

JUMO flowTRANS MAG S10/H10

Electromagnetic flowmeter

Type 406060, 406061 and 406067

PED Pressure
Equipment
Directive



Operating Manual



40606000T90Z001K000

V2.00/EN/00700892/2021-05-31

Table of contents

1	Safety	5	5.4.4	Plastic pipes, non-metallic pipes or pipes with insulating liner.....	24
1.1	General information and instructions	5	5.4.5	JUMO flowTRANS MAG H10 sensor type.....	24
1.2	Warnings	5	5.4.6	Grounding with conductive PTFE grounding plate	24
1.3	Intended use	6			
1.4	Improper use	6	5.4.7	Installation and grounding in piping with cathodic corrosion protection	25
1.5	Warranty provisions	6			
2	Design and function	7	5.5	Electrical connections	26
2.1	Overview.....	7	5.5.1	Connecting the power supply	26
2.1.1	JUMO flowTRANS MAG S10	7	5.5.2	Installing the connecting cables.....	27
2.1.2	JUMO flowTRANS MAG H10	8	5.5.3	Connection via cable conduit.....	27
2.1.3	Transmitter	9	5.5.4	Connection of IP 68 protection class	28
2.2	Model variants	10	5.5.5	Electrical connection.....	30
2.3	Measuring principle.....	10	5.5.6	Electrical data for inputs and outputs.....	31
3	Product identification	11	5.5.7	Connection to integral mount design	32
3.1	Name plate	11	5.5.8	Connection to remote mount design.....	33
3.1.1	Integral mount design	11	6	Commissioning	36
3.1.2	Remote mount design.....	12	6.1	Safety instructions	36
4	Transport and storage	14	6.2	Write-protection switch, service LED and local operator interface	36
4.1	Inspection	14	6.3	Checks prior to commissioning.....	37
4.2	Transport	14	6.4	Parameterization of the device	37
4.3	Storing the device	15	6.5	Factory settings	38
4.4	Returning devices	15	6.6	Switching on the power supply	38
5	Installation	16	6.7	Parameterization via the menu function Easy Setup	38
5.1	Installation conditions	16	6.8	Measuring range table.....	41
5.1.1	General.....	16	7	Operation.....	42
5.1.2	Brackets.....	16	7.1	Safety instructions	42
5.1.3	Gaskets	16	7.2	Menu navigation	42
5.1.4	Devices with a wafer-type design	17	7.3	Menu levels	43
5.1.5	Flow direction	17	7.3.1	Process display	44
5.1.6	Electrode axis	17	7.3.2	Switching to the information level (operator menu)	44
5.1.7	Mounting position.....	17	7.3.3	Error messages on the LCD display	45
5.1.8	Minimum spacing of the devices.....	18	7.3.4	Switching to the configuration level (parameterization)	45
5.1.9	Inlet and outlet sections	18	7.3.5	Selecting and changing parameters	46
5.1.10	Free inlet or outlet.....	19	7.4	Parameter overview.....	48
5.1.11	Mounting with heavily contaminated measuring media.....	19	7.5	Parameter descriptions.....	53
5.1.12	Mounting with pipe vibration	19	7.5.1	Available units	53
5.1.13	Installation in piping with larger nominal diameter	20	7.5.2	Menu: Easy Setup	54
5.1.14	Installation in 3A compliant installations	20	7.5.3	Menu: Device Info.....	55
5.2	Installing the sensor.....	21	7.5.4	Menu: Device Setup	57
5.3	Opening and closing the terminal box.....	22	7.5.5	Menu: Display.....	60
5.3.1	Rotating the LCD display	22	7.5.6	Menu: Input/Output.....	61
5.4	Sensor grounding	23	7.5.7	Menu: Process Alarm	64
5.4.1	General information on grounding	23			
5.4.2	Metal pipe with fixed flanges.....	23			
5.4.3	Metal pipe with loose flanges.....	23			

Table of contents

7.5.8	Menu: Diagnostics	65	13	Appendix.....	90
7.5.9	Menu: Totalizer	67	13.1	Torque information	90
8	Diagnosis / error messages	68	13.1.1	Tightening torques for variant 1 sensors	90
8.1	Calling up the error description	68	13.1.2	Tightening torques for variant 2 sensors	95
8.2	Error messages	69	13.1.3	Tightening torques for JUMO flowTRANS MAG H10 with variable Process connections	97
8.3	Overview.....	72	13.2	Parameterization overview (factory settings).....	97
9	Maintenance	75	13.3	Declarations of conformity	98
9.1	Safety instructions	75	13.3.1	JUMO flowTRANS MAG S10	98
9.2	Sensor	75	13.3.2	JUMO flowTRANS MAG H10	104
9.2.1	Gaskets	75	13.3.3	JUMO flowTRANS MAG 10.....	110
9.3	Cleaning	75	13.4	China RoHS.....	114
10	Repair	76			
10.1	Spare parts	76			
10.2	Replacing the fuse	76			
10.3	Replacing the LCD indicator	77			
10.4	Replacing the transmitter.....	78			
10.5	Replacing the sensor.....	79			
10.6	Loading the system data.....	80			
11	Recycling and disposal	81			
11.1	Dismounting.....	81			
11.2	Disposal.....	81			
11.3	Information regarding the RoHS Directive (2011/65/EU)	81			
12	Specification	82			
12.1	Permitted pipe vibration	82			
12.2	JUMO flowTRANS MAG S10 – Temperature data	82			
12.2.1	Storage temperature range.....	82			
	Maximum permissible cleaning temperature.....	82			
12.2.2	Maximum ambient temperature depending on measuring medium temperature	83			
12.3	JUMO flowTRANS MAG S10 – Material load for Process connections.....	84			
12.3.1	Minimum permissible operating pressure	84			
12.3.2	Material load	84			
12.4	JUMO flowTRANS MAG H10 – Temperature data	87			
12.4.1	Storage temperature range.....	87			
	Maximum permissible cleaning temperature.....	87			
12.4.2	Maximum Allowable Temperature Shock	87			
12.4.3	Maximum ambient temperature depending on measuring medium temperature	87			
12.5	JUMO flowTRANS MAG H10 – Material load for Process connections.....	88			
12.5.1	Minimum permissible operating pressure	88			
12.5.2	Overview of material load	88			

1 Safety

1.1 General information and instructions

These instructions are an important part of the product and must be retained for future reference.

Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.

For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.

The content of these instructions is neither part of nor an amendment to any previous or existing agreement, promise or legal relationship.

Modifications and repairs to the product may only be performed if expressly permitted by these instructions.

Information and symbols on the product must be observed. These may not be removed and must be fully legible at all times.

The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair and maintenance of electrical products.

1.2 Warnings

The warnings in these instructions are structured as follows:

DANGER

The signal word '**DANGER**' indicates an imminent danger. Failure to observe this information will result in death or severe injury.

WARNING

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

CAUTION

The signal word '**CAUTION**' indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

NOTICE

The signal word '**NOTICE**' indicates possible material damage.

Note

'**Note**' indicates useful or important information about the product.

1 Safety

1.3 Intended use

This device is intended for the following uses:

- For the transmission of fluid, pulpy or pasty measuring media with electrical conductivity.
- For volume flow measurement (in operating conditions).
- For mass flow measurement (based on a non-adjustable density value).

The device has been designed for use exclusively within the values stated on the rating plate and within the technical limit values specified on the data sheets.

Compliance with the following items is required when using media for measurement:

- Parts that make contact with the medium such as measuring electrodes, lining, grounding electrodes, grounding plates or protective panes must not be adversely affected by the chemical and physical properties of the medium being measured during operation.
- Media with unknown properties or abrasive media may only be used if the owner/operating authority can perform regular and suitable tests to ensure the safe condition of the device.
- Ensure compliance with the specifications on the rating plate.
- Prior to using the devices with corrosive or abrasive media, the owner must check the level of resistance of all parts that come into contact with the medium being measured.

The manufacturer will be happy to assist you with the selection but cannot be held liable.

1.4 Improper use

The following are considered to be instances of improper use of the device:

- Operation as a flexible compensating adapter in piping, for example for compensating pipe offsets, pipe vibrations, pipe expansions, etc.
- For use as a climbing aid, for example for mounting purposes.
- For use as a bracket for external loads, for example as a support for piping, etc.
- Material application, for example by painting over the housing, name plate or welding/soldering on parts.
- Material removal, for example by spot drilling the housing.

1.5 Warranty provisions

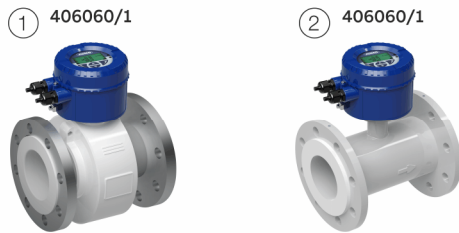
Using the device in a manner that does not fall within the scope of its intended use, disregarding this manual, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

2 Design and function

2.1 Overview

2.1.1 JUMO flowTRANS MAG S10

Integral mount design



Remote mount design



① Sensor housing for variant 1 (double shell housing) - DN 3 to 2000

② Sensor housing for variant 2 - DN 25 to 600

③ External transmitter

Figure 1: Designs

Sensor	
Model	JUMO flowTRANS MAG S10
Design	Integral mount design (406060/1), remote mount design (406060/2)
Measuring accuracy for liquids	0.5 % of rate
Permissible temperature of the medium being measured (T_{medium})	-25 to 130 °C (-13 to 266 °F)
Minimum conductivity	> 20 µS/cm
Nominal pressure rating	PN 10 to 40; ASME CL 150, 300; JIS 10K
Nominal diameter	DN 3 to 2000 (1/10 to 80 in.)
Process connection	Flange* acc. to DIN, ASME, JIS
Process connection material	Steel, cast steel, stainless steel
Lining material	Hard rubber (DN 15 to 2000), soft rubber (DN 50 to 2000), PTFE (DN 10 to 600), PFA (DN 3 to 200), ETFE (DN 25 to 600)
Electrode material	Stainless steel, Hastelloy B, Hastelloy C, platinum-iridium, tantalum, titanium
IP degree of protection	Integral mount design: IP 65 / IP 67 Remote mount design: IP 65 / IP 67 / IP 68 (only for sensors)
Approvals	
Pressure Equipment Directive 2014/68/EU	Conformity assessment in accordance with category III, fluid group 1
Further approvals	Are available in the download section at www.jumo.de , or on request.

* For information regarding flange thicknesses, see **Dimensions can be found in the data sheet.**

2 Design and function

2.1.2 JUMO flowTRANS MAG H10

Integral mount design



Remote mount design



① Sensor

② External transmitter

Figure 2: Designs

Sensor															
Model	JUMO flowTRANS MAG H10														
Design	Integral mount design (406061/1), remote mount design (406061/2)														
Measuring accuracy for liquids	0.5 % of rate														
Permissible temperature of the medium being measured, T_{medium}	-25 to 130 °C (-13 to 266 °F)														
Minimum conductivity	> 20 $\mu\text{S/cm}$														
Nominal pressure rating	PN 10 to 40, ASME CL 150, 300, JIS 10K														
Nominal diameter	DN 3 to 100 (1/8 in. to 4 in.)														
Process connection	<table border="0"> <tr> <td>Wafer-type design:</td> <td>DN 3 to 100 (1/8 to 4 in.)</td> </tr> <tr> <td>Flange in acc. with DIN, ASME or JIS:</td> <td>DN 3 to 100 (1/8 to 4 in.), PN 10 to 40</td> </tr> <tr> <td>Threaded pipe fitting in acc. with DIN 11851:</td> <td>DN 3 to 100 (1/8 to 4 in.), PN 10 to 40</td> </tr> <tr> <td>Weld stubs:</td> <td>DN 3 to 100 (1/8 to 4 in.), PN 10 to 40</td> </tr> <tr> <td>Tri-Clamp in acc. with DIN 32676:</td> <td>DN 3 to 100 (1/8 to 4 in.), PN 10 to 16</td> </tr> <tr> <td>Tri-Clamp in acc. with ASME BPE:</td> <td>DN 3 to 100 (1/8 to 4 in.), PN 10</td> </tr> <tr> <td>External thread in acc. with ISO 228 / DIN 2999:</td> <td>DN 3 to 25 (1/8 to 1 in.), PN 16</td> </tr> </table>	Wafer-type design:	DN 3 to 100 (1/8 to 4 in.)	Flange in acc. with DIN, ASME or JIS:	DN 3 to 100 (1/8 to 4 in.), PN 10 to 40	Threaded pipe fitting in acc. with DIN 11851:	DN 3 to 100 (1/8 to 4 in.), PN 10 to 40	Weld stubs:	DN 3 to 100 (1/8 to 4 in.), PN 10 to 40	Tri-Clamp in acc. with DIN 32676:	DN 3 to 100 (1/8 to 4 in.), PN 10 to 16	Tri-Clamp in acc. with ASME BPE:	DN 3 to 100 (1/8 to 4 in.), PN 10	External thread in acc. with ISO 228 / DIN 2999:	DN 3 to 25 (1/8 to 1 in.), PN 16
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Tri-Clamp in acc. with ASME BPE:	DN 3 to 100 (1/8 to 4 in.), PN 10														
External thread in acc. with ISO 228 / DIN 2999:	DN 3 to 25 (1/8 to 1 in.), PN 16														
Process connection material	Stainless steel														
Lining material	PFA (vacuum-proof)														
Electrode material	CrNi steel 1.4571 (AISI 316Ti), 1.4539 [904L], Hastelloy B, Hastelloy C, platinum-iridium, tantalum, titanium														
IP degree of protection	Integral mount design: IP 65 / IP 67 Remote mount design: IP 65 / IP 67 / IP 68 (only for sensors)														

Approvals

Pressure Equipment Directive 2014/68/EU	Conformity assessment in accordance with category III, fluid group 1
Hygiene approvals	FDA-compliant materials
Further approvals	Are available in the download section at www.jumo.de , or on request.

2 Design and function

2.1.3 Transmitter

Transmitter	
Model	JUMO flowTRANS MAG 10
Design	Remote mount design (406067/2)
IP degree of protection	IP 65 / IP 67
Signal cable length	Maximum 50 m (164 ft), remote mount design only
Power supply	100 to 240 V AC (-15% / +10 %), 24 to 48 V DC (-10% / +10 %)
Outputs	Current output: 4 to 20 mA, active Digital output 1: Passive, can be configured as pulse, frequency or switching output Digital output 2: Passive, can be configured as pulse or switching output
Local display	Graphical display, can be configured (optional)

Approvals	
Further approvals	Are available in the download section at www.jumo.de , or on request.

2 Design and function

2.2 Model variants

Integral mount design

The transmitter and the flow sensor form a mechanical unit in devices featuring a compact (integral mount) design.

Remote mount design

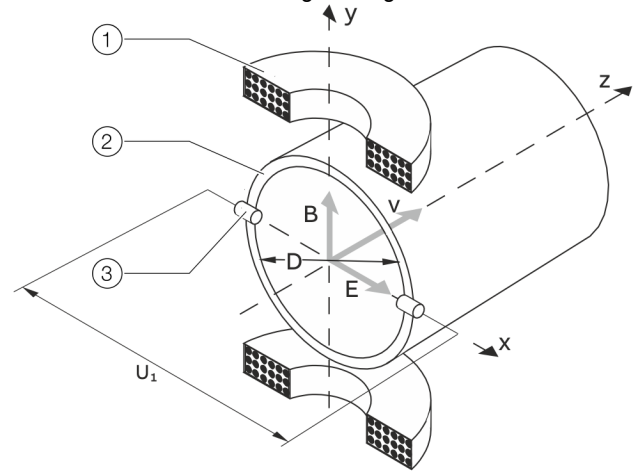
The transmitter and the flow sensor are mounted physically separated from one another in devices featuring a separate (remote mount) design. The electrical connection between the transmitter and the sensor is provided by a signal cable. With a minimum conductivity of 20 $\mu\text{S}/\text{cm}$ of the medium being measured, a maximum signal cable length of 50 m (164 ft) is possible.

Information regarding JUMO flowTRANS MAG S10

JUMO flowTRANS MAG S10 flow sensors are available in two different versions, variant 1 and variant 2. See **Design and function** on page 7.

2.3 Measuring principle

Measurements performed by the electromagnetic flowmeter are based on Faraday's law of induction. A voltage is generated in a conductor when it moves through a magnetic field.



- ① Magnet coil
- ② Measuring tube in electrode plane
- ③ Measuring electrode

Figure 3: Electromagnetic flowmeter diagram

$U_1 \sim B \times D \times v$	$qv = \frac{D^2 \times \pi}{4} \times v$	$U_1 \sim qv$
U_1 Measuring span	v Average flow velocity	
B Magnetic induction	qv Volume flow rate	
D Electrode spacing		

With the device-relevant application of this measuring principle, a conductive measuring medium flows through a tube in which a magnetic field is generated perpendicular to the flow direction (see Figure 3).

The voltage induced in the measuring medium is tapped by two diametrically opposed electrodes. This measurement voltage is proportional to the magnetic induction, the electrode spacing and the average medium velocity v .

Taking into account that the magnetic induction and the electrode spacing are constant values results in a proportion between the measurement voltage U_1 and the average medium velocity. From the calculation of the volume flow rate follows that the measurement voltage is linear and proportional to the volume flow rate

The induced voltage is converted by the transmitter to standardized, analog and digital signals.

3 Product identification

3.1 Name plate

3.1.1 Integral mount design

JUMO		JUMO flowTRANS MAG S10		CE	0036
Serial no.:	244530562 / X001 / 000639	100 - 240V~, 24 - 48V=, 50 / 60 Hz	Smax: < 20 VA		
Model no.:	406060-1	Protection Class:	IP 65, IP 67 NEMA 4X		
Part no.:	00671441	Tamb.:	20 ... 60 °C		
Order no.:	911742/PDI0000	Size:	DN 25		
Device Vers.:	01.07.00	Qmax DN:	200 l/min		
Update:		Liner Mat.:	PFA		
		Tmed.:	130 °C		
		Sz:	0,003		
			Ss: 103,5		
Manufactured	JUMO GmbH & Co. KG	Moritz-Juchheim-Str.1			
02 / 2018	36039 Fulda, Germany				

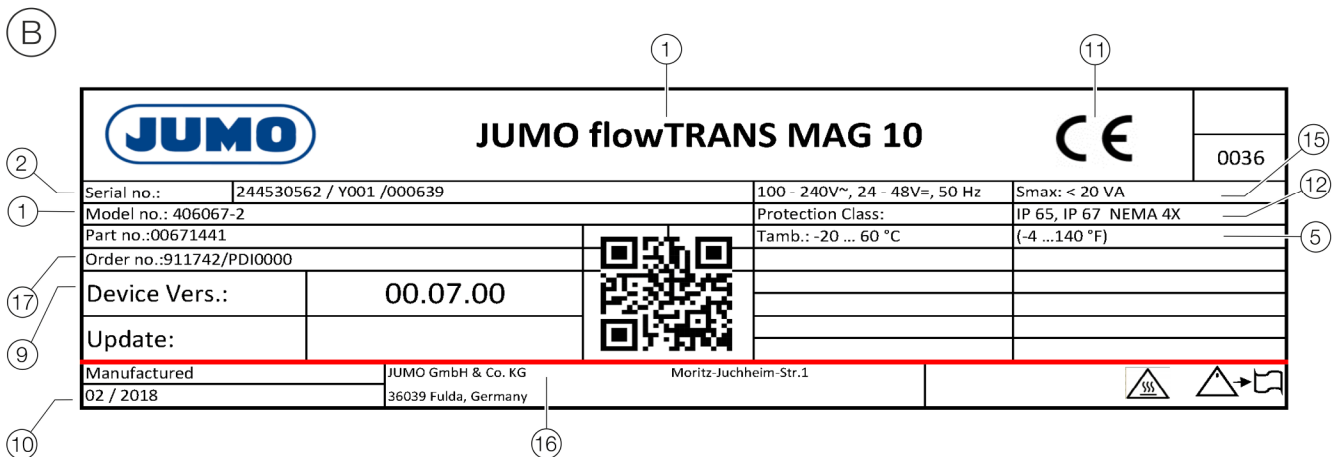
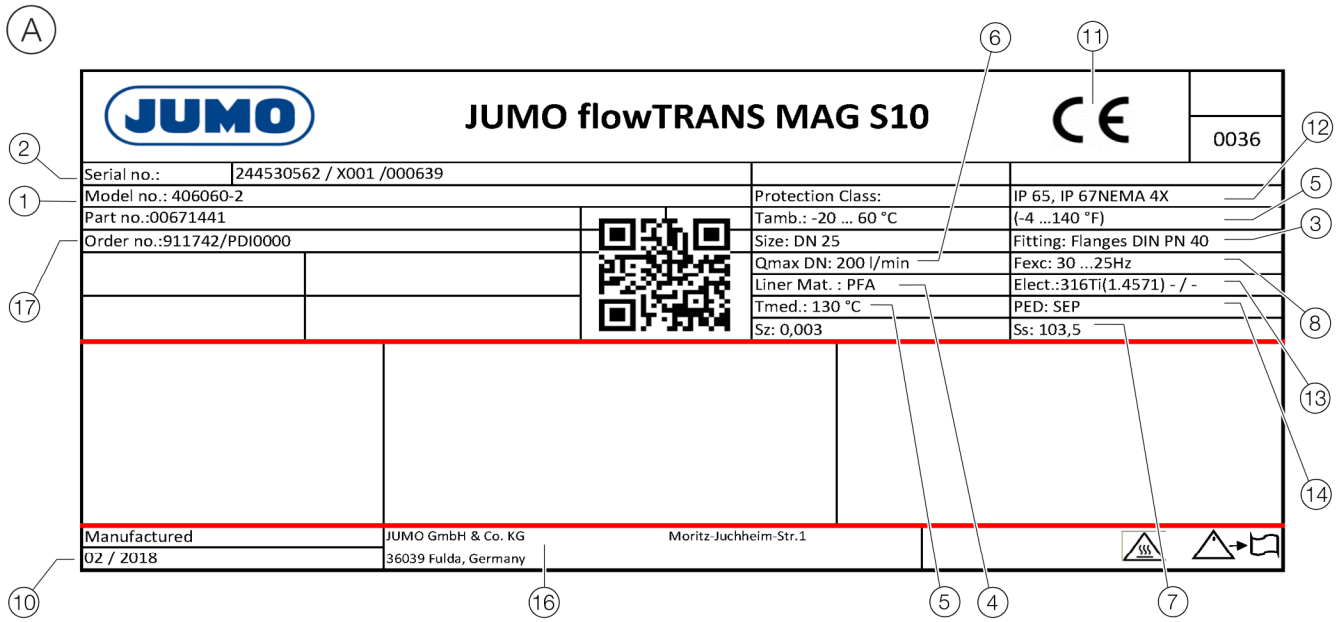
- ① Model number *
- ② Order number / Serial number for identification by the manufacturer
- ③ Nominal diameter and nominal pressure rating
- ④ Material: Flange / Lining / Electrode
- ⑤ T_{med} = maximum permissible temperature of medium being measured
 T_{amb} = maximum permissible ambient temperature
- ⑥ Calibration value, Q_{max} DN
- ⑦ Calibration value, Ss (span)
Calibration value, Sz (zero point)
- ⑧ Excitation frequency of sensor coils
- ⑨ Software version
- ⑩ Year of manufacture
- ⑪ CE mark
- ⑫ Protection class according to EN 60529
- ⑬ Supplementary information: EE = grounding electrodes, TFE = partial filling electrode
- ⑭ Label indicating whether the pressure vessel is subject to the Pressure Equipment Directive (PED).
Information on the relevant fluid group.
Fluid group 1 = hazardous fluids, liquid, gaseous. (Pressure Equipment Directive = PED).
If the pressure equipment is not subject to the Pressure Equipment Directive 2014/68/EU, it is classified in accordance with SEP (= sound engineering practice) as per Art. 3, Para. 3, of the PED.
If no such information is present, it means that the device does not claim to comply with the requirements of the Pressure Equipment Directive 2014/68/EU. Water supplies and connected equipment accessories are classed as an exception in accordance with guideline 1/16 of Art. 1, Para. 3.2 of the Pressure Equipment Directive.
- ⑮ Maximum voltage at the inputs and outputs
- ⑯ Manufacturer
- ⑰ Order number

* Detailed information about the technical design can be found on the data sheet or the order confirmation.

Figure 4: Rating plate

3 Product identification

3.1.2 Remote mount design



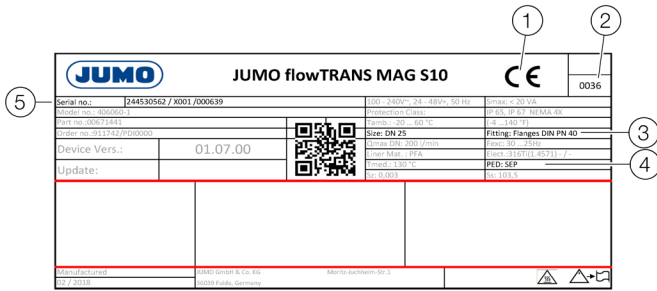
- (A) Sensor
- (B) Transmitter
- (1) Model number *
- (2) Order number / Serial number for identification by the manufacturer
- (3) Nominal diameter and nominal pressure rating
- (4) Material: Flange / Lining / Electrode
- (5) T_{med} = maximum permissible temperature of medium being measured
 T_{amb} = maximum permissible ambient temperature
- (6) Calibration value, Q_{max} DN
- (7) Calibration value, Ss (span)
Calibration value, Sz (zero point)
- (8) Excitation frequency of sensor coils
- (9) Software version
- (10) Year of manufacture
- (11) CE mark
- (12) Protection class according to EN 60529
- (13) Supplementary information: EE = grounding electrodes, TFE = partial filling electrode
- (14) Label indicating whether the pressure vessel is subject to the Pressure Equipment Directive (PED).
Information on the relevant fluid group.
Fluid group 1 = hazardous fluids, liquid, gaseous. (Pressure Equipment Directive = PED).
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- (15) Maximum voltage at the inputs and outputs
- (16) Manufacturer
- (17) Order number

* Detailed information about the technical design can be found on the data sheet or the order confirmation.

Figure 5: Rating plate

3 Product identification

The identification information according to the Pressure Equipment Directive (PED) is included on the rating plate and provided on the sensor itself.



- ① CE mark with notified body
- ② Notified body
- ③ Nominal diameter / Nominal pressure rating
- ④ Fluid group or reason for exception
- ⑤ Serial number of sensor

Figure 6: Identification label according to PED (example)

The identification information is based on the nominal diameter (> DN 25 or ≤ DN 25) of the sensor (also see PED 2014/68/EU).

Pressure equipment subject to the PED

The number of the notified body is indicated on the rating plate to confirm that the device is in conformity with the requirements set out in the PED.

The fluid group taken account of in accordance with the PED is indicated under PED.

Example: Fluid group 1 = hazardous fluids, gaseous.

Pressure equipment outside the applicable range of the PED

The reason for the exception is given according to art. 3, para. 3 of the PED under PED.

The pressure vessel is classified as SEP (= Sound Engineering Practice).

4 Transport and storage

4 Transport and storage

4.1 Inspection

Check the devices immediately after unpacking for possible damage that may have occurred from improper transport. Details of any damage that has occurred in transit must be recorded on the transport documents. All claims for damages must be submitted to the shipper without delay and before installation.

4.2 Transport

⚠ DANGER

Life-threatening danger due to suspended loads.

In the case of suspended loads, a danger of the load falling exists.

- Standing under suspended loads is prohibited.

⚠ WARNING

Risk of injury due to device slipping.

The device's center of gravity may be higher than the harness suspension points.

- Make sure that the device does not slip or turn during transport.
- Support the device laterally during transport.

NOTICE

Potential damage to the device!

The protection plates or protection caps mounted at the process connections on devices with PTFE / PFA liners may only be removed immediately before installation.

- To prevent possible leakage, make sure that the liner on the flange is not cut or damaged.

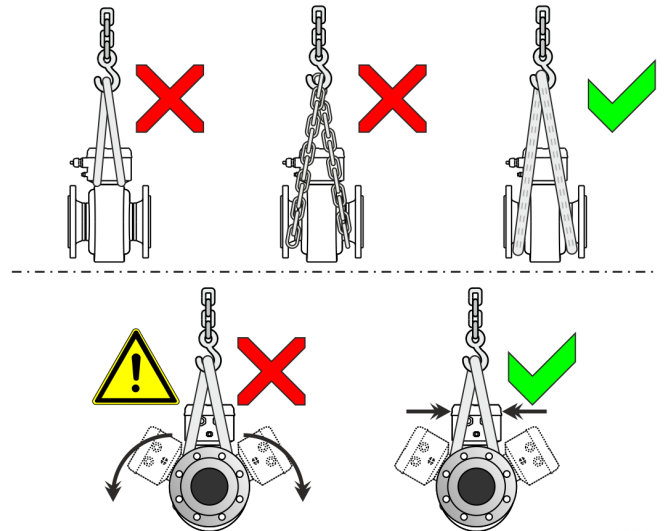


Figure 7: Transport instructions - ≤ DN 450

Flange devices ≤ DN 450

- Use arrying straps to transport flange designs smaller than DN 450
- Wra the carrying straps around both process connections when lifting the device.
- Chans should not be used, since these may damage the housing.

Flange devices > DN 450

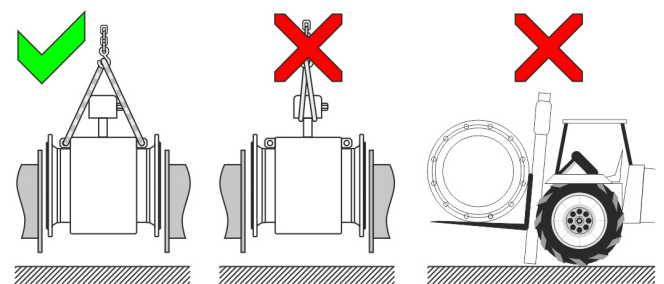


Figure 8: Transport instructions - > DN 450

- Using a forklift to transport flange device can dent the housing.
- Flange devices must not be lifted by the center of the housing when using a forklift for transport.
- Flange devices must not be lifted by the terminal box or by the center of the housing.
- Only the transport lugs fitted to the device can be used to lift the device and insert it into the piping.

4 Transport and storage

4.3 Storing the device

Bear the following points in mind when storing devices:

- Store the device in its original packaging in a dry and dust-free location.
- Observe the permitted ambient conditions for transport and storage.
- Avoid storing the device in direct sunlight.
- In principle, the devices may be stored for an unlimited period. However, the warranty conditions stipulated in the order confirmation of the supplier apply.

Storage temperature range

-30 to 70 °C (-22 to 158 °F)

The ambient condition requirements for transport and storage of the device correspond to the ambient condition requirements for the operation of the device.

Compliance with the information on the data sheet for the device is required.

4.4 Returning devices

NOTE

Improperly returned devices.

The EU Directive governing hazardous materials dictates that the owners of any hazardous waste are also responsible for disposing of it. All devices delivered to the manufacturer must be free from any hazardous materials (acids, alkalis, solvents, etc.).

All documents required for returning the device as well as the manufacturer's return address can be found at <http://produkttruecksendung.jumo.info>.

The following applies to returning devices for repair or recalibration purposes:

- Use the original packaging or a secure transport container.
- Enclose the filled out repair form for the device.

In addition, the following applies to devices that came in contact with hazardous materials:

- Enclose the filled out repair form and the completed and signed decontamination certificate.

Any hazardous material in the cavities, e.g. between the meter tube and the housing, is to be rinsed out and neutralized.

These activities must be confirmed in writing in the decontamination certificate.

5 Installation

5 Installation

5.1 Installation conditions

5.1.1 General

Compliance with the following points is required for installation:

- Ensure that the flow direction corresponds to the marking, if there is one.
- Ensure that the maximum torque specification is maintained for all flange screws. **Torque information** on page 90.
- Secure flange screws and nuts against pipe vibrations.
- Install devices without mechanical tension (torsion, bend).
- Install flange and wafer-type devices with coplanar counter flanges and use only appropriate gaskets.
- Use only gaskets made from a material that is compatible with the medium being measured and its temperature.
- Ensure that gaskets do not extend into the flow area since possible turbulence could influence the device accuracy.
- Ensure that no impermissible forces or moments act on the device owing to the piping.
- Ensure that the temperature limits for the device are being adhered to during operation.
- Avoid vacuum shocks in the piping. Vacuum shocks can destroy the liner and the device.
- Do not remove the plugs for the cable glands until you are ready to install the electrical cables.
- Make sure that the gaskets for the housing cover are seated properly. Carefully close the cover. Tighten the cover screws.
- Install the remote-mount transmitter at a location that is free of vibrations to a large extent.
- Do not expose the transmitter or the sensor to direct sunlight; provide protection from the sun as needed.
- Ensure that sufficient cooling is provided whenever installing the transmitter in a control cabinet.
- Ensure that the remote-mount transmitter and the associated sensor are correctly assigned (paired).
Devices that form a pair have the same numeric suffix; e.g., the X001 sensor is paired with the Y001 transmitter or the X002 sensor is paired with the Y002 transmitter; this is indicated on the rating plate.

5.1.2 Brackets

NOTICE

Potential damage to the device!

Improper support for the device may result in a deformed housing and damage to internal magnetic coils.

- Place the supports at the edge of the sensor housing (see arrows in **Figure 9**).

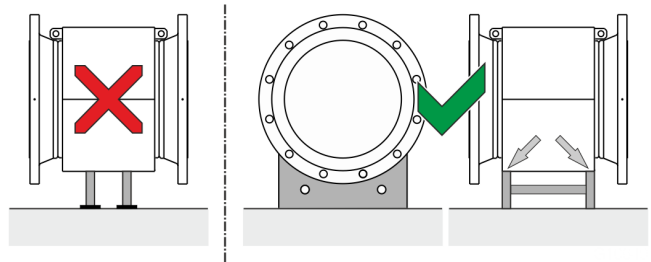


Figure 9: Support for nominal diameters larger than DN 400

Devices with nominal diameters larger than DN 400 must be mounted on a sufficiently strong foundation with support.

5.1.3 Gaskets

The following points must be observed when installing gaskets:

- To achieve the best results, make sure that the gaskets and meter tube fit concentrically.
- To make sure that the flow profile is not distorted, the gaskets may not intrude in the piping cross-section.
- The use of graphite with the flange or process connection gaskets is prohibited. This is because, in some instances, an electrically conductive coating may form on the inside of the meter tube.

Device with hard rubber or soft rubber lining

- Additional gaskets are always required for devices with lining made of hard rubber or soft rubber.
- The use of rubber gaskets or sealing materials that are similar to rubber is recommended by the manufacturer.
- When selecting the seals ensure that the torques detailed in **Torque information** on page 90 are not exceeded.

Devices with lining made of PTFE, PFA or ETFE

- No additional gaskets are required for devices with lining made of PTFE, PFA or ETFE.

5.1.4 Devices with a wafer-type design

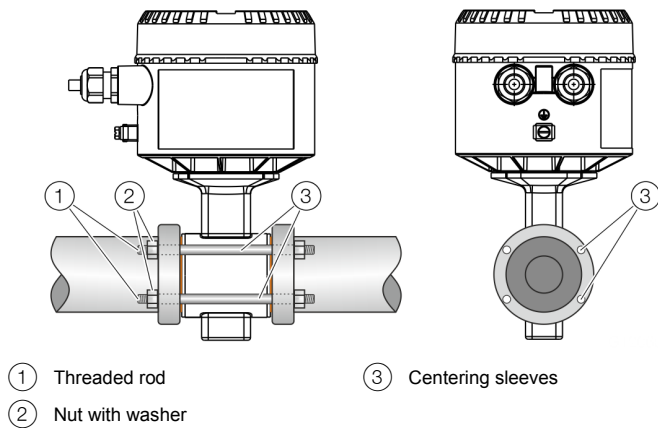


Figure 10: Installation set for wafer-type design (example)

For devices that feature a wafer-type design, the manufacturer offers an installation set as an accessory part that consists of threaded rods, nuts, washers and centering sleeves to facilitate installation.

5.1.5 Flow direction

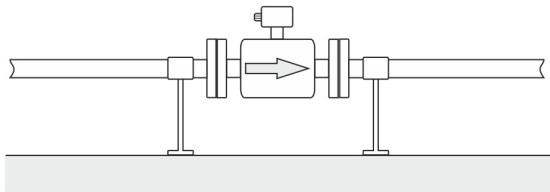
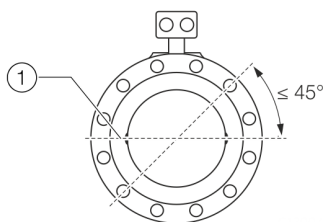


Figure 11: Flow direction

The device measures the flow rate in both flow directions. Forward flow is the factory setting, as shown in Figure 11.

5.1.6 Electrode axis



① Electrode axis

Figure 12: Orientation of the electrode axis

The flowmeter sensor should be mounted in the piping in such a manner that the electrode axis is oriented as horizontally as possible.

A maximum deviation of 45° from the horizontal position is permissible.

5.1.7 Mounting position

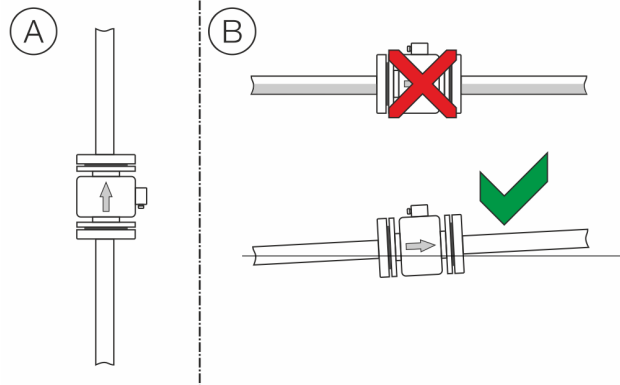


Figure 13: Mounting position

- Ⓐ Vertical installation for measuring abrasive materials, preferably with flow in upward direction.
- Ⓑ For a horizontal installation, the meter tube must always be completely filled with the measuring medium. Provide for a slight incline of the connection for degassing.

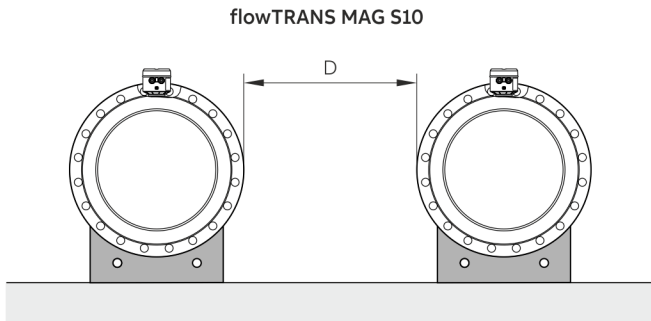
Note

For hygienic applications, the vertical mounting position is preferred.

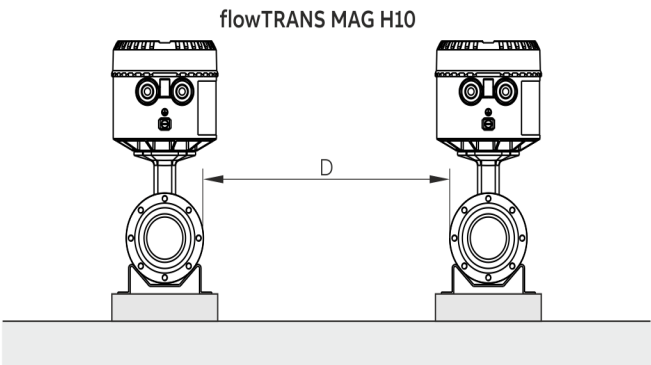
For a horizontal mounting position, make sure that the sensor is installed to be self-draining.

5 Installation

5.1.8 Minimum spacing of the devices



Distance (D): ≥ 1.0 m (3.3 ft.) for variant 1; ≥ 0.7 m (2.3 ft.) for variant 2

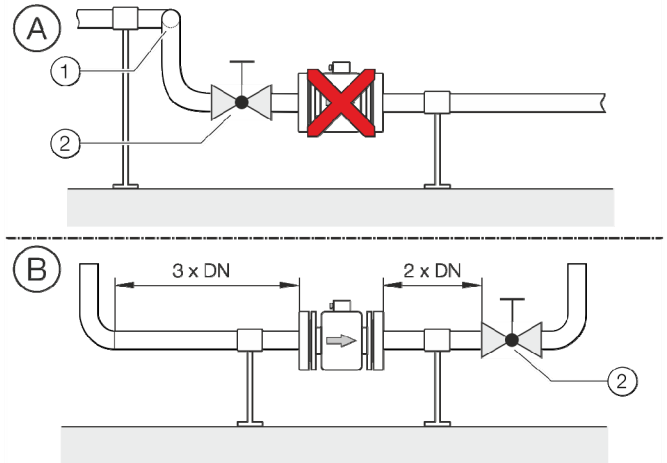


Distance (D): ≥ 1.0 m (3.3 ft.)

Figure 14: Minimum distance

- In order to prevent the devices from interfering with each other, a minimum distance as presented in **Figure 14** must be maintained between the devices.
- The sensor must not be operated in the vicinity of powerful electromagnetic fields, e.g., motors, pumps, transformers, etc. A minimum spacing of approx. 1 m (3.28 ft) must be maintained.
- For installation on or to steel parts (e.g. steel brackets), a minimum spacing of 100 mm (3.94 in) must be maintained. These values have been calculated on the basis of IEC 801-2 or IEC TC77B

5.1.9 Inlet and outlet sections



① 90° out-of-plane double bend ② Shut-off device

Figure 15: Upstream and downstream sections, shut-off devices

The metering principle is independent of the flow profile as long as stationary eddies do not extend into the metering section, such as may occur downstream of 90° out-of-plane double bends, in the event of tangential inflow, or where half-open gate valves are located upstream of the sensor. Such cases require measures to be put in place to normalize the flow profile.

- Ⓐ Do not install fittings, elbows, valves, etc. directly upstream of the sensor.
- Ⓑ Upstream section / Downstream section: Length of the straight pipe at the inlet and the outlet of the sensor. Experience has shown that, in most installations, a straight upstream section length of three times the nominal diameter of the flow sensor and a straight downstream section length of two times the nominal diameter of the flow sensor are sufficient. For test stands, the reference conditions of straight upstream section lengths ten times the nominal diameter of the sensor and straight downstream section lengths five times the nominal diameter of the sensor should be provided in accordance with EN 29104 / ISO 9104. Valves or other shut-off devices should be installed in the downstream section. Butterfly valves must be installed so that the valve plate does not extend into the flow sensor.

5.1.10 Free inlet or outlet

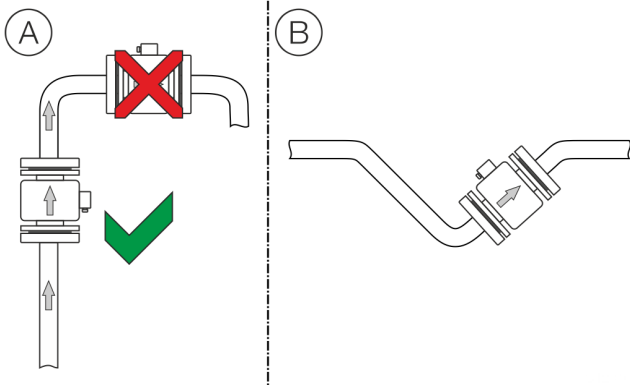


Figure 16: Free inflow and outflow

- (A) For a free outflow, do not install flowmeter at the highest point of the piping or on its outflow side, since the measuring tube may run empty, creating air bubbles.
- (B) For free inflow/outflow, provide an invert to make sure that the piping is always full

5.1.11 Mounting with heavily contaminated measuring media

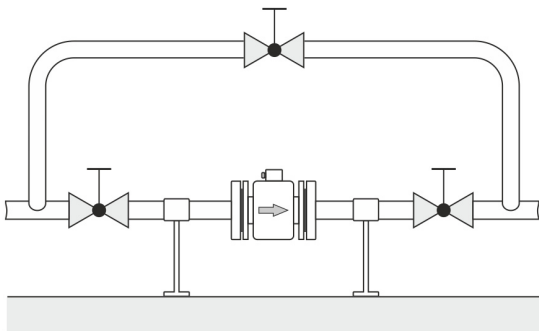
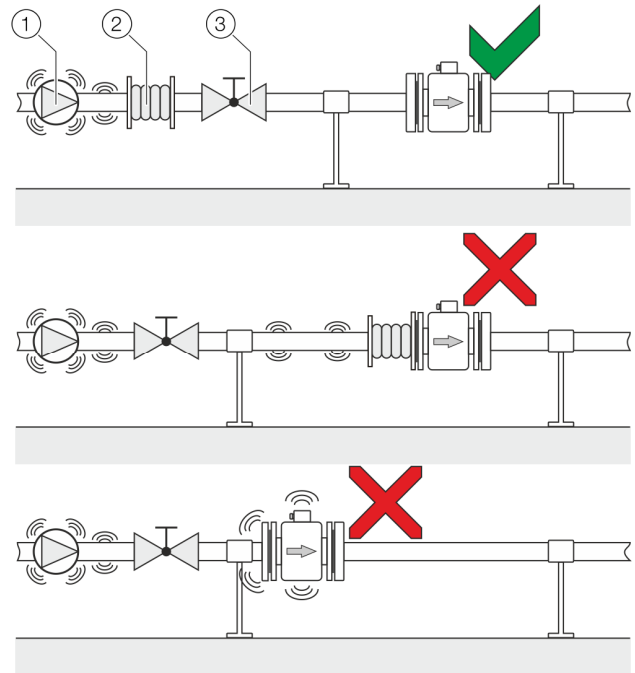


Figure 17: Bypass line

For strongly contaminated measuring media, a bypass line in accordance with the figure is recommended so that operation of the system can continue to run without interruption during mechanical cleaning.

5.1.12 Mounting with pipe vibration



- ① Pump
- ② Damping device
- ③ Turn-off device

Figure 18: Vibration damping

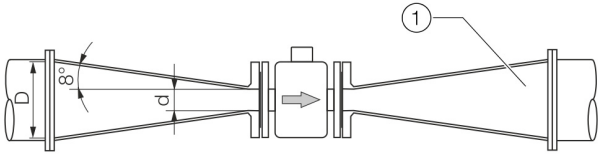
If pipe vibration occurs, it needs to be damped using damping devices.

The damping devices must be installed outside the support section and outside of the piping section between the turn-off devices.

Avoid connecting damping devices directly to the flowmeter sensor.

5 Installation

5.1.13 Installation in piping with larger nominal diameter



① Reducer

Figure 19: Using reducers

Determine the resulting pressure loss when using reducers:

1. Determine diameter ratios d/D .
2. Determine the flow velocity based on the flow rate nomogram (Figure 20).
3. Read the pressure loss on the Y-axis in Figure 20.

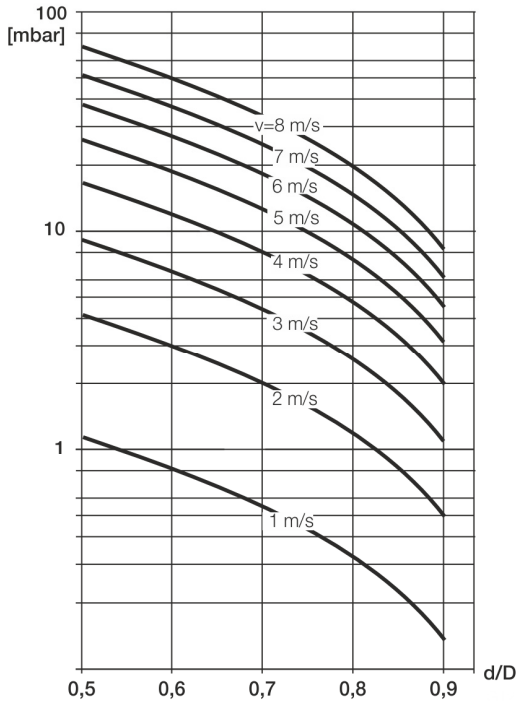
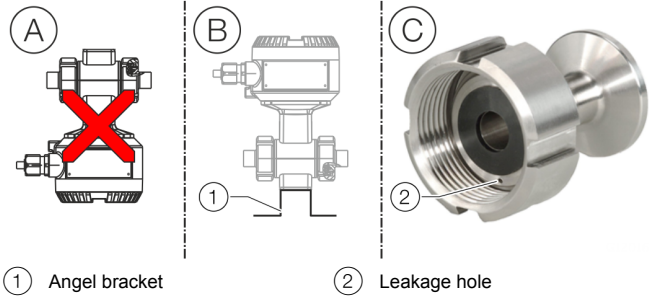


Figure 20: Flow rate nomogram for flange transition piece at $\alpha/2 = 8^\circ$

5.1.14 Installation in 3A compliant installations



① Angel bracket

② Leakage hole

Figure 21: 3A compliant installation

Please observe the following points:

- (A) Do not install the device vertically with the terminal box or transmitter housing pointing downward.
 - (B) The 'angel bracket' option is not 3A compliant.
 - (C) Please make sure that the leakage hole of the process connection is located at the lowest point of the installed device.
- A vertical mounting position is preferred. For a horizontal mounting position, make sure that the sensor is installed to be self-draining.
 - Make sure that the cover of terminal box and / or transmitter housing is properly sealed. There can be no gaps between the housing and the cover.

Only devices with the following process connections fulfill 3A compliance.

- Welded spuds
- Tri-clamp

5.2 Installing the sensor

NOTICE

Damage to the device

Damage to the device due to improper assembly.

- The use of graphite with the flange or process connection gaskets is prohibited. This is because, in some instances, an electrically conductive coating may form on the inside of the meter tube.
- Vacuum shocks in the piping should be avoided to prevent damage to the liners (PTFE liner). Vacuum shocks can destroy the device.

The flowmeter sensor can be installed at any location in the piping while taking the installation conditions into account.

1. Remove protective plates, if present, to the right and left of the meter tube. To prevent possible leakage, make sure that the liner on the flange is not cut or damaged.
2. Position the flowmeter sensor plane parallel and centered between the piping.
3. Install gaskets between the surfaces, see **Gaskets** on page 16.

Note

For achieve the best results, ensure the gaskets fit concentrically with the meter tube

To ensure that the flow profile is not distorted, the gaskets must not protrude into the piping.

4. Use the appropriate screws for the holes in accordance with **Torque information** on page 90.
5. Slightly grease the threaded nuts.
6. Tighten the nuts in a crosswise manner as shown in the figure. Observe the tightening torques in accordance with **Torque information** on page 90!
First tighten the nuts to approx. 50 % of the maximum torque, then to 80 %, and finally a third time to the maximum torque. Do not exceed the max. torque.

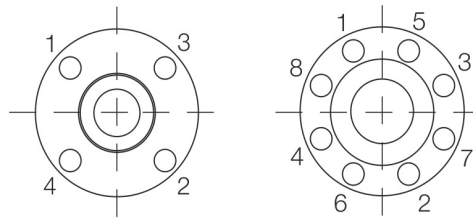


Figure 22: Tightening sequence for the flange screws

5 Installation

5.3 Opening and closing the terminal box

⚠ WARNING

Risk of injury due to live parts!

When the housing is open, contact protection is not provided and EMC protection is limited.

- Before opening the housing, switch off the power supply.

Note

Potentially adverse effects on the IP protection class.

- Ensure that the cover for the power supply terminals is correctly fitted.
- Check the o-ring gasket for damage and replace it as needed, prior to closing the housing cover.
- Check that the o-ring gasket is correctly seated when closing the housing cover.

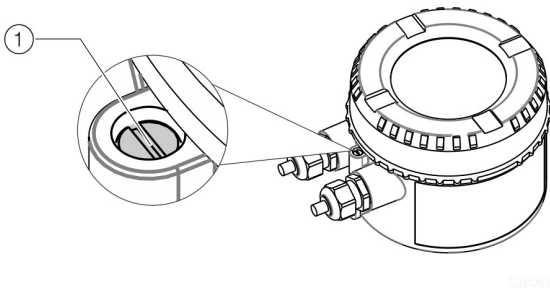


Figure 23: Cover safety catch (example)

Turn the screw ① clockwise to open the cover and to release the safety catch.

After closing the cover to the housing, secure the cover by turning the screw ① counterclockwise.

5.3.1 Rotating the LCD display

Depending on the installation position, the LCD display can be rotated to enable horizontal readings.

The LCD display can be rotated in 90° increments in four steps. Refer to **Opening and closing the terminal box** on page 22!

Rotating the LCD display: Carry out steps ① to ⑦.

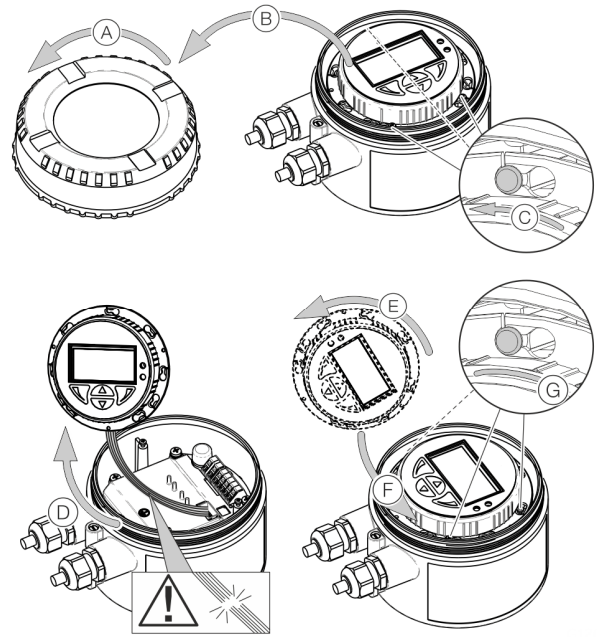


Figure 24: Rotating the LCD display (example)

5.4 Sensor grounding

5.4.1 General information on grounding

Observe the following items when grounding the device:

- For plastic piping or piping with insulating liner, the ground is provided by the grounding plate or grounding electrodes.
- When stray potentials are present, install a grounding plate upstream and downstream of the sensor.
- For measurement-related reasons, the potential in the station ground and in the piping should be identical.

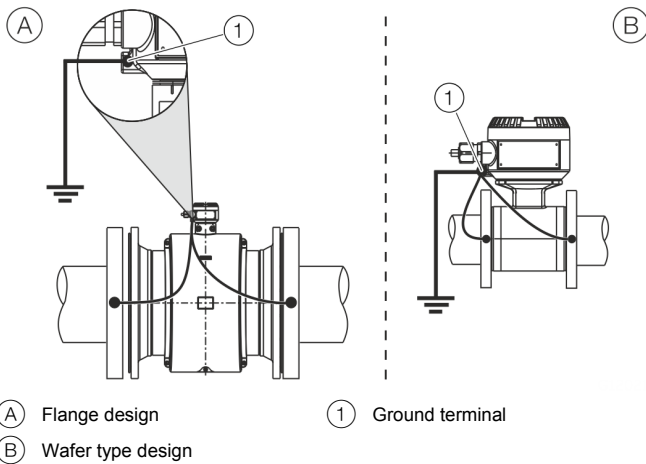
Note

If the sensor is installed in plastic or earthenware pipelines, or in pipelines with an insulating liner, compensating currents may flow through the grounding electrode in special cases (e.g. with corrosive measuring media, acids and bases)

In the long term, this may destroy the sensor, since the ground electrode will in turn degrade electrochemically.

In these special cases, the connection to the ground must be performed using grounding plates. Install a grounding plate upstream and downstream of the device in this case.

5.4.2 Metal pipe with fixed flanges

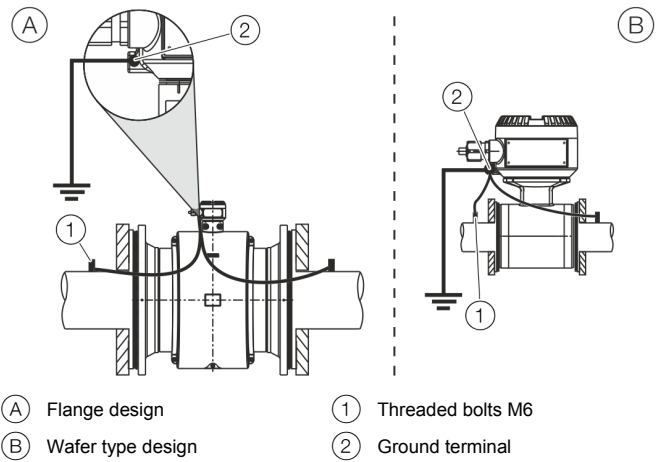


(A) Flange design
(B) Wafer type design
(1) Ground terminal

Figure 25: Metal pipe, without liner (example)

Use a copper wire [at least 2.5 mm² (14 AWG)] to establish the connection between the ground terminal of the sensor, the pipeline flanges and a suited grounding point in accordance with the figure.

5.4.3 Metal pipe with loose flanges



(A) Flange design
(B) Wafer type design
(1) Threaded bolts M6
(2) Ground terminal

Figure 26: Metal pipe, without liner (example)

1. Solder the threaded bolts M6 to the piping and connect the ground in accordance with the figure.
2. Use a copper wire [at least 2.5 mm² (14 AWG)] to establish the connection between the ground terminal of the sensor and a suited grounding point in accordance with the figure.

5 Installation

5.4.4 Plastic pipes, non-metallic pipes or pipes with insulating liner

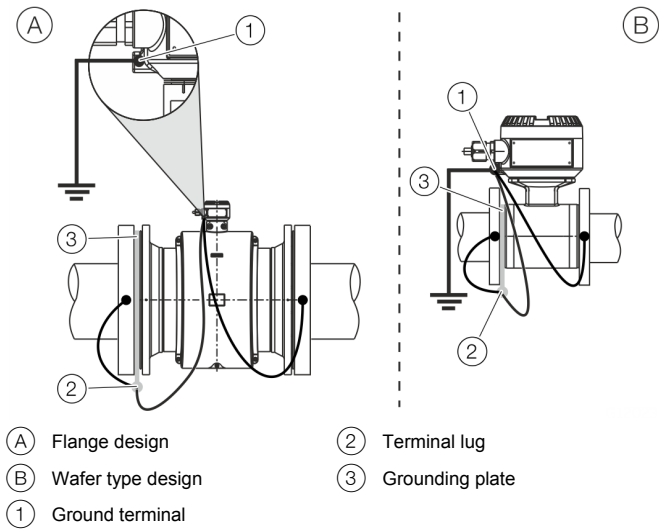


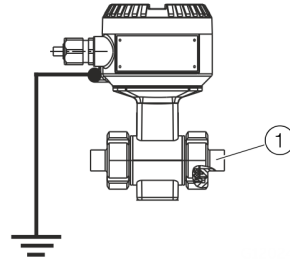
Figure 27: Plastic pipes, non-metallic pipes or pipes with insulating liner

For plastic pipes or pipes with insulating lining, the grounding of the measuring medium is provided by the grounding plate as shown in the figure below or via grounding electrodes that must be installed in the device (option).

If grounding electrodes are used, the grounding plate is not necessary.

1. Install the sensor with grounding plate in the piping.
2. Connect the terminal lug of the grounding plate and ground connection on the sensor using the grounding strap.
3. Use a copper wire with at least 2.5 mm² (14 AWG)) to establish a connection between the ground connection and a suited grounding point.

5.4.5 JUMO flowTRANS MAG H10 sensor type



(1) Adapter for process connection

Figure 28: JUMO flowTRANS MAG H10 sensor type

Follow the grounding procedure shown in the illustration. The medium being measured is grounded via the adapter for the process connection so that an additional ground is not required.

5.4.6 Grounding for devices with protective plates

The protection plates are used to protect the edges of the meter tube liner, e.g. for abrasive media.

In addition, the protection plates function as a grounding plate.

- For plastic piping or piping with insulating liner, electrically connect the protection plate in the same manner as a grounding plate.

5.4.7 Grounding with conductive PTFE grounding plate

Grounding plates made of conductive PTFE are optionally available for nominal diameter ranges of DN 10 to 250. These are installed similar to conventional grounding plates.

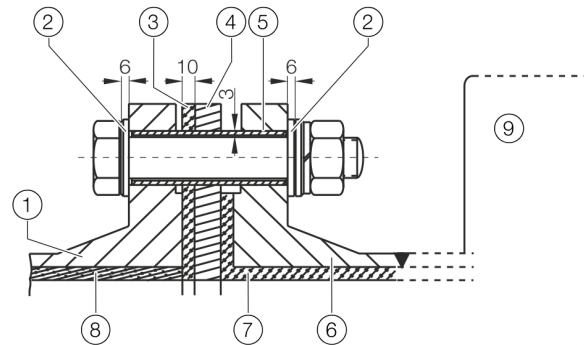
5.4.8 Installation and grounding in piping with cathodic corrosion protection

The installation of electromagnetic flowmeters in systems with cathodic corrosion protection must be made in compliance with the corresponding system conditions.

The following factors are especially important:

1. Pipelines inside electrically conductive or insulating.
2. Pipelines completely or for the most part with cathodic corrosion protection (CCP) or mixed systems with CCP areas and PE areas.
- When installing an electromagnetic flowmeter in pipes with insulating inner lining and free from foreign matter, it should be insulated with grounding rings on the upstream and downstream side. The corrosion protection potential is diverted. The grounding rings upstream and downstream of the electromagnetic flowmeter are connected to functional earth (Figure 29 / Figure 30).
- If the occurrence of external stray currents is to be expected in pipelines with internal insulation (e.g. in the case of long pipe sections in the vicinity of power supply units), an uninsulated pipe of approx. $1/4 \times \text{DN}$ of length should be provided upstream and downstream of the flowmeter sensor in order to deviate these currents away from the measuring system (Figure 31).

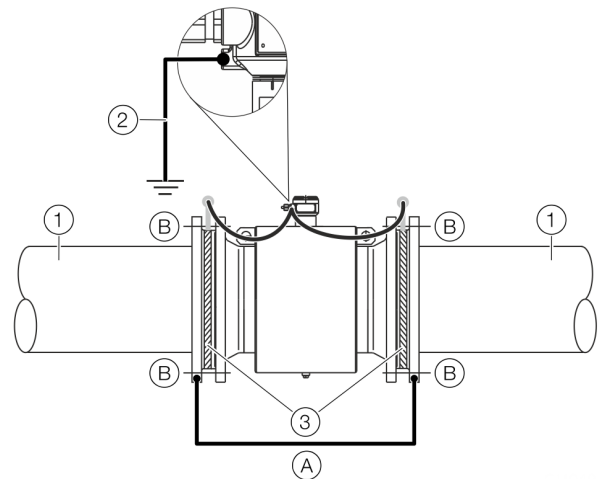
Internally insulated pipelines with cathodic corrosion protection potential



- | | |
|----------------------------|--------------------|
| ① Pipe flange | ⑥ Flange |
| ② Insulating plate | ⑦ Lining |
| ③ Gasket / insulating ring | ⑧ Insulation |
| ④ Grounding plate | ⑨ Flowmeter sensor |
| ⑤ Insulating pipe | |

Figure 29: Bolt screw view

Install grounding rings on each side of the flowmeter sensor. Insulate the grounding rings from the pipe flanges and connect them to the flowmeter sensor and to functional earth. Insulate the screw bolts for the flange connections when mounting. The insulation plates and the insulating pipe are not included in the delivery. They must be provided onsite by the customer.



- | | |
|---|--------------------|
| Ⓐ Connecting line for corrosion protection potential* | ① Insulated pipe |
| Ⓑ Insulated screw bolts without grounding rings | ② Functional earth |
| | ③ Grounding plate |

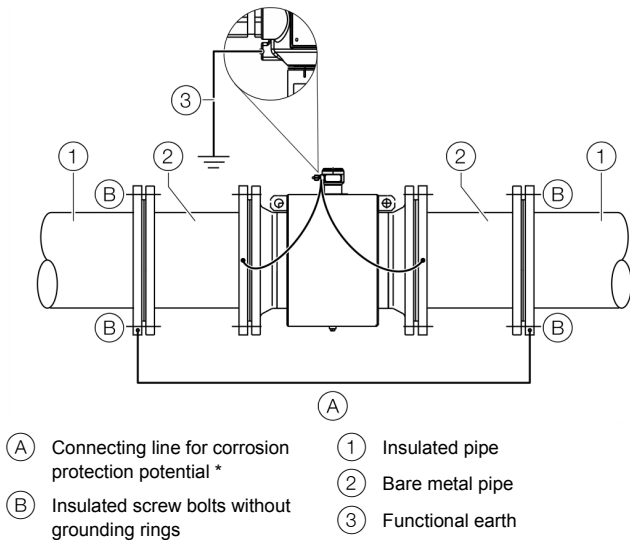
* $\geq 4 \text{ mm}^2 \text{ Cu}$, not included in the delivery, to be provided onsite.

Figure 30: Flowmeter sensor with grounding plate and functional earth

The corrosion protection potential must be diverted through a connecting line (A) away from the insulated flowmeter sensor.

5 Installation

Mixed system pipeline with cathodic corrosion protection and functional earth potentials



* $\geq 4 \text{ mm}^2 \text{ Cu}$, not included in the delivery, to be provided onsite.

Figure 31: Flowmeter sensor with functional earth

This mixed system has an insulated pipeline with corrosion protection potential and an uninsulated bar metal pipe ($L = \frac{1}{4} \times \text{flowmeter sensor size}$) with functional earth potential upstream and downstream of the flowmeter sensor. The Figure 31 shows the preferred installation for cathodic corrosion protection systems.

5.5 Electrical connections

⚠ WARNING

Risk of injury due to live parts.

Improper work on the electrical connections can result in electric shock.

- Connect the device only with the power supply switched off.
- Observe the applicable standards and regulations for the electrical connection.

The electrical connection may only be established by authorized specialist personnel and in accordance with the connection diagrams.

The electrical connection information in this manual must be observed; otherwise, the IP rating may be adversely affected. Ground the measurement system according to requirements.

5.5.1 Connecting the power supply

Note

- Adhere to the limit values of the power supply in accordance with the information on the name plate.
- Observe the voltage drop for large cable lengths and small conductor cross-sections. The voltage at the terminals of the device may not down-scale the minimum value required in accordance with the information on the name plate.

The power supply is connected to terminal L (phase), N (zero), or 1+, 2-, and PE.

A circuit breaker with a maximum rated current of 16 A must be installed in the power supply line.

The wire cross-sectional area of the power supply cable and the circuit breaker used must comply with VDE 0100 and must be dimensioned in accordance with the current consumption of the flowmeter measuring system. The cables must comply with IEC 227 and/or IEC 245.

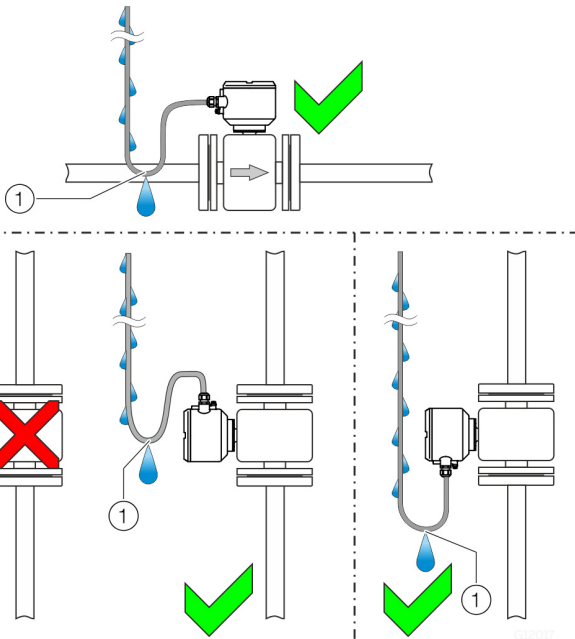
The circuit breaker must be located near the device and marked as being associated with the device.

Connect the transmitter and sensor to functional earth.

5.5.2 Installing the connecting cables

Compliance with the following items is required when routing signal cables:

- A magnetic coil cable (red and brown) is run parallel to the signal lines (violet and blue). As a result, only one cable is required between the sensor and the transmitter. Do not use junction boxes or terminal strips for routing cables.
- The signal cable carries a voltage signal of only a few millivolts and must, therefore, be routed over the shortest possible distance. The maximum permissible signal cable length is 50 m (164 ft).
- Avoid routing the cable in the vicinity of electrical equipment or switching elements that can create stray fields, switching pulses and induction. If this is not possible, run the signal / magnetic coil cable through a metal pipe and connect this to the station ground potential.
- All leads must be shielded and connected to the station ground potential.
- The cable contains outer shielding to shield against magnetic interspersions. Connect this at the SE terminal.
- Also connect the supplied stranded steel wire to the SE terminal.
- Do not damage the sheathing of the cable during installation.
- Make provisions for a drip loop (water trap) when installing the connecting cables for the sensor.



① Drip loop

Figure 32: Installing the connection cables

5.5.3 Connection via cable conduit



Figure 33: Installation set for cable conduit

NOTE

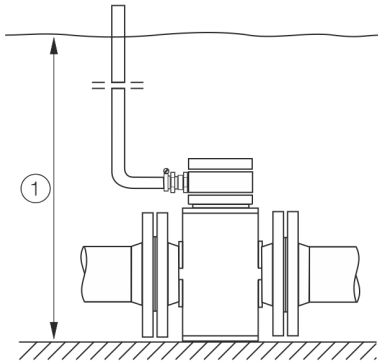
Condensate formation in terminal box.

If the sensor is permanently connected to cable conduits, there is a possibility that moisture may get into the terminal box as a result of condensate formation in the cable conduit. Ensure that the cable entry points on the terminal box are sealed.

An installation set for sealing the cable conduit (Conduit) is available via part no. 00645908.

5 Installation

5.5.4 Connection of IP 68 protection class



① Max. flooding height: 5 m (16.4 ft)

Figure 34: Flooding height

For sensors with IP 68 degree of protection, the maximum flooding height is 5 m (16.4 ft). The supplied signal cable fulfills all the submersion requirements.

The sensor is type-tested in accordance with EN 60529. Test conditions: 14 days at a flooding height of 5 m (16.4 ft).

Connection

NOTE

Potentially adverse effects on the IP 68 protection class.

The sensor's IP 68 protection class may be adversely affected by damage to the signal cable.

The sheathing of the signal cable must not be damaged.

1. Use the supplied cable to connect the sensor and the transmitter.
2. Connect the signal cable in the terminal box of the sensor.
3. Route the cable from the terminal box to above the maximum flooding height of 5 m (16.4 ft).
4. Tighten the cable gland.
5. Carefully seal the terminal box. Make sure the gasket for the cover is seated properly.

Note

As an option, the sensor can be ordered with the signal cable already connected and a sealed terminal box.

Sealing the terminal box

A special two-component sealing compound can be ordered separately (part number: 00707192) for sealing the terminal box subsequently at the site. Sealing is only possible if the sensor is installed horizontally. Compliance with the following information is required when realizing the task.

⚠ CAUTION

Health hazard!

The two-component sealing compound is toxic. Ensure that all suitable protective measures have been taken.

Compliance with the information on the material safety data sheet for the two-component sealing compound is required prior to commencing preparatory work.

Hazard-relevant information:

- R20: Harmful by inhalation.
- R36/37/38: Irritating to eyes, respiratory system and skin.
- R42/43: May cause sensitization by inhalation and skin contact.

Safety advice:

- S23: Do not inhale gas/fumes/vapor/aerosols.
- S24: Avoid contact with skin.
- S37: Wear suitable protective gloves.
- S63: In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Preparation

- Seal only after installation procedures have been completed to avoid the ingress of moisture. Ensure that all the connections are correctly seated and tight beforehand.
- Do not overfill the terminal box – keep the sealing compound away from the o-ring and gasket / groove (see Figure 35).
- Prevent the two-component sealing compound from entering the cable conduit when the NPT 1/2" is installed (if applicable).

Procedure

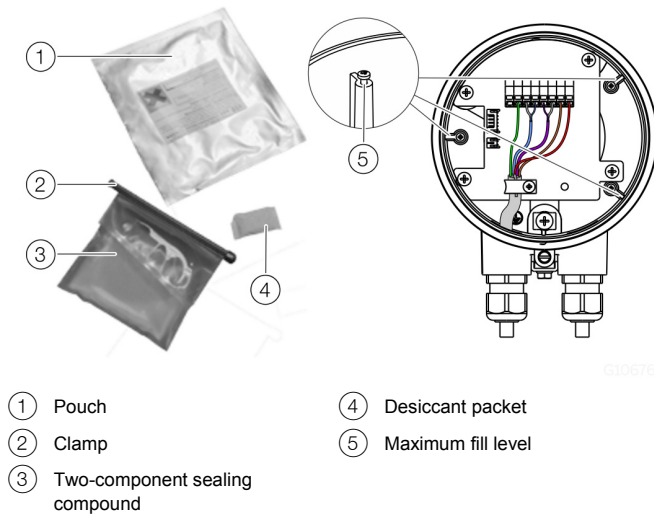
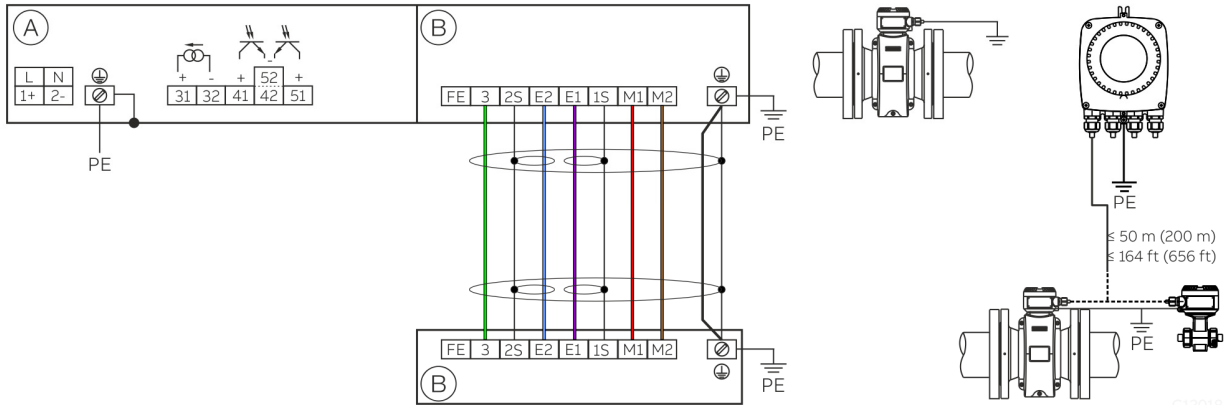


Figure 35: Procedure

1. Cut open the protective enclosure of the two-component sealing compound (see packaging).
2. Remove the clamp of the sealing compound.
3. Knead both components thoroughly until a good mix is reached.
4. Cut open the pouch at a corner. Perform work activity within 30 minutes.
5. Carefully fill the terminal box with two-component sealing compound to above the connecting cable.
6. Wait a few hours before closing the cover to allow the compound to dry, and to release any possible gas.
7. Ensure that the packaging material and the desiccant packet are disposed of in an environmentally sound manner.

5 Installation

5.5.5 Electrical connection



(A) Connection points for power supply and outputs

(B) Connection points for signal cable (remote mount design only)

Figure 36: Electrical connection points

Note

For additional information on the grounding of the transmitter, see **Sensor grounding** on page 23.

Connections for the power supply

AC power supply	
Terminal	Function / comments
L	Phase
N	Neutral conductor
PE / ⊕	Protective earth (PE)

DC voltage supply	
Terminal	Function / comments
1+	+
2-	-
PE / ⊕	Protective earth (PE)

Output connections

Terminal	Function / Comment
31 / 32	Active current output The current output is designed as an active output. The power supply for the current output is integrated in the transmitter.
41 / 42	Passive digital output DO1 The output can be configured at the site as a pulse, frequency or switching output.
51 / 52	Passive digital output DO2 The output can be configured at the site as a pulse, frequency or switching output.
⏏	Functional ground

Signal cable connections

Only for remote mount design.

Terminal	Function / Comment	Color
FE	Not assigned	–
3	Measurement potential	Green
2S	Shield for E2	–
E2	Signal lead	Blue
E1	Signal lead	Violet
1S	Shield for E1	–
M1	Solenoid	Brown
M2	Solenoid	Red
SE / ⊕	Shield	–
–	Not assigned	Orange / Yellow

5.5.6 Electrical data for inputs and outputs

Power supply, L / N, 1+ / 2-

Alternating voltage (AC) supply	
Terminals	L / N
Operating voltage	100 to 240 V AC (-15 % / +10 %), 47 to 64 Hz
Power consumption	< 20 VA
Switch-on current	8.8 A
Direct voltage (DC) supply	
Terminals	1+ / 2-
Operating voltage	24 to 48V DC (-10 % / +10 %)
Residual ripple	< 5 %
Power consumption	< 10 W
Switch-on current	5.6 A

Current output, 31 / 32

Can be configured for the output of mass flow and volumetric flow.

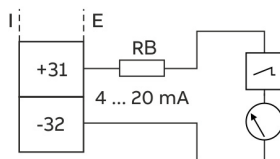


Figure 37: Connection example for active 31 / 32 current output
(I = internal, E = external, R_B = load)

Current output	Active
Terminals	31 / 32
Output signal	4 to 20 mA
Load: R_B	$0 \Omega \leq R_B \leq 650 \Omega$

Digital output, 41 / 42, 51 / 52

Can be configured as pulse, frequency or binary output.

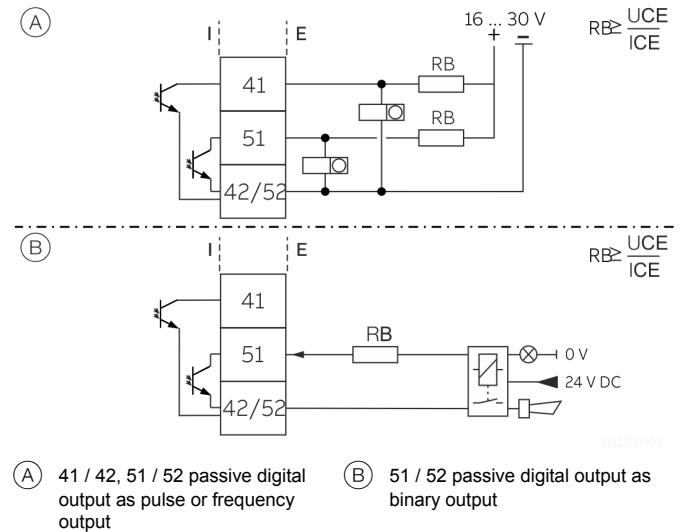


Figure 38: Connection example (I = internal, E = external, R_B = load)

Note

- The terminals 42 / 52 have the same potential. The digital outputs 41 / 42 and 51 / 52 are not electrically isolated from one another.
- If you are using a mechanical meter, we recommend setting a pulse width of ≥ 30 ms and a maximum frequency of $f_{max} \leq 3$ kHz.

Pulse output / Frequency output (passive)

Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25 mA
f_{max}	10.5 kHz
Pulse width	0.1 to 2000 ms

Binary output (passive)

Terminals	41 / 42, 51 / 52
U_{max}	30 V DC
I_{max}	25 mA
Switching function	Can be configured via software as: General alarm, empty pipe alarm, min. or max. alarm, flow direction signal, among other options

5 Installation

5.5.7 Connection to integral mount design

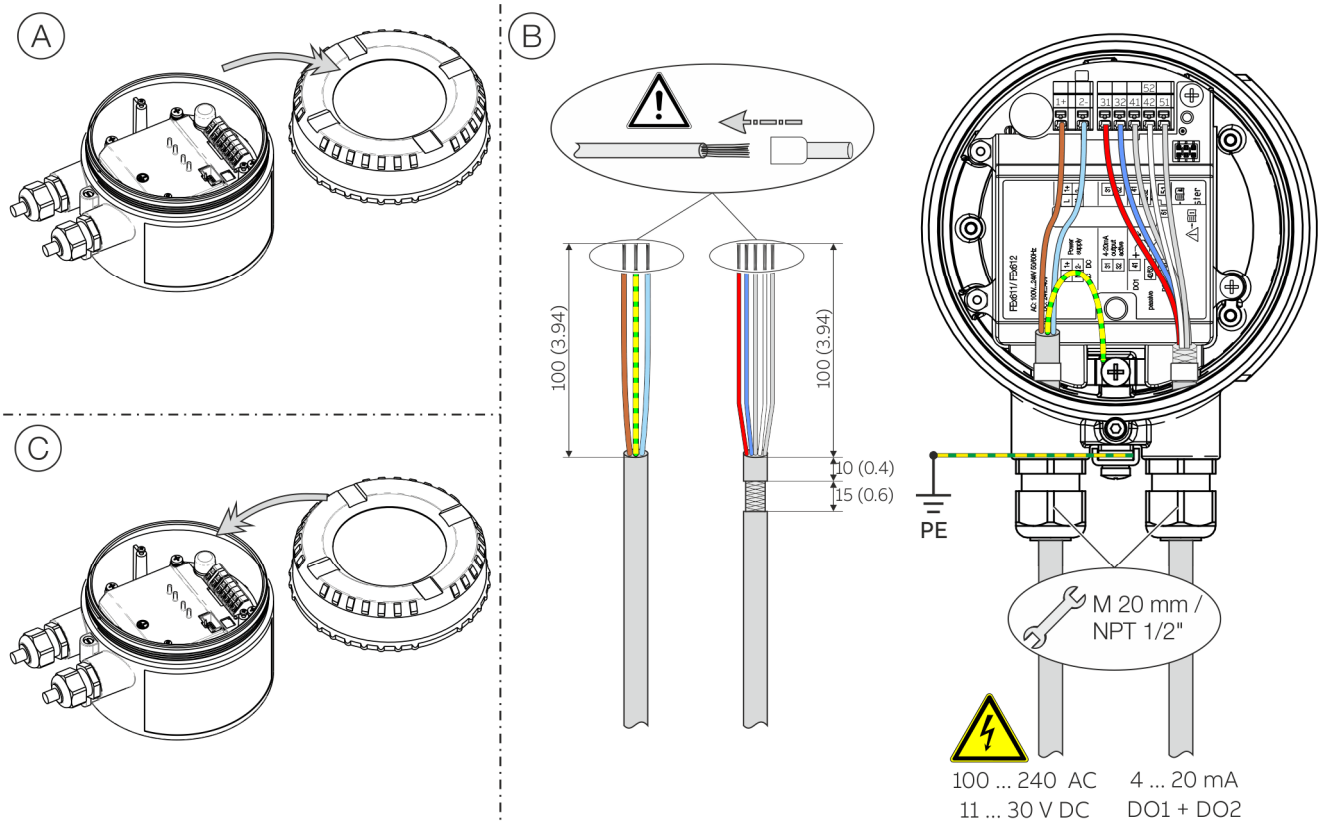


Figure 39: Connection at the device (example), dimensions in mm (in.)

PA = Equipotential bonding

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

Connection procedure for integral mount design: Carry out steps (A) to (C).

To this end, comply with the information below:

- Route the power supply cable through the cable entry on the left-hand side into the terminal box.
- Route the cables for the analog and digital outputs through the cable entry on the right-hand side into the terminal box.
- Connect the cables in accordance with the connection diagrams. Connect the cable shields to the provided grounding clamp in the terminal box.
- Connect the equipotential bonding system (PA) with the ground terminal at the terminal box.
- Use ferrules for making the connections.

Note

- Adhere to the limit values of the power supply in accordance with the information on the name plate.
- Observe the voltage drop for large cable lengths and small conductor cross-sections. The voltage at the terminals of the device may not down-scale the minimum value required in accordance with the information on the name plate.

The power supply is connected to terminal L (phase), N (zero), or 1+, 2-, and PE.

A circuit breaker with a maximum rated current of 16 A must be installed in the power supply line.

The wire cross-sectional area of the power supply cable and the circuit breaker used must comply with VDE 0100 and must be dimensioned in accordance with the current consumption of the flowmeter measuring system. The cables must comply with IEC 227 and/or IEC 245.

The circuit breaker must be located near the device and marked as being associated with the device.

Connect the transmitter and sensor to functional earth.

5.5.8 Connection to remote mount design

Note

Use ferrules.

- 0.75 mm² ferrules (AWG 19) for shielding (1S, 2S).
- 0.5 mm² ferrules (AWG 20) for all other wires.

The shields must not touch one another (this will short out the signal).

Sensor side

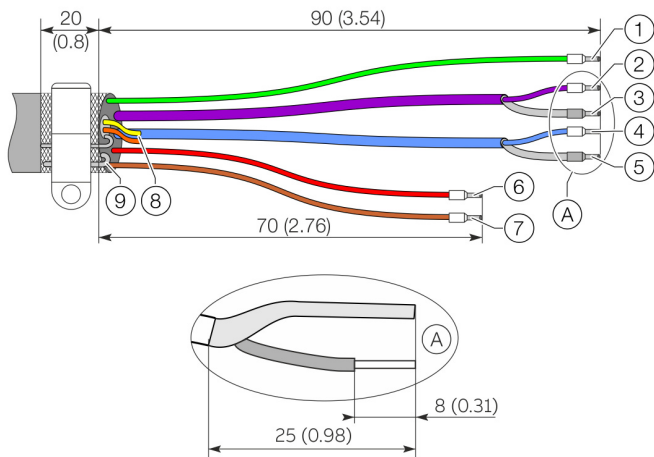


Figure 40: Signal cable 00645914; dimensions in mm (in.)

Item	Terminal	Function / Comment	Color
①	3	Measurement potential	Green
②	E1	Signal lead	Violet
③	1S	Shield for E1	–
④	E2	Signal lead	Blue
⑤	2S	Shield for E2	–
⑥	M2	Solenoid	Red
⑦	M1	Solenoid	Brown
⑧	–	Not assigned	Yellow
	–	Not assigned	Orange
⑨	SE / \perp	Shield	–

Transmitter side

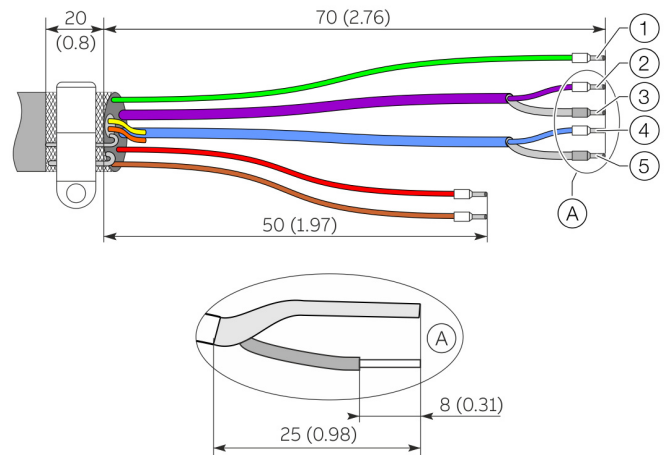
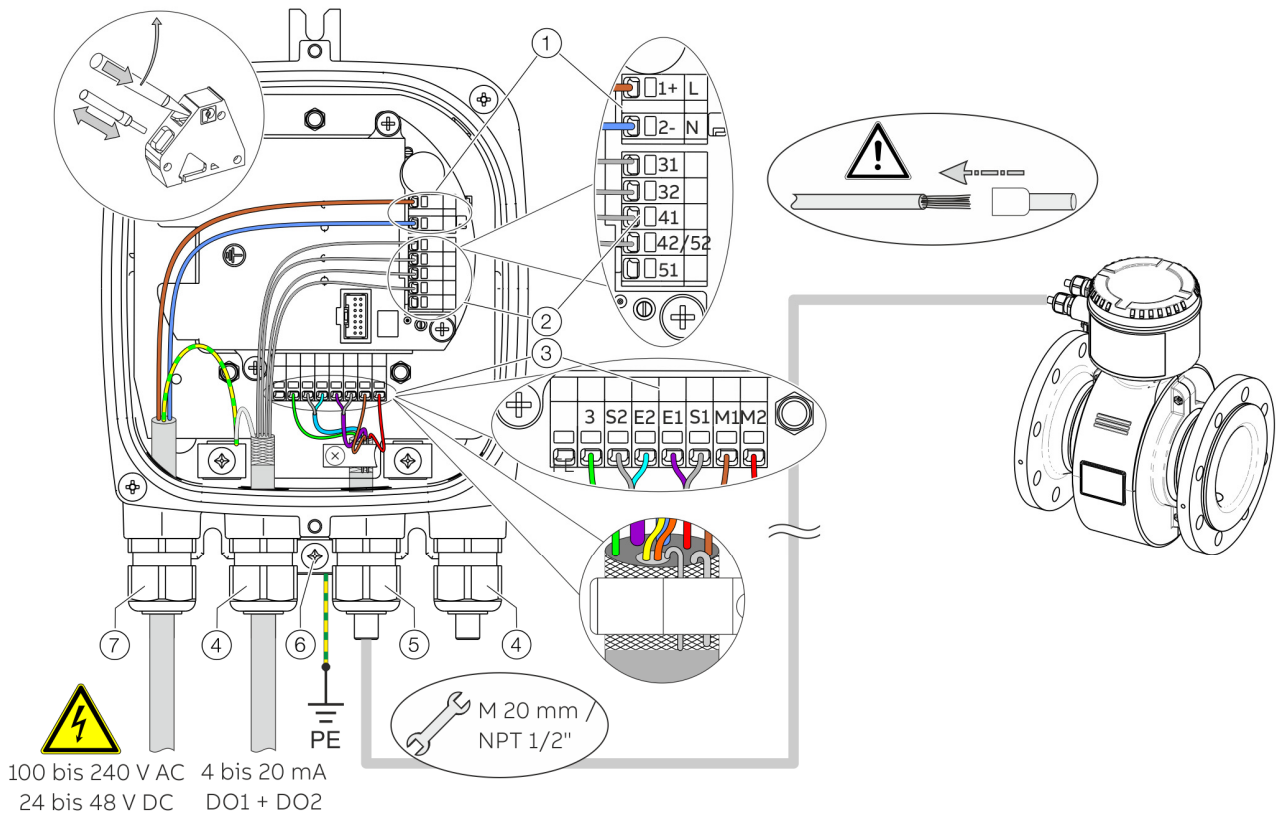


Figure 41: Signal cable 00645914; dimensions in mm (in.)

Item	Terminal	Function / Comment	Color
①	3	Measurement potential	Green
②	E1	Signal lead	Violet
③	1S	Shield for E1	–
④	E2	Signal lead	Blue
⑤	2S	Shield for E2	–
⑥	M2	Solenoid	Red
⑦	M1	Solenoid	Brown
⑧	–	Not assigned	Yellow
	–	Not assigned	Orange
⑨	SE / \perp	Shield	–

5 Installation

Transmitter



- ① Terminals for power supply
- ② Terminals for inputs and outputs
- ③ Terminals for signal cable
- ④ Cable entry for inputs and outputs
- ⑤ Cable entry for signal cable
- ⑥ Terminal for equipotential bonding
- ⑦ Cable entry for power supply

Figure 42: Electrical transmitter connection for remote mount design (example)

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

Compliance with the information below is required for making the electrical connections:

- Route the power supply cable and the cable for the signal inputs and outputs into the housing as shown.
- Connect the cables in accordance with the connection diagrams. Connect the cable shields (if applicable) to the provided grounding clamp.
- Use ferrules for making the connections.
- Use suitable plug(s) to seal the cable entries that are not used.

Note

- Adhere to the limit values of the power supply in accordance with the information on the name plate.
- Observe the voltage drop for large cable lengths and small conductor cross-sections. The voltage at the terminals of the device may not down-scale the minimum value required in accordance with the information on the name plate.

The power supply is connected to terminal L (phase), N (zero), or 1+, 2-, and PE.

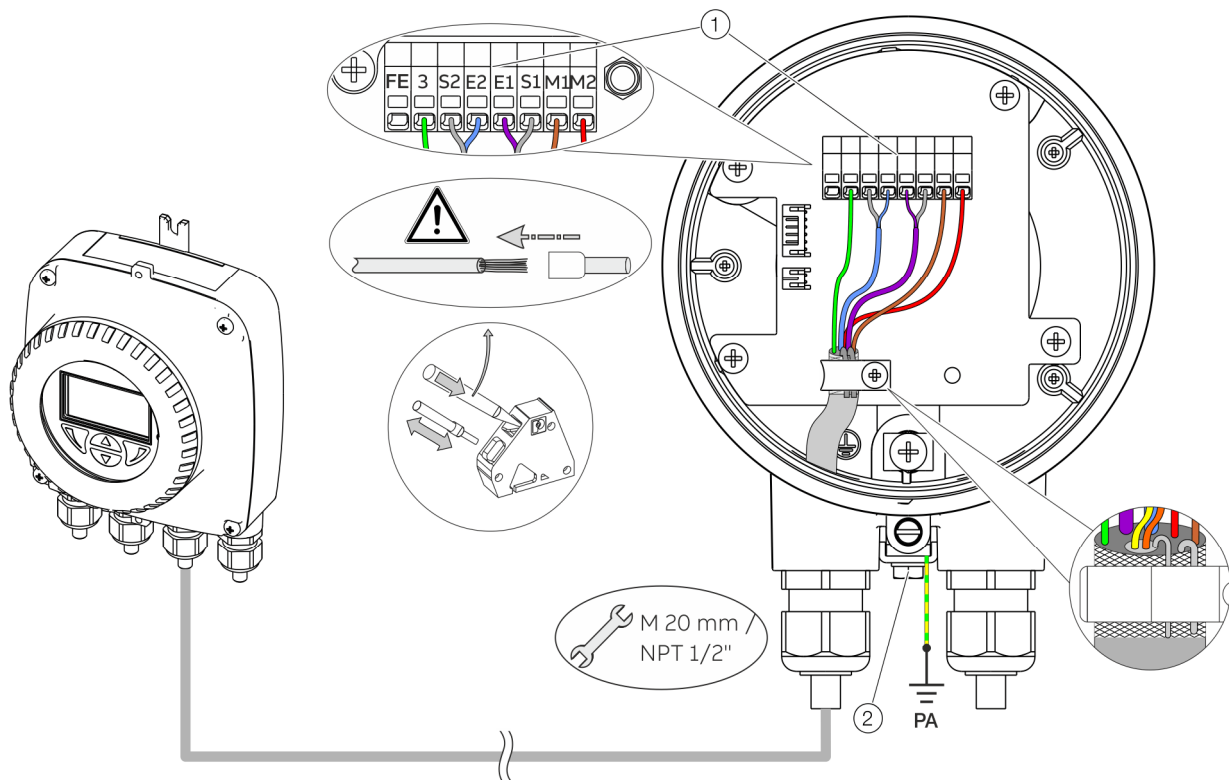
A circuit breaker with a maximum rated current of 16 A must be installed in the power supply line.

The wire cross-sectional area of the power supply cable and the circuit breaker used must comply with VDE 0100 and must be dimensioned in accordance with the current consumption of the flowmeter measuring system. The cables must comply with IEC 227 and/or IEC 245.

The circuit breaker must be located near the device and marked as being associated with the device.

Connect the transmitter and sensor to functional earth.

Flowmeter sensor



① Terminals for signal cable

② Terminal for equipotential bonding

Figure 43: Sensor connection for remote mount design (example)

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

Compliance with the information below is required for making the electrical connections:

- Route the signal cable into the housing as shown.
- Connect the cables in accordance with the connection diagrams. Connect the cable shields (if applicable) to the provided grounding clamp.
- Use ferrules for making the connections.
- Use suitable plug(s) to seal the cable entries that are not used.

6 Commissioning

6 Commissioning

6.1 Safety instructions

⚠ CAUTION
Risk of burns due to hot measuring media
 The device surface temperature may exceed 70 °C (158 °F), depending on the measuring medium temperature!

- Before starting work on the device, make sure that it has cooled sufficiently.

Aggressive or corrosive media may lead to the damage of wetted parts of the sensor. As a result, measuring medium under pressure can leak out.

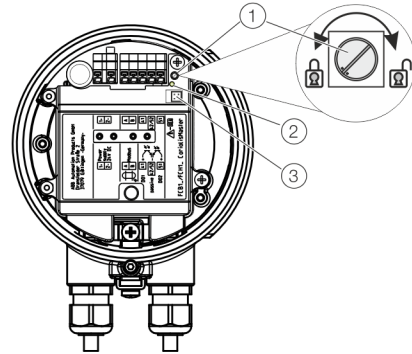
Wear to the flange gasket or process connection gaskets (e.g. pipe fitting, Tri-clamp, etc.) may caused a pressurized measuring medium to escape.

When using internal flat gaskets, they can become brittle through CIP- / SIP processes.

If pressure surges above the permissible nominal pressure of the device occur permanently during operation, this may affect the service life of the device.

If there is a chance that safe operation is no longer possible, take the device out of operation and secure it against unintended startup.

6.2 Write-protection switch, service LED and local operator interface



- ① Write-protection switch
- ② Service LED
- ③ Local operator interface

Figure 44: Write-protection switch, service LED, local operator interface

Write-protection switch

With write protection activated, device parameter settings cannot be modified via the local operator interface or the local display. Turn the write-protection switch clockwise to deactivate write protection and turn it counterclockwise to activate write protection.

Service LED

The service LED that indicates the operating state of the device is located in the terminal box for the sensor.

Service LED	Description
Flashing rapidly (100 ms)	Start-up procedure in progress; device is not ready for operation
Permanently lit	Device is running; no critical error
Flashing slowly (1 second)	No critical error has occurred; see Diagnosis / error messages on page 68

6.3 Checks prior to commissioning

The following points must be checked before commissioning the device:

- Correct wiring in accordance with **Electrical connections** on page 26.
- Correct grounding of the sensor.
- The ambient conditions must meet the requirements set out in the specification.
- The power supply must meet the requirements set out on the name plate.

Remote mount design – check sensor and transmitter for correct assignment

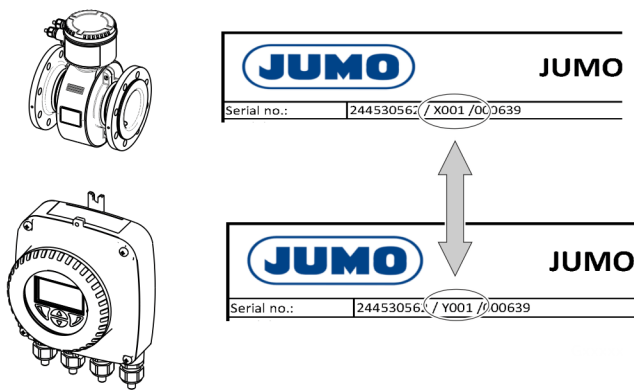
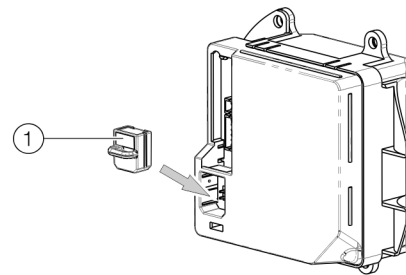


Figure 45: Assignment of sensor to transmitter

The correct assignment between sensors and transmitters has to be ensured for devices featuring a remote mount design. Devices that form a pair have the same numeric suffix and this is indicated on the rating plate; e. g., the X001 sensor is paired with the Y001 transmitter, and the X002 sensor is paired with the Y002 transmitter.



① SensorMemory

Figure 46: SensorMemory

The SensorMemory is a removable memory module located at the rear of the transmitter electronics module.

The part number and the numeric suffix are indicated on the SensorMemory module.

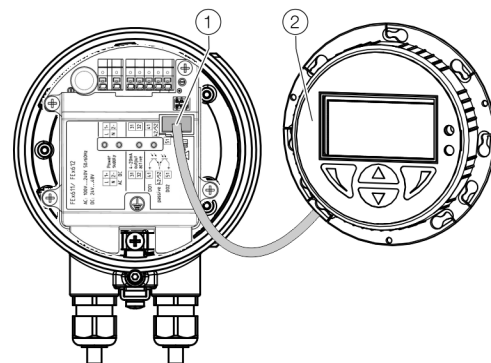
The numeric suffix is also indicated on the rating plate of the corresponding sensor.

The numeric suffix for the SensorMemory module has to be consistent with the numeric suffix for the sensor.

6.4 Parameterization of the device

Commissioning and operation of the JUMO flowTRANS MAG S10/H10 can be carried out via the integrated LCD display (optional; see **Parameterization via the menu function Easy Setup** on page 38).

Parameter settings using the optional LCD display



① Connector for LCD display

② LCD display

Figure 47: Optional LCD display

Note

For devices without an LCD display, an accessory LCD display is available that can be connected (part number: 00706388) to make the parameter settings.

6 Commissioning

6.5 Factory settings

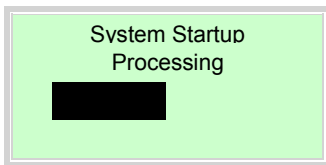
The device can be factory parameterized to customer specifications upon request. If no customer information is available, the device is delivered with factory settings.

Parameter	Factory setting
Qv Max 1	Q_{maxDN} (see Table Measuring range table on page 41)
Sensor Tag	None
TX Location TAG	None
Unit Volumeflow Qv	l/min
Unit Vol. Totalizer	l (Liter)
Pulses per Unit	1
Pulse Width	100 ms
Damping	1 s
Digital output 41 / 42	Impulses for Forward & Reverse
Digital output 51 / 52	Flow Direction
Current output	4-20mA FWD/REV
Curr.Out at Alarm	High Alarm, 21.8 mA
Current at flow > 20.5 mA	Off
Low Flow Cut Off	1 %
EPD Alarm	Off

6.6 Switching on the power supply

- Switch on the power supply.

The LCD display shows the following display during the startup process:

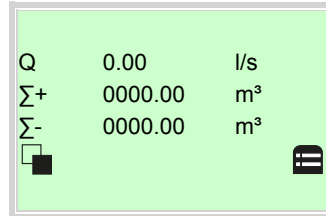


The process display is displayed after the startup process.

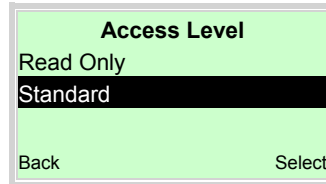
6.7 Parameterization via the menu function Easy Setup

Settings for the most common parameters are summarized in the 'Easy Setup' menu. This menu provides the fastest way to configure the device.

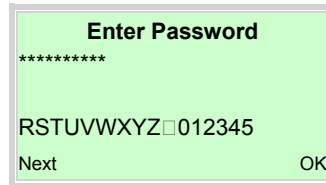
The following section describes parameterization via the 'Easy Setup' menu function.



- Switch to the configuration level with

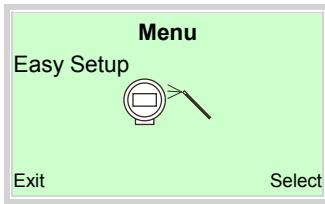


- Use / to select 'Standard'.
- Confirm the selection with .

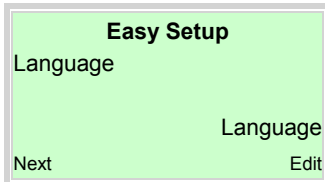


- Use to confirm the password. A password is not available as factory default; you can continue without entering a password.

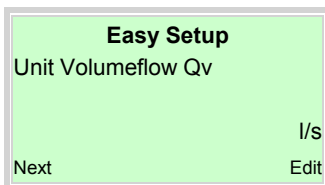
6 Commissioning



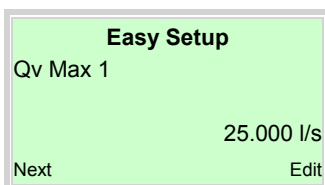
5. Use / to select 'Easy Setup'.
6. Confirm the selection with .



7. Use to call up the edit mode.
8. Use / to select the desired language.
9. Confirm the selection with .



10. Use to call up the edit mode.
11. Use / to select the desired unit for the volume flow rate.
12. Confirm the selection with .



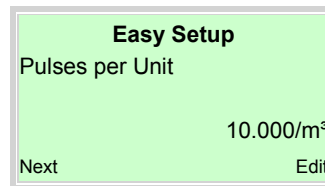
13. Use to call up the edit mode.
14. Use / to set the desired upper range value.
15. Confirm the selection with .

The device is factory calibrated to the flow range end value $Q_{\max DN}$, unless other customer information is available. The ideal upper range values are those which correspond to a flow velocity of 2 to 3 m/s (0.2 to $0.3 \times Q_{\max DN}$)

The adjustable upper range values are listed in the table at **Measuring range table** on page 41.



16. Use to call up the edit mode.
17. Use / to select the desired unit for the volume totalizer.
18. Confirm the selection with .

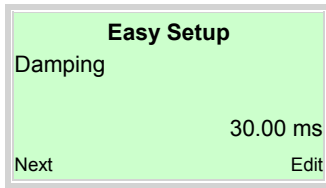


19. Use to call up the edit mode.
20. Use / to select the desired pulse per unit for the pulse output.
21. Confirm the selection with .

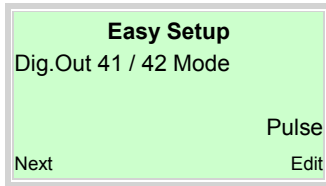


22. Use to call up the edit mode.
23. Use / to select the desired pulse width for the pulse output..
24. Confirm the selection with .

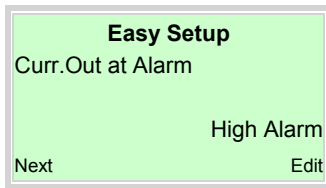
6 Commissioning



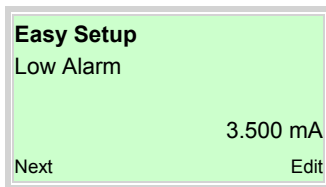
25. Use to call up the edit mode.
26. Use / to set the desired damping.
27. Confirm the selection with .



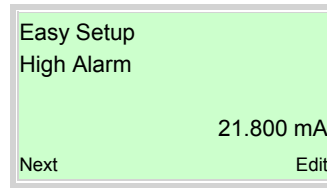
28. Use to call up the edit mode.
29. Use / to select the desired operating mode Off, Logic, Pulse, Frequency for the digital output.
30. Confirm the selection with .



31. Use to call up the edit mode.
32. Use / to select the desired alarm mode.
33. Confirm the selection with .



34. Use to call up the edit mode.
35. Use / to set the desired current for Low Alarm.
36. Confirm the selection with .



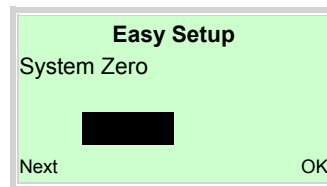
37. Use to call up the edit mode.
38. Use / to set the desired current for High Alarm.
39. Confirm the selection with .

Zero point adjustment of the flowmeter

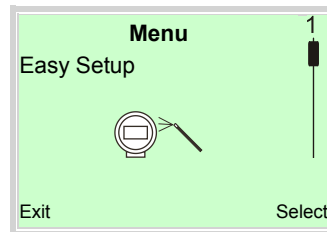
Note

Prior to starting the zero point adjustment, make sure that:

- There is no flow through the sensor (close all valves, shut-off devices etc.)
- The sensor is completely filled with the medium to be measured



- Use to start automatic adjustment of the zero point for the system.



Once all parameter have been set, the main menu appears again. The most important parameters are now set.

40. Use to switch to the process display.

6.8 Measuring range table

The full-scale value can be set between $0.02 \times Q_{\max \text{ DN}}$ and $2 \times Q_{\max \text{ DN}}$.

Nominal diameter		Lower range value	$Q_{\max \text{ DN}}$	Upper range value
DN	in.	$0.02 \times Q_{\max \text{ DN}} (\approx 0.2 \text{ m/s})$	0 to $\approx 10 \text{ m/s}$	$2 \times Q_{\max \text{ DN}} (\approx 20 \text{ m/s})$
3	1/10	0.08 l/min (0.02 US gal/min)	4 l/min (1.06 US gal/min)	8 l/min (2.11 US gal/min)
4	5/32	0.16 l/min (0.04 US gal/min)	8 l/min (2.11 US gal/min)	16 l/min (4.23 US gal/min)
6	1/4	0.4 l/min (0.11 US gal/min)	20 l/min (5.28 US gal/min)	40 l/min (10.57 US gal/min)
8	5/16	0.6 l/min (0.16 US gal/min)	30 l/min (7.93 US gal/min)	60 l/min (15.85 US gal/min)
10	3/8	0.9 l/min (0.24 US gal/min)	45 l/min (11.9 US gal/min)	90 l/min (23.78 US gal/min)
15	1/2	2 l/min (0.53 US gal/min)	100 l/min (26.4 US gal/min)	200 l/min (52.8 US gal/min)
20	3/4	3 l/min (0.79 US gal/min)	150 l/min (39.6 US gal/min)	300 l/min (79.3 US gal/min)
25	1	4 l/min (1.06 US gal/min)	200 l/min (52.8 US gal/min)	400 l/min (106 US gal/min)
32	1 1/4	8 l/min (2.11 US gal/min)	400 l/min (106 US gal/min)	800 l/min (211 US gal/min)
40	1 1/2	12 l/min (3.17 US gal/min)	600 l/min (159 US gal/min)	1200 l/min (317 US gal/min)
50	2	1.2 m ³ /h (5.28 US gal/min)	60 m ³ /h (264 US gal/min)	120 m ³ /h (528 US gal/min)
65	2 1/2	2.4 m ³ /h (10.57 US gal/min)	120 m ³ /h (528 US gal/min)	240 m ³ /h (1057 US gal/min)
80	3	3.6 m ³ /h (15.9 US gal/min)	180 m ³ /h (793 US gal/min)	360 m ³ /h (1585 US gal/min)
100	4	4.8 m ³ /h (21.1 US gal/min)	240 m ³ /h (1057 US gal/min)	480 m ³ /h (2113 US gal/min)
125	5	8.4 m ³ /h (37 US gal/min)	420 m ³ /h (1849 US gal/min)	840 m ³ /h (3698 US gal/min)
150	6	12 m ³ /h (52.8 US gal/min)	600 m ³ /h (2642 US gal/min)	1200 m ³ /h (5283 US gal/min)
200	8	21.6 m ³ /h (95.1 US gal/min)	1080 m ³ /h (4755 US gal/min)	2160 m ³ /h (9510 US gal/min)
250	10	36 m ³ /h (159 US gal/min)	1800 m ³ /h (7925 US gal/min)	3600 m ³ /h (15850 US gal/min)
300	12	48 m ³ /h (211 US gal/min)	2400 m ³ /h (10567 US gal/min)	4800 m ³ /h (21134 US gal/min)
350	14	66 m ³ /h (291 US gal/min)	3300 m ³ /h (14529 US gal/min)	6600 m ³ /h (29059 US gal/min)
400	16	90 m ³ /h (396 US gal/min)	4500 m ³ /h (19813 US gal/min)	9000 m ³ /h (39626 US gal/min)
450	18	120 m ³ /h (528 US gal/min)	6000 m ³ /h (26417 US gal/min)	12000 m ³ /h (52834 US gal/min)
500	20	132 m ³ /h (581 US gal/min)	6600 m ³ /h (29059 US gal/min)	13200 m ³ /h (58117 US gal/min)
600	24	192 m ³ /h (845 US gal/min)	9600 m ³ /h (42268 US gal/min)	19200 m ³ /h (84535 US gal/min)
700	28	264 m ³ /h (1162 US gal/min)	13200 m ³ /h (58118 US gal/min)	26400 m ³ /h (116236 US gal/min)
760	30	312 m ³ /h (1374 US gal/min)	15600 m ³ /h (68685 US gal/min)	31200 m ³ /h (137369 US gal/min)
800	32	360 m ³ /h (1585 US gal/min)	18000 m ³ /h (79252 US gal/min)	36000 m ³ /h (158503 US gal/min)
900	36	480 m ³ /h (2113 US gal/min)	24000 m ³ /h (105669 US gal/min)	48000 m ³ /h (211337 US gal/min)
1000	40	540 m ³ /h (2378 US gal/min)	27000 m ³ /h (118877 US gal/min)	54000 m ³ /h (237754 US gal/min)
1050	42	616 m ³ /h (2712 US gal/min)	30800 m ³ /h (135608 US gal/min)	61600 m ³ /h (271217 US gal/min)
1100	44	660 m ³ /h (3038 US gal/min)	33000 m ³ /h (151899 US gal/min)	66000 m ³ /h (290589 US gal/min)
1200	48	840 m ³ /h (3698 US gal/min)	42000 m ³ /h (184920 US gal/min)	84000 m ³ /h (369841 US gal/min)
1400	54	1080 m ³ /h (4755 US gal/min)	54000 m ³ /h (237755 US gal/min)	108000 m ³ /h (475510 US gal/min)
1500	60	1260 m ³ /h (5548 US gal/min)	63000 m ³ /h (277381 US gal/min)	126000 m ³ /h (554761 US gal/min)
1600	66	1440 m ³ /h (6340 US gal/min)	72000 m ³ /h (317006 US gal/min)	144000 m ³ /h (634013 US gal/min)
1800	72	1800 m ³ /h (7925 US gal/min)	90000 m ³ /h (396258 US gal/min)	180000 m ³ /h (792516 US gal/min)
2000	80	2280 m ³ /h (10039 US gal/min)	114000 m ³ /h (501927 US gal/min)	228000 m ³ /h (1003853 US gal/min)

7 Operation

7 Operation

7.1 Safety instructions

⚠ CAUTION

Risk of burns due to hot measuring media

The device surface temperature may exceed 70 °C (158 °F), depending on the measuring medium temperature!

- Before starting work on the device, make sure that it has cooled sufficiently.

Aggressive or corrosive media may lead to the damage of wetted parts of the sensor. As a result, measuring medium under pressure can leak out.

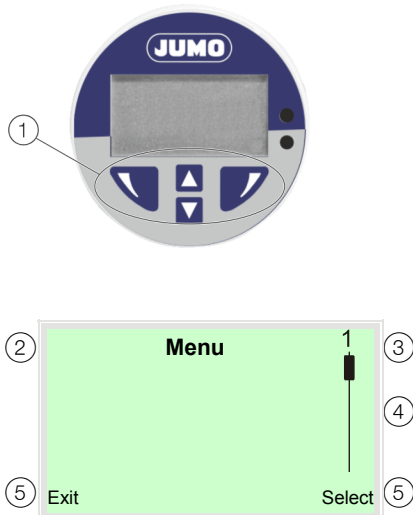
Wear to the flange gasket or process connection gaskets (e.g. pipe fitting, Tri-clamp, etc.) may caused a pressurized measuring medium to escape.

When using internal flat gaskets, they can become brittle through CIP- / SIP processes.

If pressure surges above the permissible nominal pressure of the device occur permanently during operation, this may affect the service life of the device.

If there is a chance that safe operation is no longer possible, take the device out of operation and secure it against unintended startup.

7.2 Menu navigation







- ① Control buttons for menu navigation
- ② Indicated menu name
- ③ Indicated menu number
- ④ Marker for indicating the relative position within the menu
- ⑤ Function currently assigned to the control buttons  and 



Figure 48: LCD display

The LCD indicator has capacitive operating buttons. These enable you to control the device through the closed housing cover.


Note


The transmitter automatically calibrates the capacitive buttons on a regular basis. If the cover is opened during operation, the sensitivity of the buttons is firstly increased to enable operating errors to occur. The button sensitivity will return to normal during the next automatic calibration.

You can use the  or  operating buttons to browse through the menu or select a number or character within a parameter value.

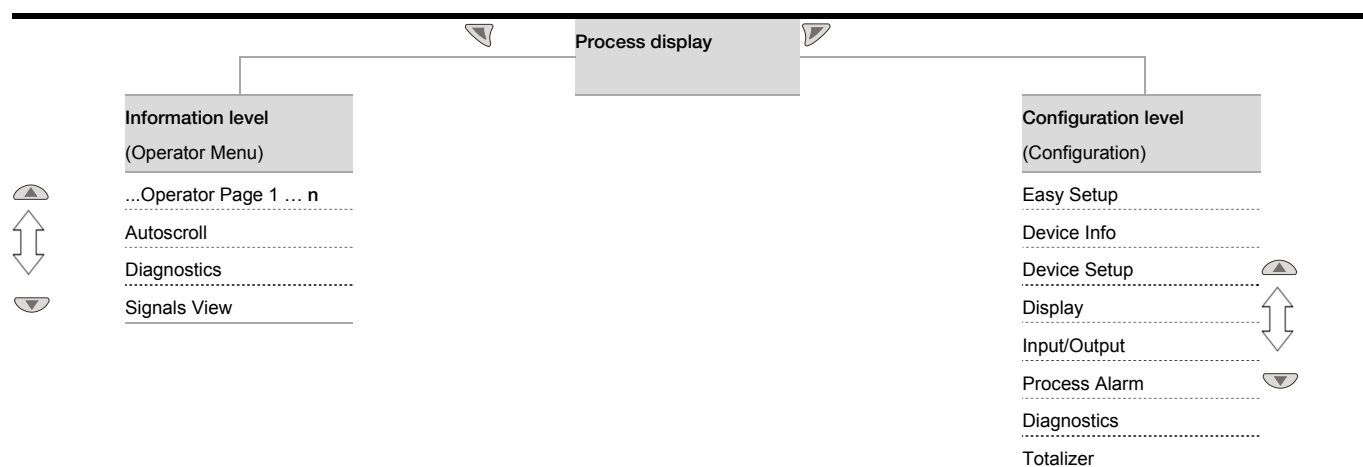
Different functions can be assigned to the  and  operating buttons. The function ⑤ that is currently assigned to them is shown on the LCD display.

Control button functions

	Meaning
Exit	Exit menu
Back	Go back one submenu
Cancel	Cancel a parameter entry
Next	Select the next position for entering numerical and alphanumeric values

	Meaning
Select	Select submenu / parameter
Edit	Edit parameter
OK	Save parameter entered

7.3 Menu levels



Process display

The process display shows the current process values.

There are two menu levels under the process display.

Information level (Operator Menu)

The information level contains the parameters and information that are relevant for the operator.

The device configuration cannot be changed on this level.

Configuration level (Configuration)

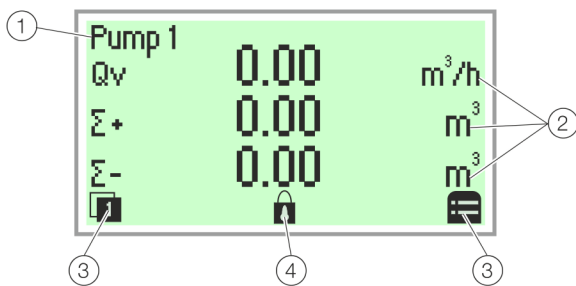
The configuration level contains all the parameters required for device commissioning and

configuration. The device configuration can be changed on this level. For detailed information on the parameters, see chapter

Parameter descriptions on page 53.

7 Operation

7.3.1 Process display










- ① Measuring point tagging
- ② Current process values
- ③ 'Button function' symbol
- ④ 'Parameterization protected' symbol

Figure 49: Process display (example)

The process display appears on the LCD display when the device is powered on. It shows information about the device and current process values.

The way in which the current process values are shown can be adjusted on the configuration level.


The symbols at the bottom of the process display are used to indicate the functions of the operating buttons  and , in addition to other information.

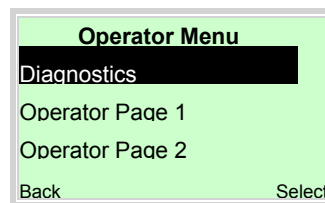
Symbol	Description
 / 	Call up information level. When Autoscroll mode is activated, the  icon appears here and the operator pages are automatically displayed one after the other.
	Call up configuration level.
	The device is protected against changes in the parametrization.




7.3.2 Switching to the information level (operator menu)

On the information level, the operator menu can be used to display diagnostic information and choose which operator pages to display.



1. Open the  using Operator Menu.



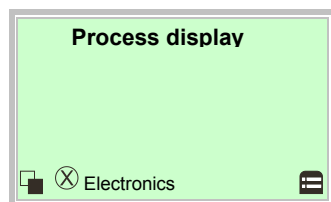
2. Select the desired submenu using  / .
3. Confirm the selection with .

Menu	Description
... / Operator Menu	
Diagnostics	Selection of sub-menu 'Diagnostics'; see also Error messages on the LCD display on page 45.
Operator Page 1 to n	Selection of operator page to be displayed.
Autoscroll	When 'Autoscroll' is activated, automatic switching of the operator pages is initiated on the process screen.
Signals View	Selection of submenu 'Signals View' (only for service purposes).

7.3.3 Error messages on the LCD display

In the event of an error, a message consisting of a symbol and text (e.g. Electronics) appears at the bottom of the process screen.

The text displayed provides information about the area in which the error has occurred.



The error messages are divided into four groups in accordance with the NAMUR classification scheme. The group assignment can only be changed using a DTM or EDD:

Symbol	Description
	Error / failure
	Function check
	Outside of the specification
	Maintenance required

The error messages are also divided into the following areas:

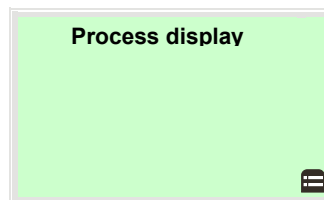
Range	Description
Operation	Error / alarm due to the current operating conditions.
Sensor	Error / alarm of the flowmeter sensor.
Electronics	Error / alarm of the electronics.
Configuration	Error / alarm due to device configuration.

Note

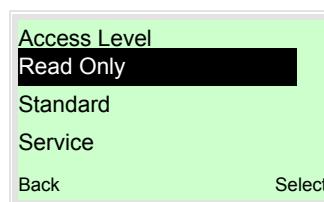
For a detailed description of errors and troubleshooting instructions, please see **Diagnosis / error messages** on page 68.

7.3.4 Switching to the configuration level (parameterization)

The device parameters can be displayed and changed on the configuration level.



1. Use to go to the configuration level.



2. Use / to select the required access level.
3. Use to confirm your selection.

Note

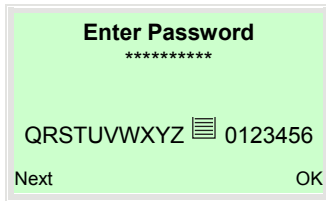
There are three access levels. A password can be specified for the "Standard" level.


There is no factory default password.

Access Level	Description
Read Only	All parameters are blocked. Parameters can only be read and not modified.
Standard	All parameter settings can be changed.
Service	The Service menu is reserved solely for the customer service department of the manufacturer.



7 Operation

Once you have logged on to the corresponding access level, you can edit or reset the password. Resetting ("No password defined" state) is done by selecting "☰" as the password.



4. Enter the corresponding password. No factory default password has been set; you can access the configuration level without entering a password. The selected access level remains active for 3 minutes. Within this period you can toggle between the process display and the configuration level without re-entering the password.
5. Use  to confirm the password.

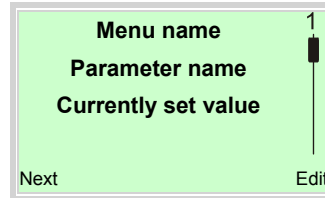
The LCD display now indicates the first menu item on the configuration level.


6. Use  /  to select a menu.
7. Use  to confirm your selection.

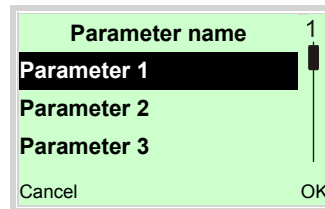
7.3.5 Selecting and changing parameters




Entry from table

When an entry is made from a table, a value is selected from a list of parameter values.



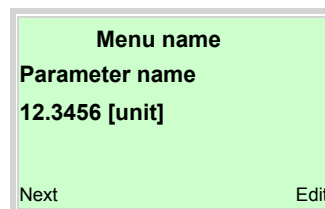
1. Select the parameters you want to set in the menu.
2. Use  to call up the list of available parameter values. The parameter value that is currently set is highlighted.




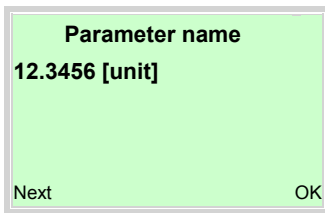
3. Select the desired value using  / .
 4. Confirm the selection with .
- This concludes the procedure for selecting a parameter value.

Numerical entry

When a numerical entry is made, a value is set by entering the individual decimal positions.



1. Select the parameters you want to set in the menu.
2. Use  to call up the parameter for editing. The decimal place that is currently selected is highlighted.

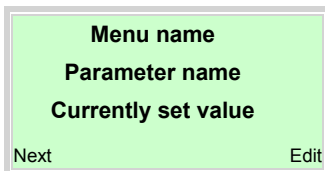


3. Use to select the decimal place to change.
4. Use / to set the desired value.
5. Use to select the next decimal place.
6. If necessary select and set additional decimal places in accordance with steps 3 to 4.
7. Use to confirm your setting.

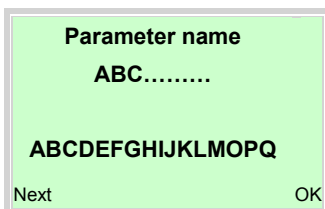
This concludes the procedure for changing a parameter value.

Alphanumeric entry

When an alphanumeric entry is made, a value is set by entering the individual decimal positions.



1. Select the parameters you want to set in the menu.
2. Use to call up the parameter for editing. The decimal place that is currently selected is highlighted.



3. Use to select the decimal place to change.
4. Use / to set the desired value.
5. Use to select the next decimal place.
6. If necessary select and set additional decimal places in accordance with steps 3 to 4.
7. Use to confirm your setting.

This concludes the procedure for changing a parameter value.

Exiting the setup

For some menu items, values must be entered. If you don't want to change the parameter, you can exit the menu as described below.

1. Pressing (Next) repeatedly moves the cursor to the right. Once the cursor reaches the end position, 'Cancel' is displayed in the lower right of the screen.
2. terminates editing and exits the menu item. Use to return to the start.

Note

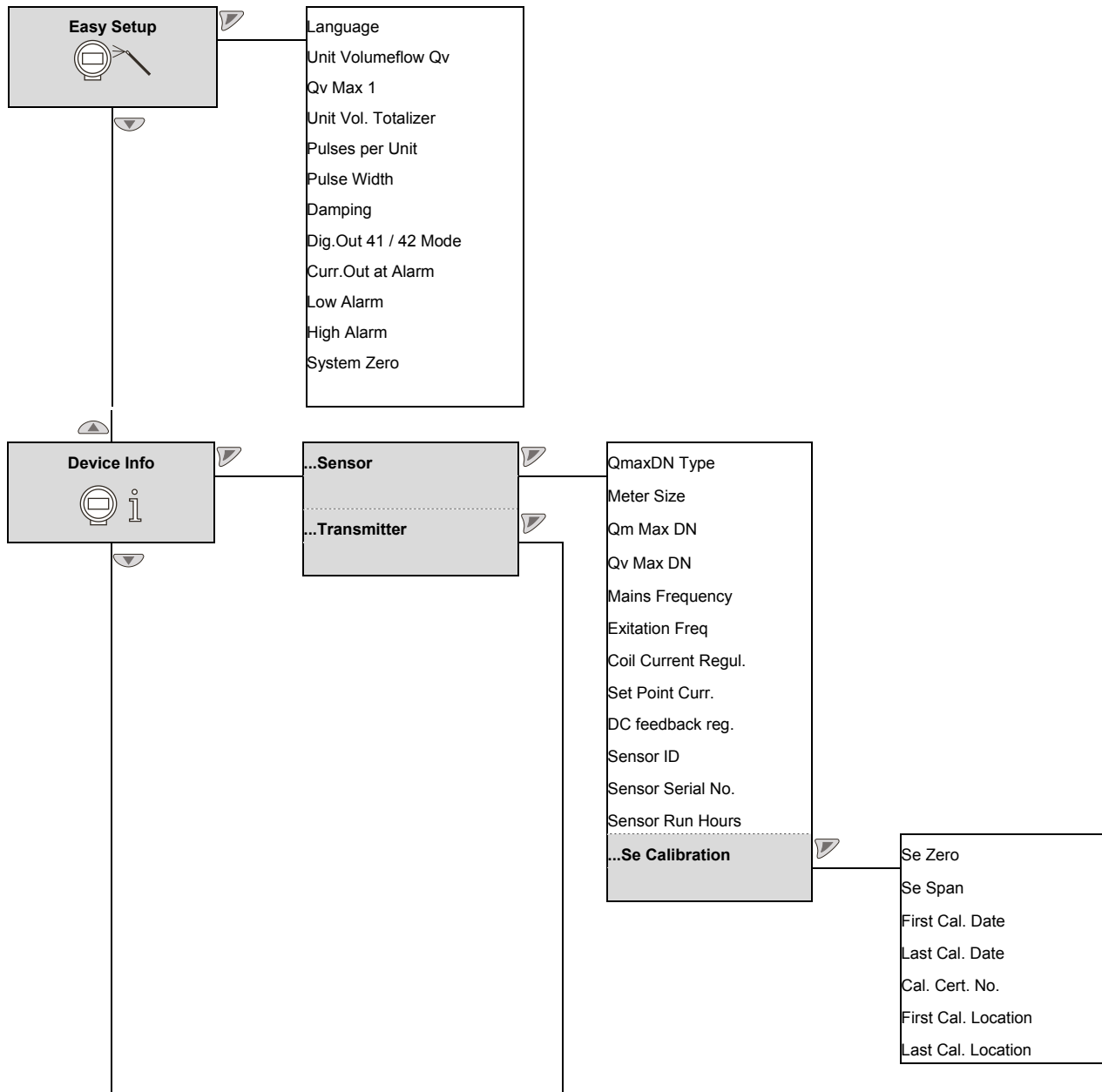
The LCD display automatically returns to the process display three minutes after the last button has been actuated.

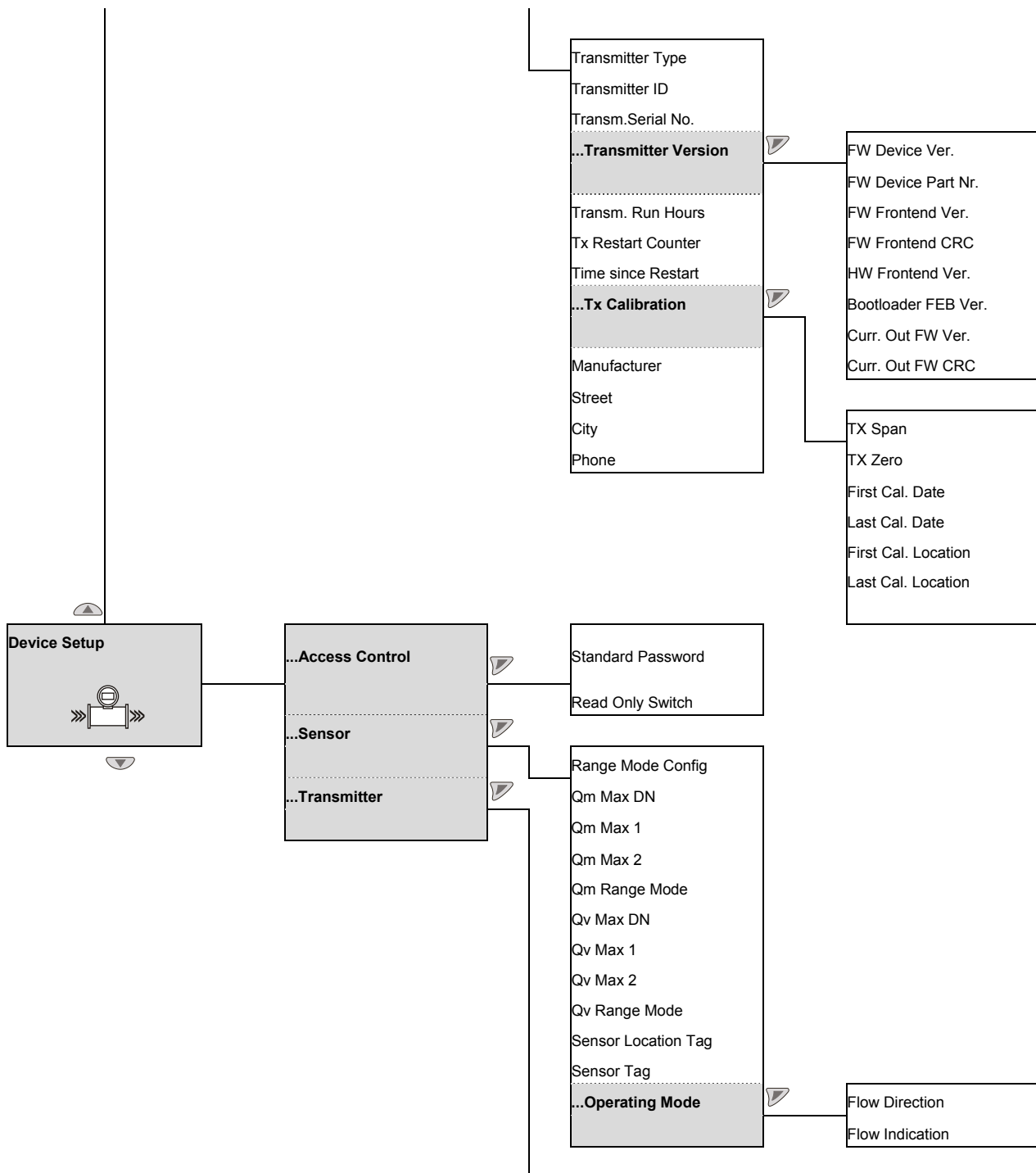
7 Operation

7.4 Parameter overview

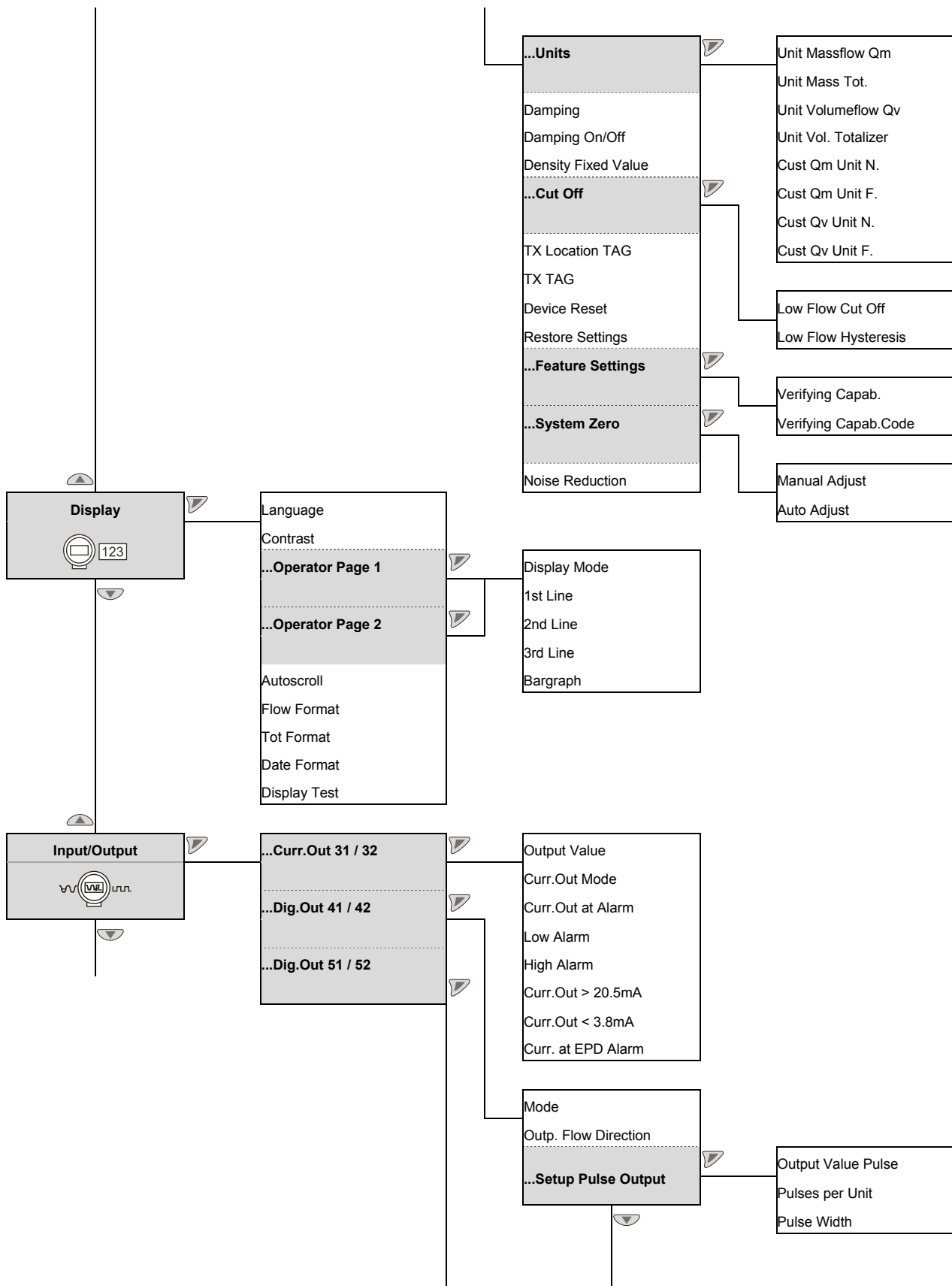
Note

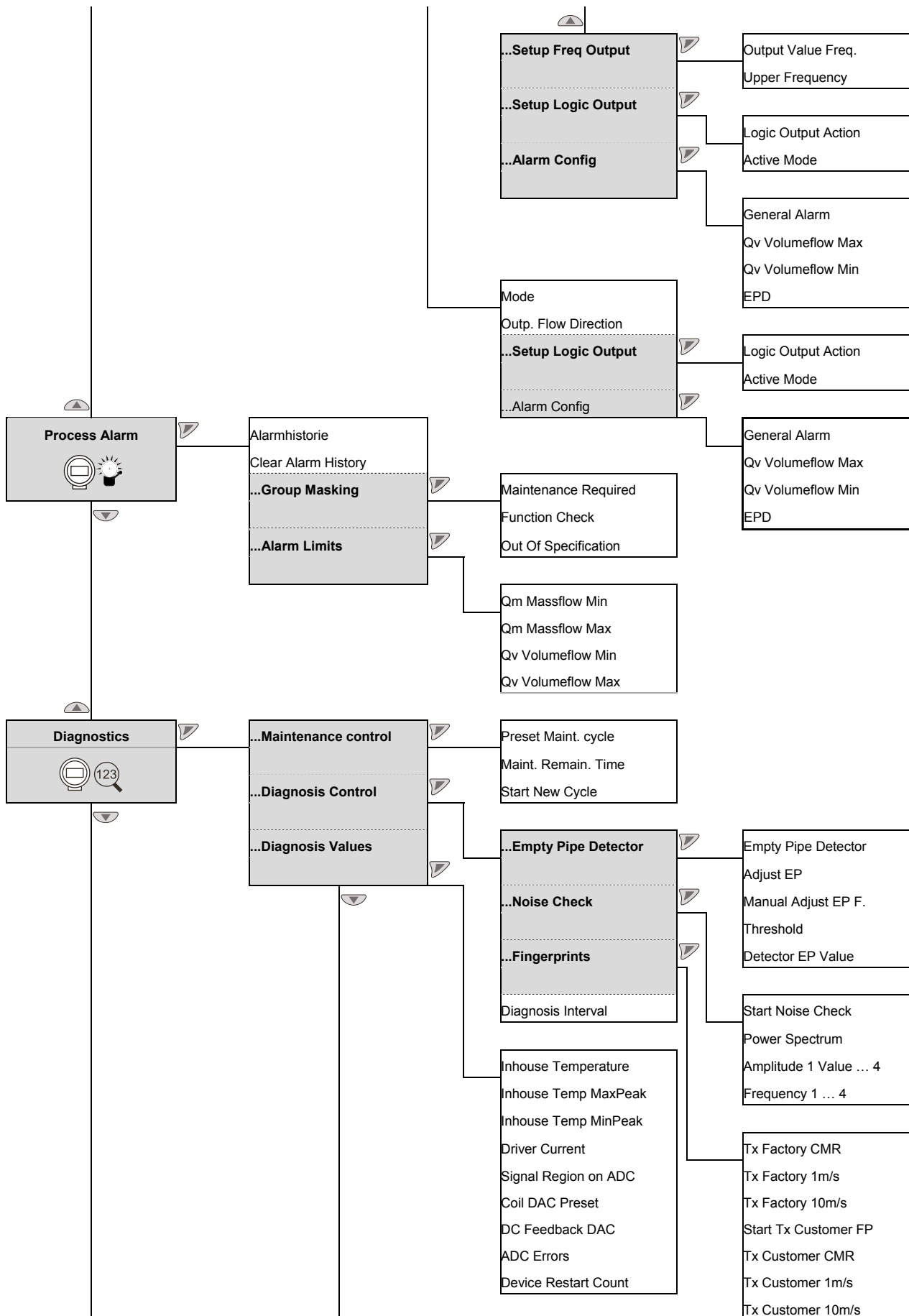
This overview of parameters shows all the menus and parameters available on the device. Depending on the version and configuration of the device, not all of the menus and parameters may be visible on it.



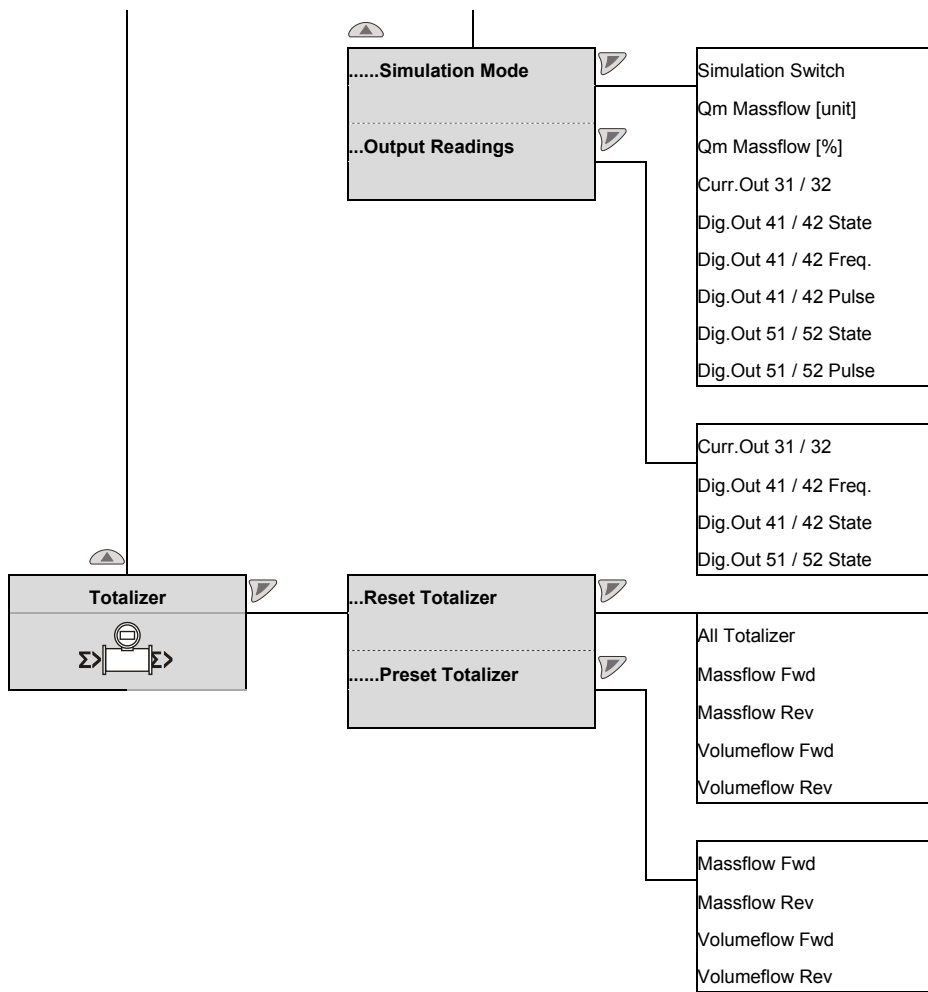


7 Operation





7 Operation



7.5 Parameter descriptions

7.5.1 Available units

For certain parameters it is possible to choose among the following units.

Note

The 'Code' column indicates the value to which the corresponding parameter must be set, e.g. using the communications interface.

Table 1: Units for the volume flow

Selection	Code	Description
m ³ /s	13	Cubic meters per second
m ³ /min	14	Cubic meters per minute
m ³ /h	15	Cubic meters per hour
m ³ /d	16	Cubic meters per day
ft ³ /s	29	Cubic feet per second
ft ³ /min	30	Cubic feet per minute
ft ³ /h	31	Cubic feet per hour
ft ³ /d	32	Cubic feet per day
ml/s	46	Milliliters per second
ml/min	47	Milliliters per minute
l/s	48	Liters per second
l/min	49	Liters per minute
l/h	50	Liters per hour
l/d	51	Liters per day
hl/h	54	Hectoliters per hour
Ml/d	62	Megaliters per day
ugal/s	71	US gallons per second
ugal/min	72	US gallons per minute
ugal/h	73	US gallons per hour
ugal/d	74	US gallons per day
Mugal/d	82	Mega US gallons per day
igal/s	91	Imperial gallons per second
igal/min	92	Imperial gallons per minute
igal/h	93	Imperial gallons per hour
lgal/d	94	Imperial gallons per day
bbl/s	112	Oil barrels per second
bbl/min	113	Oil barrels per minute
bbl/h	114	Oil barrels per hour
bbl/d	115	Oil barrels per day
bls/s	130	Brew barrels per second
bls/min	131	Brew barrels per minute
bls/h	132	Brew barrels per hour
bls/d	133	Brew barrels per day
xx/yy	254	User-defined unit

Table 2: Units for the mass flow

Selection	Code	Description
g/s	1	Grams per second
g/min	2	Grams per minute
g/h	3	Grams per hour
g/d	4	Grams per day
kg/s	5	Kilograms per second
kg/min	6	Kilograms per minute
kg/h	7	Kilograms per hour
kg/d	8	Kilograms per day
lb/s	9	Pounds (avdp) per second
lb/min	10	Pounds (avdp) per minute
lb/h	11	Pounds (avdp) per hour
lb/d	12	Pounds (avdp) per day
t/min	30	Metric tons per minute
t/h	31	Metric tons per hour
t/d	32	Metric tons per day
xx/yy	254	User-definable unit

Table 3: Units for the mass totalizer


Selection	Code	Description
kg	2	Kilograms
g	3	Grams
t	5	Tons (metric)
Pounds	8	Pounds (advp)
xx/yy	254	User-definable unit

Table 4: Units for the volume totalizer

Selection	Code	Description
m ³	4	Cubic meters
ft ³	7	Cubic feet
ml	11	Milliliters
l	13	Liters
hl	14	Hectoliters
ugal	20	US gallons
igal	21	Imperial gallons
bbl	22	Barrels (petroleum, USA)
bls	31	Barrels (beer, USA)
xx/yy	254	User-definable unit



7 Operation


7.5.2 Menu: Easy Setup

Menu / Parameters	Description
Easy Setup	
Language	Used to select the menu language (Deutsch, English, Französisch, Spanisch, Italienisch, Chinesisch, Portugiesisch).
Unit Volumeflow Qv	Used to select the unit for the volumetric flow rate (e. g. for the parameters QvMax / QvMaxDN and for the corresponding process value). Default setting: l/min See Table Table 1: Units for the volume flow on page 53.
Qv Max 1	Used to set the full-scale value (measuring range = 0 to Qv Max 1) for the upstream and downstream volumetric flow rate. Default setting: $1 \times Q_{\text{maxDN}}$
Unit Vol. Totalizer	Used to select the unit for the volumetric meter and the pulse outputs. Default setting: l (liter) See Table Available units on page 53.
Pulses per Unit	Used to set the pulses per volumetric unit or per mass unit and the pulse width for the "Pulse" operating mode of the digital outputs. The pulse factor and pulse width are interdependent and are calculated dynamically (pulses per unit: 1 to 10000/s;
Pulse Width	pulse width: 0.1 to 2000 mS). Available only if a digital output has been configured as a pulse output and if volumetric flow or mass flow was selected as the process variable to be output.
Damping	Used to select the damping. The value set here (0.02 to 60 s) relates to 1 T (Tau). The value refers to the response time to a sudden flow rate step change. The damping affects the actual value on the LCD display and the current output. Default setting: 1 second
Dig.Out 41 / 42 Mode	Used to select the operating mode for the digital output 41 / 42. <ul style="list-style-type: none">• Off: Used to deactivate the digital output 41 / 42.• Logic: Digital output 41 / 42 is used as binary output (e. g. as alarm output).• Pulse: Digital output 41 / 42 is used as pulse output. In pulse mode, pulses per unit are output (e. g. 1 pulse per m³).• Frequency: Digital output 41 / 42 is used as frequency output. In frequency mode, a frequency proportional to the flow rate is output. The maximum frequency can be configured according to the full-scale value. Default setting: Pulse
Upper Frequency	Used to set the frequency for the full-scale value for the "Frequency" operating mode of the digital outputs. The entered value (0 to 10500 Hz) corresponds to 100 % flow. Available only if a digital output has been configured as a frequency output and if volumetric flow or mass flow was selected as the process variable to be output.
Curr.Out at Alarm	Used to select the state of the current output in the case of a fault. The output "Low Alarm" or "High Alarm" current is configured in the subsequent menu.
Low Alarm	Used to set the current (3.5 to 3.6 mA) for low alarm.
High Alarm	Used to set the current (21 to 22.6 mA) for high alarm.
System Zero	Used to start the automatic zero point calibration process with  . The automatic zero point calibration process takes approx. 60 seconds. Note Prior to starting the zero point calibration process, make sure that: <ul style="list-style-type: none">• There is no flow through the sensor (close all valves, shut-off devices, etc.).• The sensor is filled completely with the medium being measured.

7.5.3 Menu: Device Info



This menu is only used for displaying the device parameters. The parameters are displayed independently of the configured access level, but cannot be changed.

Menu / Parameters	Description
Device Info	
...Sensor	Used to select the "...Sensor" submenu with  .
...Transmitter	Used to select the "...Transmitter" submenu with  .

Device Info / ...Sensor	
QmaxDN Type	For your information only.
Meter Size	Nominal diameter of sensor.
Qm Max DN	This value indicates the maximum mass flow rate at a velocity of 10 m/s. This value is automatically determined by multiplying the selected nominal diameter with the set density.
Qv Max DN	This value indicates the maximum volumetric flow rate at a velocity of 10 m/s. This value is automatically determined based on the selected nominal diameter.
Mains Frequency	Line frequency for power supply.
Excitation Freq	The frequency used to operate the sensor solenoids.
Coil Current Regul.	Display for service purposes only.
Set Point Curr.	The current used to operate the sensor solenoids.
DC feedback reg.	Display for service purposes only.
Sensor ID	ID number of the sensor.
Sensor Serial No.	Serial number of the sensor.
Sensor Run Hours	Operating hours of the sensor.
...Se Calibration	Used to select the "...Se Calibration" submenu with  .

Device Info / ...Sensor / ...Se Calibration	
Se Span	Sensor calibration value (span) in upstream and downstream direction.
Se Zero	
First Cal. Date	Date of the first sensor calibration (calibration of new device).
Last Cal. Date	Date of the last sensor calibration.
Cal. Cert. No.	Identification (no.) of the relevant calibration certificate.
First Cal. Location	Location of the first sensor calibration.
Last Cal. Location	Location of the last sensor calibration.

7 Operation

Menu / Parameters	Description
Device Info / ...Transmitter	
Transmitter Type	Type of sensor, e. g. Fex610.
Transmitter ID	ID number of transmitter.
Transm.Serial No.	Serial number of transmitter.
...Transmitter Version	Used to select the "...Transmitter Version" submenu with  .
Transm. Run Hours	Operating hours of the transmitter.
Tx Restart Counter	Number of restarts (switching on and off of power supply) for the device.
Time since Restart	Operating hours of the device since the most recent restart.
...Tx Calibration	Used to select the "...Tx Calibration" submenu with  .
Manufacturer	Name of manufacturer.
Street	Manufacturer's address (street).
City	Manufacturer's address (city).
Phone	Manufacturer's address (telephone number).





Device Info / ...Transmitter / ...Transmitter Version

FW Device Ver.	Version and part number of the software package for the device.
FW Device Part Nr.	
FW Frontend Ver.	Version and checksum (CRC) of the software for the front end board (FEB).
FW Frontend CRC	
HW Frontend Ver.	Hardware version of the front end board (FEB).
Bootloader FEB Ver.	Bootloader version of the front end board (FEB).
Curr. Out FW Ver.	Version and checksum (CRC) of the software for the current output module.
Curr. Out FW CRC	





Device Info / ...Transmitter / ...Tx Calibration

TX Span	Transmitter calibration value.
TX Zero	
First Cal. Date	Date of the first transmitter calibration (calibration of new device).
Last Cal. Date	Date of the last transmitter calibration.
Cal. Cert. No.	Identification (no.) of the relevant calibration certificate.
First Cal. Location	Location of the first transmitter calibration.
Last Cal. Location	Location of the last transmitter calibration.

7.5.4 Menu: Device Setup

Menu / Parameters	Description
Device Setup	
...Access Control	Used to select the "...Access Control" submenu with  .
...Sensor	Used to select the "...Sensor" submenu with  .
...Transmitter	Used to select the "...Transmitter" submenu with  .
Device Setup / ...Access Control	
Standard Password	Used to enter / change the password for the "Standard" access level.
Read Only Switch	Used to indicate the position of the write-protection switch. Further information can be found in the chapter on Write-protection switch, service LED and local operator interface on page 36.
Device Setup / ...Sensor	
Range Mode Config	Used to activate the second measuring range for mass flow and volumetric flow. The setting can be made separately for the mass flow (Qm) and the volumetric flow (Qv). This enables you to quickly toggle between two measuring ranges (e. g. Qm max and Qm max2). The change-over occurs via the "Qm Range Mode" and "Qv Range Mode" parameters. <ul style="list-style-type: none"> • Disabled: Used to deactivate the second measuring range for mass flow and volumetric flow. • Qm and Qv: Used to activate the second measuring range for mass flow and volumetric flow. • Qm only: Used to activate the second measuring range for mass flow. • Qv only: Used to activate the second measuring range for volumetric flow.
Qm Max DN	Maximum mass flow rate for the selected nominal diameter at a velocity of 10 m/s. The value is set automatically based on the selected nominal diameter.
Qm Max 1	Used to set the full-scale value 1 (measuring range = 0 to Qm Max 1) for the upstream and downstream mass flow. Default setting: 1 x Q _{max} DN
Qm Max 2	Used to set the full-scale value 2 (measuring range = 0 to Qm Max 2) for the upstream and downstream mass flow. This value is also used for determining the corresponding percentage value. This parameter is only available if for the "Qm Range Mode" parameter setting the "Qm Max 2" value was selected.
Qm Range Mode	Used to manually toggle between the measuring ranges (Qm Max 1 / Qm Max 2) for measuring the mass flow. This parameter is only available if for the "Range Mode Config" parameter setting the Qm and Qv value or the Qm only value was selected.
Qv Max DN	Maximum volumetric flow rate for the selected nominal diameter at a velocity of 10 m/s. The value is set automatically based on the selected nominal diameter.
Qv Max 1	Used to set the full-scale value 1 (measuring range = 0 to Qv Max 1) for the upstream and downstream volumetric flow rate. Default setting: 1 x Q _{max} DN
Qv Max 2	Used to set the full-scale value 2 (measuring range = 0 to Qv Max 2) for the upstream and downstream volumetric flow rate. This value is also used for determining the corresponding percentage value. This parameter is only available if for the "Qv Range Mode" parameter setting the "Qv Max 2" value was selected. Default setting: 1 x Q _{max} DN
Qv Range Mode	Used to manually toggle between the measuring ranges (Qv Max 1 / Qv Max 2) for measuring the volumetric flow. This parameter is only available if for the "Range Mode Config" parameter setting the Qm and Qv value or the Qv only value was selected.
Sensor Location Tag	Used to enter the meter location for the sensor. Alphanumeric, max. 20 characters
Sensor Tag	Used to enter the TAG number of the sensor. Alphanumeric, max. 20 characters.
...Operating Mode	Used to select the "...Operating Mode" submenu with  .





7 Operation

Menu / Parameters	Description
Device Setup / ...Sensor / ...Operating Mode	
Flow Direction	Used to set the measuring direction for the sensor. The device measures and totalizes in both flow directions by default when the device is supplied. <ul style="list-style-type: none">• Forward & Reverse: Used to have the device measure in both flow directions.• Forward only: Used to have the device measure only in upstream direction.• Reverse only: Used to have the device measure only in downstream direction. Default setting: Forward & Reverse
Flow Indication	Used to invert the indicated flow direction. Default setting: Normal
Device Setup / ...Transmitter	
...Units	Used to select the "...Units" submenu with  .
Damping	Used to set the damping. The value set here (0.02 to 60 s) relates to 1 τ (Tau). The value refers to the response time to a sudden mass flow rate step change. Default setting: 1 second.
Damping On/Off	Used to activate the damping.
Density Fixed Value	If the flow is measured and displayed in units of mass, a fixed density value has to be included in the calculations. A density value from 0.01 to 5.0 g/cm ³ can be set to make the conversion to the mass flow rate.
...Cut Off	Used to select the "...Cut Off" submenu with  .
TX Location TAG	Used to enter the meter location for the transformer. Alphanumeric, max. 20 characters
TX TAG	Used to enter the TAG number for the transmitter. Alphanumeric, max. 20 characters
Device Reset	Used to restart the device. Takes the place of a brief interruption of the power supply.
Restore Settings	Used to reset all parameter settings accessible to users to the factory default settings.
...Feature Settings	Used to select the "...Feature Settings" submenu with  .
...System Zero	Used to select the "...System Zero" submenu with  .
Noise Reduction	Used to activate noise reduction. Filter: Off, filter 15, 30, 60 (15: low filtering action; 60: high filtering action) This setting influences the current output (damping). Default setting: Off




Menu / Parameters	Description
Device Setup / ...Transmitter / ...Units	
Unit Massflow Qm	Used to select the unit for the mass flow. Refer to Available units on page 53. The selection applies to the current mass flow display and to the parameters that relate to the mass flow such as QmMax and Qm _{Max} DN.
Unit Mass Tot.	Used to select the unit for the mass meter. Refer to Table 3: Units for the mass totalizer on page 53.
Unit Volumeflow Qv	Used to select the unit for the volumetric flow. Refer to Table 1: Units for the volume flow on page 53. The selection applies to the current volumetric flow display and to the parameters that relate to the volumetric flow rate such as QvMax and QvMaxDN.
Unit Vol. Totalizer	Used to select the unit for the volumetric meter. Refer to Table 4: Units for the volume totalizer on page 53.
Cust Qm Tot Unit F.	Used to enter the factor for a user-defined unit of mass. This factor relates to the flow per liter.
Cust Qm Tot Unit N.	Used to enter the name of the user-defined unit of mass.
Cust Qv Tot Unit F.	Used to enter the factor for a user-defined unit of volume. This factor relates to the flow per liter.
Cust Qv Unit N.	Used to enter the name of the user-defined unit of volume.
Device Setup / ...Transmitter / ...Cut Off	
Low Flow Cut Off	Used to set the switching threshold (0 to 10 %) for low flow suppression. If the flow rate is below the set switching threshold for low flow, the flow is not measured. The setting of 0 % deactivates the low flow suppression option. Default setting: 1.0 %
Low Flow Hysteresis	Used to set the hysteresis (0 to 50 %) for low flow suppression as defined by the "Low Flow Cut Off" parameter setting. Default setting: 20 %
Device Setup / ...Transmitter / ...Feature Settings	
Verifying Capab.	Used to indicate whether the verification function is active.
Verifying Capab.Code	Used to set the device-specific code to activate the verification function. To retrofit this option, contact the manufacturer or the sales organization. Restart the device after the code has been entered (e.g. via the "Device Reset" parameter or by briefly switching off the power supply).
Device Setup / ...System Zero	
Manual Adjust	Used to set the value for zero point calibration in % of Q _{max} DN. Manual setting: -50 to +50 mm/s
Auto Adjust	Used to start the automatic zero point calibration process with  . The automatic zero point calibration process takes approx. 60 seconds. Note Prior to starting the zero point calibration process, make sure that: <ul style="list-style-type: none"> • There is no flow through the sensor (close all valves, shut-off devices, etc.). • The sensor is filled completely with the medium being measured.

7 Operation





7.5.5 Menu: Display



Menu / Parameters	Description
Display	
Language	Used to select the menu language. (German, English, French, Spanish, Italian, Chinese, Portuguese)
Contrast	Used to set the contrast for the LCD display.
...Operator Page 1	Used to select the " ...Operator Page 1 " submenu with  .
...Operator Page 2	Used to select the " ...Operator Page 2 " submenu with  .
Autoscroll	If Autoscroll is activated, you can enable the "Autoscroll" function in the user menu (at information level). This will result in the operator pages being automatically shown on the process display in succession, in ten-second intervals. Manual scrolling through pre-configured operator pages as described above is no longer necessary. When the Autoscroll scroll mode is enabled, the  icon is shown on the bottom left-hand side of the display. Default setting: Disabled.
Flow Format	Used to select the decimal places (6 maximum) for displaying the corresponding process variables.
Tot Format	Default setting: X.XX.
Date Format	Used to select the display format for the date and time.
Display Test	"  " is used to start the display test for the LCD display. The display test process takes approx. 10 seconds. Various patterns are shown on the LCD display for checking the display.
Display / ...Operator Page 1 (n)	
Display Mode	Used to configure the corresponding operator page. One of the following versions can be selected: Off, Graph View, 1x4, 1x6A, 1x6A Bar, 1x9, 1x9 Bar, 2x9, 2x9 Bar, 3x9. By selecting "Off", the corresponding operator page is deactivated.
1st Line	Used to select the displayed process variable in the corresponding line.
2nd Line	<ul style="list-style-type: none"> • Qv [unit]: Volumetric flow indicated in the selected unit. • Qm [unit]: Mass flow indicated in the selected unit.
3rd Line	<ul style="list-style-type: none"> • Qv [%]: Volumetric flow in %. • Qm [%]: Mass flow in %. • $\Sigma V+$: Volumetric meter, upstream • $\Sigma M+$: Mass meter, upstream • $\Sigma V-$: Volumetric meter, downstream • $\Sigma M-$: Mass meter, downstream • ΣVn: Volumetric meter, net • ΣMn: Mass meter, net • CO1 Current: Output current in mA • scaled velocity: Flow velocity
Bargraph	Used to select the process variable shown in a bar graph. <ul style="list-style-type: none"> • Qm [%]: Mass flow in % • Qv [%]: Volumetric flow in % • CO1 Current: Output current in mA

7.5.6 Menu: Input/Output

Menu / Parameters	Description
Input/Output	
...Curr.Out 31 / 32	Used to select the "...Curr.Out 31 / 32" submenu with  .
...Dig.Out 41 / 42	Used to select the "...Dig.Out 41 / 42" submenu with  .
...Dig.Out 51 / 52	Used to select the "...Dig.Out 51 / 52" submenu with  .
Input/Output / Curr.Out 31 / 32	
Output Value	Used to select the process variable output at the current output. <ul style="list-style-type: none"> • Qm [%]: Mass flow • Qv [%]: Volumetric flow
Curr.Out Mode	Used to select the operating mode for the current output. <ul style="list-style-type: none"> • "4-20mA FWD": Output of flow in upstream direction: <ul style="list-style-type: none"> 4 mA = no flow 20 mA = maximum flow). • "4-12-20 mA": Output of flow in upstream and downstream direction: <ul style="list-style-type: none"> 4 mA = maximum flow in downstream direction 12 mA = no flow 20 mA = maximum flow in upstream direction • "4-20mA FWD/REV": Output of flow in upstream and downstream direction without differentiation of flow direction: <ul style="list-style-type: none"> 4 mA = no flow 20 mA = maximum flow). <p>Default setting: 4-20mA FWD/REV</p>
Curr.Out at Alarm	Used to select the state of the current output in the case of a fault. The output "Low Alarm" or "High Alarm" current is configured in the subsequent menu.
Low Alarm	Used to set the current for the low alarm (3.5 to 3.6 mA). Default setting: 3.5 mA
High Alarm	Used to set the current for the high alarm (21 to 22.6 mA). Default setting: 21.8 mA
Curr.Out > 20.5mA	Current output behavior when 20.5 mA are exceeded. <ul style="list-style-type: none"> • Hold Last Value: Used to maintain and output the most recent measured value. • High Alarm: Used to output the current for high alarm. • Low Alarm: Used to output the current for low alarm. <p>Default setting: Hold Last Value</p>
Curr.Out < 3.8mA	Current output behavior when below 3.8 mA. <ul style="list-style-type: none"> • Hold Last Value: Used to maintain and output the most recent measured value. • High Alarm: Used to output the current for high alarm. • Low Alarm: Used to output the current for low alarm. <p>The parameter is not available if for the "Curr.Out Mode" parameter 4-20mA FWD/REV was selected.</p> <p>Default setting: Low Alarm</p>
Curr. at EPD Alarm	Current output behavior in the case of an empty meter tube. <ul style="list-style-type: none"> • Off: No effect on the current output. • Q=0 %: The current output is set to 4 mA, which corresponds to "no flow". • High Alarm: Used to output the current for high alarm. • Low Alarm: Used to output the current for low alarm. <p>Default setting: Off</p>

7 Operation

Menu / Parameters	Description
Input/Output / Dig.Out 41 / 42	
Mode	<p>Used to select the operating mode for the digital output 41 / 42.</p> <ul style="list-style-type: none"> Off: Used to deactivate the digital output 41 / 42. Logic: Digital output 41 / 42 is used as binary output (e. g. as alarm output). Pulse: Digital output 41 / 42 is used as pulse output. In pulse mode, pulses per unit are output (e. g. 1 pulse per m3). Frequency: Digital output 41 / 42 is used as frequency output. In frequency mode, a frequency proportional to the flow rate is output. The maximum frequency can be configured according to the full-scale value. <p>Default setting: Pulse.</p>
Outp. Flow Direction	<p>Used to select the flow direction, in which the pulse output / frequency output outputs the selected process value. This parameter is only available if the digital output has been configured as a pulse output or a frequency output.</p> <ul style="list-style-type: none"> Forward & Reverse: Used to have pulses output for both flow directions via the digital output 41 / 42. Forward: Used to have only pulses in upstream direction output (flow in direction of arrow) via the digital output 41 / 42. Reverse: Used to have only pulses in downstream direction output (flow opposite to direction of arrow) via the digital output 41 / 42. <p>Default setting: Forward & Reverse.</p>
...Setup Pulse Output	<p>Used to select the "...Setup Pulse Output" submenu with .</p> <p>Available only, if for "Mode" Pulse was selected.</p>
...Setup Freq Output	<p>Used to select the "...Setup Freq Output" submenu with .</p> <p>Available only, if for "Mode" Frequency was selected.</p>
...Setup Logic Output	<p>Used to select the "...Setup Logic Output" submenu with .</p> <p>Available only, if for "Mode" Logic was selected.</p>
...Alarm Config	<p>Used to select the "...Alarm Config" submenu with .</p> <p>Available only, if for "Mode" Logic was selected and if in the "...Setup Logic Output / Logic Output Action" menu Alarm Signal was selected.</p>
Input/Output / Dig.Out 41 / 42 / ...Setup Pulse Output	
Output Value Pulse	<p>Used to select the process variable that is output via the pulse output.</p> <ul style="list-style-type: none"> Off: Used to deactivate the pulse output. Pulse Mass Flow: Used to have pulses output for the mass flow. Pulse Volume Flow: Used to have pulses output for the volumetric flow.
Pulses per Unit	<p>Used to set the pulses per volumetric unit or per mass unit and the pulse width for the "Pulse" operating mode of the digital outputs. The pulse factor and pulse width are interdependent and are calculated dynamically (pulses per unit: 1 to 10000/s; pulse width: 0.1 to 2000 mS).</p>
Pulse Width	<p>Available only if a digital output has been configured as a pulse output and if volumetric flow or mass flow was selected as the process variable to be output.</p>
Input/Output / Dig.Out 41 / 42 / ...Setup Freq Output	
Output Value Freq.	<p>Used to select the process variable that is output via the frequency output.</p> <ul style="list-style-type: none"> Off: Used to deactivate the frequency output. Pulse Mass Flow: Used to have the frequency output output pulses for the mass flow. Pulse Volume Flow: Used to have the frequency output output pulses for the volumetric flow.
Upper Frequency	<p>Used to set the frequency for the full-scale value. The entered value (0 to 10500 Hz) corresponds to 100 % flow.</p>



Menu / Parameters	Description
Input/Output / Dig.Out 41 / 42 / ...Setup Logic Output	
Logic Output Action	<p>Used to select the binary output function.</p> <ul style="list-style-type: none"> Off: Used to deactivate the binary output. F/R Signal: Used to have the binary output signal the flow direction. Alarm Signal: Used to have the binary output signal the pending alarm. The alarm is selected in the "...Alarm Config" menu. Dual Range: The binary output is activated when measuring range 2 (Qm Max 2 / Qv Max 2) has been selected. This selection is only available if the "Dual Range" parameter has been configured for Qm or Qv.
Active Mode	<p>Used to select the switching behavior for the binary output.</p> <ul style="list-style-type: none"> Active High: Normally open contact. Active Low: Normally closed contact. <p>Default setting: Active High.</p>
Input/Output / Dig.Out 41 / 42- / ...Alarm Config	
General Alarm	Used to select the error messages signaled via the binary output 41 / 42.
Qv Volumeflow Max	Available only if the "Logic Output Action" parameter was set to Alarm Signal.
Qv Volumeflow Min	Default setting: Off.
EPD	
Input/Output / Dig.Out 51 / 52	
Mode	<p>Used to select the operating mode for the digital output 51 / 52. The "Follow DO 41 / 42, 90° Shift, 180° Shift" operating modes are only available if the digital output 51 / 52 has been configured as a pulse output.</p> <ul style="list-style-type: none"> Off: Used to deactivate the digital output. Logic: The digital output is used as a binary output (information on this function can be found under the "...Setup Logic Output" parameter). Follow DO 41 / 42: The digital output 51 / 52 follows the pulses of digital output 41 / 42. This function depends on the setting made for the "Outp. Flow Direction" parameter. 90° Shift: Phase-shifted output by 90° of the same pulses as for the digital output 41 / 42. 180° Shift: Phase-shifted output by 180° of the same pulses as for the digital output 41 / 42. <p>Default setting: Logic.</p>
Outp. Flow Direction	<p>Used to select the flow direction, in which the pulse output / frequency output outputs the selected process value. This parameter is only available if the digital output 51 / 52 has been configured in the "Mode" parameter with Follow DO 41 / 42 .</p> <ul style="list-style-type: none"> No pulses are output when "Forward & Reverse" is selected. Only the digital output 41 / 42 is active. When "Forward" is selected, pulses for the upstream flow are output via digital output 41 / 42, whereas pulses for the downstream flow are output via digital output 51 / 52. When "Reverse" is selected, pulses for the downstream flow are output via digital output 41 / 42, whereas pulses for the upstream flow are output via digital output 51 / 52.
...Setup Logic Output	<p>Used to select the "...Setup Logic Output" submenu with  .</p> <p>Available only, if for "Mode" Logic was selected.</p>
...Alarm Config	<p>Used to select the "...Alarm Config" submenu with  .</p> <p>Available only, if for "Mode" Logic was selected.</p>

7 Operation

Menu / Parameters	Description
Input/Output / Dig.Out 51 / 52 / ...Setup Logic Output	
Logic Output Action	Used to select the binary output function. Refer to the description regarding "Input/Output / Dig.Out 41 / 42- / ...Setup Logic Output".
Active Mode	Used to select the switching behavior for the binary output. <ul style="list-style-type: none"> Active High: Normally open contact. Active Low: Normally closed contact. Default setting: Active High.

Input/Output / Dig.Out 51 / 52 / ...Alarm Config	
General Alarm	Used to select the error messages signaled via the binary output 51 / 52.
Qv Volumeflow Max	Available only if the "Logic Output Action" parameter was set to Alarm Signal.
Qv Volumeflow Min	
EPD	









7.5.7 Menu: Process Alarm

Menu / parameter	Description
Process Alarm	
Alarm history	Display of the alarm history
Clear Alarm History	Reset of the alarm history.
...Group Masking	Selection of submenu '...Group Masking' using  .
...Alarm Limits	Selection of submenu '...Alarm Limits' using  .


Process Alarm / ...Group Masking	
Maintenance Required	Alarm messages are divided into groups.
Function Check	If masking is activated for a group (On), no alarm is issued.
Out Of Specification	For additional information, see Diagnosis / error messages on page 68.


Process Alarm / ...Alarm Limits	
Qm Massflow Min	Set the minimum / maximum limit value (0 to 110 %) for mass measurement. If the process value 'Qm [unit]' exceeds or falls below the limit value, an alarm is triggered.
Qm Massflow Max	
Qv Volumeflow Min	Set the minimum / maximum limit value (0 to 110 %) for volume measurement. If the process value 'Qv [unit]' exceeds or falls below the limit value, an alarm is triggered.
Qv Volumeflow Max	

7.5.8 Menu: Diagnostics

Menu / Parameters	Description
Diagnostics	
...Maintenance control	Used to select the "...Maintenance control" submenu with  .
...Diagnosis Values	Used to select the "...Diagnosis Values" submenu with  .
.....Simulation Mode	Used to select the ".....Simulation Mode" submenu with  .
...Output Readings	Used to select the "...Output Readings" submenu with  .
...Alarm Simulation	Used to select the "...Alarm Simulation" submenu with  .
Diagnostics / ...Maintenance control	
Preset Maint. cycle	Used to set the maintenance interval (0 to 9999 hours). The corresponding "Maintenance interval is reached. Perform maintenance." error message is output after the maintenance interval has elapsed. By choosing the "0" setting, the maintenance interval function is deactivated.
Maint. Remain. Time	Used to indicate the time of the maintenance interval that remains until the "Maintenance interval is reached. Perform maintenance." error message is issued.
Start New Cycle	Used to reset the maintenance interval. The maintenance interval is being reset to the value configured under "Preset Maint. cycle".
Diagnostics / ...Diagnosis Control	
...Empty Pipe Detector	Used to select the "...Empty Pipe Detector" submenu with  .
...Noise Check	Used to select the "...Noise Check" submenu with  .
...Fingerprints	Used to select the "...Fingerprints" submenu with  .
Diagnosis Interval	Used to set the interval for the individual diagnostic activities. The "Empty Pipe Detector" function is being executed according to the selected interval (e. g. every 5 seconds). Default setting: 5s.
Diagnostics / ...Diagnosis Control / ...Empty Pipe Detector	
Empty Pipe Detector	Used to activate the "Empty Pipe Detector" function (only for nominal diameters \geq DN 10). A completely full measuring tube is essential for an accurate measurement. The "Empty Pipe Detection" function is used to detect an empty meter tube. In the case of an alarm, the current output assumes the status that was configured in the "Input/Output / ...Curr.Out 31 / 32 / Curr. at EPD Alarm" menu, and the pulse output is stopped. Default setting: Off
Adjust EP	The empty pipe detection function should be aligned with the local conditions. The switching threshold is set during the automatic adjustment. Used to start the automatic adjustment of the empty pipe detection function.
Manual Adjust EP F.	Used to manually adjust the empty pipe detection function. The value should be modified so that the frequency for the empty pipe detection function (Detector EP Value) is close to 2000 Hz. Note Prior to starting the (manual / automatic) adjustment process, make sure that: <ul style="list-style-type: none"> • There is no flow through the sensor (close all valves, shut-off devices, etc.). • The sensor is filled completely with the medium being measured.
Threshold	Used to set the switching threshold for empty pipe detection. The switching threshold is set automatically during automatic adjustment. Manual fine adjustment is possible by changing the switching threshold.
Detector EP Value	Used to display the frequency for the empty pipe detection function. If the current value is above the set switching threshold, a message is shown on the LCD display and the alarm at the digital output is activated, if this has been configured accordingly.

7 Operation

Menu / Parameters	Description
Diagnostics / ...Diagnosis Control / ...Noise Check	
Start Noise Check	Used to start the noise check function with  .
Power Spectrum	Used to indicate the current power spectrum
Amplitude 1 Value	Used to indicate the four strongest amplitudes in the power spectrum.
Amplitude 2 Value	
Amplitude 3 Value	
Amplitude 4 Value	
Frequency 1	Used to display the frequencies associated with the four strongest amplitudes in the power spectrum.
Frequency 2	
Frequency 3	
Frequency 4	



Diagnostics / ...Diagnosis Control / ...Fingerprints	
Tx Factory CMR	The "fingerprint" database integrated in the transmitter enables you to compare the values at the time of factory calibration or
Tx Factory 1m/s	commissioning with the currently recorded values.
Tx Factory 10m/s	As a result, changes can be detected early, and the appropriate measures can be taken.
Start Tx Customer FP	Used to create the commissioning fingerprint for the transmitter with  .
Tx Customer CMR	The commissioning fingerprint is created on site during commissioning.
Tx Customer 1m/s	Use the "Start Tx Customer FP" parameter to create the commissioning fingerprint.
Tx Customer 10m/s	

Diagnostics / ...Diagnosis Values	
All of the values indicated in this menu serve information and service purposes.	
Inhouse Temperature	Used to display the temperature inside the transmitter housing.
Inhouse Temp MaxPeak	
Inhouse Temp MinPeak	
Driver Current	Used to display the driver current for the sensor coils.
Signal Region on ADC	Used to display the measured voltage at the input of the analog / digital converter.
Coil DAC Preset	Used to indicate the setpoint for the digital / analog converter.
DC Feedback DAC	Used to indicate the actual value for the digital / analog converter.
ADC Errors	Used to indicate the number of A / D converter errors.
Device Restart Count	Used to display the number of device restarts.

Menu / Parameters	Description
Diagnostics /Simulation Mode	
Simulation Switch	Used for manual simulation of measured values. After selecting the value to be simulated, a corresponding parameter is indicated in the "Diagnostics /Simulation Mode" menu through which the simulation value can be configured.
Off	
Qm Massflow [unit]	The output values correspond to the configured simulated measured value.
Qm Massflow [%]	The "Configuration" information is indicated in the bottom line on the display.
Qv Volumeflow [unit]	Only one measured value / output at a time can be selected for simulation purposes.
Qv Volumeflow [%]	The simulation function is deactivated after the device has been switched off or is restarted.
Curr.Out 31 / 32	
Dig.Out 41 / 42 State	
Dig.Out 41 / 42 Pulse	
Dig.Out 41 / 42 Freq.	
Dig.Out 51 / 52 State	
Dig.Out 51 / 52 Pulse	

Diagnostics / ...Output Readings	
Curr.Out 31 / 32	Used to display the current values and statuses of the listed inputs and outputs.
Dig.Out 41 / 42 Freq.	
Dig.Out 41 / 42 State	
Dig.Out 51 / 52 State	

7.5.9 Menu: Totalizer

Menu / Parameters	Description
Totalizer	
...Reset Totalizer	Used to select the "...Reset Totalizer" submenu with  .
...Preset Totalizer	Used to select the "...Preset Totalizer" submenu with  .

Totalizer / ...Reset Totalizer	
All Totalizer	Used to reset all meters to zero.
Massflow Fwd	Used to reset individual meters.
Massflow Rev	
Volumeflow Fwd	
Volumeflow Rev	

Totalizer / ...Preset Totalizer	
Massflow Fwd	Used to enter / edit meter readings (e. g. when a transmitter is replaced).
Massflow Rev	
Volumeflow Fwd	
Volumeflow Rev	

8 Diagnosis / error messages

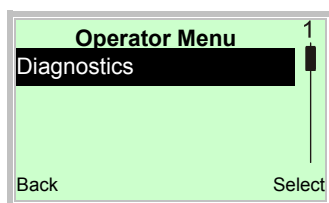
8 Diagnosis / error messages




8.1 Calling up the error description

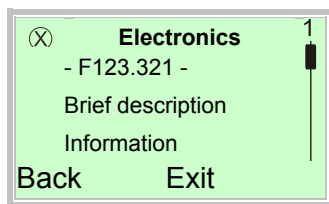
Additional details about the error that has occurred can be called up on the information level.



1. Use  to go to the information level (Operator Menu).



2. Use  /  to select the "Diagnostics" submenu.
3. Use  to confirm the selection.



The first line shows the area in which the error has occurred.
The second line shows the unique error number.
The next lines show a brief description of the error and information on how to remedy the error.

Note

A detailed description of error messages and information regarding the elimination of errors can be found on the subsequent pages.

8 Diagnosis / error messages

8.2 Error messages

The error messages are divided into four groups in accordance with the NAMUR classification scheme.

Errors

Error no. / Area	Text on the LCD display	Cause	Remedy
F099.042 / Electronics	ADC overrange alarm. Noise too high. Check applicati. Call service.	The signal at the input of the A / D converter exceeds the maximum value. Flow measurement is not possible.	When the meter tube is empty, ensure that the empty pipe detection function is active. Ensure that the current flow rate does not exceed the set measuring range. Contact the manufacturer.
F098.012 / Electronics	FEB communication error. EMC disturbance. Call Service.	Defective front end board or motherboard. Wiring error between sensor and transmitter. The front end board and the motherboard are not connected.	If this involves an integral mount design: Contact the manufacturer. If this involves a remote mount design: Check the wiring between the sensor and the transmitter. Contact the manufacturer.
F097.029 / Electronics	Coil regulation error. Check wiring of sensor coils. Call service	Defective solenoid. Wiring error, broken cable or shorted out coil circuit (terminals M1 / M2). Defective fuse for coil circuit; moisture in sensor terminal box.	Check wiring. Check coil circuit fuse. Check the sensor terminal box for moisture.
F096.043 / Electronics	SIL self check alarm. Call service.	The SIL monitoring function has detected a transmitter error.	Contact the manufacturer.
F095.036 / Electronics	Coil isolation alarm. Call service.	Defective solenoid. Wiring error with coil circuit (short-circuit, terminals M1 / M2 downstream of GND). Flooded sensor.	Contact the manufacturer.
F094.022 / Electronics	Safety Alarm Curr. Out 31 / 32 SIL function detects error. Call Service.	SIL-relevant error detected at current output.	Contact the manufacturer.
F093.032 / Electronics	Electrode short cuircit. Check wiring of sensor electrode. Call service.	Wiring error with electrode circuit (short-circuit downstream of shield). Leaking electrode. Flooded sensor.	Check wiring. Check electrode wiring for short-circuit to shield. Check electrode for leakage. Check the sensor terminal box for moisture.
F092.033 / Electronics	Electrode open cuircit. Check wiring of sensor electrode. Call service.	Wiring error with electrode circuit (interruption, broken cable).	Check wiring.
F091.030 / Electronics	Coil wiring error. Check wiring of sensor coils. Call service.	Defective solenoid. Wiring error, broken cable or shorted out coil circuit (terminals M1 / M2). Defective fuse for coil circuit; moisture in sensor terminal box.	Check wiring. Check coil circuit fuse. Check the sensor terminal box for moisture.
F090.035 / Electronics	ADC RX210 com. error. Call service.	Problems with the electromagnetic compatibility (EMC) in the vicinity. Error with transmitter electronics.	Replace the transmitter or contact the manufacturer.
F088.013 / Electronics	FEB communication error. EMC disturbance. Call Service.	Problems with the electromagnetic compatibility (EMC) of the signal cable. Incorrect signal cable.	Check the signal cable and the wiring. Contact the manufacturer.

8 Diagnosis / error messages

Error no. / Area	Text on the LCD display	Cause	Remedy
F086.019 / Electronics	Curr.Out 31 / 32 com error. Defective Board. EMC disturbance. Call Service.	Error with electronics involving motherboard and transmitter. Problems with the EMC.	Contact the manufacturer.
F084.011 / Electronics	NV data defect. Data storage irreparable. Call Service.	Data error in SensorMemory.	Contact the manufacturer.
F082.014 / Electronics	Incompatible Frontend Board. Frontend not fit to Motherboard. Call Service.	Incompatible front end board.	Contact the manufacturer.
F081.026 / Electronics	MB voltages outside range. Defective Motherboard HW. Call Service.	Defective motherboard of transmitter.	Replace the transmitter or contact the manufacturer.

Function check

Error no. / Area	Text on the LCD display	Cause	Remedy
C078.004 / Config.	Flowrate to zero. Check digital in terminals.	External deactivation is active via digital input.	Check status of the digital input. Check parameter settings.
C076.006 / Config.	All totalizer stopp. Check digital in terminals.	External meter stop function is active via digital input.	Check status of the digital input. Check parameter settings.
C074.007 / Config.	Totalizer reset. Reset of one or more Totalizers.	External meter reset function is active via digital input.	Check status of the digital input. Check parameter settings.
C072.003 / Config.	Simulation is on Simulated values. Switch off Simulation Mode.	The simulation mode is active.	Deactivate the simulation mode.
C070.027 / Config.	An alarm is simulated. Switch off alarm simulation.	The alarm simulation function is active.	Deactivate the alarm simulation functions.

Operation outside of the specifications (Out Of Specs)

Error no. / Area	Text on the LCD display	Cause	Remedy
S065.044 / Operation	Inhouse temp. alarm. Reduce ambient temperature.	The ambient temperature or the temperature of the medium being measured is outside of the permissible range.	Check the ambient temperature and the temperature of the medium being measured; reduce the temperature.
S064.041 / Operation	EPD alarm. Secure pipe is completely filled.	The meter tube is not completely full.	Ensure that the meter tube is always filled all the way.
S062.039 / Operation	Sensor temp. limits alarm. Change limits or change fluid temperature.	The temperature of the medium being measured is outside of the permissible range.	Check the temperature of the medium being measured; adjust the alarm limits.
S052.017 / Operation	Curr.Out 31 / 32 is saturated. CO process value out of range. Adapt Qmax.	Current output 31 / 32, over-traveled. The selected process value exceeds the set measuring range.	Check the setting for the measuring range and adjust as needed.
S047.016 / Operation	Pulse output is cut off. Wrong config. Check pulse out configuration.	The pulse rate or the frequency at the pulse output is outside of the permissible limits.	Check the configuration of the pulse output parameters.

8 Diagnosis / error messages

Error no. / Area	Text on the LCD display	Cause	Remedy
S046.001 / Operation	Mass flowrate exceeds limits. Check flowrate and alarm limits.	The mass flow is above or below the configured limit values for "Qm Massflow Min" and "Qm Massflow Max".	Check the parameter settings in the "Process Alarm / ...Alarm Limits" menu and adjust as needed. Check the mass flow.
S044.002 / Operation	Volume flowrate exceeds limits. Check flowrate and alarm limits.	The mass flow is above or below the configured limit values for "Qv Volumeflow Min" and "Qv Volumeflow Max".	Check the parameter settings in the "Process Alarm / ...Alarm Limits" menu and adjust as needed. Check the volumetric flow.
S041.034 / Electronics	DC feedback regulation. Check conditions of application. Call service.	Multi-phase media are being measured that produce a very high level of noise. Stones or solids that produce a very high level of noise. Galvanic voltages at the measuring electrodes. Conductivity of medium being measured is not evenly distributed (e.g., directly after injection points).	Contact the manufacturer.
S040.031 / Electronics	Coil impedance alarm. Call service.	Change in coil inductance; damaged coil; damaged coil insulation; interference due to external magnetic fields.	Contact the manufacturer.

Maintenance required

Error no. / Area	Text on the LCD display	Cause	Remedy
M038.010 / Electronics	Sensor memory defective. Mem. or connect. defective. Replace memory.	No SensorMemory. Defective SensorMemory.	Check that the correct SensorMemory is inserted. Contact the manufacturer.
M037.015 / Electronics	NV chips defect on Motherboard. Defective MB. Replace MB. Call Service.	Defective SensorMemory in motherboard	Replace the transmitter. Contact the manufacturer.
M032.023 / Config.	Curr.Out 31 / 32 not calibrated. Call Service.	Current output 31 / 32 is not calibrated.	Contact the manufacturer.
M028.008 / Config.	Display value is < 1600 h at Qmax. Change mass Unit or vol. Unit for Totalizer.	The current meter reading exceeds the display resolution	Check the settings for the mass / volumetric meter and adjust as needed
M026.005 / Config.	Maintenance interval is reached. Perform maintenance.	Maintenance interval reached. Set "Preset Maint. cycle" to zero to deactivate the maintenance counter.	Complete the maintenance tasks. Start new maintenance interval.
M024.009 / Config.	Device not calibrated. Call Service.	Device is not calibrated.	Contact the manufacturer.

8 Diagnosis / error messages

8.3 Overview

Errors encountered are itemized in tabular form on the following pages. The response of the transmitter on error detection is described therein.

The table lists all possible errors together with a description of their impact on the value of measurement variables, the properties of current outputs and the alarm output.

Error no. / Area	Text on the LCD display	Current output	Digital output	Pulse output	LCD display	Maskable error?
F099.042 / Electronics	ADC overrange alarm. Noise too high. Check applicati. Call service.	High Alarm or Low Alarm depends on the digital output has "Curr.Out at Alarm"	General Alarm, if the been configured as a	0	0 %	No
F098.012 / Electronics	FEB communication error. EMC disturbance. Call Service.	parameter setting.	"Logic / Alarm Signal".0	0	0 %	No
F097.029 / Electronics	Coil regulation error. Check wiring of sensor coils. Call service			0	0 %	No
F096.043 / Electronics	SIL self check alarm. Call service.			No change; current value.	No change; current value.	No
F095.036 / Electronics	Coil isolation alarm. Call service.			No change; current value.	No change; current value.	No
F094.022 / Electronics	Safety Alarm Curr. Out 31 / 32 SIL function detects error. Call Service.			No change; current value.	No change; current value.	No
F093.032 / Electronics	Electrode short cuircit. Check wiring of sensor electrode. Call service.			0	0 %	No
F092.033 / Electronics	Electrode open cuircit. Check wiring of sensor electrode. Call service.			0	0 %	No
F091.030 / Electronics	Coil wiring error. Check wiring of sensor coils. Call service.			0	0 %	No
F090.035 / Electronics	ADC RX210 com. error. Call service.			0	0 %	No
F088.013 / Electronics	FEB communication error. EMC disturbance. Call Service.			0	0 %	No
F086.019 / Electronics	Curr.Out 31 / 32 com error. Defective Board. EMC disturbance. Call Service.			No change; current value.	No change; current value.	No
F084.011 / Electronics	NV data defect. Data storage irreparable. Call Service.			0	0 %	No
F082.014 / Electronics	Incompatible Frontend Board. Frontend not fit to Motherboard. Call Service.			0	0 %	No
F081.026 / Electronics	MB voltages outside range. Defective Motherboard HW. Call Service.			0	0 %	No

8 Diagnosis / error messages

Error no. / Area	Text on the LCD display	Current output	Digital output	Pulse output	LCD display	Maskable error?
C078.004 / Config	Flowrate to zero. Check digital in terminals.	4 mA (0 % flow)	No change; current value.	0	0 %	"...Group Masking" menu.
C076.006 / Config	All totalizer stopp. Check digital in terminals.	No change; current value.	No change; current value.	No change; current value.	No change; current value.	
C074.007 / Config	Totalizer reset. Reset of one or more Totalizers.	No change; current value.	No change; current value.	No change; current value.	No change; current value.	"...Group Masking" menu.
C072.003 / Config	Simulation is on Simulated values. Switch off Simulation Mode.	No change; current value.	No change; current value.	No change; current value.	No change; current value.	
C070.027 / Config	An alarm is simulated. Switch off alarm simulation.	No change; current value.	No change; current value.	No change; current value.	No change; current value.	
S065.044 / Operation	Inhouse temp. alarm. Reduce ambient temperature.	No change; current value.	No response	No response	No change; current value.	
S064.041 / Operation	EPD alarm. Secure pipe is completely filled.	Alarm – as configured in the "Curr. at EPD Alarm" menu.	Alarm, if the digital output has been configured as a "Logic / Alarm Signal / EPD".	0	0 %	"...Group Masking" menu.
S062.039 / Operation	Sensor temp. limits alarm. Change limits or change fluid temperature.	No change; current value.	No response	No change; current value.	No change; current value.	"...Group Masking" menu.
S052.017 / Operation	Curr.Out 31 / 32 is saturated. CO process value out of range. Adapt Qmax.	Alarm – as configured in the "Curr.Out > 20.5mA" menu.	No change; current value.	No change; current value.	No change; current value.	"...Group Masking" menu.
S047.016 / Operation	Pulse output is cut off. Wrong config. Check pulse out configuration.	No change; current value.	No change; current value.	Maximum pulse rate possible	No change; current value.	"...Group Masking" menu.
S046.001 / Operation	Mass flowrate exceeds limits. Check flowrate and alarm limits.	No change; current value.	Alarm, if the digital output has been configured as a "Qm Massflow Max" or a "Qm Massflow Min".	No change; current value.	No change; current value.	"...Group Masking" menu.
S044.002 / Operation	Volume flowrate exceeds limits. Check flowrate and alarm limits.	No change; current value.	Alarm, if the digital output has been configured as a "Qv Volumeflow Max" or a "Qv Volumeflow Min".	No change; current value.	No change; current value.	"...Group Masking" menu.
S041.034 / Electronics	DC feedback regulation. Check conditions of application. Call service.	4 mA (0 % flow)	No response	0 Hz	0 %	"...Group Masking" menu.
S040.031 / Electronics	Coil impedance alarm. Call service.	No change; current value.	No response	No change; current value.	No change; current value.	"...Group Masking" menu.

8 Diagnosis / error messages

Error no. / Area	Text on the LCD display	Current output	Digital output	Pulse output	LCD display	Maskable error?
M038.010 / Electronics	Sensor memory defective. Mem. or connect. defective. Replace memory.	No change; current value.	No response	No change; current value.	No change; current value.	"...Group Masking" menu.
M037.015 / Electronics	NV chips defect on Motherboard. Defective MB. Replace MB. Call Service.					
M032.023 / Config	Curr.Out 31 / 32 not calibrated. Call Service.					
M028.008 / Config	Display value is < 1600 h at Qmax. Change mass Unit or vol. Unit for Totalizer.					
M026.005 / Config	Maintenance interval is reached. Perform maintenance.					
M024.009 / Config	Device not calibrated. Call Service.	High Alarm or Low Alarm depends on the value. "Curr.Out at Alarm" parameter setting.	No change; current value.	No change; current value.	No change; current value.	"...Group Masking" menu.

9 Maintenance

9.1 Safety instructions

WARNING

Risk of injury due to live parts!

When the housing is open, contact protection is not provided and EMC protection is limited.

- Before opening the housing, switch off the power supply.

CAUTION

Risk of burns due to hot measuring media

The device surface temperature may exceed 70 °C (158 °F), depending on the measuring medium temperature!

- Before starting work on the device, make sure that it has cooled sufficiently.

NOTICE

Damage to components!

The electronic components of the printed circuit board can be damaged by static electricity (observe ESD guidelines).

- Make sure that the static electricity in your body is discharged before touching electronic components.

Corrective maintenance work may only be performed by trained personnel.

- Before removing the device, depressurize it along with any adjacent lines or equipment.
- Check whether hazardous materials have been used as measuring medium before opening the device. Residual amounts of hazardous material may still be present in the device and could escape when it is opened.

Within the scope of operator responsibility, check the following as part of a regular inspection:

- pressure-carrying walls / pressure equipment liner
- the measurement-related function
- the leak tightness
- the wear (corrosion)

9.2 Sensor

The flowmeter sensor is largely maintenance-free.

The following items should be checked annually:

- Ambient conditions (air circulation, humidity).
- Tightness of the process connections.
- Cable entries, cover gaskets and cover screws.
- Operational reliability of power supply, lightning protection and grounding.

The sensor electrodes must be cleaned when the flow rate information on the transmitter changes while recording the identical flow rate volume.

If the display shows a higher flowrate, the contamination is insulating. If a lower flowrate is displayed, the contamination results in a short-circuit.

For repairs to the liner, electrodes or magnet coil, the flowmeter must be returned to the manufacturer.

Returning devices on page 15

9.2.1 Gaskets

Some device versions are shipped with special gaskets. These gaskets must be used and installed properly to prevent leakage and to ensure conformity with 3A standards and EHEDG requirements.

For all other device versions, use commercially available gaskets made from a material (rubber, PTFE, It, EPDM, silicone, Viton, etc.) that is compatible with the prevailing temperature and the medium being measured and for hygienic "JUMO flowTRANS MAG H10" devices, use sealing materials that are 3A-compliant. Wafer-type sensors are installed without gaskets directly in the piping.

9.3 Cleaning

When cleaning the exterior of meters, make sure that the cleaning agent used does not corrode the housing surface and the seals.

To avoid static charge, a damp cloth must be used for cleaning.

10 Repair

10 Repair

⚠ WARNING

Risk of injury due to live parts!

When the housing is open, contact protection is not provided and EMC protection is limited.

- Before opening the housing, switch off the power supply.

⚠ CAUTION

Risk of burns due to hot measuring media

The device surface temperature may exceed 70 °C (158 °F), depending on the measuring medium temperature!

- Before starting work on the device, make sure that it has cooled sufficiently.

NOTICE

Damage to components!

The electronic components of the printed circuit board can be damaged by static electricity (observe ESD guidelines).

- Make sure that the static electricity in your body is discharged before touching electronic components.

10.1 Spare parts

Repair and maintenance activities may only be performed by authorized customer service personnel.

When replacing or repairing individual components, use original spare parts.

Note

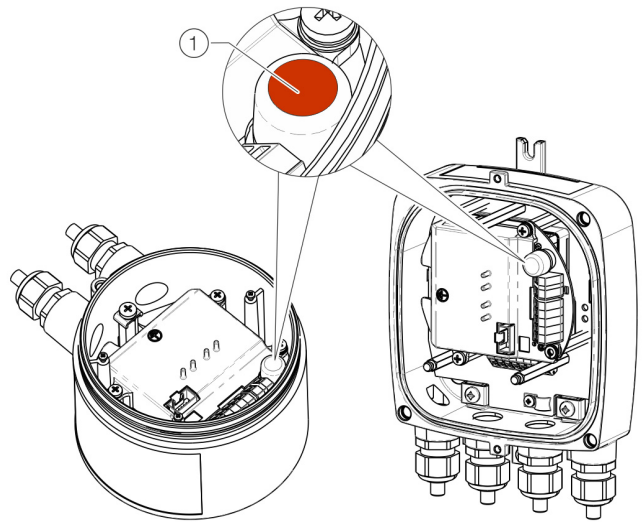
Spare parts can be ordered from the manufacturer.

10.2 Replacing the fuse

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.



① Fuse holder with fuse

Figure 50: Fuse holder

A fuse is located in the transmitter housing.

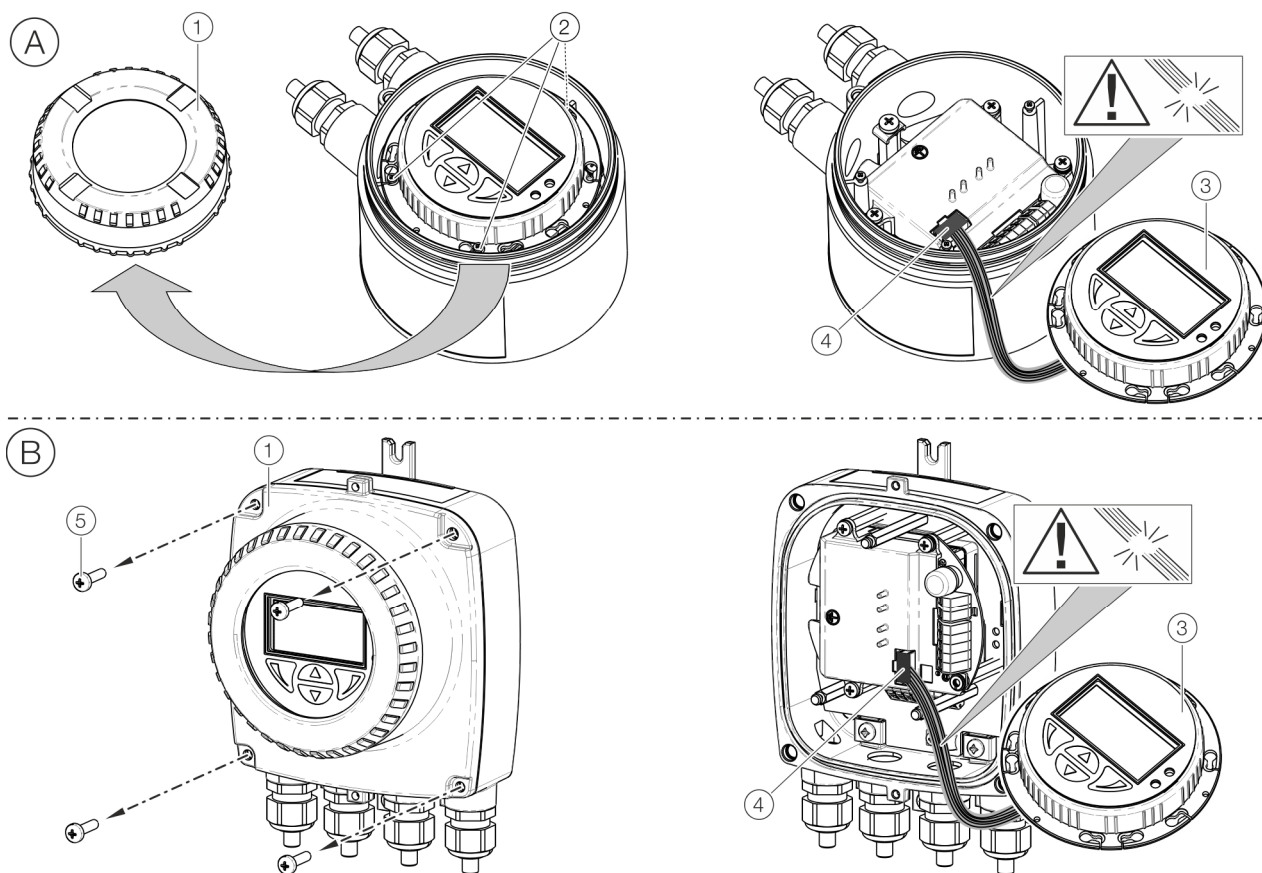
Component	Part number
Power supply fuse (T 500 mA, 250 V) suitable for all models	00706386

Follow the steps below to replace the fuse:

1. Switch off the power supply.
2. Unscrew front cover.
3. Take off LCD display.
4. Remove defective fuse and insert new fuse.
5. Re-attach LCD display.
6. Screw on cover again.
7. Switch on the power supply.
8. Check the device for correct functioning.

The device is defective and needs to be replaced should the fuse blow again after activation of the device.

10.3 Replacing the LCD indicator



- (A) Integral mount design
- (B) Remote mount design
- (1) Housing cover
- (2) Fastening screws for LCD display

- (3) LCD display
- (4) Connector
- (5) Four fastening screws for housing cover

Figure 51: Replacing the LCD display

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

The LCD display can be replaced in the case of a defect.

Component	Part number
LCD display (HMI).	00706388

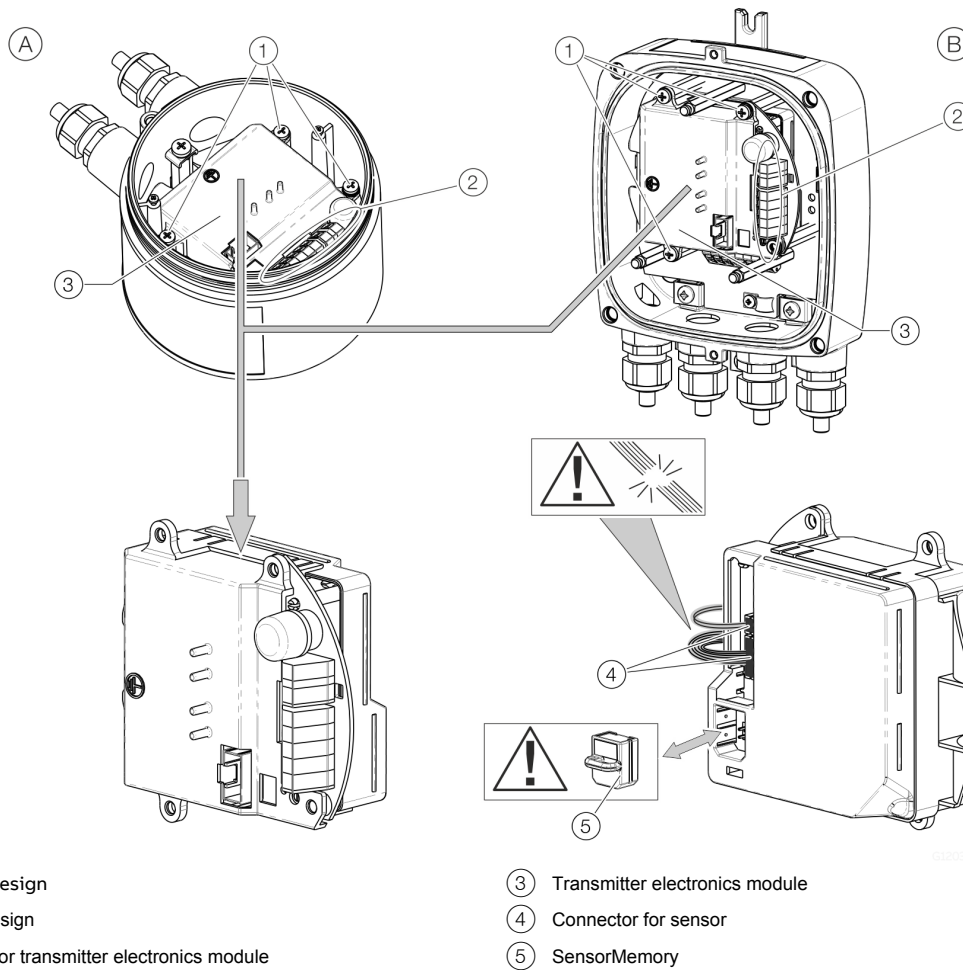
For integral and remote mount design types

Follow the steps below to replace the LCD display:

1. Switch off the power supply.
2. Unscrew and remove the cover.
3. Loosen the fastening screws for the LCD display (applicable to integral mount design only).
4. Take off LCD display.
5. Detach connector from motherboard.
6. Insert connector of new LCD display. Take care not to damage the cable harness.
7. Insert the LCD display and tighten screws as needed.
8. Attach and screw on cover again.
9. Switch on the power supply.

10 Repair

10.4 Replacing the transmitter



- (A) Integral mount design
- (B) Remote mount design
- ① Fastening screw for transmitter electronics module
- ② Terminals

- ③ Transmitter electronics module
- ④ Connector for sensor
- ⑤ SensorMemory

Figure 52: Replacing the transmitter electronics module

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

The transmitter electronics module can be replaced in the case of a defect.

Component	Part number
Transmitter electronics module	00706390

Follow the steps below to replace the transmitter electronics module:

1. Switch off the power supply.
2. Unscrew and remove the cover.
3. Take off LCD display. Take care not to damage the cable harness.
4. Remove the three fastening screws for the transmitter electronics module.

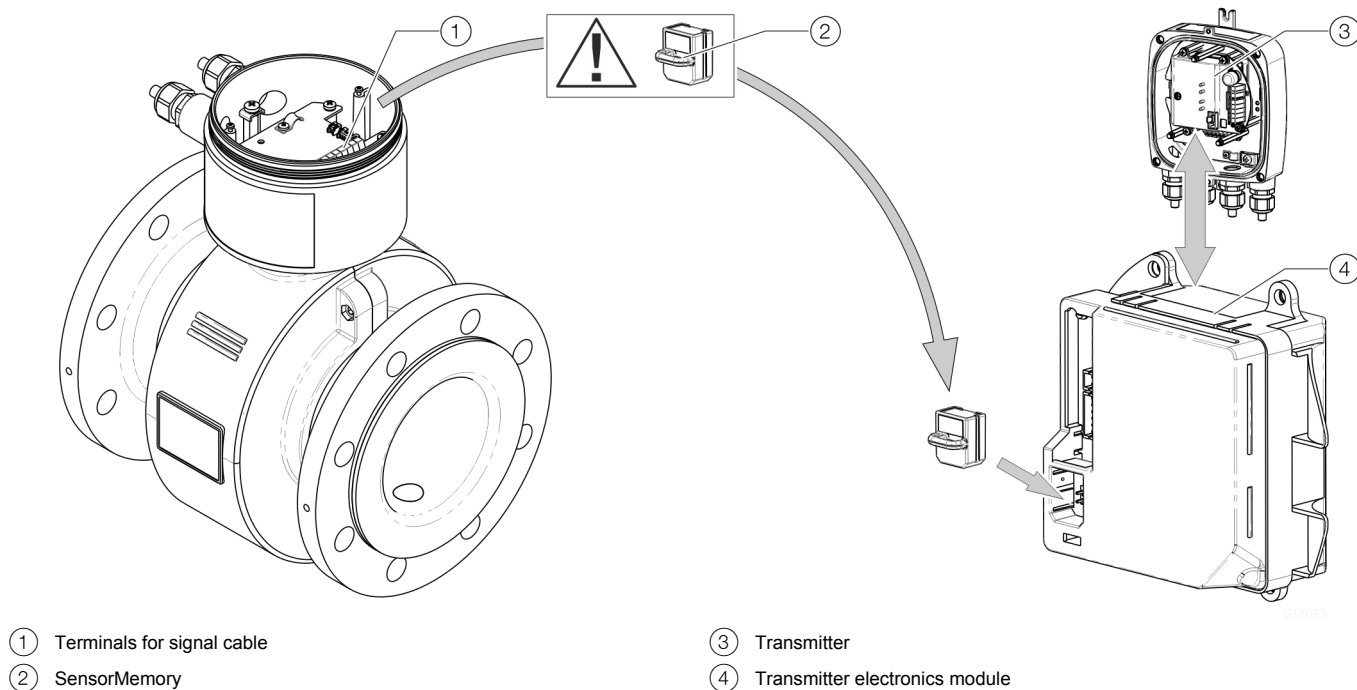
5. Remove the defective transmitter electronics module.
6. Detach the connector from the cable harness for the sensor. Take care not to damage the cable harness.
7. Remove the SensorMemory module.

Note

The SensorMemory module is assigned to the sensor. Ensure that the SensorMemory module remains with the sensor and is not lost.

8. Insert SensorMemory module in the new transmitter electronics module.
9. Insert the connector from the cable harness for the sensor.
10. Insert the new transmitter electronics module and tighten the three fastening screws to secure it in place.
11. Insert the LCD display and attach and screw on the cover again.
12. After activation of the power supply, the transmitter automatically loads the system data from the SensorMemory.

10.5 Replacing the sensor



- ① Terminals for signal cable
- ② SensorMemory

- ③ Transmitter
- ④ Transmitter electronics module

Figure 53: Replacing the transmitter

NOTICE

If the O-ring gasket is seated incorrectly or damaged, this may have an adverse effect on the housing protection class.

Follow the instructions in **Opening and closing the terminal box** on page 22 to open and close the housing safely.

Note

The replacement transmitter is supplied together with a SensorMemory module. The calibration data is stored on the SensorMemory module. The SensorMemory module is located in the terminal box for the replacement transmitter and has to be fitted in the transmitter. Information on how to install SensorMemory modules can be found in the chapter on **Replacing the transmitter** on page 78.

Proceed as follows to replace the transmitter:

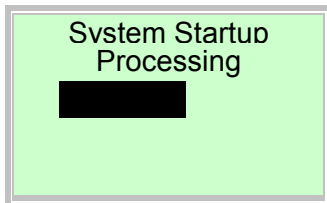
1. Switch off the power supply.
2. Unscrew and remove the cover.
3. Disconnect the signal cable (remove the sealing compound as needed).
4. Install the new transmitter as specified in the chapter on **Installation** on page 16.
5. Fit the SensorMemory module from the terminal box for the new transmitter in the transmitter.
6. Make the electrical connection in accordance with the information given in the chapter on **Electrical connections** on page 26.
7. Attach and screw on cover again.
8. After activation of the power supply, the transmitter automatically loads the system data from the SensorMemory.

10 Repair

10.6 Loading the system data

1. Switch on the power supply.

The following information is shown on the LDC display during the start-up process:



The transmitter is loading the sensory data and the transmitter settings such as e. g: the measuring range, the dampings and the pulse width from the SensorMemory.

2. The process display is indicated following the start-up process.
3. The flowmeter is ready for operation and will operate, as ordered, based on either the factory default settings or the preconfiguration requested by the customer.
To change the factory default settings, see **Parameterization of the device** on page 37.

Note

Check the parameter settings for correctness.

- * The SensorMemory is a removable memory module located at the rear of the transmitter electronics module.

11 Recycling and disposal

11.1 Dismounting

WARNING

Risk of injury due to process conditions.

The process conditions, for example high pressures and temperatures, toxic and aggressive measuring media, can give rise to hazards when dismantling the device.

- If necessary, wear suited personal protective equipment during disassembly.
- Before disassembly, make sure that the process conditions do not pose any safety risks.
- Depressurize and empty the device / piping, allow to cool and purge if necessary.

Bear the following points in mind when dismantling the device:

- Switch off the power supply.
- Disconnect electrical connections.
- Allow the device / piping to cool and depressurize and empty. Collect any escaping medium and dispose of it in accordance with environmental guidelines.
- Use suited tools to disassemble the device, taking the weight of the device into consideration.
- If the device is to be used at another location, the device should preferably be packaged in its original packing so that it cannot be damaged.
- Observe the notices in **Returning devices** on page 15.

11.2 Disposal

This product and its packaging is manufactured using materials that can be recycled by specialist recycling companies.

Compliance with the information below is required for disposal:

- This product is not subject to the requirements set out by the WEEE Directive 2002/96/EC or corresponding national legislation (ElektroG in Germany for example).
- The product must be disposed of at a specialist recycling facility. Do not discard the product at municipal waste collection points. Municipal waste collection points can only be used for the disposal of privately used products in accordance with the WEEE Directive 2002/96/EC.
- If it is not possible to properly dispose of the used device, our customer service department is prepared to accept and dispose of the used device for a fee.

Note



Products that are marked with this symbol may not be disposed of through municipal garbage collection points.

11.3 Information regarding the RoHS Directive (2011/65/EU)

The products supplied by the manufacturer are not subject to the current scope of prohibited materials or the German Electrical and Electronic Equipment Act (ElektroG).

We will be able to do without these substances when developing new products in the future, provided the required components are available on the market in good time.

12 Specification

12 Specification

Note

The data sheet for the device is available in the download section at www.jumo.de oder auf Anfrage, or on request.

12.1 Permitted pipe vibration

In accordance with EN 60068-2-6

Valid for sensors in remote mount and integral mount design.

- Maximum deflection: 0.15 mm (0.006 in) in the frequency range of 10 to 58 Hz
- Maximum acceleration: 2 g in the frequency range of 58 to 150 Hz

12.2 JUMO flowTRANS MAG S10 – Temperature data

12.2.1 Storage temperature range

-30 to 70 °C (-22 to 158 °F)

The temperature range offered by the device is dependent on a number of different factors.

These factors include the measuring medium temperature

T_{medium} , the ambient temperature T_{amb} , operating pressure

P_{medium} , liner material and the approval for explosion protection.

12.2.2 Maximum permissible cleaning temperature

CIP media	Liner	Cleaning temperature
Steam	PTFE, PFA	150 °C (302 °F)
Cleaning fluid	PTFE, PFA	140 °C (284 °F)

- The maximum cleaning temperature specified applies to a maximum ambient temperature of 25 °C (77 °F).
If the ambient temperature up-scales > 25 °C (> 77 °F), then the temperature difference to the current temperature must be subtracted from the max. cleaning temperature.
- The specified cleaning temperature may have an effect for a maximum of 60 minutes.

12.2.3 Maximum ambient temperature depending on measuring medium temperature

Integral mount design

Liner material	Flange material	Ambient temperature (T _{amb.})		Temperature of medium being measured (T _{medium})	
		Minimum	Maximum	Minimum	Maximum
Hard rubber	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	85 °C (185 °F)*
Hard rubber	Stainless steel	-15 °C (5 °F)	60 °C (140 °F)	-15 °C (5 °F)	85 °C (185 °F)*
Soft rubber	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	60 °C (140 °F)
Soft rubber	Stainless steel	-15 °C (5 °F)	60 °C (140 °F)	-15 °C (5 °F)	60 °C (140 °F)
PTFE	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	85 °C (185 °F)
		-10 °C (14 °F)	30 °C (86 °F)	-10 °C (14 °F)	130 °C (266 °F)
PTFE	Stainless steel	-20 °C (-4 °F)	60 °C (140 °F)	-25 °C (-13 °F)	85 °C (185 °F)
		-20 °C (-4 °F)	30 °C (86 °F)	-25 °C (-13 °F)	130 °C (266 °F)
PFA	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	85 °C (185 °F)
		-10 °C (14 °F)	30 °C (86 °F)	-10 °C (14 °F)	130 °C (266 °F)
PFA	Stainless steel	-20 °C (-4 °F)	60 °C (140 °F)	-25 °C (-13 °F)	85 °C (185 °F)
		-20 °C (-4 °F)	30 °C (86 °F)	-25 °C (-13 °F)	130 °C (266 °F)
ETFE	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	85 °C (185 °F)
		-10 °C (14 °F)	30 °C (86 °F)	-10 °C (14 °F)	130 °C (266 °F)
ETFE	Stainless steel	-20 °C (-4 °F)	60 °C (140 °F)	-25 °C (-13 °F)	85 °C (185 °F)
		-20 °C (-4 °F)	30 °C (86 °F)	-25 °C (-13 °F)	130 °C (266 °F)

* For variant 2 sensors lined with hard rubber, a reduced maximum temperature of 80 °C (176 °F) applies to the medium being measured.

Remote mount design

Liner material	Flange material	Ambient temperature (T _{amb.})		Temperature of medium being measured (T _{medium})	
		Minimum	Maximum	Minimum	Maximum
Hard rubber	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	90 °C (194 °F)*
Hard rubber	Stainless steel	-15 °C (5 °F)	60 °C (140 °F)	-15 °C (5 °F)	90 °C (194 °F)*
Soft rubber	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	60 °C (140 °F)
Soft rubber	Stainless steel	-15 °C (5 °F)	60 °C (140 °F)	-15 °C (5 °F)	60 °C (140 °F)
PTFE	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	130 °C (266 °F)
PTFE	Stainless steel	-25 °C (-13 °F)	60 °C (140 °F)	-25 °C (-13 °F)	130 °C (266 °F)
PFA	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	130 °C (266 °F)
PFA	Stainless steel	-25 °C (-13 °F)	60 °C (140 °F)	-25 °C (-13 °F)	130 °C (266 °F)
ETFE	Steel	-10 °C (14 °F)	60 °C (140 °F)	-10 °C (14 °F)	130 °C (266 °F)
ETFE	Stainless steel	-25 °C (-13 °F)	60 °C (140 °F)	-25 °C (-13 °F)	130 °C (266 °F)

* For variant 2 sensors lined with hard rubber, a reduced maximum temperature of 80 °C (176 °F) applies to the medium being measured.

12 Specification

12.3 JUMO flowTRANS MAG S10 – Material load for process connections

The limits of the permissible measuring medium temperature (T_{medium}) and permissible pressure (P_{medium}) are calculated on the basis of the liner and flange material used in the device (see device name plate).

12.3.1 Minimum permissible operating pressure

The minimum permissible operating pressure (P_{medium}) dependent on the temperature of the medium being measured (T_{medium}) and the liner material is indicated in the table below.

Sensor, variant 1

Liner material	Nominal diameter	P_{medium} [mbar abs]	T_{medium}^*
Hard rubber	DN 15 to 2000 (½ to 80 in.)	0	< 85 °C (185 °F)
Soft rubber	DN 50 to 2000 (2 to 80 in.)	0	< 60 °C (140 °F)
PTFE	DN 10 to 600 (¾ to 24 in.)	270	< 20 °C (68 °F)
		400	< 100 °C (212 °F)
		500	< 130 °C (266 °F)
PFA	DN 3 to 200 (⅓ to 8 in.)	0	< 130 °C (266 °F)
ETFE	DN 25 to 600 (1 to 24 in.)	100	< 130 °C (266 °F)

Sensor, variant 2

Liner material	Nominal diameter	P_{medium} [mbar abs]	T_{medium}^*
Hard rubber	DN 40 to 600 (1 ½ to 24 in.)	600	< 80 °C (176 °F)
PTFE	DN 25 to 600 (1 to 24 in.)	270	< 20 °C (68 °F)
		400	< 100 °C (212 °F)
		500	< 130 °C (266 °F)

* For CIP/SIP cleaning, higher temperatures are permitted for limited periods; refer to table **Maximum permissible cleaning temperature** on page 87.

Approvals for liners available on request; please contact the manufacturer.

12.3.2 Material load

Sensor, variant 1

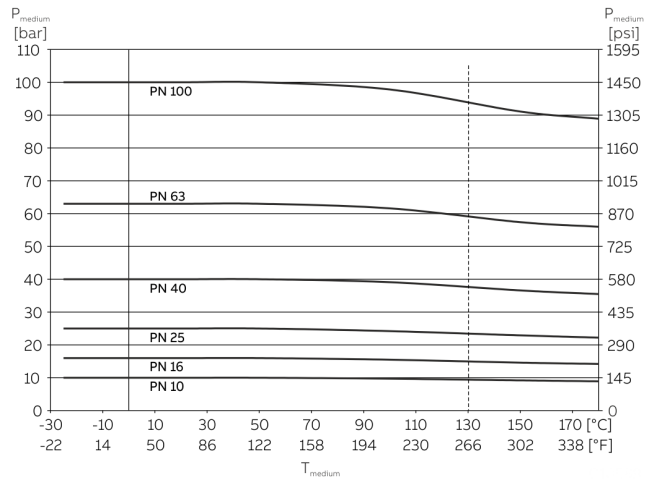


Figure 54: DIN flange, stainless steel up to DN 600 (24 in.)

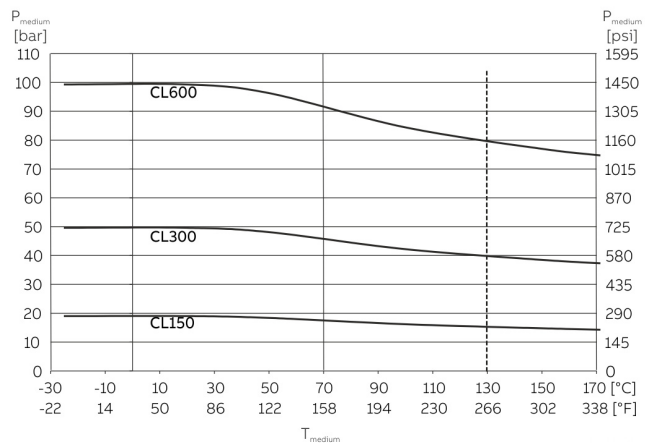


Figure 55: ASME flange, stainless steel up to DN 400 (16 in.) (CL150/300) and up to DN 1000 (40 in.) (CL150)

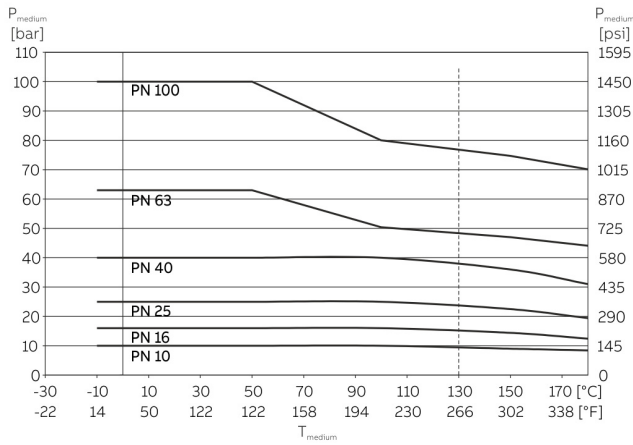


Figure 56: DIN flange, steel up to DN 600 (24 in.)

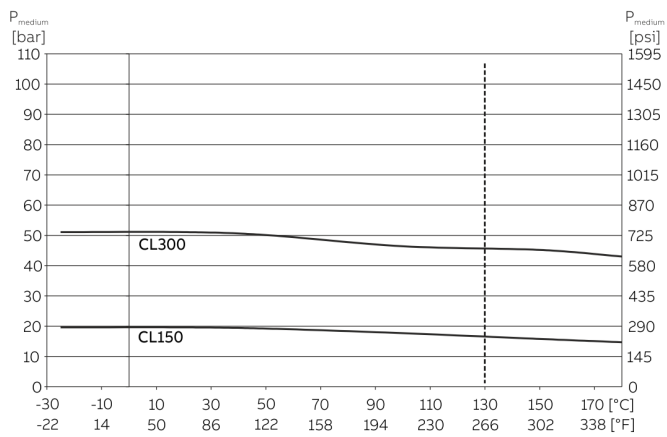
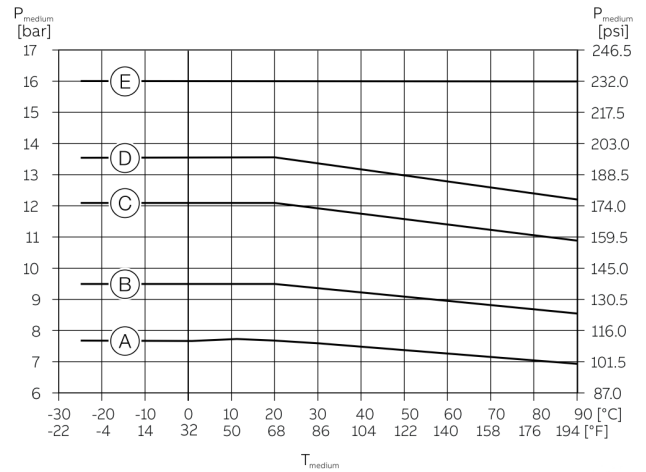


Figure 57: ASME flange, steel up to DN 400 (16 in.) (CL150/300); and up to DN 1000 (40 in.) (CL150)

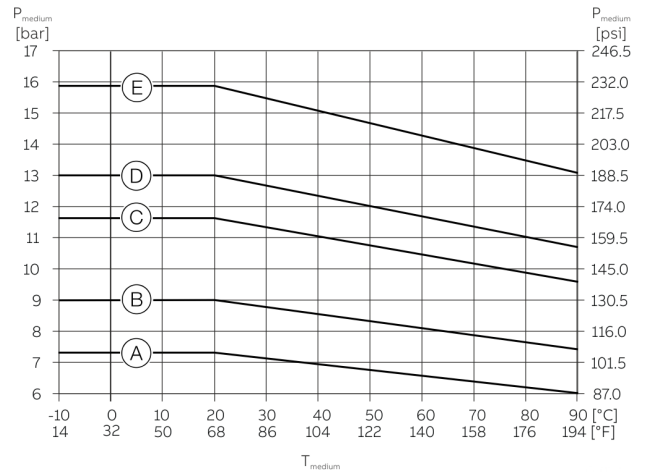
JIS 10K-B2210 flange

DN	Material	PN	T _{medium}	P _{medium}
DN 32 to 400 (1 ¼ to 16 in.)	Stainless steel	10	-25 to 180 °C (-13 to 356 °F)	10 bar (145 psi)
DN 32 to 400 (1 ¼ to 16 in.)	Steel	10	-10 to 180 °C (14 to 356 °F)	10 bar (145 psi)



- (A) DN 1000, PN 10
- (B) DN 700, DN800, DN900, PN 10
- (C) DN 1000, PN 16
- (D) DN 900, DN 800, PN 16
- (E) DN 700, PN 16

Figure 58: DIN flange, stainless steel, DN 700 to 1000 (28 to 40 in.)



- (A) DN 1000, PN 10
- (B) DN 700, DN800, DN900, PN 10
- (C) DN 1000, PN 16
- (D) DN 900, DN 800, PN 16
- (E) DN 700, PN 16

Figure 59: DIN flange, steel, DN 700 to 1000 (28 to 40 in.)

12 Specification

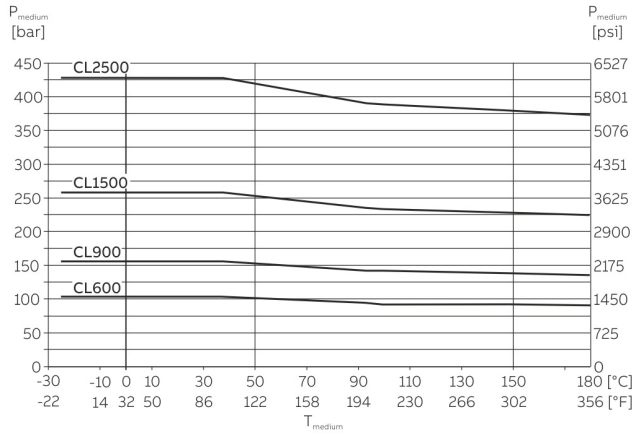


Figure 60: ASME flange, steel, DN 25 to 400 (1 to 24 in.)

Sensor, variant 2

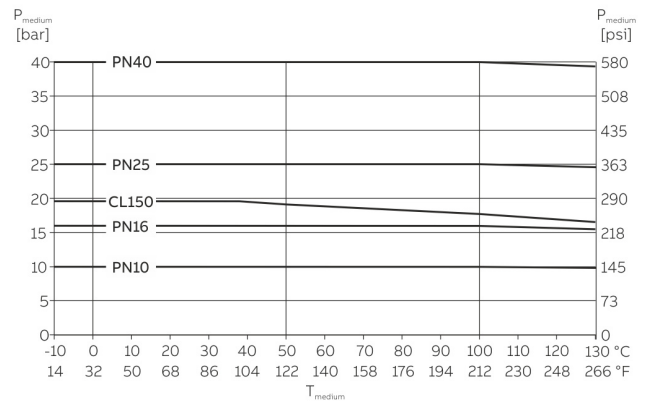


Figure 62: Cast steel housing, DN 25 to 600 (1 to 2 in.)

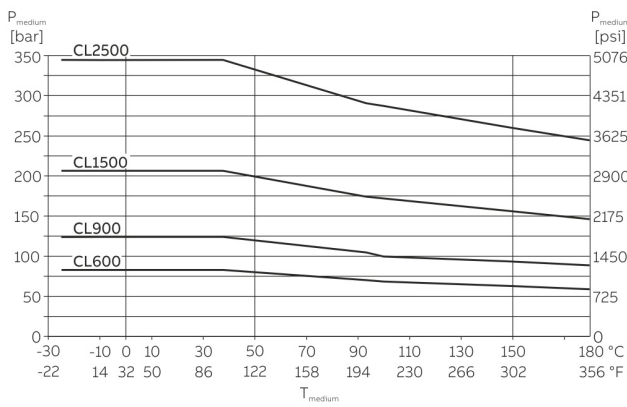


Figure 61: ASME flange, stainless steel, DN 25 to 400 (1 to 24 in.)

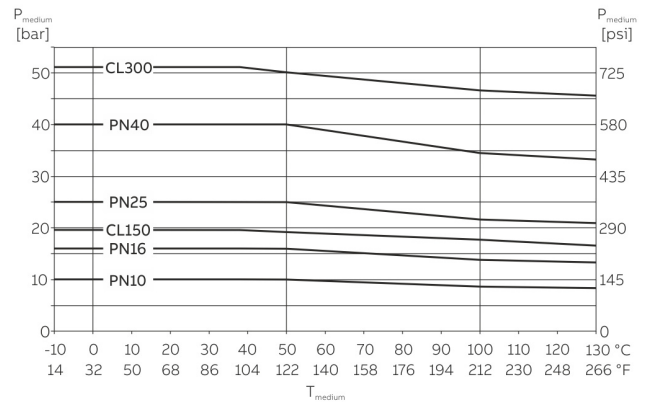


Figure 63: Welded steel housing, DN 25 to 600 (1 to 24 in.)

12.4 JUMO flowTRANS MAG H10 – Temperature data

The temperature range offered by the device is dependent on a number of different factors.

These factors include the measuring medium temperature

T_{medium} , the ambient temperature T_{amb} , operating pressure

P_{medium} , liner material and the approval for explosion protection.

12.4.1 Storage temperature range

-30 to 70 °C (-22 to 158 °F)

12.4.2 Maximum permissible cleaning temperature

CIP media	Liner	Cleaning temperature
Steam	PTFE, PFA	150 °C (302 °F)
Cleaning fluid	PTFE, PFA	140 °C (284 °F)

- The maximum cleaning temperature specified applies to a maximum ambient temperature of 25 °C (77 °F). If the ambient temperature up-scales > 25 °C (> 77 °F), then the temperature difference to the current temperature must be subtracted from the max. cleaning temperature.
- The specified cleaning temperature may have an effect for a maximum of 60 minutes.

12.4.3 Maximum Allowable Temperature Shock

Maximum allowable temperature shock difference in °C: Any

Temperature gradient °C/min: Any

12.4.4 Maximum ambient temperature depending on measuring medium temperature

Process connection	Ambient temperature (T_{amb})		Temperature of medium being measured (T_{medium})	
	Minimum	Maximum	Minimum	Maximum*
Flange	-20 °C (-4 °F)	60 °C (140 °F)	-25 °C (-13 °F)	95 °C (203 °F)
	-20 °C (-4 °F)	45 °C (113 °F)	-25 °C (-13 °F)	130 °C (266 °F)
Variable process connections	-20 °C (-4 °F)	60 °C (140 °F)	-25 °C (-13 °F)	95 °C (203 °F)
	-20 °C (-4 °F)	45 °C (113 °F)	-25 °C (-13 °F)	130 °C (266 °F)

* For CIP/SIP cleaning, higher temperatures are permitted for limited periods; refer to **Maximum permissible cleaning temperature** on page 87.

12 Specification

12.5 JUMO flowTRANS MAG H10 – Material load for process connections

The limits of the permissible measuring medium temperature (T_{medium}) and permissible pressure (P_{medium}) are calculated on the basis of the liner and flange material used in the device (see device name plate).

12.5.1 Minimum permissible operating pressure

The minimum permissible operating pressure (P_{medium}) dependent on the temperature of the medium being measured (T_{medium}) and the liner material is indicated in the table below.

Liner material	Nominal diameter	P_{medium} [mbar abs]	T_{medium}^*
PFA	DN 3 to 100 ($\frac{1}{10}$ to 4 in.)	0	< 130 °C (266 °F)

* For CIP/SIP cleaning, higher temperatures are permitted for limited periods; refer to table **Maximum permissible cleaning temperature** on page 87.

Approvals for liners available on request; please contact the manufacturer.

12.5.2 Overview of material load

Process connection	DN	$P_{\text{medium max.}}$	T_{medium}
Wafer type	DN 3 to 50 ($\frac{1}{10}$ to 2 in.)	40 bar (580 psi)	-25 to 130 °C (-13 to 266 °F)
	DN 65 to 100 (2 $\frac{1}{2}$ to 4 in.)	16 bar (232 psi)	
Weld stub DIN 2463, ISO 1127, DIN 11850	DN 3 to 40 ($\frac{1}{10}$ to 1 $\frac{1}{2}$ in.)	40 bar (580 psi)	-25 to 130 °C (-13 to 266 °F)
	DN 50, DN 80 (2 in., 3 in.)	16 bar (232 psi)	
Weld stub SMS 1145	DN 65, DN 100 (2 $\frac{1}{2}$ in., 4 in.)	10 bar (145 psi)	
	DN 25, DN 40 to 100 (1 in., 1,5 to 4 in.)	6 bar (87 psi)	-25 to 130 °C (-13 to 266 °F)
Threaded pipe fitting DIN 11851	DN 3 to 40 ($\frac{1}{10}$ to 1 $\frac{1}{2}$ in.)	40 bar (580 psi)	-25 to 130 °C (-13 to 266 °F)
	DN 50, DN 80 (2 in., 3 in.)	16 bar (232 psi)	
Tri-Clamp DIN 32676	DN 65, DN 100 (2 $\frac{1}{2}$ in., 4 in.)	10 bar (145 psi)	
	DN 3 to 50 ($\frac{1}{10}$ to 2 in.)	16 bar (232 psi)	-25 to 130 °C (-13 to 266 °F)
Tri-Clamp ASME BPE	DN 65 to 100 (2 $\frac{1}{2}$ to 4 in.)	10 bar (145 psi)	
	DN 3 to 80 ($\frac{1}{10}$ to 3 in.)	10 bar (145 psi)	-25 to 121 °C (-13 to 250 °F)
External thread ISO 228, DIN 2999	DN 100 (4 in.)	8.6 bar (124.7 psi)	
	DN 3 to 25 ($\frac{1}{10}$ to 1 in.)	16 bar (232 psi)	-25 to 130 °C (-13 to 266 °F)
Weld stub OD tubing	DN 3 to 50 ($\frac{1}{10}$ to 2 in.)	10 bar (145 psi)	-25 to 130 °C (-13 to 266 °F)

Flange design

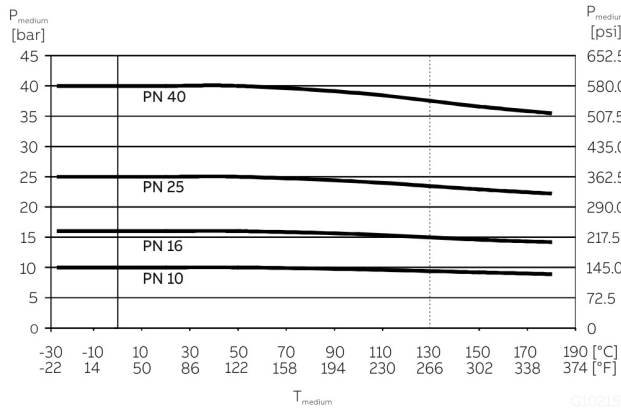


Figure 64: DIN flange, stainless steel up to DN 100 (4 in.)

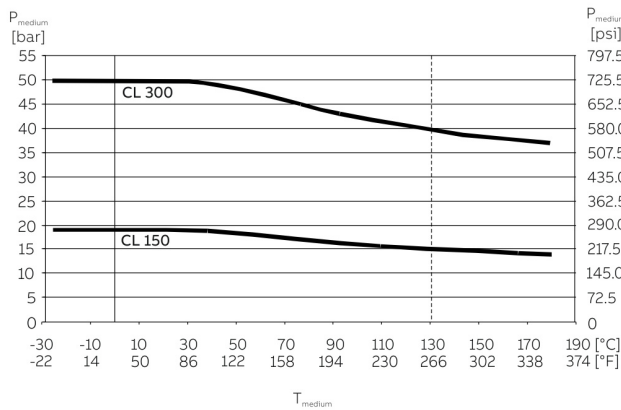


Figure 65: ASME flange, stainless steel up to DN 100 (4 in.) (CL 150 / CL 300)

JIS 10K-B2210 flange

DN	Material	PN	T _{medium}	P _{medium}
DN 25 to 100 (1 to 4 in.)	Stainless steel	10	-25 to 130 °C (-13 to 266 °F)	10 bar (145 psi)

Wafer type design

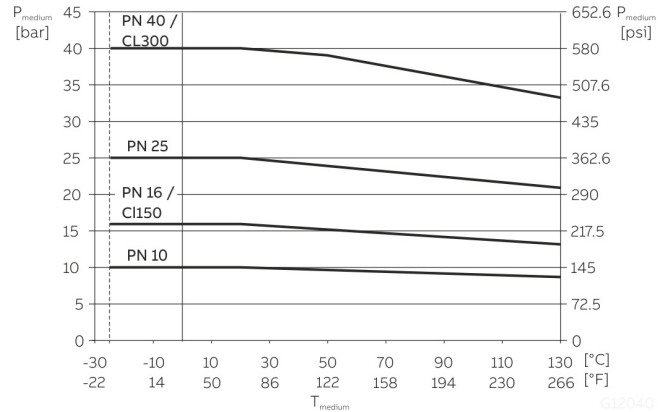


Figure 66: Wafer type design

JIS 10K-B2210 wafer type design

DN	Material	PN	T _{medium}	P _{medium}
DN 32 to 100 (1 ¼ to 4 in.)	1.4404 1.4435 1.4301	10	-25 to 130 °C (-13 to 266 °F)	10 bar (145 psi)

Trademark information

Hastelloy® is a registered trademark of Haynes International Inc., Kokomo, IN 46901, US.

13 Appendix

13 Appendix

13.1 Torque information

13.1.1 Tightening torques for variant 1 sensors

Note

The listed torques apply only to greased threads and to piping that is not subject to tensile stress.

JUMO flowTRANS MAG S10 in flange design and JUMO flowTRANS MAG H10 in flange design / wafer-type design

Nominal diameter [mm (in.)]	Pressure rating	Maximum tightening torque [Nm]					
		Hard rubber / Soft rubber		PTFE, PFA, ETFE		Ceramic carbide	
		**	***	**	***	**	***
DN 3 to 10 * ($\frac{1}{10}$ to $\frac{3}{8}$ in.)*	PN40	–	–	12.43	12.43	–	–
	PN63/100	–	–	12.43	12.43	–	–
	CL150	–	–	12.98	12.98	–	–
	CL300	–	–	17.38	17.38	–	–
	JIS 10K	–	–	12.43	12.43	–	–
DN 15 ($\frac{1}{2}$ in.)	PN40	6.74	4.29	14.68	14.68	–	–
	PN63/100	13.19	11.2	22.75	22.75	–	–
	CL150	3.65	3.65	12.98	12.98	–	–
	CL300	4.94	3.86	17.38	17.38	–	–
	CL600	9.73	9.73	–	–	–	–
DN 20 ($\frac{3}{4}$ in.)	JIS 10K	2.84	1.37	14.68	14.68	–	–
	PN40	9.78	7.27	20.75	20.75	–	–
	PN63/100	24.57	20.42	42.15	42.15	–	–
	CL150	5.29	5.29	18.49	18.49	–	–
	CL300	9.77	9.77	33.28	33.28	–	–
DN 25 (1 in.)	CL600	15.99	15.99	–	–	–	–
	JIS 10K	4.1	1.88	20.75	20.75	–	–
	PN40	13.32	8.6	13.32	8.6	13.32	8.6
	PN63/100	32.09	31.42	53.85	53.85	53.85	53.85
	CL150	5.04	2.84	23.98	23.98	23.98	23.98
DN 32 (1 $\frac{1}{4}$ in.)	CL300	17.31	16.42	65.98	38.91	65.98	38.91
	CL600	22.11	22.11	–	–	–	–
	JIS 10K	8.46	5.56	26.94	26.94	26.94	26.94
	PN40	27.5	15.01	45.08	45.08	45.08	45.08
	PN63/100	42.85	41.45	74.19	70.07	74.19	70.07
DN 32 (1 $\frac{1}{4}$ in.)	CL150	4.59	1.98	29.44	29.44	29.44	29.44
	CL300	25.61	14.22	45.52	45.52	45.52	45.52
	CL600	34.09	34.09	–	–	–	–
	JIS 10K	9.62	4.9	45.08	45.08	45.08	45.08
	JIS 10K	9.62	4.9	45.08	45.08	45.08	45.08

* Connection flange, DIN/EN1092-1 = DN 10 ($\frac{3}{8}$ "); connection flange, ASME = DN 15 ($\frac{1}{2}$ ").

** Flange material: Steel.

*** Flange material: Stainless steel.

13 Appendix

Nominal diameter [mm (in.)]	Pressure rating	Maximum tightening torque [Nm]					
		Hard rubber / Soft rubber		PTFE, PFA, ETFE		Ceramic carbide	
		**	***	**	***	**	***
DN 40 (1 ½ in.)	PN40	30.44	23.71	56.06	56.06	56.06	56.06
	PN63/100	62.04	51.45	97.08	97.08	97.08	97.08
	CL150	5.82	2.88	36.12	36.12	36.12	36.12
	CL300	33.3	18.41	73.99	73.99	73.99	73.99
	CL600	23.08	23.08	–	–	–	–
	JIS 10K	12.49	6.85	56.06	56.06	56.06	56.06
DN 50 (1 ½ in.)	PN40	41.26	27.24	71.45	71.45	71.45	71.45
	PN63	71.62	60.09	109.9	112.6	109.9	112.6
	CL150	22.33	22.33	66.22	66.22	66.22	66.22
	CL300	17.4	22.33	38.46	38.46	38.46	38.46
	CL600	35.03	35.03	–	–	–	–
	JIS 10K	17.27	10.47	71.45	71.45	71.45	71.45
DN 65 (2 ½ in.)	PN16	14.94	8	37.02	39.1	37.02	39.1
	PN40	30.88	21.11	43.03	44.62	43.03	44.62
	PN63	57.89	51.5	81.66	75.72	81.66	75.72
	CL150	30.96	30.96	89.93	89.93	89.93	89.93
	CL300	38.38	27.04	61.21	61.21	61.21	61.21
	CL600	53.91	53.91	–	–	–	–
	JIS 10K	14.94	8	37.02	39.1	37.02	39.1
DN 80 (3 in.)	PN40	38.3	26.04	51.9	53.59	51.9	53.59
	PN63	63.15	55.22	64.47	80.57	64.47	80.57
	CL150	19.46	19.46	104.6	104.6	104.6	104.6
	CL300	75.54	26.91	75.54	75.54	75.54	75.54
	CL600	84.63	84.63	–	–	–	–
	JIS 10K	16.26	9.65	45.07	47.16	45.07	47.16
DN 100 (4 in.)	PN16	20.7	12.22	49.68	78.19	49.68	78.19
	PN40	67.77	47.12	78.24	78.19	78.24	78.19
	PN63	107.4	95.79	148.5	119.2	148.5	119.2
	CL150	17.41	7.82	76.2	76.2	76.2	76.2
	CL300	74.9	102.6	102.6	102.6	102.6	102.6
	CL600	147.1	147.1	–	–	–	–
	JIS 10K	20.7	12.22	49.68	78.19	49.68	78.19
DN 125 (5 in.)	PN16	29.12	18.39	61.4	64.14	61.4	64.14
	PN40	108.5	75.81	123.7	109.6	123.7	109.6
	PN63	180.3	164.7	242.6	178.2	242.6	178.2
	CL150	24.96	11.05	98.05	98.05	98.05	98.05
	CL300	81.64	139.4	139.4	139.4	139.4	139.4
	CL600	244.1	244.1	–	–	–	–

* Connection flange, DIN/EN1092-1 = DN 10 (¾"); connection flange, ASME = DN 15 (½").

** Flange material: Steel.

*** Flange material: Stainless steel.

13 Appendix

Nominal diameter [mm (in.)]	Pressure rating	Maximum tightening torque [Nm]					
		Hard rubber / Soft rubber		PTFE, PFA, ETFE		Ceramic carbide	
		**	***	**	***	**	***
DN 150 (6 in.)	PN16	46.99	23.7	81.23	85.08	81.23	85.08
	PN40	143.5	100.5	162.5	133.5	162.5	133.5
	PN63	288.7	269.3	371.3	243.4	371.3	243.4
	CL150	30.67	13.65	111.4	111.4	111.4	111.4
	CL300	101.4	58.4	123.6	123.6	123.6	123.6
	CL600	218.4	218.4	–	–	–	–
DN 200 (8 in.)	PN10	45.57	27.4	113	116.9	113	116.9
	PN16	49.38	33.82	70.42	73	70.42	73
	PN25	100.6	69.17	109.9	112.5	109.9	112.5
	PN40	196.6	144.4	208.6	136.8	208.6	136.8
	PN63	350.4	331.8	425.5	282.5	425.5	282.5
	CL150	49.84	23.98	158.1	158.1	158.1	158.1
	CL300	133.9	78.35	224.3	224.3	224.3	224.3
	CL600	391.8	391.8	–	–	–	–
DN 250 (10 in.)	PN10	23.54	27.31	86.06	89.17	86.06	89.17
	PN16	88.48	61.71	99.42	103.1	99.42	103.1
	PN25	137.4	117.6	166.5	133.9	166.5	133.9
	PN40	359.6	275.9	279.9	241	279.9	241
	CL150	55.18	27.31	146.1	148.3	146.1	148.3
	CL300	202.7	113.2	246.4	246.4	246.4	246.4
DN 300 (12 in.)	PN10	58.79	38.45	91.29	94.65	91.29	94.65
	PN16	122.4	85.64	113.9	114.8	113.9	114.8
	PN25	180.6	130.2	151.1	106.9	151.1	106.9
	PN40	233.4	237.4	254.6	252.7	254.6	252.7
	CL150	90.13	50.37	203.5	198	203.5	198
	CL300	333.3	216.4	421.7	259.1	421.7	259.1
DN 350 (14 in.)	PN10	69.62	47.56	72.49	75.22	72.49	75.22
	PN16	133.6	93.61	124.9	104.4	124.9	104.4
	PN25	282.3	204.3	226.9	167.9	226.9	167.9
	CL150	144.8	83.9	270.5	263	270.5	263
	CL300	424.1	252.7	463.9	259.4	463.9	259.4
DN 400 (16 in.)	PN10	108.2	75.61	120.1	113.9	120.1	113.9
	PN16	189	137.2	191.4	153.8	191.4	153.8
	PN25	399.4	366	404	246.7	404	246.7
	CL150	177.6	100	229.3	222.8	229.3	222.8
	CL300	539.5	318.8	635.8	328.1	635.8	328.1

** Flange material: Steel.

*** Flange material: Stainless steel.

13 Appendix

Nominal diameter [mm (in.)]	Pressure rating	Maximum tightening torque [Nm]					
		Hard rubber / Soft rubber		PTFE, PFA, ETFE		Ceramic carbide	
		**	***	**	***	**	***
DN 450 (18 in.)	CL150	218.6	120.5	267.3	192.3	267.3	192.3
	CL300	553.8	327.2	660.9	300	660.9	300
DN 500 (20 in.)	PN10	141.6	101.4	153.9	103.5	153.9	103.5
	PN16	319.7	245.4	312.1	224.8	312.1	224.8
	PN25	481.9	350.5	477.1	286	477.1	286
	CL150	212.5	116	237.3	230.4	237.3	230.4
	CL300	686.3	411.8	786.8	363.1	786.8	363.1
DN 600 (24 in.)	PN10	224.7	164.8	238.7	149.1	238.7	149.1
	PN16	515.1	399.9	496.7	365.3	496.7	365.3
	PN25	826.2	600.3	750.7	539.2	750.7	539.2
	CL150	356.6	202.8	451.6	305.8	451.6	305.8
	CL300	1188	719	1376	587.4	1376	587.4
DN 700 (28 in.)	PN10	267.7	204.9	On request	On request	267.7	204.9
	PN16	455.7	353.2	On request	On request	455.7	353.2
	PN25	905.9	709.2	On request	On request	905.9	709.2
	CL150	364.1	326.2	449.2	432.8	364.1	326.2
	CL300	1241	On request	On request	On request	1241	On request
DN 750 (30 in.)	CL150	423.8	380.9	493.3	442	423.8	380.9
	CL300	1886	On request	On request	On request	1886	On request
DN 800 (32 in.)	PN10	391.7	304.2	On request	On request	391.7	304.2
	PN16	646.4	511.8	On request	On request	646.4	511.8
	PN25	1358	1087	On request	On request	1358	1087
	CL150	410.8	380.9	493.3	380.9	410.8	380.9
	CL300	2187	On request	On request	On request	2187	On request
DN 900 (36 in.)	PN10	387.7	296.3	On request	On request	387.7	296.3
	PN16	680.8	537.3	On request	On request	680.8	537.3
	PN25	1399	1119	On request	On request	1399	1119
	CL150	336.2	394.6	511	458.5	336.2	394.6
	CL300	1972	On request	On request	On request	1972	On request

** Flange material: Steel.

*** Flange material: Stainless steel.

13 Appendix

Nominal diameter [mm (in.)]	Pressure rating	Maximum tightening torque [Nm]					
		Hard rubber / Soft rubber		PTFE, PFA, ETFE		Ceramic carbide	
		**	***	**	***	**	***
DN 1000 (40 in.)	PN10	541.3	419.2	On request	On request	541.3	419.2
	PN16	955.5	756.1	On request	On request	955.5	756.1
	PN25	2006	1612	On request	On request	2006	1612
	CL150	654.2	598.8	650.6	385.1	654.2	598.8
	CL300	2181	On request	On request	On request	2181	On request
DN 1100 (44 in.)	CL150	749.1	682.6	741.3	345.9	–	–
	CL300	2607	On request	On request	On request	–	–
DN 1200 (48 in.)	PN 6	363.5	On request	–	–	–	–
	PN10	705.9	On request	–	–	–	–
	PN16	1464	On request	–	–	–	–
	CL150	815.3	731.6	–	–	–	–
	CL300	3300	On request	–	–	–	–
DN 1350 (54 in.)	CL150	1036	983.7	–	–	–	–
	CL300	5624	On request	–	–	–	–
DN 1400 (56 in.)	PN 6	515	On request	–	–	–	–
	PN10	956.3	On request	–	–	–	–
	PN16	1558	On request	–	–	–	–
DN 1500 (60 in.)	CL150	1284	1166	–	–	–	–
	CL300	6139	On request	–	–	–	–
DN 1600 (64 in.)	PN 6	570.7	On request	–	–	–	–
	PN10	1215	On request	–	–	–	–
	PN16	2171	On request	–	–	–	–
DN 1800 (72 in.)	PN 6	708.2	On request	–	–	–	–
	PN10	1492	On request	–	–	–	–
	PN16	2398	On request	–	–	–	–
DN 2000 (80 in.)	PN 6	857.9	On request	–	–	–	–
	PN10	1840	On request	–	–	–	–
	PN16	2860	On request	–	–	–	–

** Flange material: Steel.

*** Flange material: Stainless steel.

13.1.2 Tightening torques for variant 2 sensors

Note

The listed torques apply only to greased threads and to piping that is not subject to tensile stress.

Nominal diameter [mm (in.)]	Pressure rating	Hard rubber / Soft rubber			PTFE
		** [Nm]	*** [Nm]	** [Nm]	*** [Nm]
DN 25 (1 in.)	PN40	—	—	13.32	8.6
	CL150	—	—	23.98	23.98
	CL300	—	—	65.98	38.91
	JIS 10K	—	—	26.94	26.94
DN 32 (1 ¼ in.)	PN40	—	—	45.08	45.08
	CL150	—	—	29.44	29.44
	CL300	—	—	45.52	45.52
	JIS 10K	—	—	45.08	45.08
DN 40 (1 ½ in.)	PN40	—	—	56.06	56.06
	CL150	—	—	36.12	36.12
	CL300	—	—	73.99	73.99
	JIS 10K	—	—	56.06	56.06
DN 50 (1 ½ in.)	PN40	—	—	71.45	71.45
	CL150	—	—	66.22	66.22
	CL300	—	—	38.46	38.46
	JIS 10K	—	—	71.45	71.45
DN 65 (2 ½ in.)	PN16	—	—	37.02	39.1
	PN40	—	—	43.03	44.62
	CL150	—	—	89.93	89.93
	CL300	—	—	61.21	61.21
	JIS 10K	—	—	37.02	39.1
DN 80 (3 in.)	PN40	—	—	51.9	53.59
	CL150	—	—	104.6	104.6
	CL300	—	—	75.54	75.54
	JIS 10K	—	—	45.07	47.16
DN 100 (4 in.)	PN16	—	—	49.68	78.19
	PN40	—	—	78.24	78.19
	CL150	—	—	76.2	76.2
	CL300	—	—	102.6	102.6
	JIS 10K	—	—	49.68	78.19
DN 125 (5 in.)	PN16	—	—	61.4	64.14
	PN40	—	—	123.7	109.6
	CL150	—	—	98.05	98.05
	CL300	—	—	139.4	139.4
DN 150 (6 in.)	PN16	—	—	81.23	85.08
	PN40	—	—	162.5	133.5
	CL300	—	—	111.4	111.4

13 Appendix

Nominal diameter [mm (in.)]	Pressure rating	Hard rubber / Soft rubber			PTFE
		** [Nm]	*** [Nm]	** [Nm]	*** [Nm]
DN 200 (8 in.)	PN10	—	—	123.6	123.6
	PN16	—	—	113	116.9
	PN25	—	—	70.42	73
	PN40	—	—	109.9	112.5
	CL150	—	—	208.6	136.8
	CL300	—	—	158.1	158.1
DN 250 (10 in.)	PN10	—	—	86.06	89.17
	PN16	—	—	99.42	103.1
	PN25	—	—	166.5	133.9
	PN40	—	—	279.9	241
	CL150	—	—	146.1	148.3
	CL300	—	—	246.4	246.4
DN 300 (12 in.)	PN10	—	—	91.29	94.65
	PN16	—	—	113.9	114.8
	PN25	—	—	151.1	106.9
	PN40	—	—	254.6	252.7
	CL150	—	—	203.5	198
	CL300	—	—	421.7	259.1
DN 350 (14 in.)	PN10	—	—	72.49	75.22
	PN16	—	—	124.9	104.4
	PN25	—	—	226.9	167.9
	CL150	—	—	270.5	263
	CL300	—	—	463.9	259.4
DN 400 (16 in.)	PN10	—	—	120.1	113.9
	PN16	—	—	191.4	153.8
	PN25	—	—	404	246.7
	CL150	—	—	229.3	222.8
	CL300	—	—	635.8	328.1
DN 450 (18 in.)	CL150	—	—	267.3	192.3
	CL300	—	—	660.9	300
DN 500 (20 in.)	PN10	—	—	153.9	103.5
	PN16	—	—	312.1	224.8
	PN25	—	—	477.1	286
	CL150	—	—	237.3	230.4
	CL300	—	—	786.8	363.1
DN 600 (24 in.)	PN10	—	—	238.7	149.1
	PN16	—	—	496.7	365.3
	PN25	—	—	750.7	539.2
	CL150	—	—	451.6	305.8
	CL300	—	—	1376	587.4

** Flange material: Steel.

*** Flange material: Stainless steel.

13.1.3 Tightening torques for JUMO flowTRANS MAG H10 with variable process connections

Nominal diameter		Maximum tightening torque
[mm]	[in.]	[Nm]
DN 3 to 10	¾ in.	8
DN 15	½ in.	10
DN 20	¾ in.	21
DN 25	1	31
DN 32	1 ¼ in.	60
DN 40	1 ½ in.	80
DN 50	2	5
DN 65	2 ½ in.	5
DN 80	3	15
DN 100	4	14


13.2 Parameterization overview (factory settings)

Parameter	Value range	Factory setting
Sensor Tag	Alphanumeric, maximum 20 characters.	None
Sensor Location Tag	Alphanumeric, maximum 20 characters.	None
Qv Max 1	Depending on the nominal diameter of the sensor.	Set to Q_{\max} DN in accordance with Measuring range table on page 41.
Unit Volumeflow Qv	l/s; l/min; l/h; ml/s; ml/min; m3/s; m3/min; m3/h; m3/d; hl/h; g/s; g/min; g/h; kg/s; kg/min; kg/h; kg/d; t/min; t/h; t/d	l/min
Unit Vol. Totalizer	m3; l; ml; hl; g; kg; t	Liter (l)
Pulses per Unit	1 to 10000	1
Pulse Width	0.1 to 2000 ms	100 ms
Damping	0.02 to 60 s	1
Operating mode Digital output 41 / 42	Off, Binary output, Pulse output, Frequency output	Digital output 41/42 as pulse output for forward flow and reverse flow
Operating mode Digital output 51 / 52	Off, Binary output, pulse output (follows digital output 41 / 42, 90 ° or 180 ° out of phase)	Digital output 51 / 52 as binary output for output of the flow direction.
Curr.Out 31 / 32	4-20mA FWD/REV, 4-20mA FWD, 4-12-20 mA	4-20mA FWD/REV
Curr.Out at Alarm	High Alarm 21 to 23 mA or Low Alarm 3.5 to 3.6 mA	High Alarm, 21.8 mA
Current at flow rate > 103 % (I=20.5 mA)	Off (current output remains at 20.5 mA), High Alarm, Low Alarm ,	Off
Low flow cutoff	0 to 10 %	1 %
Empty pipe detection	On / Off	Off

13 Appendix

13.3 Declarations of conformity

13.3.1 JUMO flowTRANS MAG S10

JUMO GmbH & Co. KG			
Moritz-Juchheim-Straße 1 36039 Fulda, Germany	Tel.: +49 661 6003-0 Fax: +49 661 6003-500	E-Mail: mail@jumo.net Internet: www.jumo.net	
		More than sensors + automation	
<h2>EU-Konformitätserklärung</h2> <p>EU declaration of conformity / Déclaration UE de conformité</p>			
Dokument-Nr. <i>Document No. / Document n°.</i>	CE 797		
Hersteller <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG		
Anschrift <i>Address / Adresse</i>	Moritz-Juchheim-Straße 1, 36039 Fulda, Germany		
Produkt <i>Product / Produit</i>	Typ <i>Type / Type</i>	Typenblatt-Nr. <i>Data sheet no. / N° Document d'identification</i>	
JUMO flowTRANS MAG S10	406060	406060	
Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Anforderungen der Europäischen Richtlinien erfüllt.			
<i>We hereby declare in sole responsibility that the designated product fulfills the requirements of the European Directives.</i>			
<i>Nous déclarons sous notre seule responsabilité que le produit remplit les Directives Européennes.</i>			
1. Richtlinie <i>Directive / Directive</i>			
Name <i>Name / Nom</i>	EMC		
Fundstelle <i>Reference / Référence</i>	2014/30/EU		
Bemerkung <i>Comment / Remarque</i>	Mod. A		
Datum der Erstanbringung des CE-Zeichens auf dem Produkt <i>Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit</i>	2018		
Dokument-Nr. Document No. / Document n°.	CE 797	EU-Konformitätserklärung	Seite: 1 von 5

JUMO GmbH & Co. KG

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Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61326-1	2013	
EN 61326-2-3	2013	

Gültig für Typ

Valid for Type / Valable pour le type

406060/...

2. Richtlinie

Directive / Directive

Name <i>Name / Nom</i>	LVD
Fundstelle <i>Reference / Référence</i>	2014/35/EU
Bemerkung <i>Comment / Remarque</i>	Mod. A

Datum der Erstanbringung des CE-Zeichens auf dem Produkt

Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61010-1	2010+A1:2019/AC:2019	

Gültig für Typ

Valid for Type / Valable pour le type

406060/...

Dokument-Nr.
Document No. / Document n°.

CE 797

EU-Konformitätserklärung

Seite: 2 von 5

13 Appendix

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3. Richtlinie

Directive / Directive

Name PED

Name / Nom

Fundstelle 2014/68/EU

Reference / Référence

Bemerkung Mod. B(E)+D

Comment / Remarque

Datum der Erstanbringung des CE-Zeichens 2018

auf dem Produkt

*Date of first application of the CE mark to the product / Date
de 1ère application du sigle sur le produit*

Gültig für Typ

Valid for Type / Valable pour le type

406060/...

3.1 EU-Baumusterprüfbescheinigung

EU type examination certificate / Certificat d'examen de type UE

Fundstelle HPC2030223/ZE-1112/1A1

Reference / Référence

Notifizierte Stelle LR Deutschland GmbH

Notified Body / Organisme notifié

Kennnummer 0525

Identification no. / N° d'identification

Anerkannte Qualitätssicherungssysteme der Produktion

Recognized quality assurance systems of production / Systèmes de qualité reconnus de production

Notifizierte Stelle

Notified Body / Organisme notifié

TÜV SÜD Industrie Service GmbH

Kennnummer

Identification no. / N° d'identification

0036

Dokument-Nr.
Document No. / Document n°.

CE 797

EU-Konformitätserklärung

Seite: 3 von 5

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4. Richtlinie

Directive / Directive

Name RoHS

Name / Nom

Fundstelle 2011/65/EU

Reference / Référence

Bemerkung Mod. A

Comment / Remarque

Datum der Erstanbringung des CE-Zeichens 2018

auf dem Produkt

Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle

Reference / Référence

Ausgabe

Edition / Édition

Bemerkung

Comment / Remarque

VDK Umweltrelevante Aspekte V1

bei der Produktentwicklung und -gestaltung

Gültig für Typ

Valid for Type / Valable pour le type

406060/...

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Place, date / Lieu, date

Fulda, 2021-05-28

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Legally binding signatures /

Signatures juridiquement valable

Geschäftsführer

Dimitrios Charisiadis

Qualitätsbeauftragter und Leiter Qualitätswesen

i. V. Harald Gienger

Dokument-Nr.
Document No. / Document n°.

CE 797

EU-Konformitätserklärung

Seite: 5 von 5

13.3.2 JUMO flowTRANS MAG H10

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EU-Konformitätserklärung

EU declaration of conformity / Déclaration UE de conformité

Dokument-Nr. <i>Document No. / Document n°.</i>	CE 798	
Hersteller <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG	
Anschrift <i>Address / Adresse</i>	Moritz-Juchheim-Straße 1, 36039 Fulda, Germany	
Produkt <i>Product / Produit</i>		
Name <i>Name / Nom</i>	Typ <i>Type / Type</i>	Typenblatt-Nr. <i>Data sheet no. / N° Document d'identification</i>
JUMO flowTRANS MAG H10	406061	406061

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Anforderungen der Europäischen Richtlinien erfüllt.

We hereby declare in sole responsibility that the designated product fulfills the requirements of the European Directives.

Nous déclarons sous notre seule responsabilité que le produit remplit les Directives Européennes.

1. Richtlinie*Directive / Directive*

Name EMC
Name / Nom

Fundstelle 2014/30/EU
Reference / Référence

Bemerkung Mod. A
Comment / Remarque

Datum der Erstanbringung des CE-Zeichens auf dem Produkt 2018

*Date of first application of the CE mark to the product / Date
de 1ère application du sigle sur le produit*

Dokument-Nr.
Document No. / Document n°.

CE 798

EU-Konformitätserklärung

Seite: 1 von 5

13 Appendix

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Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61326-1	2013	
EN 61326-2-3	2013	

Gültig für Typ

Valid for Type / Valable pour le type

406061/...

2. Richtlinie

Directive / Directive

Name <i>Name / Nom</i>	LVD
Fundstelle <i>Reference / Référence</i>	2014/35/EU
Bemerkung <i>Comment / Remarque</i>	Mod. A
Datum der Erstanbringung des CE-Zeichens auf dem Produkt <i>Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit</i>	2018

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61010-1	2010+A1:2019/AC:2019	

Gültig für Typ

Valid for Type / Valable pour le type

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Dokument-Nr.
Document No. / Document n°.

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EU-Konformitätserklärung

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3. Richtlinie

Directive / Directive

Name	PED
<i>Name / Nom</i>	
Fundstelle	2014/68/EU
<i>Reference / Référence</i>	
Bemerkung	Mod. B(E)+D
<i>Comment / Remarque</i>	
Datum der Erstanbringung des CE-Zeichens auf dem Produkt	2018
<i>Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit</i>	

Gültig für Typ

Valid for Type / Valable pour le type

406061/...

3.1 EU-Baumusterprüfbescheinigung

EU type examination certificate / Certificat d'examen de type UE

Fundstelle	HPC2030223/ZE-1112/1A1
<i>Reference / Référence</i>	
Notifizierte Stelle	LR Deutschland GmbH
<i>Notified Body / Organisme notifié</i>	
Kennnummer	0525
<i>Identification no. / N° d'identification</i>	

Anerkannte Qualitätssicherungssysteme der Produktion

Recognized quality assurance systems of production / Systèmes de qualité reconnus de production

Notifizierte Stelle	Kennnummer
<i>Notified Body / Organisme notifié</i>	<i>Identification no. / N° d'identification</i>
TÜV SÜD Industrie Service GmbH	0036

Dokument-Nr.
Document No. / Document n°.

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EU-Konformitätserklärung

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4. Richtlinie

Directive / Directive

Name

Name / Nom

RoHS

Fundstelle

Reference / Référence

2011/65/EU

Bemerkung

Comment / Remarque

Mod. A

Datum der Erstanbringung des CE-Zeichens auf dem Produkt

*Date of first application of the CE mark to the product / Date
de 1ère application du sigle sur le produit*

2018

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle

Reference / Référence

Ausgabe

Edition / Édition

Bemerkung

Comment / Remarque

VDK Umweltrelevante Aspekte V1
bei der Produktentwicklung und
-gestaltung

Gültig für Typ

Valid for Type / Valable pour le type

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Document No. / Document n°.

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Place, date / Lieu, date

Fulda, 2021-05-28

Rechtsverbindliche Unterschriften

Legally binding signatures /

Signatures juridiquement valable

Geschäftsführer

Dimitrios Charisiadis

Qualitätsbeauftragter und Leiter Qualitätswesen

i. V. Harald Gienger

Dokument-Nr.
Document No. / Document n°.

CE 798

EU-Konformitätserklärung

Seite: 5 von 5

13 Appendix

13.3.3 JUMO flowTRANS MAG 10

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More than sensors + automation

EU-Konformitätserklärung

EU declaration of conformity / Déclaration UE de conformité

Dokument-Nr. <i>Document No. / Document n°.</i>	CE 799	
Hersteller <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG	
Anschrift <i>Address / Adresse</i>	Moritz-Juchheim-Straße 1, 36039 Fulda, Germany	
Produkt <i>Product / Produit</i>		
Name <i>Name / Nom</i>	Typ <i>Type / Type</i>	Typenblatt-Nr. <i>Data sheet no. / N° Document d'identification</i>
JUMO flowTRANS MAG 10	406067	406060

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Anforderungen der Europäischen Richtlinien erfüllt.

We hereby declare in sole responsibility that the designated product fulfills the requirements of the European Directives.

Nous déclarons sous notre seule responsabilité que le produit remplit les Directives Européennes.

1. Richtlinie

Directive / Directive

Name EMC
Name / Nom

Fundstelle 2014/30/EU
Reference / Référence

Bemerkung Mod. A
Comment / Remarque

Datum der Erstanbringung des CE-Zeichens auf dem Produkt 2018

Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit

Dokument-Nr.
Document No. / Document n°.

CE 799

EU-Konformitätserklärung

Seite: 1 von 5

JUMO GmbH & Co. KG

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More than **sensors + automation**

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61326-1	2013	
EN 61326-2-3	2013	

Gültig für Typ

Valid for Type / Valable pour le type

406067/...

2. Richtlinie

Directive / Directive

Name <i>Name / Nom</i>	LVD
Fundstelle <i>Reference / Référence</i>	2014/35/EU
Bemerkung <i>Comment / Remarque</i>	Mod. A
Datum der Erstanbringung des CE-Zeichens auf dem Produkt <i>Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit</i>	2018

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle <i>Reference / Référence</i>	Ausgabe <i>Edition / Édition</i>	Bemerkung <i>Comment / Remarque</i>
EN 61010-1	2010+A1:2019/AC:2019	

Gültig für Typ

Valid for Type / Valable pour le type

406067/...

Dokument-Nr.
Document No. / Document n°.

CE 799

EU-Konformitätserklärung

Seite: 2 von 5

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3. Richtlinie

Directive / Directive

Name	PED
<i>Name / Nom</i>	
Fundstelle	2014/68/EU
<i>Reference / Référence</i>	
Bemerkung	Mod. B(E)+D
<i>Comment / Remarque</i>	
Datum der Erstanbringung des CE-Zeichens auf dem Produkt	2018
<i>Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit</i>	

Gültig für Typ

Valid for Type / Valable pour le type

406067/...

3.1 EU-Baumusterprüfbescheinigung

EU type examination certificate / Certificat d'examen de type UE

Fundstelle	HPC2030223/ZE-1112/1A1
<i>Reference / Référence</i>	
Notifizierte Stelle	LR Deutschland GmbH
<i>Notified Body / Organisme notifié</i>	
Kennnummer	0525
<i>Identification no. / N° d'identification</i>	

Anerkannte Qualitätssicherungssysteme der Produktion

Recognized quality assurance systems of production / Systèmes de qualité reconnus de production

Notifizierte Stelle	Kennnummer
<i>Notified Body / Organisme notifié</i>	<i>Identification no. / N° d'identification</i>
TÜV SÜD Industrie Service GmbH	0036

Dokument-Nr.
Document No. / Document n°.

CE 799

EU-Konformitätserklärung

Seite: 3 von 5

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4. Richtlinie

Directive / Directive

Name RoHS

Name / Nom

Fundstelle 2011/65/EU

Reference / Référence

Bemerkung Mod. A

Comment / Remarque

Datum der Erstanbringung des CE-Zeichens 2018

auf dem Produkt

Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle

Reference / Référence

Ausgabe

Edition / Édition

Bemerkung

Comment / Remarque

VDK Umweltrelevante Aspekte V1

bei der Produktentwicklung und -gestaltung

Gültig für Typ

Valid for Type / Valable pour le type

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Aussteller

Issued by / Etabli par

JUMO GmbH & Co. KG

Ort, Datum

Place, date / Lieu, date

Fulda, 2021-05-28

Rechtsverbindliche Unterschriften

Legally binding signatures /

Signatures juridiquement valable

Geschäftsführer

Dimitrios Charisiadis

Qualitätsbeauftragter und Leiter Qualitätswesen

i. V. Harald Gienger

Dokument-Nr.
Document No. / Document n°.

CE 799

EU-Konformitätserklärung

Seite: 5 von 5

13 Appendix

13.4 China RoHS

						
产品组别 Product group: 406060/61/67	产品中有害物质的名称及含量 China EEP Hazardous Substances Information					
部件名称 Component Name						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳 Housing (Gehäuse)	○	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	○	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	○	○	○	○	○	○
<p>本表格依据SJ/T 11364的规定编制。 This table is prepared in accordance with the provisions SJ/T 11364.</p> <p>○ : 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 Indicate the hazardous substances in all homogeneous materials' for the part is below the limit of the GB/T 26572.</p> <p>× : 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。 Indicate the hazardous substances in at least one homogeneous materials' of the part is exceeded the limit of the GB/T 26572.</p>						

Note

All documentation, declarations of conformity, and certificates are available in the download section at www.jumo.de.



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