

JUMO flowTRANS US W01

Ultrasonic flowmeter
for liquids



Operating Manual



40605000T90Z001K000

V3.00/EN/00729317/2024-11-13

Further information and downloads



qr-406050-en.jumo.info

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1 About this documentation

1.1 Purpose

This documentation is part of the device and includes all information to ensure that it is used safely and as intended across all phases of the product lifecycle.

If you do not follow the documentation and safety information, this may result in risk to life and damage to property due to improper use.

- Read and follow the documentation and the safety information and warnings.
- Store the document in its entirety, in an easily accessible location, and so that it can be read in full at all times.
- Contact the manufacturer if you have any questions about the device and documentation.

1.2 Target group

This documentation is intended to be used by personnel trained in electrical, mechanical, and plant engineering across all phases of the product lifecycle.

1.3 Definition of terms

Use in the documentation	Definition
Device, inline device, product	Ultrasonic flowmeter
Medium, measurement medium, fluid	Liquid
Transducer	Ultrasonic converter, transducer, sensor
Volume flow, flow	Totalized flow rate per time span
Product lifecycle	Overall consideration of Product identification, acceptance of the goods, storage, mounting, connection, operation, troubleshooting, maintenance to disposal

1.4 Trademark information

All trademarks and trade and company names used are the property of their rightful owners or authors.

1.5 Symbols



REFERENCE!

This symbol refers to **further information** in other sections, chapters, or other manuals.

2 Safety

2.1 Intended use

The ultrasonic flowmeter measures the flow of conductive and non-conductive liquid media. It is installed in plastic or metal pipes.

The documentation is part of the device. The device is only intended for use according to this documentation.

2.2 Qualification of personnel

The personnel deployed must meet the following requirements in all phases of the product lifecycle:

- Trained electrical, mechanical, and plant engineering personnel.
- Members of personnel are familiar with this documentation and the safety information and warnings it contains.

2.3 Hot surfaces

Hot device surfaces pose a risk of injury. Hot device surfaces can be caused by the use of hot media in applications.

- If required, install contact protection.
- Take into account the alignment of the housing for electronic components, ⇒page 18.

When working on the device:

- Allow the device and plant to cool down.
- Wear suitable protective equipment.

2.4 Hazardous materials

Using hazardous materials as a medium may result in abrasive and corrosive damage to components of the product that come into contact with the medium. The medium may leak and present a fire hazard and a risk to health.

Carry out a risk assessment taking into consideration the safety data sheet for the relevant hazardous substance for mounting, operation, maintenance, cleaning, and disposal:

- Comparison and systematic checking of the durability of the components of the product that come into contact with the medium and the admissible environmental influences.
- Assessment of the risk to people and the environment.
- Assessment of the fire hazard due to the product materials, the admissible environmental influences, and the voltage supply.

2.5 Mechanical loads

Mechanical load on the device and process connections can lead to leaks.

- Do not place the device and the process connections under mechanical strain.
- Systematically check that the process connections are leak-tight.

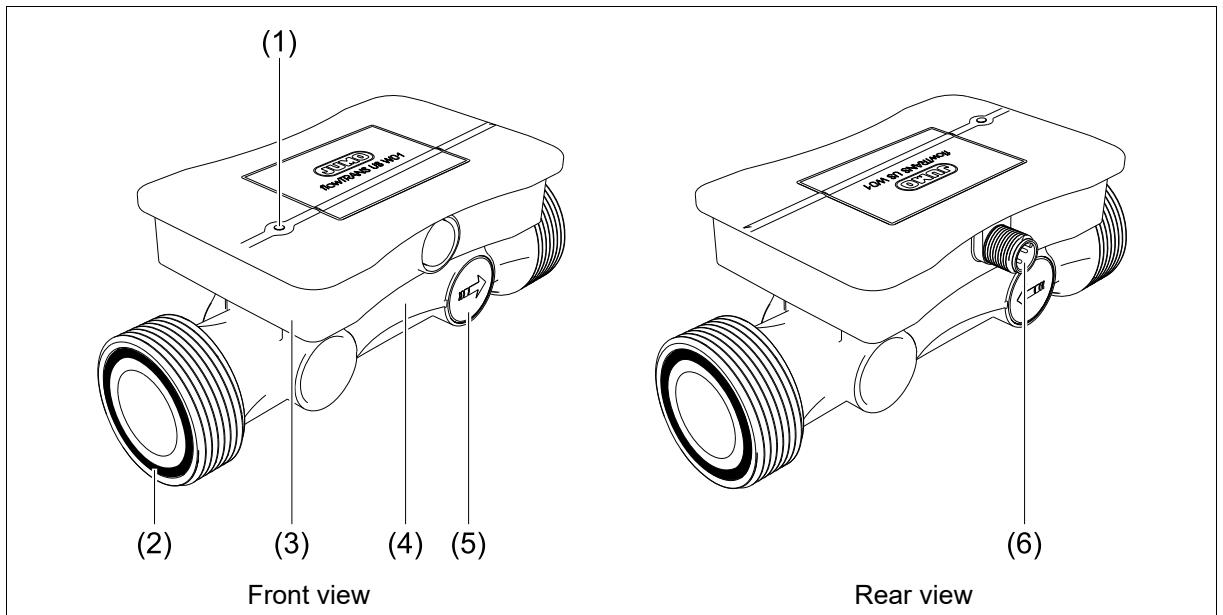
2.6 Transport and storage damage

The device can be damaged if it is insufficiently protected during transport and/or improperly stored.

- Transport the device protected from moisture and dirt in shockproof packaging.
- Protect all electrical and mechanical connections from damage.
- Observe the admissible storage temperature of the device.
- Store the device in a dry and dust-free environment.

3 Description

3.1 Structure



- | | | | |
|---|------------------------------------------|---|-----------------------------------|
| 1 | Device status LED | 4 | Measuring tube |
| 2 | O-ring (seal for the process connection) | 5 | Transducer (ultrasonic converter) |
| 3 | Housing for electronic components | 6 | M12 plug connector |

3.2 Function

The transducers are on opposite sides of the measuring section and act as transmitters and receivers, i.e. they convert the electrical energy into sound waves and the sound waves into electrical energy.

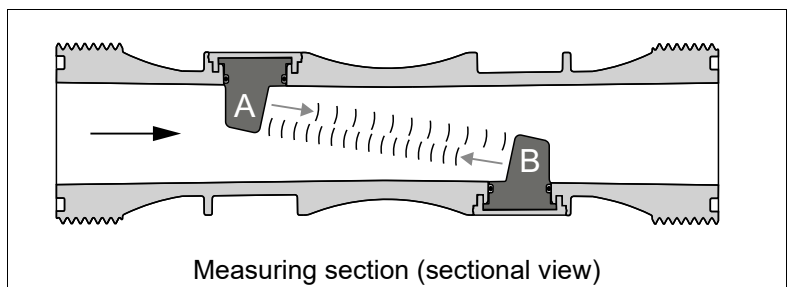
The electronic components supply power to the device, convert the raw signals into standard signals for communicating with other systems (PLC, recorder, indicating device, etc.), and provide interfaces for displaying measured values.

Function principle

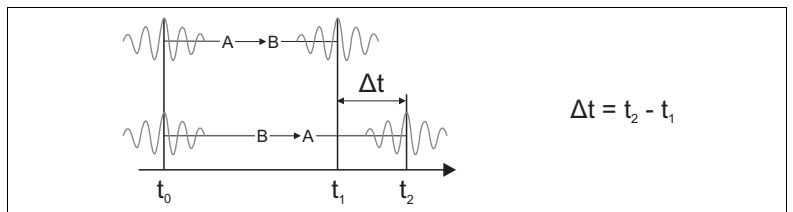
The ultrasonic flowmeter works according to the runtime method.

This method measures the run-times t_1 and t_2 required by the sound to travel from transducer A to transducer B and vice versa.

→ = Flow direction

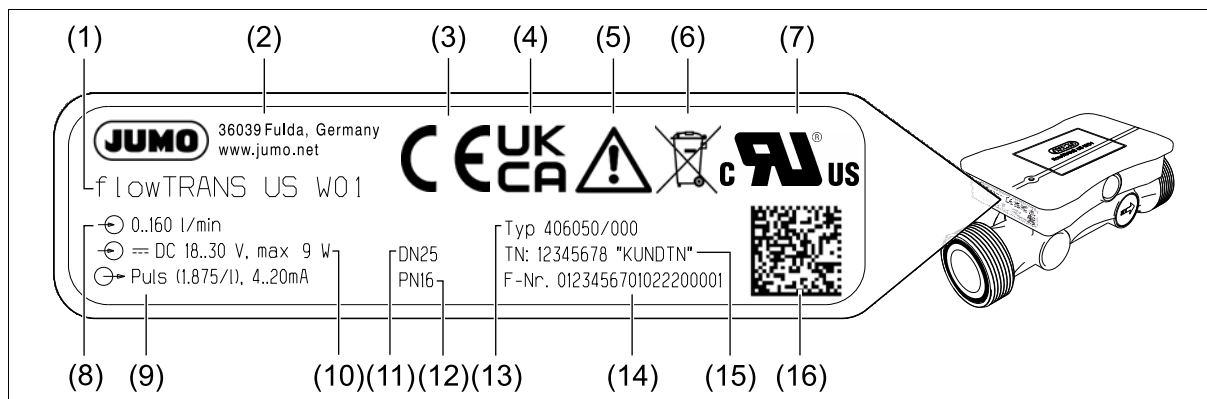


The runtime differential Δt is directly proportional to the flow velocity of the medium.



3.3 Nameplate

Example:



1	Device designation	9	Output signal
2	Manufacturer and address	10	Voltage supply (DC)
3	CE identification marking	11	Nominal width
4	UKCA identification marking	12	Nominal pressure level
5	Observe device documentation!	13	Order code
6	Disposal	14	Fabrication number
7	UL identification marking	15	Part no.
8	Measuring range	16	Data Matrix code

3.4 Approval marks and certificates



Certificates for approved device versions are available for download on the manufacturer's website.

3.5 Scope of delivery

Device in the ordered version
Operating manual
Calibration certificate
2 O-rings (seal for the process connection) in the ordered version

4 Technical data

4.1 Electrical safety

Requirements	DIN EN 61010-1 The device must be equipped with an electrical circuit that meets the requirements for "Limited-energy circuits".
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4.2 Electrical data

Voltage supply	DC 18 to 30 V SELV, PELV, Class 2
Current consumption	
Analog outputs mode	≤ 50 mA
Digital outputs mode	≤ 300 mA
Power consumption	
Analog outputs mode	≤ 1,5 W
Digital outputs mode	≤ 9 W
Protection rating	DIN EN 61140, Class III (protective low voltage)
Electrical connection	
Connection elements	
Device	M12 plug connector
Connecting cable	M12 plug connector
M12 plug connector	IEC 61076-2-101
Version	4-core, shielded
Protection type	IP67
Connecting cable	
Conductor cross section	≥ AWG 23
Version	4-core, copper, shielded
Line length	≤ 20 m
Temperature resistance	≥ 80 °C
For UL application	
Approved cables ^a	CYJV2/8, CYJV/7, PVVA2/8, PVVA/7

^a The cables must be suitable for the voltage, current and temperature used.

4.3 Inputs

4.3.1 Measurands

Measuring range ^{a, b} DN 15 (Low-flow calibration) DN 15 DN 20 DN 25 DN 32	0 to 30 l/min (60 l/min ^c) 0 to 62,5 l/min (80 l/min ^c) 0 to 105 l/min (210 l/min ^c) 0 to 160 l/min (320 l/min ^c) 0 to 260 l/min (520 l/min ^c)														
Accuracy ^d Pulse output Current output Voltage output Reproducibility Temperature drift Response time t_{90}	$\leq \pm 2.0\%$ of measured value $\pm 0.1\%$ of $flow_{max}$ Like pulse output, additionally $\leq \pm 0.1\%$ of 20 mA Like pulse output, additionally $\leq \pm 0.1\%$ of 10 V $\leq \pm 0.5\%$ of measured value $\pm 0.03\%$ of $flow_{max}$ $\leq \pm 0.15\%$ of measured value per 10 K temperature change (at -20 to +80° C) ≤ 2 s														
Reference conditions Measurement medium Medium temperature Ambient temperature Medium pressure Measuring tube	Water 23 °C (73 °F) ± 5 K 23 °C (73 °F) ± 5 K 1 to 4 bar Horizontal installation, compliance with the required inlet and outlet sections														
X = Measuring range _{max} (%) Y = Measuring deviation from the measured value \pm (%)	<table border="1"> <caption>Approximate data points from the graph</caption> <thead> <tr> <th>Measuring range (X) [%]</th> <th>Measuring deviation (Y) [%]</th> </tr> </thead> <tbody> <tr><td>2</td><td>10</td></tr> <tr><td>5</td><td>6</td></tr> <tr><td>10</td><td>3.5</td></tr> <tr><td>20</td><td>2.5</td></tr> <tr><td>50</td><td>2.2</td></tr> <tr><td>100</td><td>2.1</td></tr> </tbody> </table>	Measuring range (X) [%]	Measuring deviation (Y) [%]	2	10	5	6	10	3.5	20	2.5	50	2.2	100	2.1
Measuring range (X) [%]	Measuring deviation (Y) [%]														
2	10														
5	6														
10	3.5														
20	2.5														
50	2.2														
100	2.1														

^a Low flow cut off: 0.05 % of $flow_{max}$.

^b Optionally expandable up to $flow_{max}$.

^c $Flow_{max}$.

^d Under reference conditions.

4 Technical data

4.4 Outputs

4.4.1 Analog outputs

Current output	
Function	Output of the flow rate, output of a signal for error messages and display via device status LED
Signal range	4 to 20 mA
Signal limits	3.8 to 20.5 mA
Error message	3.4 or 22 mA (default settings: 3.4 mA)
Temperature influence	75 ppm/K
Burden	$\leq 500 \Omega$
Burden influence	$\leq \pm 0.02 \% \text{ per } 100 \Omega$
Voltage output (optionally)	
Function	Output of the flow rate, output of a signal for error messages and display via device status LED
Signal range	DC 0 to 10 V
Signal limits	DC 0 to 10,3 V
Error message	DC 0 or 11 V (default settings: 0 V)
Temperature influence	75 ppm/K
Load	$\geq 700 \Omega$
Load influence	$\leq \pm 15 \text{ mV}$

4.4.2 Digital outputs

Type	Transistor output as pulse output
Protection	Against polarity reversal, short circuiting and overload
Output signal	Push-pull, PNP, NPN (optionally)
Ampacity	$\leq 200 \text{ mA}$
Voltage drop	$\leq 2 \text{ V}$
Pulse output	
Function	Output of the flow process value
Pulse frequency	0 to 10 kHz
Duty cycle	50 %
Output value at nominal width	Pulses per Liter (l)
DN 15 (Low-flow calibration)	10000
DN 15	4800
DN 20	2850
DN 25	1875
DN 32	1150

4.5 Environmental influences

The product is UL-approved. The approval stipulates that the product may be used indoors only.

Admissible ambient temperature at a medium temperature of ≤ 70 °C at a medium temperature of > 70 °C ^a	DIN 60068-2-1, DIN 60068-2-2 -20 to +70 °C -20 to +45 °C
Climatic conditions Climate class Air temperature Relative humidity	DIN EN 60721-3-1, DIN EN 60721-3-3, DIN EN 60068-2-78 3K6 -20 to +55 °C ≤ 100 % – Condensation on device outer shell
Protection type	DIN EN 60529, EN 50102 IP65, IP67
Electromagnetic compatibility (EMC) Interference emission Interference immunity	DIN EN 61326-2-3:2022 Class B ^b Industrial requirements
Oscillation Amplitude Acceleration	DIN EN 60068-2-6 0,35 mm at 10 to 2000 Hz 5 g at 10 to 2000 Hz
Shock Peak acceleration Shock duration	DIN EN 60068-2-27 20 g 11 ms
Pressure Equipment Directive Group 1 fluids - DN ≤ 25 Group 2 fluids - DN ≤ 32 Group 1 fluids	2014/68/EU Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.i Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.i Sound engineering practice acc. to Art. 4, para. 3 i. c. w. Art. 4 para. 1c.ii

^a Without UL approval.

^b The product is suitable for industrial use as well as for households and small businesses.

4 Technical data

4.6 Mechanical features

4.6.1 Device

Weight ^a Without screw connection	≥ 215 to ≤ 385 g
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^a Depends on version and DN.

4.6.2 Materials

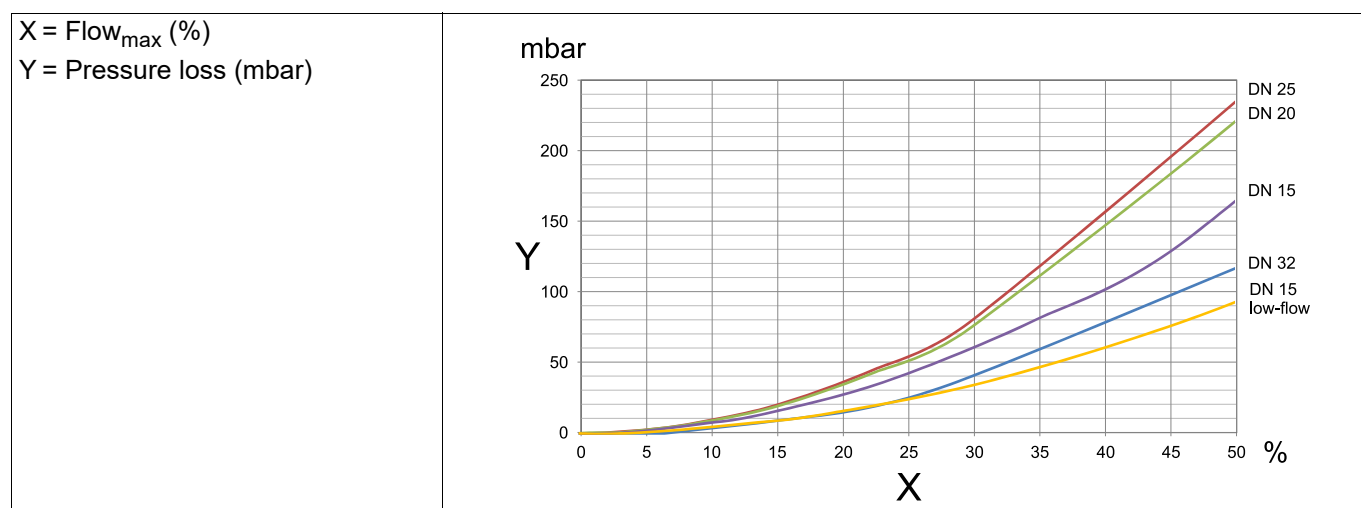
Housing	PA66-GF25
Components in contact with the medium Measuring tube Transducer Seals Process connection, transducer	PPSU PEEK EPDM or FKM (optionally)
Approvals Components in contact with the medium	Drinking water certified materials (when using EPDM seals)

4.6.3 Nominal pressure

Nominal pressure level DN 15, DN 20, DN 25 DN 32	PN 16 PN 10
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4.6.4 Pressure loss diagram

Created under reference conditions ⇨ Page 11.



4.7 Measurement media

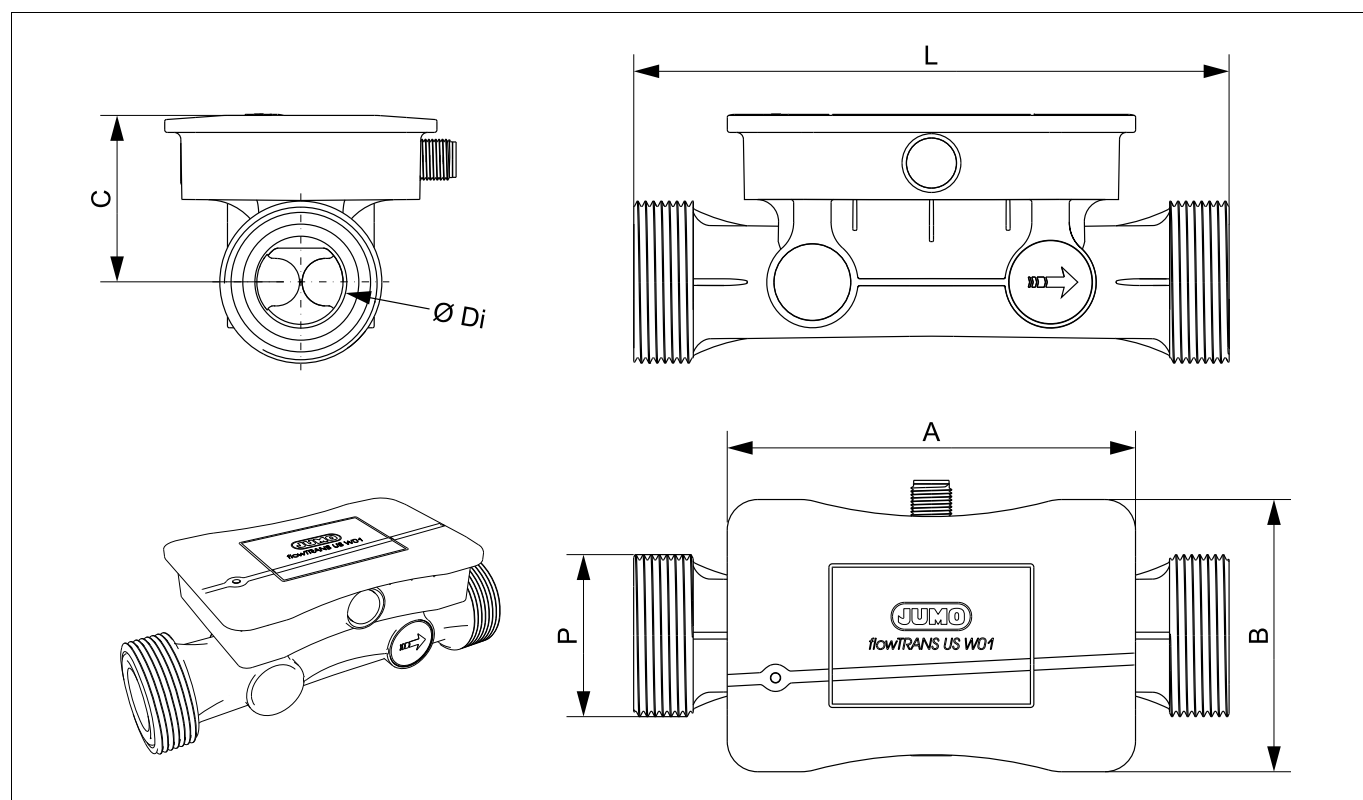
Medium type	Conductive or non-conductive liquids
Viscosity	≤ 100 mPas
Foreign matter content	
Solids	≤ 5 % vol ≤ 1 % vol
Medium temperature	
Temperature range	-20 to +95 °C
Within the accuracy	-20 to +70 °C
Within the accuracy ^a	-20 to +80 °C
Outside of the accuracy ^{a, b}	> 80 to 95 °C

^a Without UL approval.

^b Return to the accuracy after cooling down.

4.8 Dimensions

4.8.1 Device

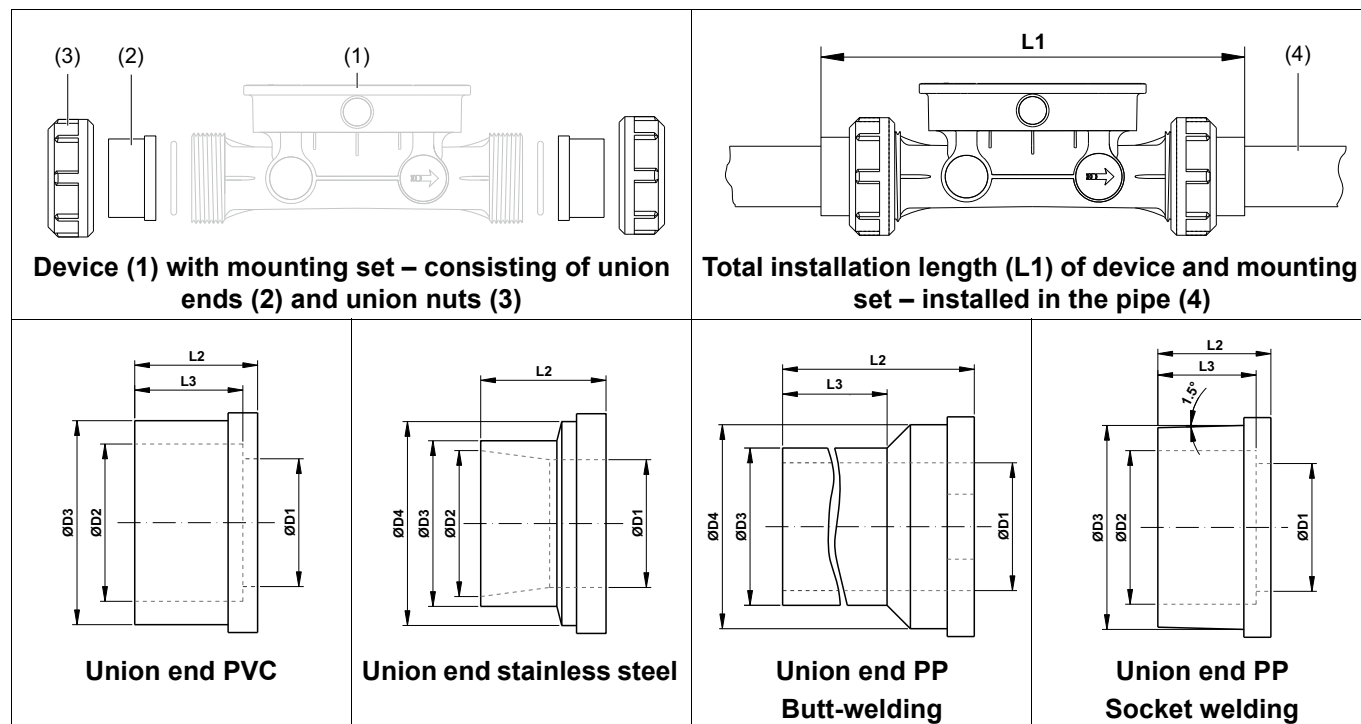


Nominal width	Ø Di [mm]	P	A [mm]	B [mm]	C [mm]	L [mm]
DN 15	16.5	G 1	120	80	43.5	155
DN 20	21.5	G 1 1/4			46	165
DN 25	27	G 1 1/2			49	175
DN 32	34	G 2			52.5	185

4 Technical data

4.8.2 Accessories

Mounting sets



Nominal width	ØD1 [mm]	ØD2 [mm]	ØD3 [mm]	ØD4 [mm]	L1 [mm]	L2 [mm]	L3 [mm]
Union end PVC							
DN 15 to DN 10	10.5	16	23.5	27.5	203	24	16
DN 15	15	20	27.5	-	198	19	16
DN 20	22	25	36	-	209	22	19
DN 25	26	32	41.5	-	225	25	22
DN 32	33	40	53	-	243	29	26
Union end stainless steel							
DN 15 to DN 10	10.5	16	23.5	27.5	203	24	16
DN 15	15	17.3	21.3	27.5	203	21.5	-
DN 20	22	22.9	26.9	36	210	22.5	-
DN 25	26	29.7	33.7	41.5	226	25.5	-
DN 32	33	38.4	42.4	53	236	25.5	-
Union end PP butt-welding							
DN 15	15/16.2	-	20	27.5	266	53	37.75
DN 20	19.8	-	25	36	277.8	56.4	38.6
DN 25	26	-	32	41.5	293	59	41.25
DN 32	32.6	-	40	53	310.6	62.8	41.8
Union end PP socket-welding							
DN 15	17	19.35	27.5	-	198	19	16
DN 20	21	24.3	36	-	207	21	18
DN 25	26	31.25	41.5	-	221	23	20
DN 32	33	39.2	53	-	235	25	22

5.1 Preparing for installation

5.1.1 Installation site

Requirements:

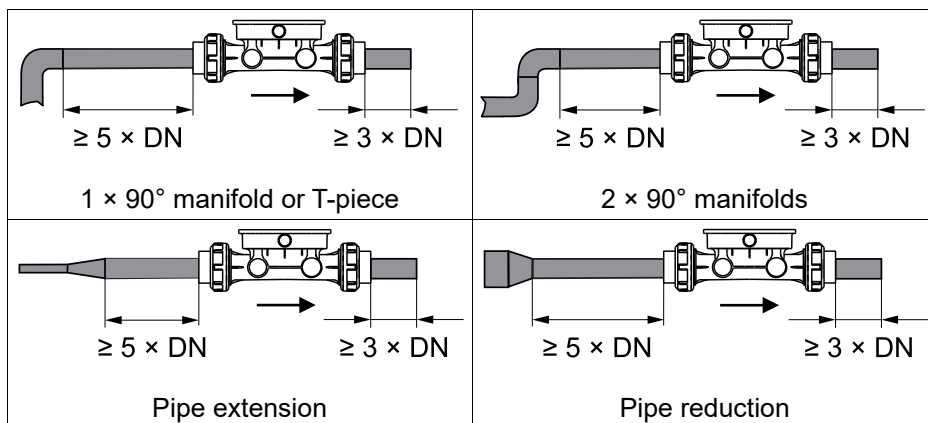
- The device is protected from electromechanical interference.
- The device is protected from UV radiation.
- The device is protected from the weather in outdoor applications.

5.1.2 Inlet and outlet sections

To ensure measurement accuracy, longer inlet and outlet distances may be required depending on the application.

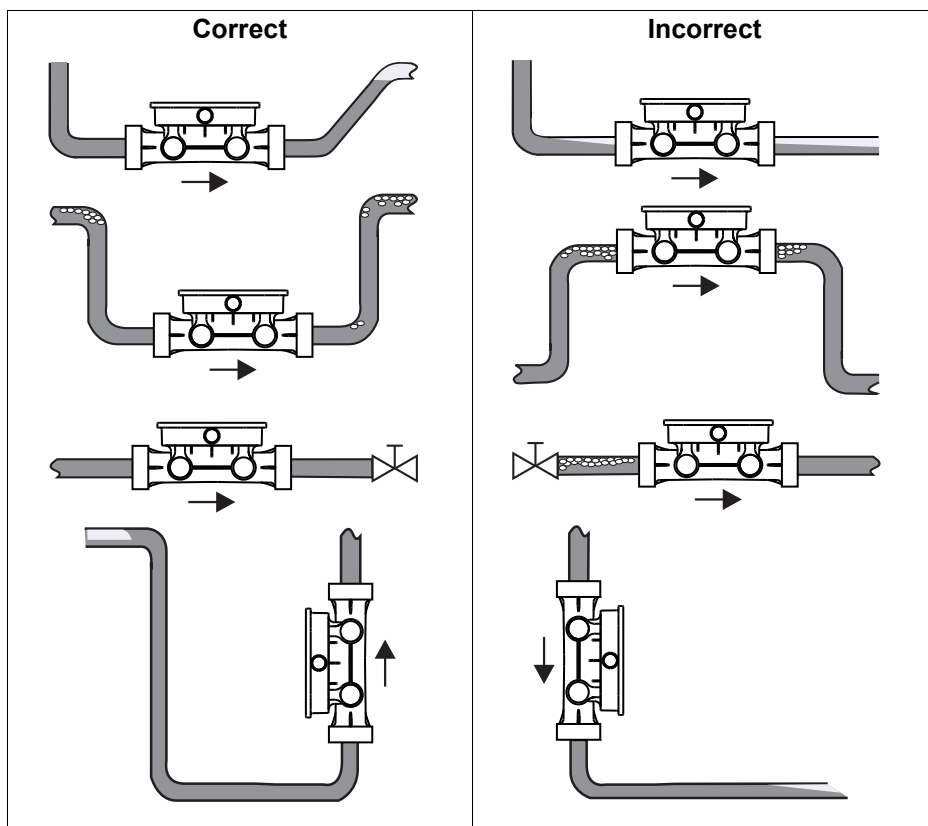
DN = Nominal pipe width

→ = Flow direction



5.1.3 Installation position

→ = Flow direction



5 Installation

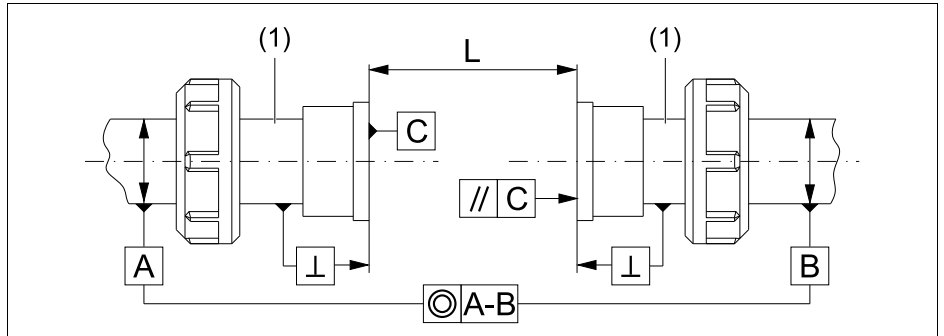
5.1.4 Avoid mechanical strain

Requirements:

- The center axes of both pipe ends are aligned (A-B) before mounting in the pipeline (1).
- The pipe ends are aligned parallel and at an angle to each other (C).
- The insertion length (L) of the device is observed.

Mounting sets, ⇨Page 28.

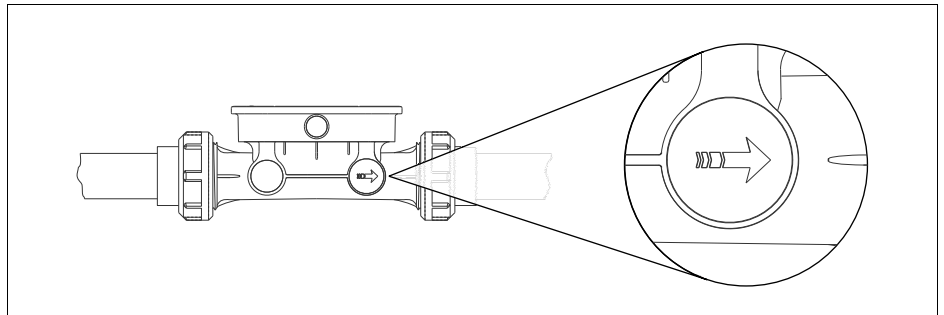
Dimensions, ⇨Page 16.



Nominal width	Insertion length L [mm]
DN 15	155
DN 20	165
DN 25	175
DN 32	185

5.1.5 Flow direction

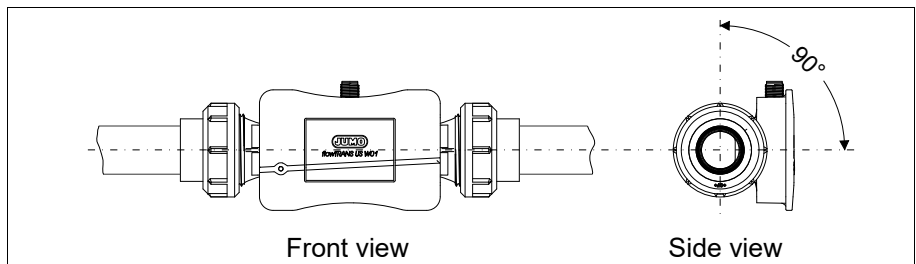
The positive flow direction (→) is shown on the transducer covers on both sides of the device and must be observed during installation, in accordance with the application in question.



5.1.6 Alignment of the housing for electronic components

Alignment of the housing for electronic components

CAUTION! Protect the electronics housing from being heated up by hot media. Install the electronics housing at medium temperatures > 60 ° C (140 ° F) aligned 90 ° to the side!



5.2 Installing the device

Describes the installation in the pipe with accessory mounting kits, ⇨Page 16.

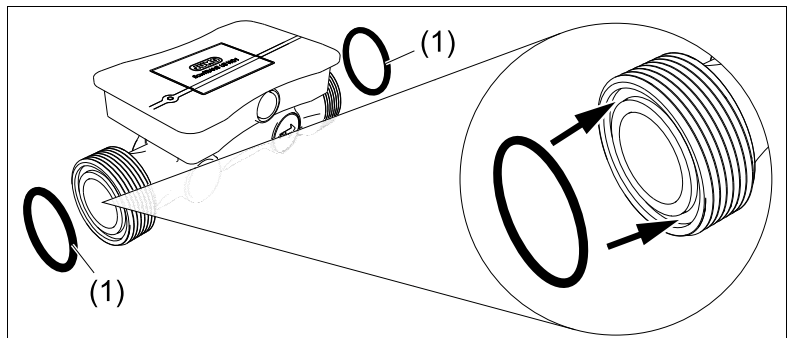
Material	2 O-rings (process connection seals)
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Requirements:

- The system has been de-energized and secured against being switched on again.
- The medium circulation of the plant is stopped.
- The pipe is drained and rinsed.
- Suitable protective equipment has been set up.
- The pipe is prepared for installation with the mounting kits.

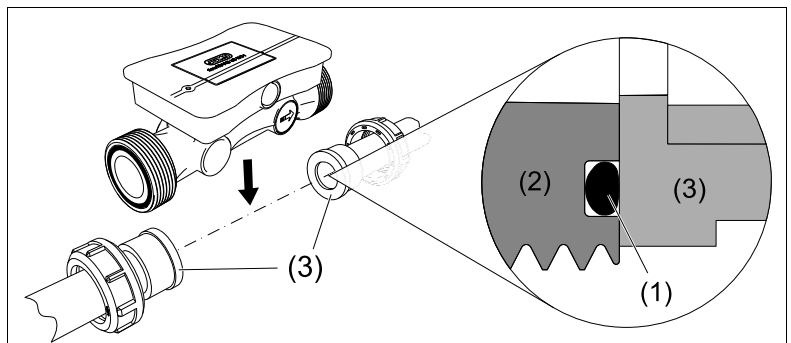
Procedure:

1. Insert the O-rings (1) into the sealing ring grooves in the two process connections

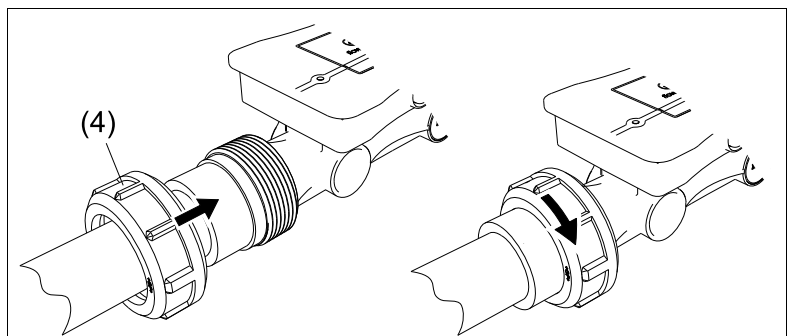


2. Install the device between the two union ends (3) of the mounting set.

Ensure that the O-rings (1) between the process connections (2) and union ends are correctly positioned.



3. Manually screw union nuts (4) on both ends of the pipe to the process connections on the device.

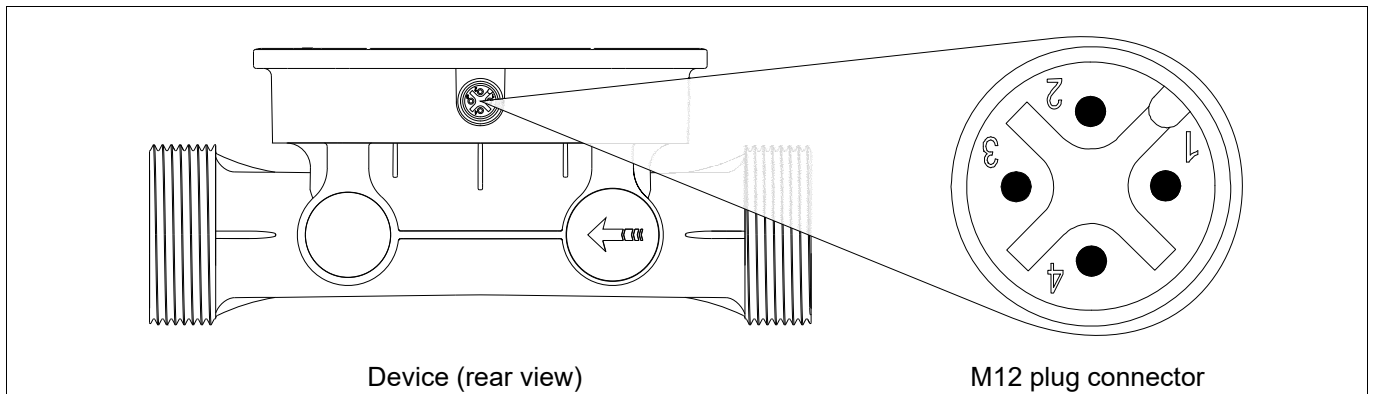


4. Switch on the plant, fill the pipe and check the tightness of the process connections under operating conditions.

The device is now installed in the pipe.

6 Electrical connection

6.1 Connection elements



6.1.1 Terminal assignment

M12 plug connection

Designation	Description	Assignment		
Analog output, digital output	DC 24 V	1 BN (Brown)		
	Analog output	2 WH (White)		
	GND	3 BU (Blue)		
	Digital output	4 BK (Black)		
			Device	Connecting cable

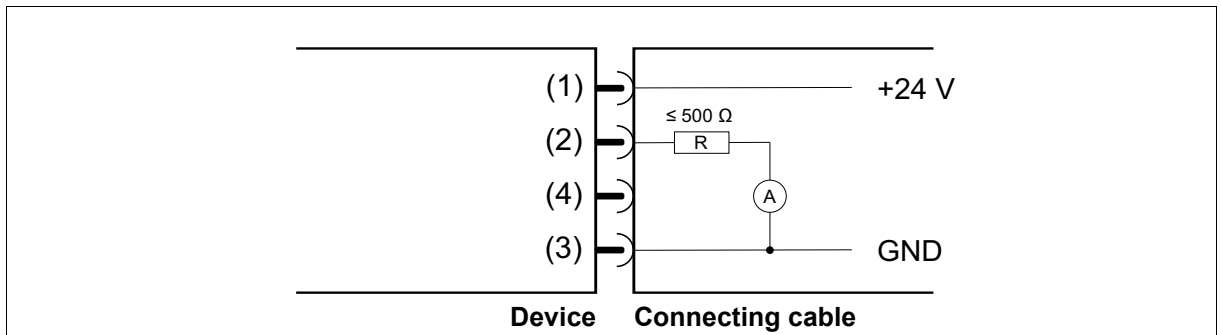
6.2 Connection diagram

Requirements:

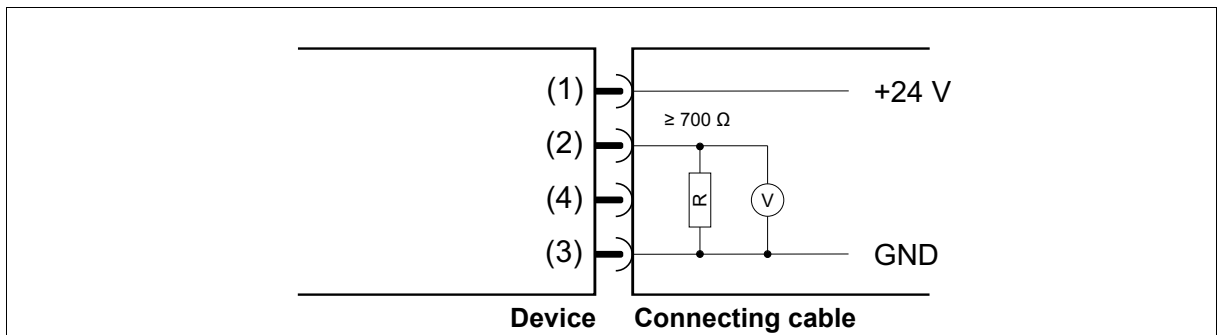
- An unused current output is connected to GND.
- An unused voltage output is open.

6.2.1 Analog outputs

Current output – 4 to 20 mA



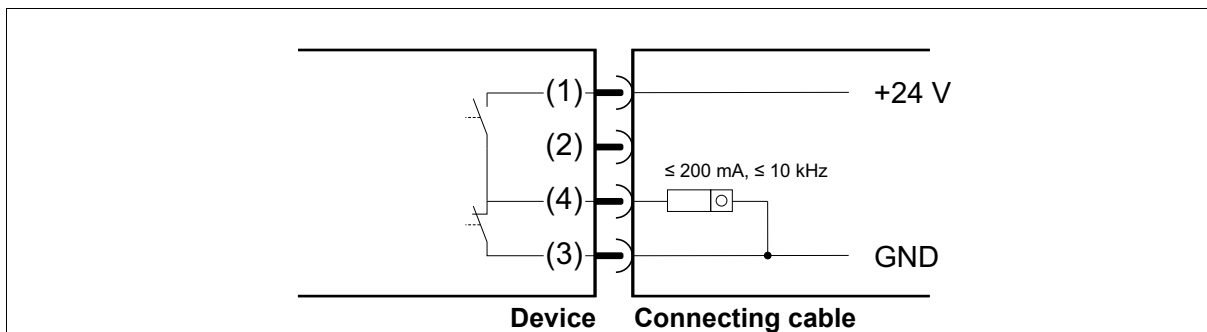
Voltage output – 0 to 10 V (optionally)



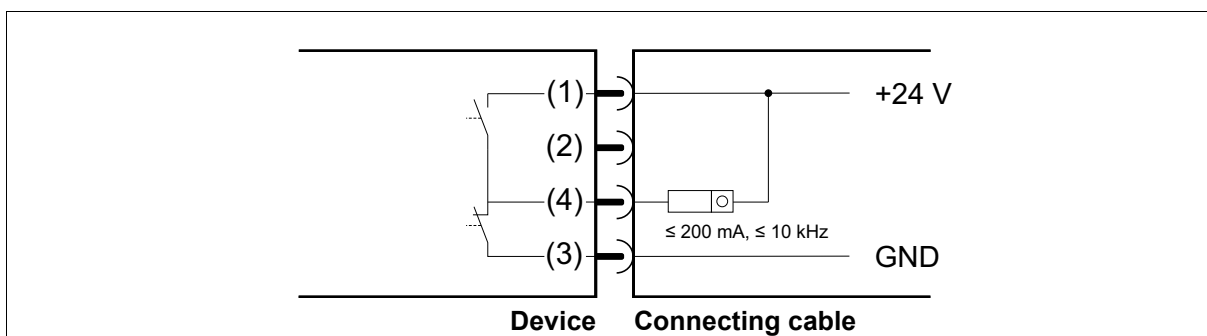
6 Electrical connection

6.2.2 Digital outputs

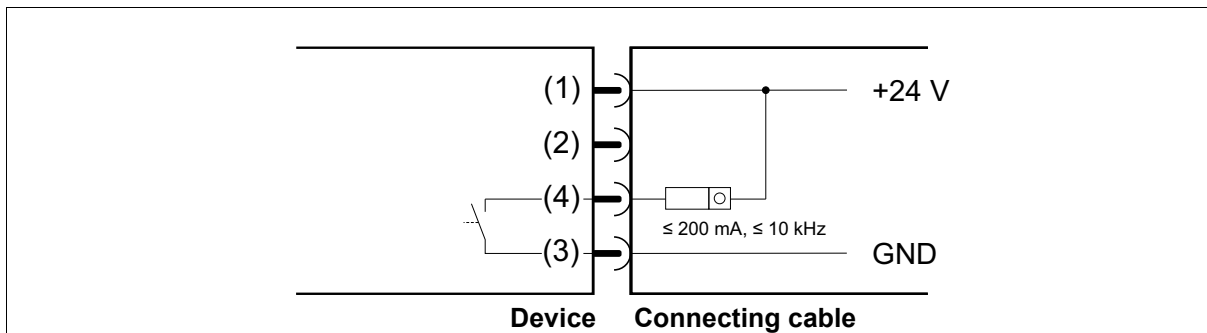
Pulse output – push-pull (example 1)



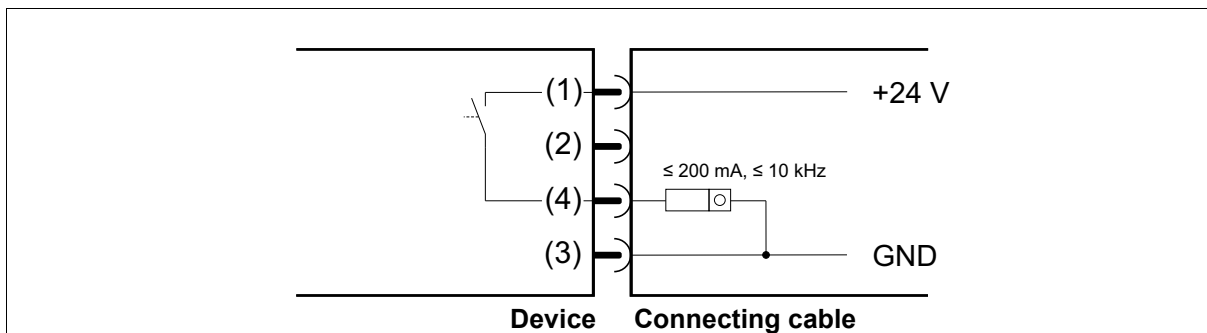
Pulse output – push-pull (example 2)



Pulse output – NPN (optionally)



Pulse output – PNP (optionally)



6.3 Connecting the device

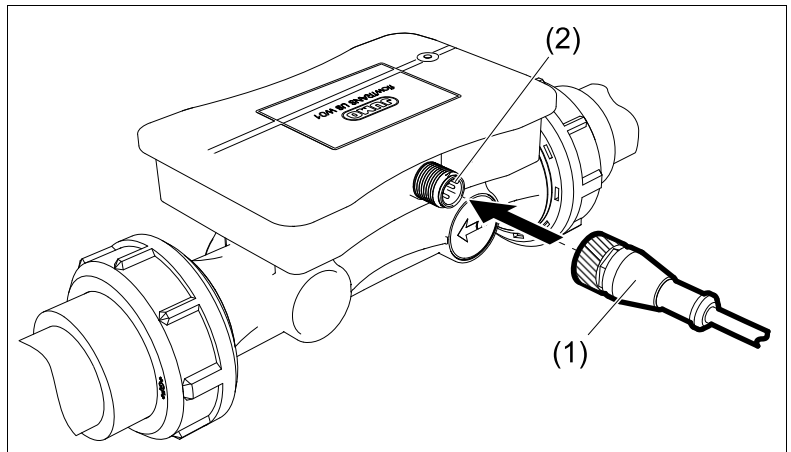
Materials	Connecting cable for plug connector M12
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Requirements:

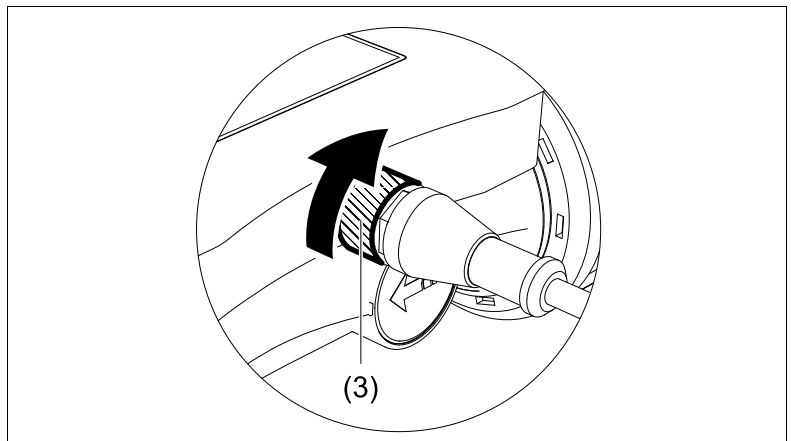
- The system has been de-energized and secured against being switched on again.
- The connections for the voltage supply and signal processing have been correctly prepared.
- The connection cable is temperature resistant according to the process.
- The connection cable is installed at a minimum distance of 30 cm from high-voltage or high-frequency cables.

Procedure:

1. Insert the connecting cable(1) into the M12 plug connection (2).



2. Screw the union nut (3) of the connecting cable onto the M12 plug connection on the device.
Tightening torque: 0.4 Nm.



3. Connect the connecting cable to the device that is processing the signals and to the voltage supply.
Route the cable so that it is protected against mechanical strain.

The device is ready for operation as soon as the voltage supply is established,
⇒ "Device status LED ", Page 24.

7 Operation

7.1 Display elements


7.1.1 Device status LED




Pos.	Designation	Description
1	Device status LED multicolored	Shows device status in accordance to NAMUR classification NE 107: <ul style="list-style-type: none">• Green solid = Normal operation• Yellow solid = Functional check(C)• Yellow flashing = Out of specification (S)• Red flashing = Error/Failure (F)

8 Troubleshooting


Error messages in accordance with NAMUR classification NE 107 are displayed by the device status LED flashing yellow or red.

Symbol	Designation
 Red flashing (f = 1 Hz, t _{on} /T = 0.5)	Error/failure (F)

Message	Cause	Remedy
Internal error (TDC comm.)	The device is faulty.	Contact the manufacturer.
Flow invalid	Too many air bubbles in the system.	Bleed the system.
	The sensor is faulty.	Contact the manufacturer.

Symbol	Designation
 Red flashing (f = 5 Hz, t _{on} /T = 0.5)	Error/failure (F)

Message	Cause	Remedy
Configuration corrupted	The configuration data in the EEPROM are damaged.	Transfer the configuration data to the device again.
Device not calibrated	The device is not calibrated	Contact the manufacturer.
	The device is faulty.	

Symbol	Designation
 Yellow flashing (f = 1 Hz, t _{on} /T = 0.5)	Out of specification (S)

Message	Cause	Remedy
Outside the specification	The measuring range was exceeded.	Adhere to the measuring range.
Undervoltage	The voltage supply to the device is insufficient.	Check the voltage supply to the device.
Overload at C/Q or DO	The switching outputs are overloaded.	Check the connection and load of the switching outputs.
Error analog output	The burden at the analog output is too high.	Observe the specified values for the burden of the analog output.
Max. pulse freq. exceeded	The maximum output frequency of the pulse output has been exceeded.	Check the configuration of the pulse output.
Empty conduit	The measuring tube is empty.	Fill the measuring tube or the system.
Air bubbles detected	Air bubbles have been detected in the system.	Bleed the system.

9 Maintenance and cleaning

9.1 Cleaning device housing

The device housing can be cleaned when the device has been installed.

Clean the device with a cloth dampened with water.

9.2 Decontamination

Use:

- When the medium is changed in the plant.
- Before replacing O-rings.
- Before returning the device.
- Before disposing of the device.

Requirements:

- The device is uninstalled, ⇒Page 27.
- If the medium is a hazardous substance: The information in the safety data sheet is taken into account.
- Suitable protective equipment has been set up.
- Ein geeignetes Reinigungsmittel ist einsatzbereit.
- Ein Reinigungsplatz zum Spülen und Neutralisieren aller medienberührten Teile ist vorbereitet.

Procedure:

1. **CAUTION!** Do not damage the sealing ring grooves of the process connections when removing the O-rings.
Remove the two O-rings from the sealing ring grooves.
2. **CAUTION!** Use only cleaning agents that are compatible with the materials used to make the device.
Thoroughly flush and neutralize all parts that come into contact with the medium using a suitable cleaning agent.
3. When disposing the device: ⇒Page 27.
4. When continuing to use the device: ⇒Page 19.

9.3 Replacing O-rings

Requirements:

- All components in contact with the medium are decontaminated, ⇒page 26.

Procedure:

1. Check the O-rings previously used for damage and replace if necessary.
2. Install the device, ⇒page 17.

10.1 Uninstallation

Requirements:

- The system has been de-energized and secured against being switched on again.
- The medium circulation of the plant is stopped.
- The pipe is drained and rinsed.
- Suitable protective equipment has been set up.
- A clean and dry storage location has been prepared.

Procedure:

1. Manually loosen the union nut of the connecting cable from the M12 plug connection on the device.
2. Pull the connecting cable out of the M12 plug connection and remove from the working area.
3. Manually loosen the union nuts from the process connections on the device and slide over the ends of the pipe.
4. **CAUTION!** Make sure that the O-rings remain in the sealing ring grooves of the process connections of the device.

Carefully remove the device from the plant and put in a clean and dry place.

10.2 Returns

Requirements:

- Clean the device housing ⇒Page 26.
- Clean the parts that come into contact with the medium ⇒Page 26.

Procedure:

1. The [supplementary sheet for product returns](#) must first be completed correctly and signed. Then enclose it with the shipping documents and attach it to the packaging, ideally on the outside.
2. Use the original packaging or a suitably secure container for sending the device.

10.3 Disposal

Requirements:

- Clean the device housing ⇒Page 26.
- Clean the parts that come into contact with the medium ⇒Page 26.




- Do not dispose of the device or replaced parts in the trash after use.
- Delete programs and data stored on the device.
- Remove batteries, if any, if this can be done without damaging the device.
- Dispose of the device and the packaging material in a responsible and environmentally friendly manner.
- Observe the country-specific laws and regulations for waste treatment and disposal.

In accordance with Directive 2012/19/EU on Waste from Electrical and Electronic Equipment, manufacturers are obliged to offer the option of returning waste equipment. Request the return from the manufacturer.

11 Accessories

Without UL approval

Designation	Part no.
Mounting set PVC, DN 10 with PP nut	00750869
Mounting set PVC, DN 15 with PP nut	00750871
Mounting set PVC, DN 20 with PP nut	00750872
Mounting set PVC, DN 25 with PP nut	00750874
Mounting set PVC, DN 32 with PP nut	00750876
Mounting set PP, socket welding DN 15	00750888
Mounting set PP, socket welding DN 20	00750890
Mounting set PP, socket welding DN 25	00750927
Mounting set PP, socket welding DN 32	00750926
Mounting set PP, butt welding DN 15	00750878
Mounting set PP, butt welding DN 20	00750881
Mounting set PP, butt welding DN 25	00750884
Mounting set PP, butt welding DN 32	00750887
Mounting set stainless steel, DN 10 with PP nut	00750924
Mounting set stainless steel, DN 15 with PP nut	00750923
Mounting set stainless steel, DN 20 with PP nut	00750920
Mounting set stainless steel, DN 25 with PP nut	00750919
Mounting set stainless steel, DN 32 with PP nut	00750918
Line socket, 4-pole, M12 × 1, straight, length 2 m	00404585
Line socket, 4-pole, M12 × 1, angled, length 2 m	00409334

						
产品组别 Product group: 406050	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. ○：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 are 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 material of the part exceed the limit of the GB/T 26572.</p>						



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