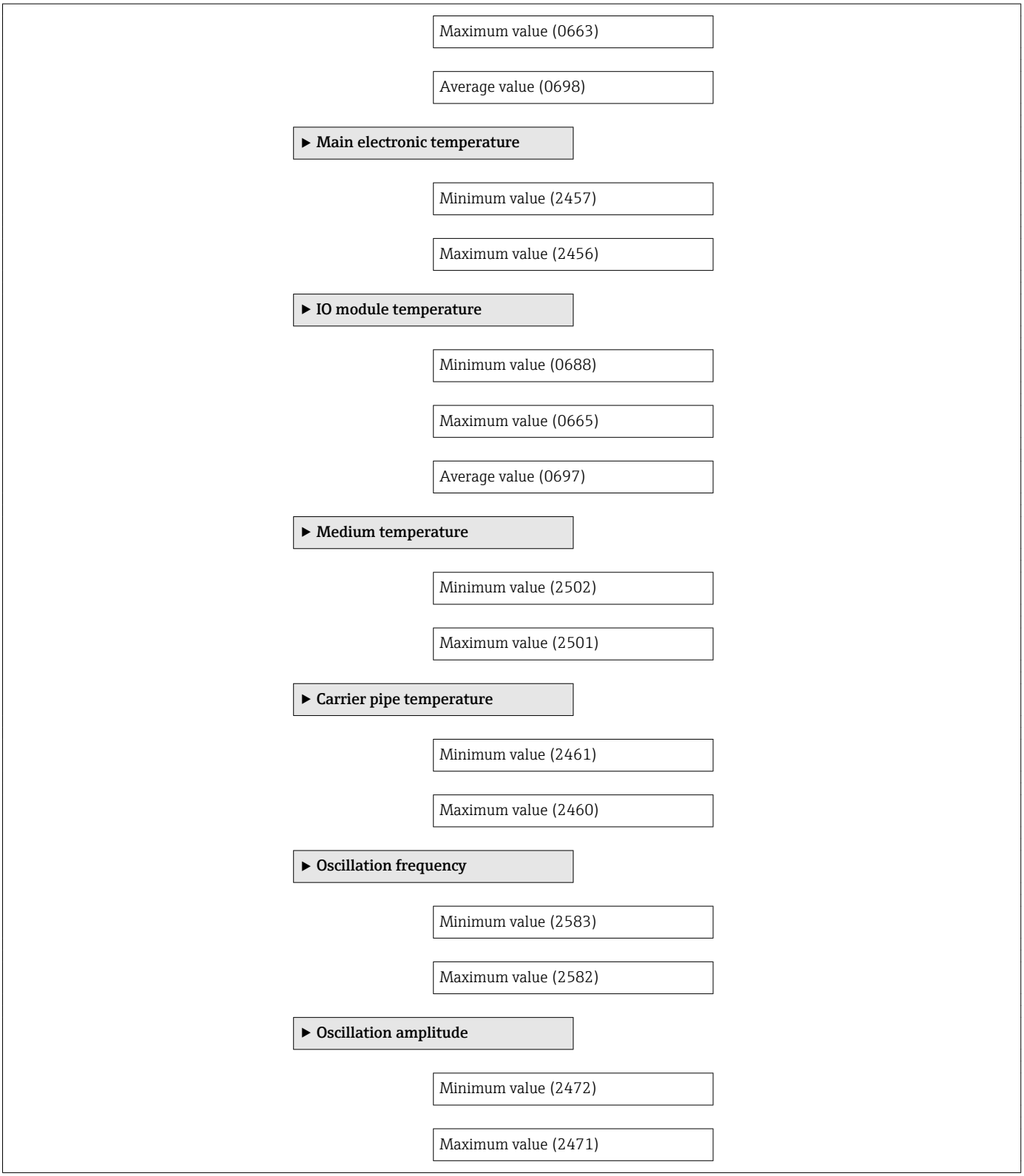
▶ **Display channel 4**

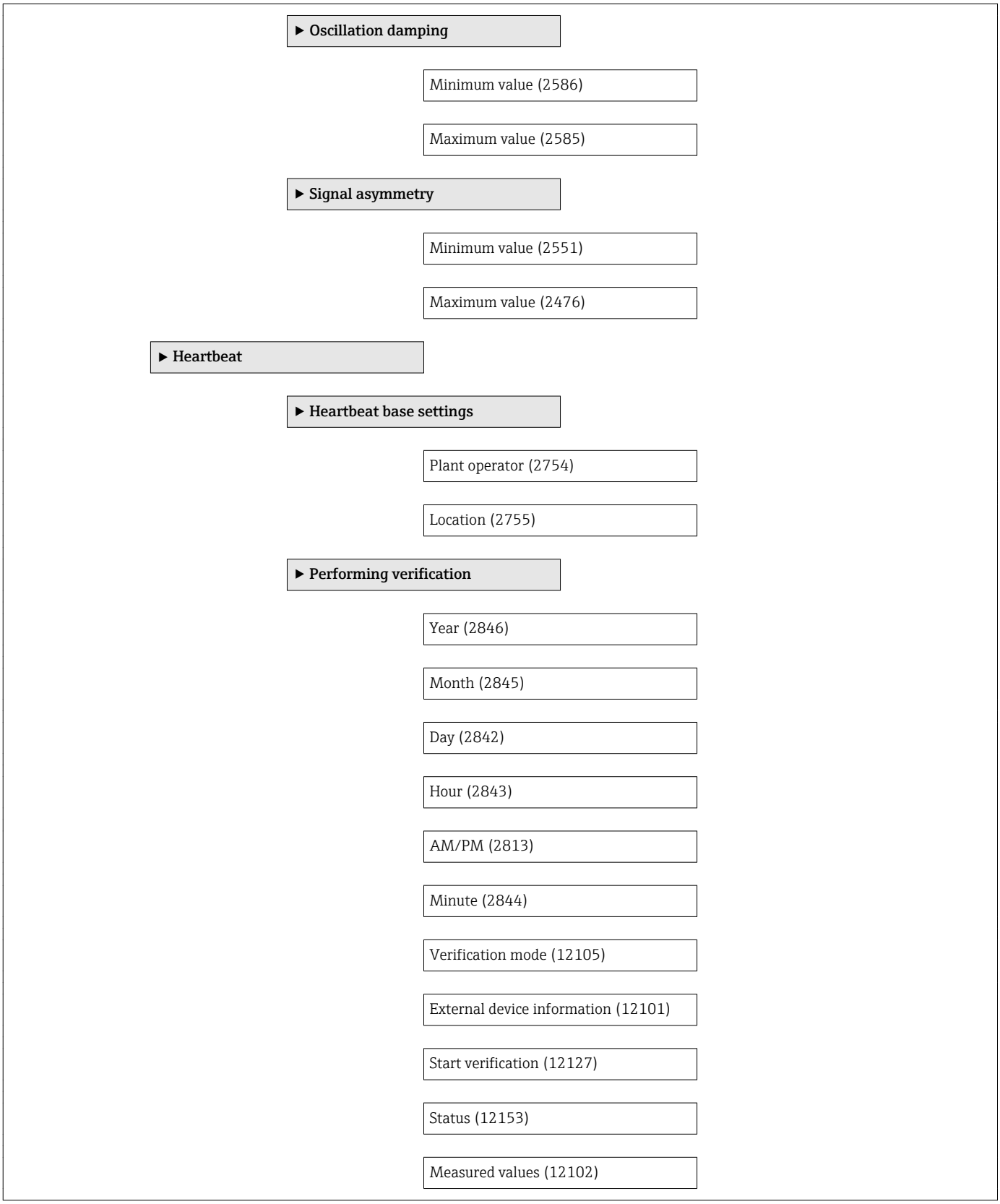
▶ **Min/max values**

Reset min/max values (2504)

▶ **Terminal voltage**

Minimum value (0689)


Maximum value (0663)
Average value (0698)
▶ Main electronic temperature
Minimum value (2457)
Maximum value (2456)
▶ IO module temperature
Minimum value (0688)
Maximum value (0665)
Average value (0697)
▶ Medium temperature
Minimum value (2502)
Maximum value (2501)
▶ Carrier pipe temperature
Minimum value (2461)
Maximum value (2460)
▶ Oscillation frequency
Minimum value (2583)
Maximum value (2582)
▶ Oscillation amplitude
Minimum value (2472)
Maximum value (2471)


▶ Oscillation damping
Minimum value (2586)
Maximum value (2585)
▶ Signal asymmetry
Minimum value (2551)
Maximum value (2476)
▶ Heartbeat
▶ Heartbeat base settings
Plant operator (2754)
Location (2755)
▶ Performing verification
Year (2846)
Month (2845)
Day (2842)
Hour (2843)
AM/PM (2813)
Minute (2844)
Verification mode (12105)
External device information (12101)
Start verification (12127)
Status (12153)
Measured values (12102)

Output values (12103)

Overall result (12149)

► **Verification results**

Date/time (12142)

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