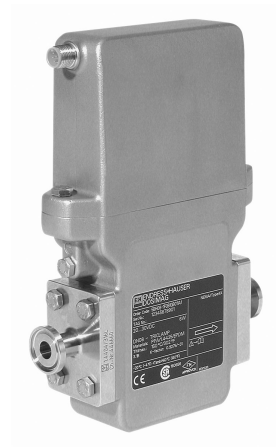# Technical Information
Dosimag

Electromagnetic flowmeter

Flowmeter with maximum repeatability and ultra-compact sensor with hygienic design

Application

- The measuring principle is practically independent of pressure, density, temperature and viscosity
- For demanding batching and dosing applications

Device properties
- Wetted materials suitable for CIP/SIP cleaning
- Nominal diameter: DN 4 to 25 (⅛ to 1")
- FDA-compliant measuring device
- Pulse/frequency/switch output, Modbus RS485
- ATEX, cCSAus
- Excellent and easy-to-clean transmitter

Your benefits

- High process safety – high measuring accuracy and repeatability in shortest filling time
- Energy-saving flow measurement – no pressure loss due to cross-section constriction
- Maintenance-free – no moving parts
- Versatile and time-saving wiring – plug connector
- Industry-optimized – ultra-compact design
- For hygiene requirements – stainless steel housing

Endress+Hauser

People for Process Automation

Table of contents

Document information

Symbols used

Electrical symbols

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

Symbols for certain types of information

Symbol	Meaning
✅	**Permitted** Procedures, processes or actions that are permitted.
✅✅	**Preferred** Procedures, processes or actions that are preferred.
❌	**Forbidden** Procedures, processes or actions that are forbidden.
🛈	**Tip** Indicates additional information.
📖	Reference to documentation
📄	Reference to page
🖼	Reference to graphic
👁	Visual inspection

Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers	1., 2., 3....	Series of steps
A, B, C, ...	Views	A-A, B-B, C-C, ...	Sections
⟨EX⟩	Hazardous area	⟨X⟩	Safe area (non-hazardous area)
≈➡	Flow direction		

Function and system design

Measuring principle

Following *Faraday's law of magnetic induction,* a voltage is induced in a conductor moving through a magnetic field.

A0017035
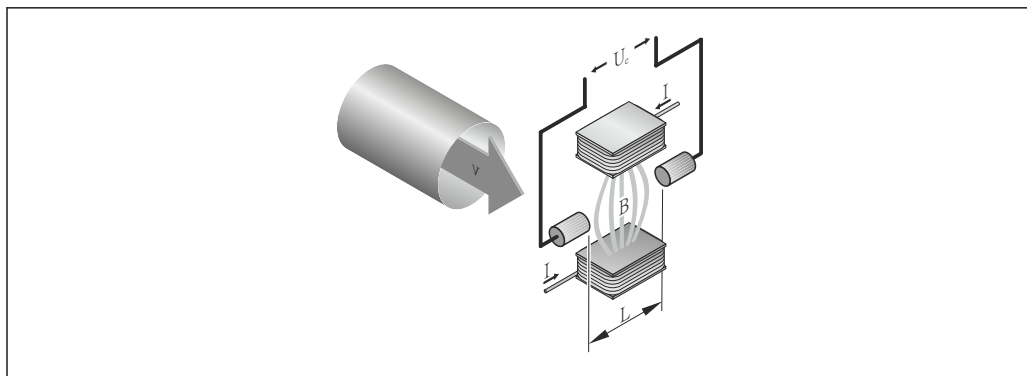
Ue   *Induced voltage*
B   *Magnetic induction (magnetic field)*
L   *Electrode spacing*
I   *Current*
v   *Flow velocity*

In the electromagnetic measuring principle, the flowing medium is the moving conductor. The voltage induced (U_e) is proportional to the flow velocity (v) and is supplied to the amplifier by means of two measuring electrodes. The flow volume (Q) is calculated via the pipe cross-section (A). The DC magnetic field is created through a switched direct current of alternating polarity.

Formulae for calculation
- Induced voltage $U_e = B \cdot L \cdot v$
- Volume flow $Q = A \cdot v$

Measuring system	The device consists of a transmitter and a sensor.

The device is available as a compact version:
The transmitter and sensor form a mechanical unit.

Dosimag	**Transmitter**

A0023381
	• Materials:
	  – Transmitter housing: stainless steel 1.4308 (304)
	  – Housing seal: EPDM
	• Configuration:
	  Via operating tools (e.g. FieldCare)
	
	Sensor
	• Range of nominal diameter: DN 4 (⁵⁄₃₂"), DN 8 (³⁄₈"), 15 (½"), 25 (1")
	• Materials:
	  – Sensor housing: stainless steel 1.4308 (304)
	  – Measuring tube: stainless steel 1.4301 (304)
	  – Liner: PFA
	  – Process connection seals: EPDM, silicone, Viton
	  – Electrodes: 1.4435 (316L); option Alloy C22, 2.4602 (UNS N06022), tantalum, platinum

Equipment architecture

Device version: Two pulse/frequency/switch outputs

The device version has two pulse/frequency/switch outputs → 🖻 10.
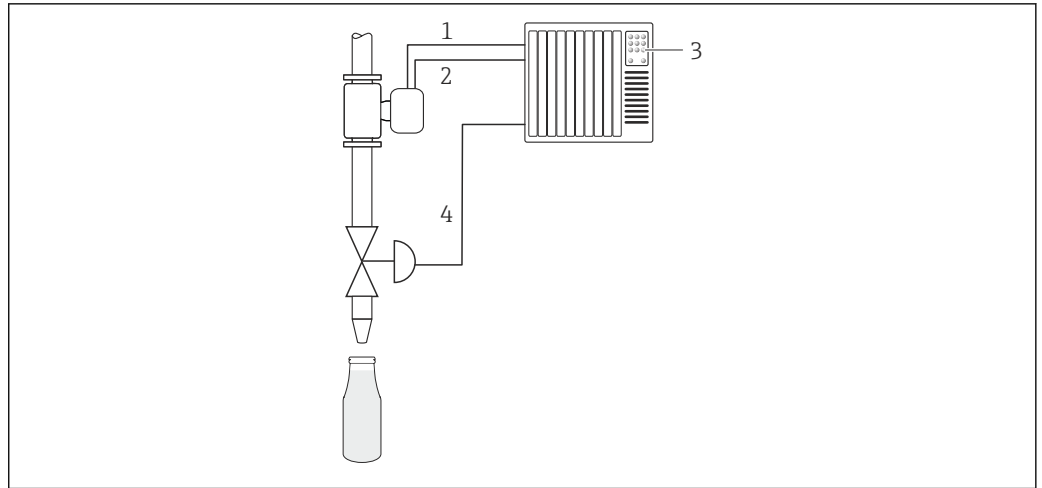
A0027057

⊡ 1   *Options for integration into a system for batching processes*

1   Pulse/frequency/current output 1
2   Pulse/frequency/current output 2
3   Automation system (e.g. PLC)
4   Control of valve (by automation system)

Device version: Modbus RS485, one or two switch outputs (Batch) and one status input

ℹ️ Device versions with MODBUS RS485 have one or two switch outputs for valve control for the regulation of batching processes→ 🔖 10.
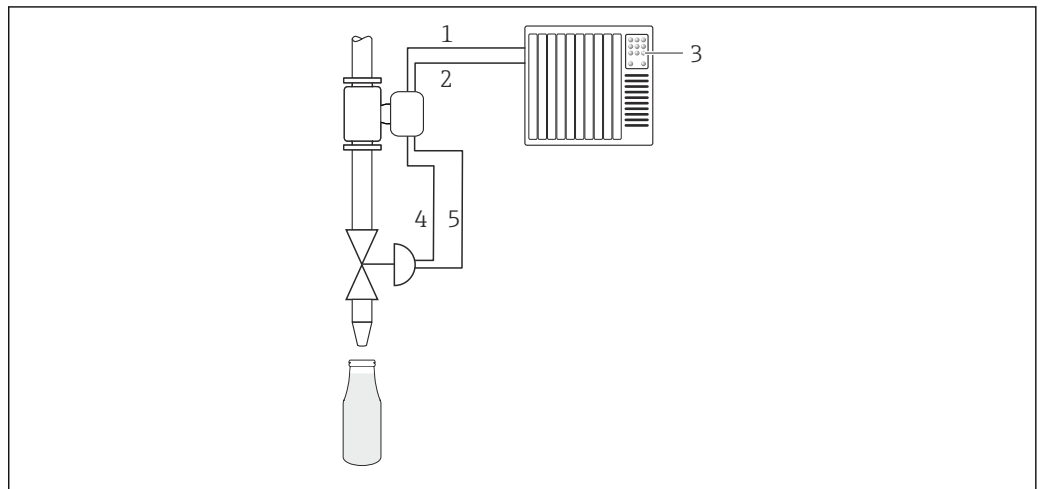
A0026621

⊡ 2   *Options for integration into a system for batching processes*

1   MODBUS RS485: Measured value (to the automation system)
2   Status input: Control of batching process (by the automation system)
3   Automation system (e.g. PLC)
4   Switch output 1 (batch): valve control, level 1
5   Switch output 2 (batch): valve control, level 2

Integrated batching functions

The following parameters can be used to configure and monitor batching processes.

Configuration

• Measured variable: volume flow
• Unit
• Batch quantity
• Fixed compensation quantity
• Select batch profile
• Drip correction mode: Off, low flow cut off or fixed time

- Measuring time drip quantity
- Filter depth drip median (3, 5 or 7)
- Average drip correction quantity
- Batch levels: One-level, two-level or one-level and blow out
- Start and stop level 2
- Blow out delay and duration
- Maximum batch time
- Maximum flow
- Disable time pressure shock suppression

Display

- Total amount measured from last batching process (incl. drip quantity)
- Duration of last batching process (incl. measurement of drip quantity)
- Switch-off time: From time of switch-off to when measurement of the drip quantity is complete
- Current drip correction quantity (drip correction quantity for next batching process)
- Sum of all batching processes measured
- Number of batching processes.

The batching process (start batch, stop batch etc.) is controlled by the automation system via the status input or the Modbus RS485 .

Safety

IT security

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

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

Input

Measured variable

Direct measured variables

Volume flow (proportional to induced voltage)

Measuring range

Typically v = 0.01 to 10 m/s (0.03 to 33 ft/s) with specified accuracy

Flow characteristic values in SI units

Nominal diameter	Recommended flow	Factory settings	
	Max. full scale value	Pulse value	Low flow cut off (v ~ 0.04 m/s)
[mm]	[l/s]	[ml]	[ml/s]
4	0.14	0.005	0.5
8	0.5	0.02	2
15K [1]	1.2	0.1	7
15	1.66	0.1	7
25	5	0.2	16

1) Conical version (corresponds to DN 12)

Flow characteristic values in US units

Nominal diameter	Recommended flow	Factory settings	
	Max. full scale value	Pulse value	Low flow cut off (v ~ 0.13 ft/s)
[in]	[gal/s]	[oz fl]	[oz fl/s]
$^5/_{32}$	0.035	0.0002	0.02
$^5/_{16}$	0.13	0.001	0.08
½K [1]	0.32	0.004	0.25
½	0.44	0.004	0.25
1	1.33	0.007	0.53

1) Conical version (corresponds to DN 12)

To calculate the measuring range, use the *Applicator* sizing tool → 🖺 41

Recommended measuring range

"Flow limit" section → 🖺 24

Operable flow range	Over 1000 : 1

Input signal	Available only for device versions using the Modbus RS485 communication method → 🖺 10.

Status input

The batching process is controlled by the automation system via the device's status input.

Maximum input values	• DC 30 V • 6 mA
Response time	Adjustable: 10 to 200 ms
Input signal level	• Low level: 0 to 1.5 V • High level: 3 to 30 V
Assignable functions	• Off • Start batching process • Start and stop batching process • Reset totalizers 1-3 separately • Reset all totalizers • Flow override

Output

Output signal	**Pulse/frequency/switch output**

Function	Can be set to:
	• Pulse
	  Quantity-proportional pulse with pulse width to be configured.
	• Automatic pulse
	  Quantity-proportional pulse with on/off ratio of 1:1
	• Frequency
	  Flow-proportional frequency output with on/off ratio of 1:1
	• Switch
	  Contact for displaying a status

Channel 2	Redundant output of pulse output: 0°, 90° or 180°

Version	Passive, open emitter
Maximum input values	• DC 30 V • 25 mA
Voltage drop	At 25 mA: ≤ DC 2 V
Pulse output	
Pulse width	Adjustable: 0.05 to 3.75 ms
Maximum pulse rate	10 000 Impulse/s
Pulse value	Adjustable
Assignable measured variables	Volume flow
Frequency output	
Output frequency	Adjustable: 0 to 10 000 Hz
Damping	Adjustable: 0 to 999.9 s
Pulse/pause ratio	1:1
Assignable measured variables	Volume flow
Switch output	
Switching behavior	Binary, conductive or non-conductive
Number of switching cycles	Unlimited

Assignable functions	• Off
	• On
	• Diagnostic behavior
	  – Alarm
	  – Alarm and warning
	  – Warning
	• Limit value:
	  – Off
	  – Volume flow
	  – Flow velocity
	• Status
	  Low flow cut off

Modbus RS485

Physical interface	In accordance with EIA/TIA-485-A standard

Switch output (batch: valve control)

> • Only available for device version with Modbus RS485 → 🖺 10.
> • Depending on the device version, the device has one or two switch outputs.

Switch output	
Version	Active, open emitter
Maximum input values	• DC 30 V • 500 mA
Switching behavior	Binary, conductive or non-conductive
Number of switching cycles	Unlimited
Assignable functions	• Open • Closed • Batching

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

Pulse/frequency/switch output

Pulse output

Failure mode	Choose from: • Actual value • No pulses

Frequency output

Failure mode	Choose from: • Actual value • 0 Hz • Defined value: 0 to 10 000 Hz

Switch output

Failure mode	Choose from: • Current status • Open • Closed

Modbus RS485

Failure mode	Choose from: • NaN value instead of current value • Last valid value

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

Galvanic isolation	• Device version: 2 pulse/frequency/switch outputs
	Order code for "Output, input", option 3:
	  – Pulse/frequency/switch outputs galvanically isolated from supply potential.
	  – Pulse/frequency/switch outputs not galvanically isolated from each other.
	• Device version: Modbus RS485, 1 switch output (batch), 1 status input
	(Order code for "Output, input": option 4)
	Switch outputs (batch) and status input on supply potential
	• Device version: Modbus RS485, 2 switch outputs (batch), 1 status input
	(Order code for "Output, input", option 5:)
	  – Switch outputs (batch) on supply potential.
	  – Status input, galvanically isolated.

Protocol-specific data	**Modbus RS485**

Protocol	Modbus Applications Protocol Specification V1.1
Device type	Slave
Slave address range	1 to 247
Broadcast address range	0
Function codes	• 03: Read holding register • 04: Read input register • 06: Write single registers • 08: Diagnostics • 16: Write multiple registers • 23: Read/write multiple registers • 43: Read device identification

Broadcast messages	Supported by the following function codes: • 06: Write single registers • 16: Write multiple registers • 23: Read/write multiple registers
Supported baud rate	• 1200 BAUD • 2400 BAUD • 4800 BAUD • 9600 BAUD • 19200 BAUD • 38400 BAUD • 57600 BAUD • 115200 BAUD
Data transfer mode	• ASCII • RTU
Data access	Each device parameter can be accessed via Modbus RS485. For Modbus register information → 📖 42

Power supply

Terminal assignment   Connection is solely by means of device plug:

There are different device versions available:

Order code for "Output, input":	Device plug
Option **3**: 2 pulse/frequency/switch outputs [1]	→ 📖 11
Option **4**: Modbus RS485, 1 switch output (batch), 1 status input	→ 📖 12
Option **5**: Modbus RS485, 2 switch outputs (batch), 1 status input	→ 📖 13
Option **6**: Modbus RS485 (custody transfer mode)	→ 📖 14

1)   Can also be used for custody transfer mode.

Pin assignment, device plug	**Device version: 2 pulse/frequency/switch outputs**

Order code for "Output, input", option 3:
2 Pulse/frequency/switch output
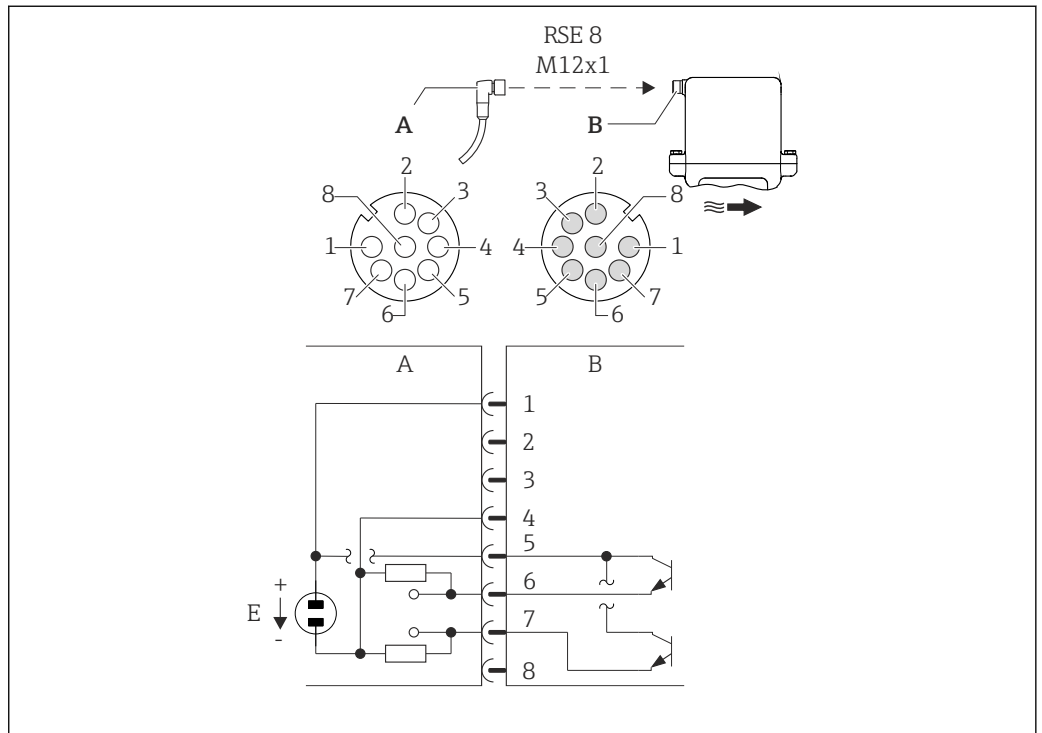
A0025981

⊞ 3   *Connection to device*

A   Coupling: Supply voltage, pulse/freq./switch output
B   Connector: Supply voltage, pulse/freq./switch output
E   PELV or SELV power supply
1 to   Pin assignment
8

Pin assignment

Connection: Coupling (A) – Connector (B)		
Pin	Assignment	
1	L+	Supply voltage
2	+	Service interface RX
3	+	Service interface TX
4	L-	Supply voltage
5	+	Pulse/frequency/switch output
6	–	Pulse/frequency/switch output 1
7	–	Pulse/frequency/switch output 2
8	–	Service interface GND

ℹ️ Observe cable specifications → 🔖 16.

Device version: Modbus RS485, status output and status input

Order code for "Output, input", option 4:
- Modbus RS485
- 1 switch output (batch)
- 1 status input
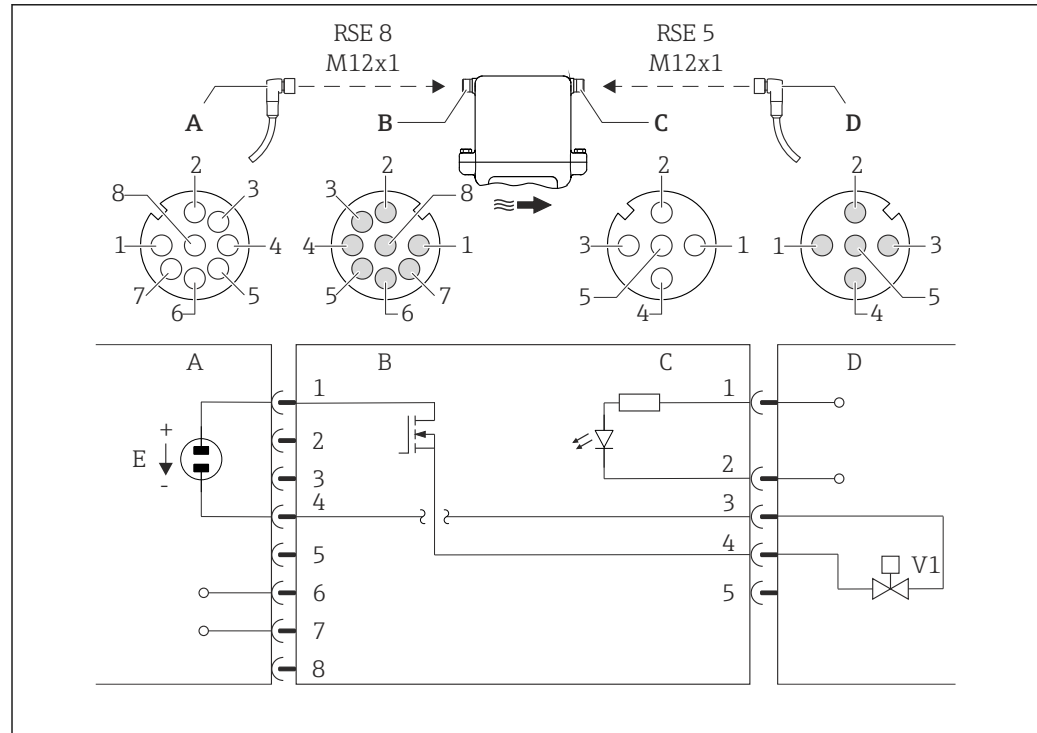
A0025977

🖾 4   *Connection to device*

A   Coupling: Supply voltage, Modbus RS485
B   Connector: Supply voltage, Modbus RS485
C   Coupling: Switch output (batch), status input
D   Connector: Switch output (batch), status input
E   PELV or SELV power supply
V1   Valve 1 (batch)
1 to Pin assignment
8

Pin assignment

Connection: Coupling (A) – Connector (B)			Connection: Coupling (C) – Connector (D)		
Pin	Assignment		Pin	Assignment	
1	L+	Supply voltage	1	+	Status input
2	+	Service interface RX	2	–	Status input
3	+	Service interface TX	3	–	Switch output (batch)
4	L-	Supply voltage	4	+	Switch output (batch)
5		Not assigned	5		Not assigned
6	A	Modbus RS485			
7	B	Modbus RS485			
8	–	Service interface GND			

Observe cable specifications → 🖺 16.

Device version: Modbus RS485 , 2 status outputs and status input

Order code for "Output, input", option 5:
- Modbus RS485
- 2 switch outputs (batch)
- 1 status input
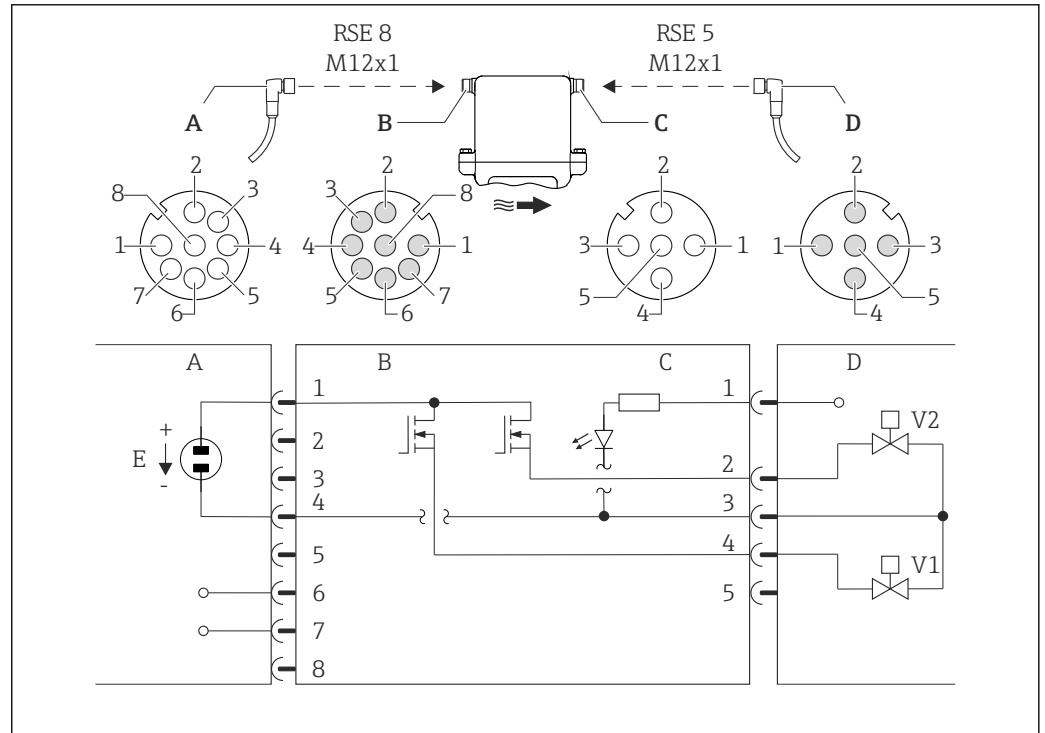
A0025963

🔲 *5   Connection to device*

A   Coupling: Supply voltage, Modbus RS485
B   Connector: Supply voltage, Modbus RS485
C   Coupling: Switch outputs (batch), status input
D   Connector: Switch outputs (batch), status input
E   PELV or SELV power supply
V1   Valve (batch), level 1
V2   Valve (batch), level 2
1 to   Pin assignment
8

Pin assignment

Connection: Coupling (A) – Connector (B)			Connection: Coupling (C) – Connector (D)		
Pin	Assignment		Pin	Assignment	
1	L+	Supply voltage	1	+	Status input
2	+	Service interface RX	2	+	Switch output (batch) 2
3	+	Service interface TX	3	–	Switch outputs, status input
4	L-	Supply voltage	4	+	Switch output (batch) 1
5		Not assigned	5		Not assigned
6	A	Modbus RS485			
7	B	Modbus RS485			
8	–	Service interface GND			

Observe cable specifications → 🔲 16.

Device version: Modbus RS485 (custody transfer mode)

Order code for "Output, input", option 6 (device version for custody transfer mode):
Modbus RS485
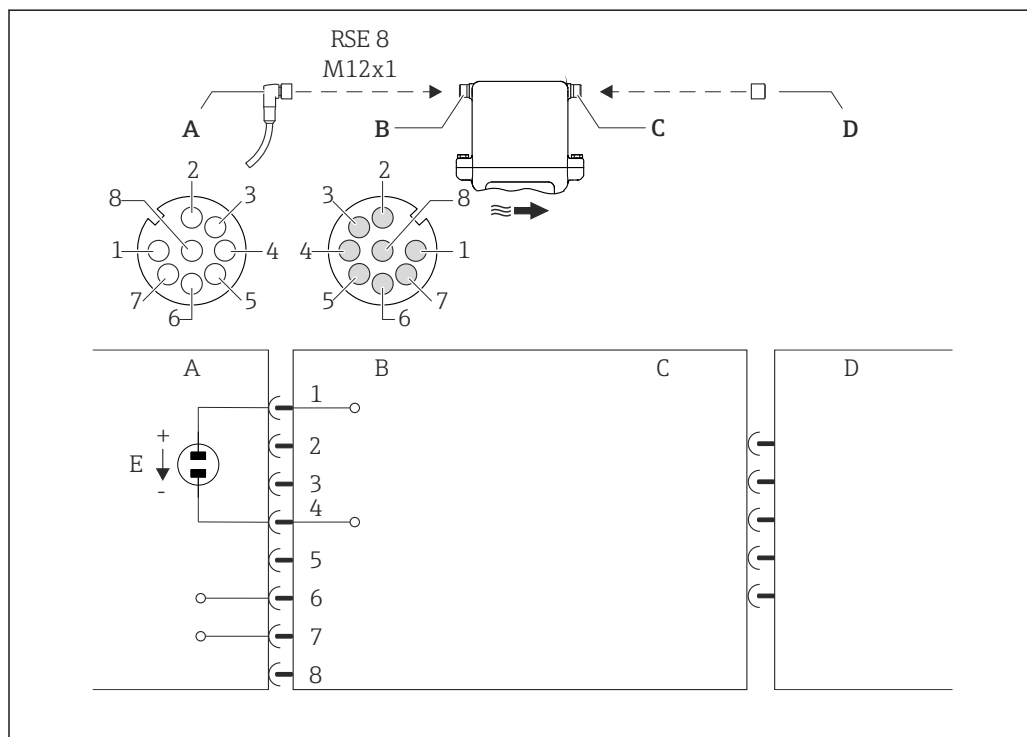
A0027089

🖾 *6   Connection to device*

A   Coupling: Supply voltage, Modbus RS485
B   Connector: Supply voltage, Modbus RS485
C   Coupling at device
D   Connector: Dongle (hardware write protection for custody transfer mode)
E   PELV or SELV power supply

Pin assignment

Connection: Coupling (A) – Connector (B)			Connection: Coupling (C) – Connector (D)	
Pin	Assignment		Pin	Assignment
1	L+	Supply voltage	1	
2	+	Service interface RX	2	
3	+	Service interface TX	3	Dongle (hardware write protection for custody transfer mode)
4	L-	Supply voltage	4	
5		Not assigned	5	
6	A	Modbus RS485		
7	B	Modbus RS485		
8	–	Service interface GND		

ℹ️ Note cable specification → 🖺 16.

Supply voltage	DC 24 V (nominal voltage: DC 20 to 30 V)

ℹ️ • The power unit must be tested to ensure that it meets safety requirements (e.g. PELV, SELV).
• The supply voltage must not exceed a maximum short-circuit current of 50 A.

Power consumption	4.5 W

Current consumption	Order code for "Output, input":	Maximum Power consumption
	Option **3**: 2 pulse/frequency/switch outputs	225 mA
	Option **4**: Modbus RS485, 1 switch output (batch), 1 status input	225 mA + 500 mA [1]
	Option **5**: Modbus RS485, 2 switch outputs (batch), 1 status input	225 mA + 1 000 mA [1]
	Option **6**: Modbus RS485 (custody transfer mode)	225 mA

1)   Additional 500 mA per switch output (batch) used.

ℹ Switch-on current: max. 1 A (< 8 ms)

Power supply failure	• Totalizers stop at the last value measured. • Error messages (incl. total operated hours) are stored.

Electrical connection   Connection is solely by means of device plug:
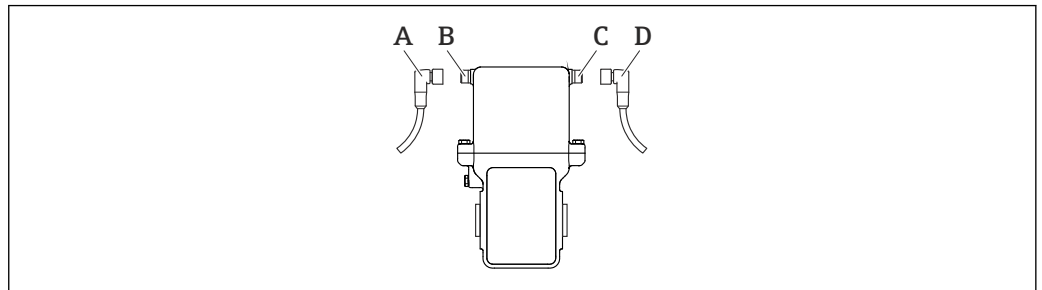
A, C Coupling
B, D Plug

There are different device versions available:

Order code for "Output, input":	Device plug
Option **3**: 2 pulse/frequency/switch outputs	→ 🕮 11
Option **4**: Modbus RS485, 1 switch output (batch), 1 status input	→ 🕮 12
Option **5**: Modbus RS485, 2 switch outputs (batch), 1 status input	→ 🕮 13
Option **6**: Modbus RS485 (custody transfer mode)	→ 🕮 14

Grounding

Grounding is by means of a cable socket.
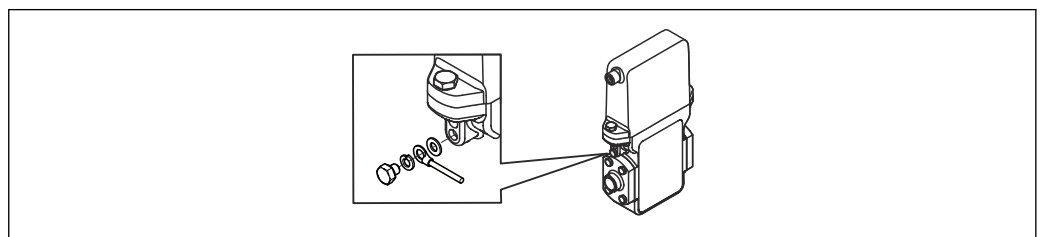
Potential equalization   **Requirements**

No potential matching is needed for grounded steel lines.

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

Cable specification	**Permitted temperature range**
	• −40 ℃ (−40 ℉) to +80 ℃ (+176 ℉)
	• Minimum requirement: cable temperature range ≥ ambient temperature +20 K

Signal cable

Cables are not included in the scope of delivery; they can be ordered as an accessory → 🖹 40.

Pulse/frequency/switch output

Standard installation cable is sufficient.

Status input and switch output (batch)

Standard installation cable is sufficient.

Modbus RS485

• The electrical connection of the shield to the device housing must be properly implemented (e.g. using a knurled nut).
• Please note the following with regard to cable loading:
  – Voltage drop due to the cable length and cable type.
  – Valve performance.

Total length of cable in the Modbus network ≤ 50 m

Use a shielded cable.

Example:
Terminated device connector with cable: Lumberg RKWTH 8-299/10

Total length of cable in the Modbus network > 50 m

Use shielded twisted pair cable for RS485 applications.

Example:
• Cable: Belden item no. 9842 (for 4-wire version, the same cable can be used for the power supply)
• Terminated device plug: Lumberg RKCS 8/9 (shieldable version)

Performance characteristics

Reference operating conditions	**In accordance with DIN EN 29104**
	• Medium temperature: +28 ± 2 ℃ (+82 ± 4 ℉)
	• Ambient temperature: +22 ± 2 ℃ (+72 ± 4 ℉)
	• Warm-up period:30 min
	Installation
	• Inlet run > 10 × DN
	• Outlet run > 5 × DN
	• Sensor and transmitter grounded.
	• The sensor is centered in the pipe.
	To calculate the measuring range, use the *Applicator* sizing tool → 🖹 41

Maximum measured error	**Error limits under reference operating conditions**
	o.r. = of reading
	Volume flow
	• ±0.25 % o.r. ± 1 to 4 m/s (3.3 to 13 ft/s) or
	• ±0.5 % o.r. ± 1 mm/s (0.04 in/s) or
	• ±5 % o.r.
	Fluctuations in the supply voltage do not have any effect within the specified range.

Accuracy of outputs

ℹ️ In the case of analog outputs, the output accuracy must also be considered for the measured error, in contrast, this need not be considered in the case of fieldbus outputs (Modbus RS485).

The outputs have the following base accuracy specifications.

Pulse/frequency output

o.r. = of reading

Accuracy	Max. ±50 ppm o.r. (across the entire ambient temperature range)

Repeatability

o.r. = of reading

DN 25 (500 ml/s), DN 15 (200 ml/s), DN 8 (50 ml/s), DN 4 (10 ml/s); 400 µS/cm

Batch time t_a [s]	Relative standard deviation in relation to the batched volume [%]
1.5 s < t_a < 3 s	0.4
3 s < t_a < 5 s	0.2
5 s < t_a	0.1

DN 15K (200 ml/s); 400 µS/cm

Batch time t_a [s]	Relative standard deviation in relation to the batched volume [%]
1.5 s < t_a < 3 s	0.25
3 s < t_a < 5 s	0.12
5 s < t_a	0.08

Influence of ambient temperature

Pulse/frequency output

Temperature coefficient	No additional effect. Included in accuracy.

Installation

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

Mounting location
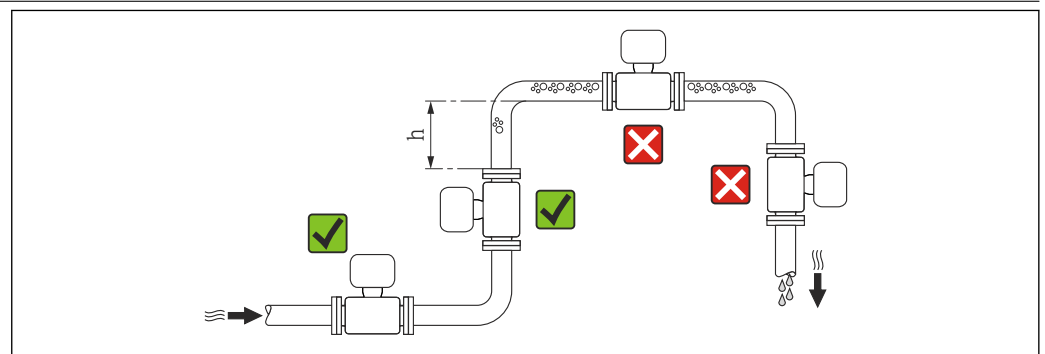
A0023343

Preferably install the sensor in an ascending pipe, and ensure a sufficient distance to the next pipe elbow: h ≥ 2 × DN

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

Installation in down pipes

Install a siphon with a vent valve downstream of the sensor in down pipes whose length h ≥ 5 m (16.4 ft). This precaution is to avoid low pressure and the consequent risk of damage to the measuring tube. This measure also prevents the system losing prime.

For information on the liner's resistance to partial vacuum → 🖹 23
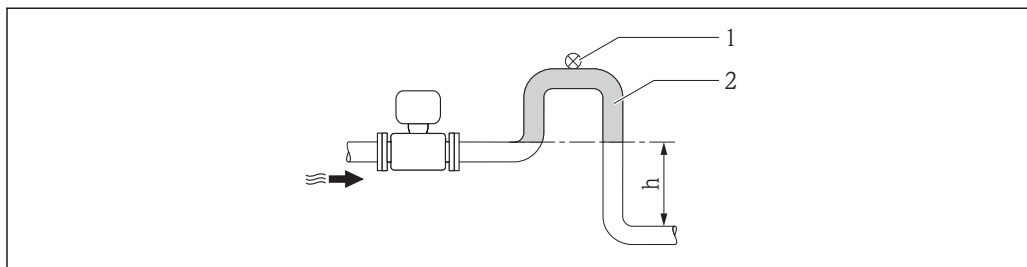
🖾 7   *Installation in a down pipe*

1   Vent valve
2   Pipe siphon
h   Length of down pipe

Installation in partially filled pipes

A partially filled pipe with a gradient necessitates a drain-type configuration.
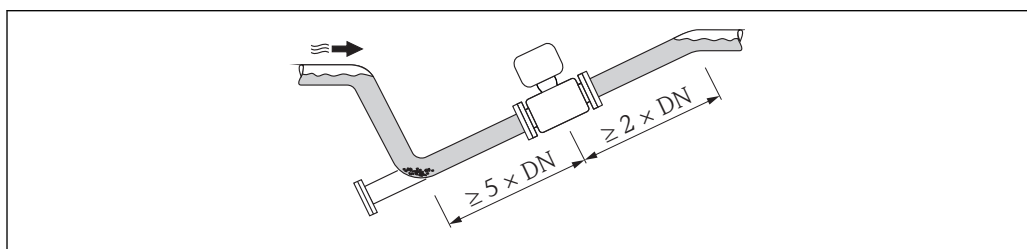
Orientation   The direction of the arrow on the sensor nameplate helps you to install the sensor according to the flow direction (direction of medium flow through the piping).

An optimum orientation can prevent buildup and the accumulation of gas or air in the measuring tube.

Valves

Never install the sensor downstream from a filling valve. If the sensor is completely empty this corrupts the measured value.

Correct measurement is only possible if the pipe is completely full. Perform sample fillings before commencing filling in production.
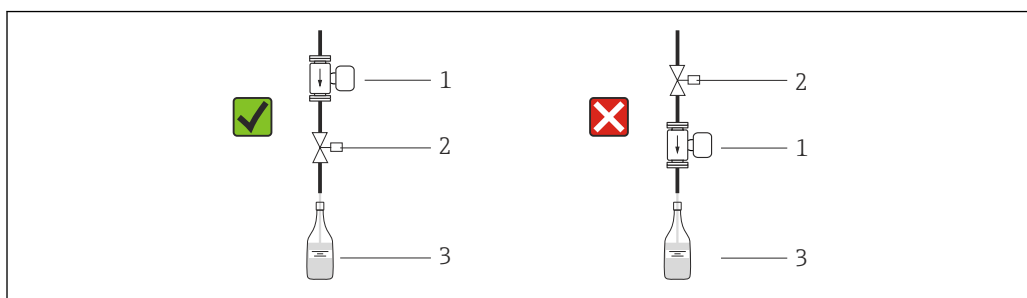
1   Measuring device
2   Filling valve
3   Container

Filling systems

The pipe system must be completely full to ensure optimum measurement.
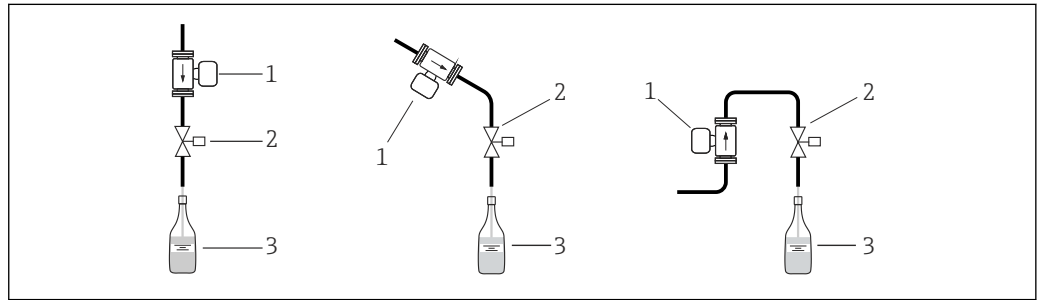
🖻 *8   Filling system*

1   Measuring device
2   Filling valve
3   Container

Horizontal
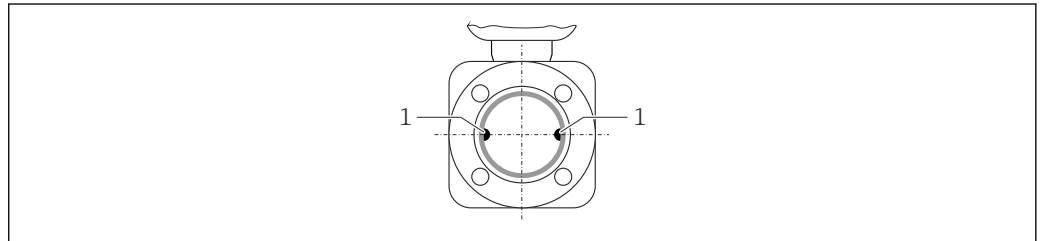
1   Measuring electrodes

ℹ️ The measuring electrode plane must be horizontal. This prevents brief insulation of the two measuring electrodes by entrained air bubbles.

High temperatures
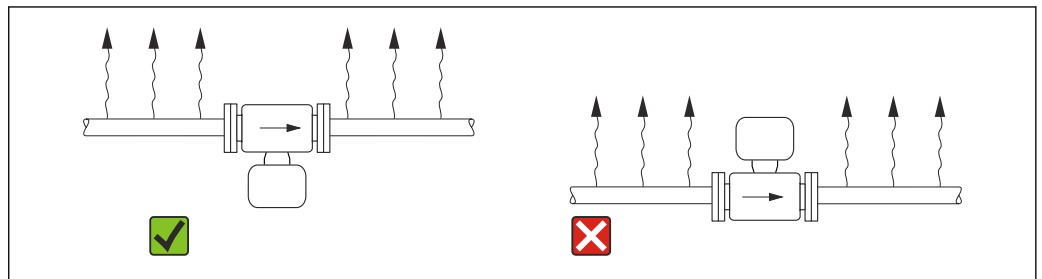
🖻 *9   Recommended orientation in the event of strong heat formation*

ℹ️ To prevent the electronics from overheating in the event of strong heat formation (e.g. CIP or SIP cleaning process), install the measuring device with the transmitter part pointing downwards.

Inlet and outlet runs

If possible, install the sensor upstream from fittings such as valves, T-pieces or elbows.

Observe the following inlet and outlet runs to comply with accuracy specifications:
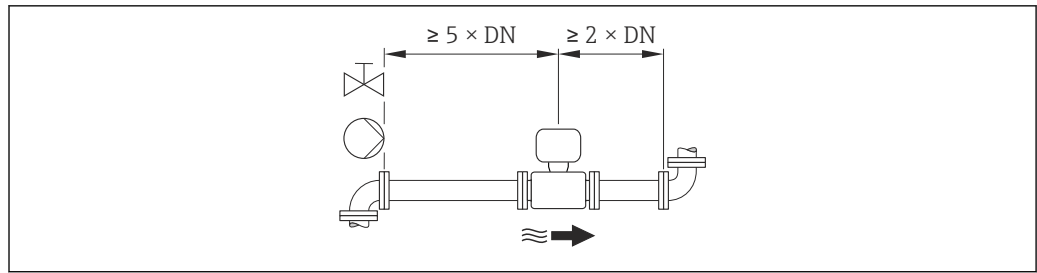
A0016275

Adapters	Suitable adapters to DIN EN 545 (double-flange reducers) can be used to install the sensor in larger-diameter pipes. The resultant increase in the rate of flow improves measuring accuracy with very slow-moving fluids.

The nomogram shown here can be used to calculate the pressure loss caused by reducers and expanders:
• Calculate the ratio of the diameters d/D.
• From the nomogram read off the pressure loss as a function of flow velocity (downstream from the reduction) and the d/D ratio.

The nomogram only applies to liquids with a viscosity similar to that of water.
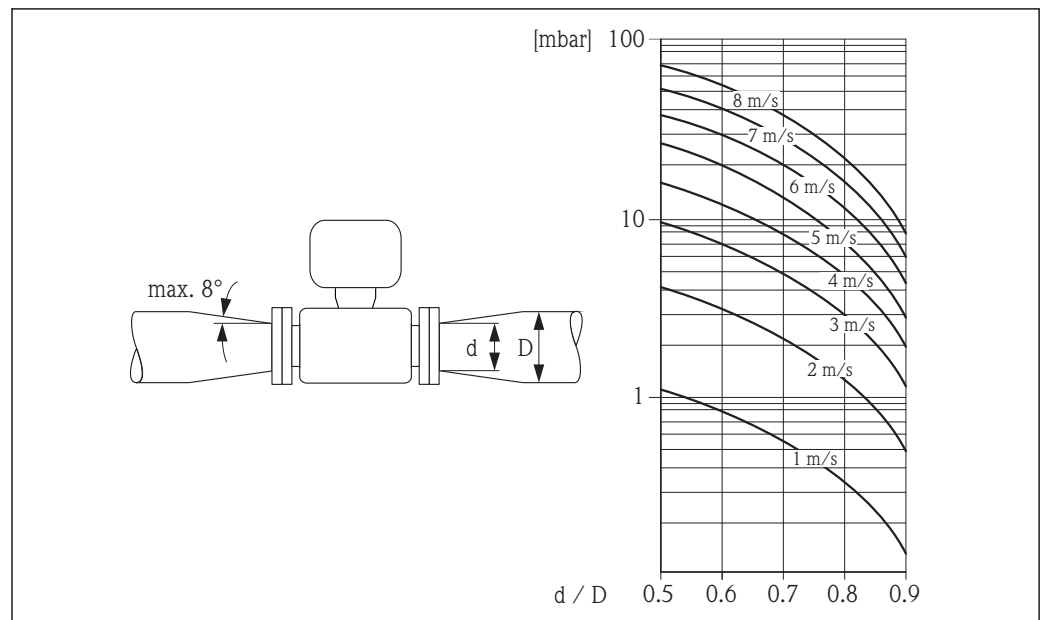
A0016359

Special mounting instructions	**Information for filling systems**

Correct measurement is possible only if the piping is completely filled. We therefore recommend that some test batches be carried out prior to production batching.

Circular filling system
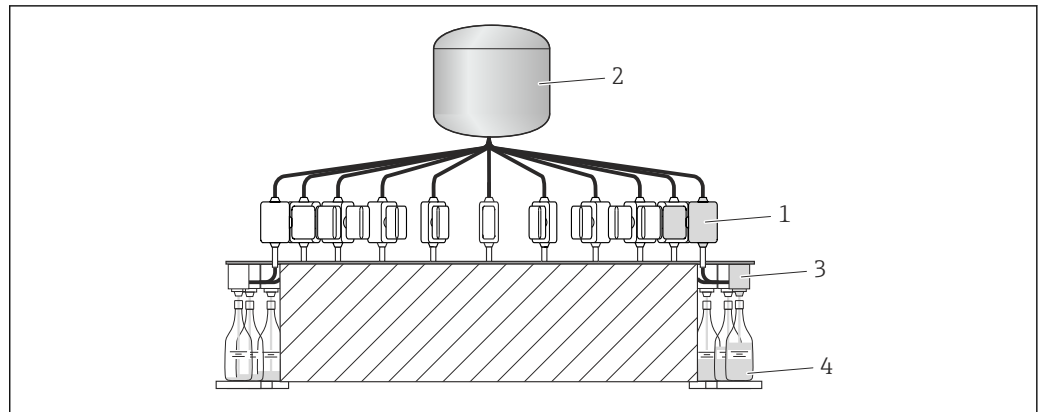
1   Measuring device
2   Tank
3   Batching valve
4   Vessel

Linear filling system
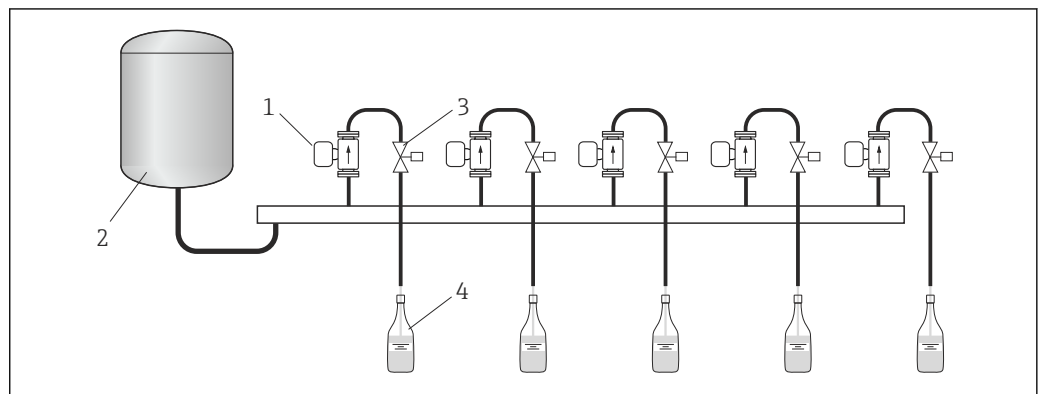
1   Measuring device
2   Tank
3   Batching valve
4   Vessel

Environment

Ambient temperature range

Transmitter	–40 to +60 ℃ (–40 to +140 ℉)
Sensor	–40 to +60 ℃ (–40 to +140 ℉)

Temperature tables

The following interdependencies between the permitted ambient and fluid temperatures apply when operating the device in hazardous areas:

Ex nA

SI units

	T5 [100 ℃]	T4 [135 ℃]	T3 [200 ℃]	T2 [300 ℃]	T1 [450 ℃]
Ambient temperature T_a	60	50	45	45	45
Maximum medium temperature T_m	70	105	130	130	130

US units

	T5 [212 ℉]	T4 [275 ℉]	T3 [392 ℉]	T2 [572 ℉]	T1 [842 ℉]
Ambient temperature T_a	140	122	113	113	113
Maximum medium temperature T_m	158	221	266	266	266

The minimum temperature of the medium is −20 ℃ (−4 ℉).

The minimum ambient temperature is −40 ℃ (−40 ℉).

Storage temperature	The storage temperature corresponds to the ambient temperature range of the transmitter and sensor.→ 🖹 21 • Protect the measuring device against direct sunlight during storage in order to avoid unacceptably high surface temperatures. • Select a storage location where moisture cannot collect in the measuring device as fungus or bacteria infestation can damage the liner. • If protection caps or protective covers are mounted these should never be removed before installing the measuring device.
Degree of protection	As standard: IP67, type 4X enclosure
Shock resistance	Acceleration up to 2 g based on IEC 60068-2-6
Vibration resistance	Acceleration up to 2 g based on IEC 60068-2-6
Interior cleaning	• Cleaning in place (CIP) • Sterilization in place (SIP) 🛈 Observe the maximum medium temperatures → 🖹 22
Electromagnetic compatibility (EMC)	According to IEC/EN 61326 📖 For details, refer to the Declaration of Conformity.

Process

Medium temperature range	**Sensor** −20 to +130 ℃ (−4 to +266 ℉) **Cleaning** +150 ℃ (+302 ℉) / 60 min for CIP and SIP processes **Seals** • EPDM: −20 to +130 ℃ (−4 to +266 ℉) (max. +150 ℃ (302 ℉) for cleaning • Silicon:−20 to +130 ℃ (−4 to +266 ℉) • Viton: 0 to +150 ℃ (+32 to +302 ℉)
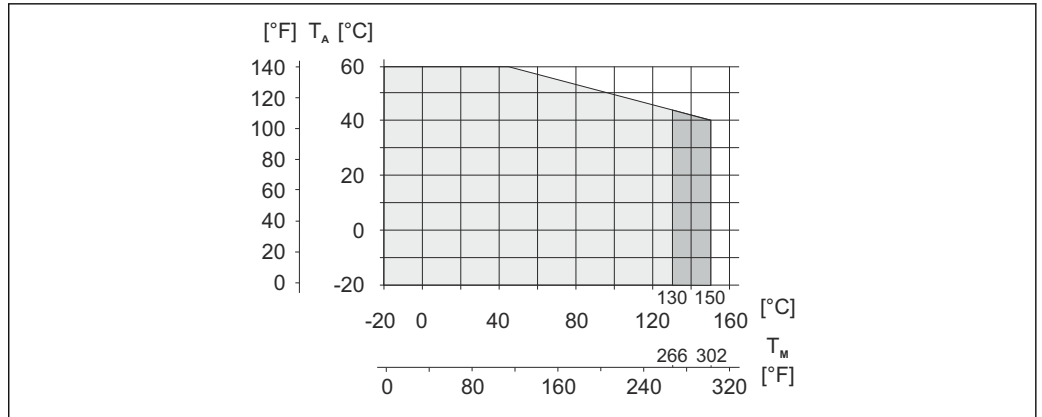
T$_A$ Ambient temperature

T$_M$ Medium temperature

Light-gray area: standard fluid temperature range

Dark-gray area: fluid temperature range for cleaning

Conductivity

- ≥ 5 µS/cm for liquids in general
- ≥ 10 µS/cmfor demineralized water

Pressure-temperature ratings

Permitted process pressure: 16 bar (232 psi)

Process connection: Welded connection as per EN 10357 (DIN 11850), ODT/SMS; clamp L14 AM7
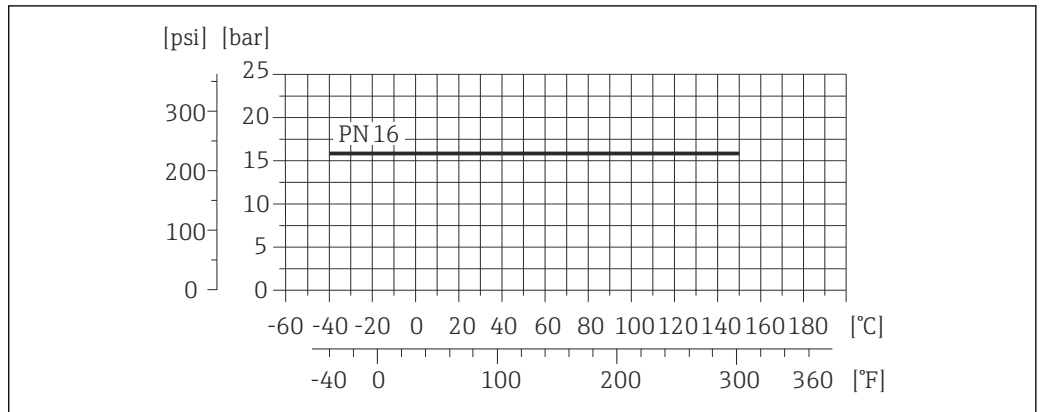
🔲 *10   Process connection material: 1.4404 (316L) (with molded seal)*

Pressure tightness

Liner: PFA

Nominal diameter		Limit values for absolute pressure in [mbar] ([psi]) for fluid temperatures:	
[mm]	[in]	+25 °C (+77 °F)	+150 °C (+302 °F)
4 to 25	⁵⁄₃₂ to 1	> 1 mbar (0.402 inH$_2$O) (0)	> 1 mbar (0.402 inH$_2$O) (0)

| Flow limit | The diameter of the pipe and the flow rate determine the nominal diameter of the sensor. The optimum flow velocity is between 2 to 3 m/s (6.56 to 9.84 ft/s). Also match the velocity of flow (v) to the physical properties of the fluid: |

• v < 2 m/s (6.56 ft/s): For abrasive media (e.g. cleaning agents)
• v > 2 m/s (6.56 ft/s): For media that produce buildup (e.g. liquids containing oil and sugar)

A necessary increase in the flow velocity can be achieved by reducing the sensor nominal diameter.

For an overview of the full scale values for the measuring range, see the "Measuring range" section → 🖹 6

| Pressure loss | • For DN 8 (5/16"), DN 15 (½") and DN 25 (1") no pressure loss occurs if the sensor is installed in a pipe with the same nominal diameter.
• Pressure losses for configurations incorporating adapters according to DIN EN 545 → 🖹 20 |

| System pressure | |
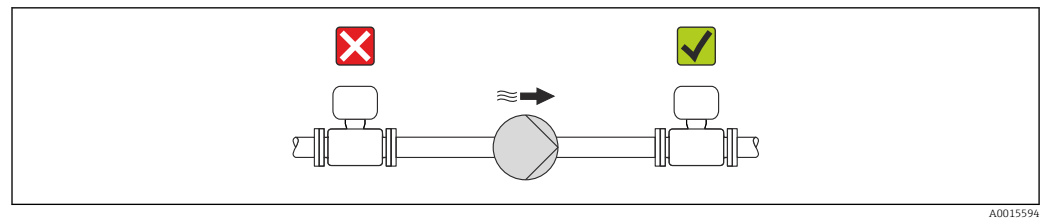
Never install the sensor on the pump suction side in order to avoid the risk of low pressure, and thus damage to the liner.

Furthermore, install pulse dampers if reciprocating, diaphragm or peristaltic pumps are used.

• For information on the liner's resistance to partial vacuum → 🖹 23
• For information on the shock resistance of the measuring system → 🖹 22
• For information on the vibration resistance of the measuring system → 🖹 22

| Vibrations | In the event of very strong vibrations, the pipe and sensor must be supported and fixed. |

• For information on the shock resistance of the measuring system → 🖹 22
• For information on the vibration resistance of the measuring system → 🖹 22
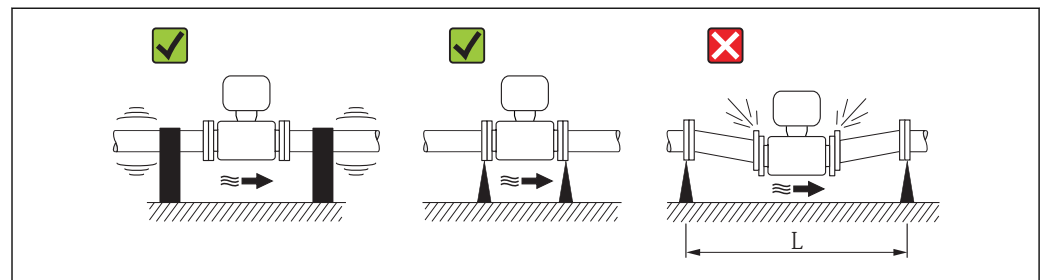
⊠ 11   *Measures to avoid device vibrations (L > 10 m (33 ft))*

Mechanical construction

Dimensions in SI units

Compact version

Order code for "Housing", option B "Compact IP67 NEMA4X, stainless steel", DN 4 to 15 (⁵⁄₃₂ to ½")
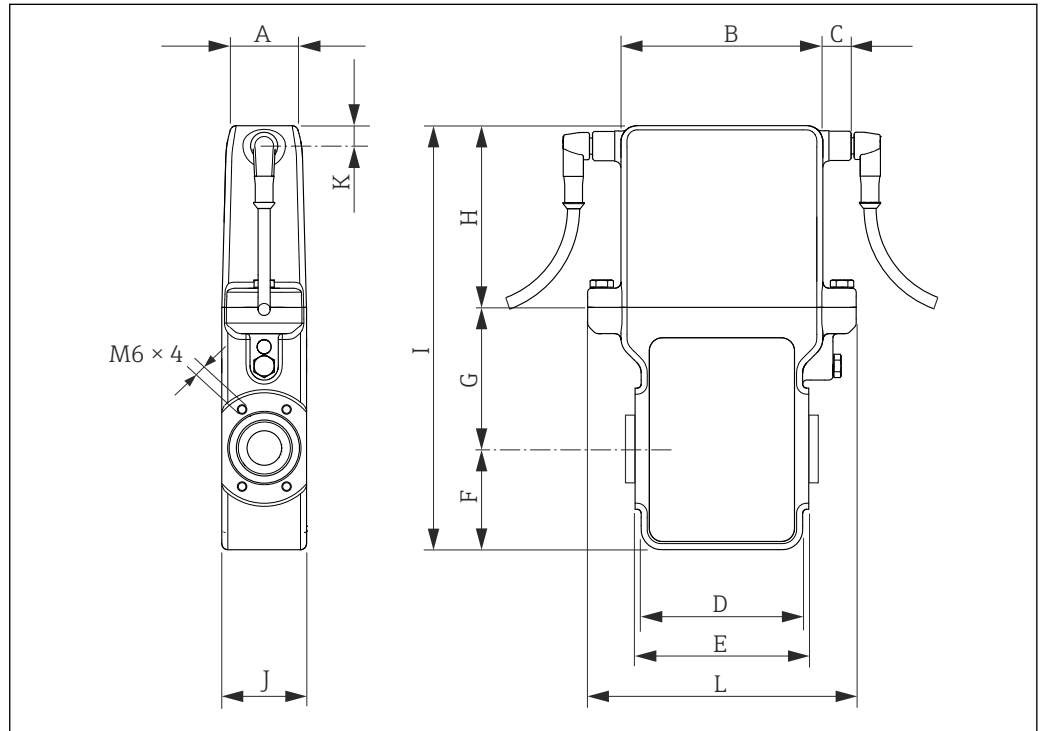
A0003864

L	A	B	C	D	E	F	G	H	I	J	K
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
133	33.4	100	12	80	86	50	70	90	210	42	10
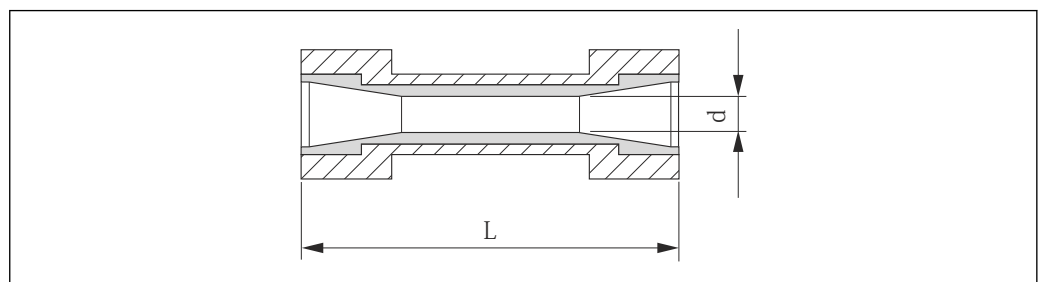
A0004874

⊡ *12   Measuring tube dimensions*

DN	L [1]	d
[mm]	[mm]	[mm]
4	94	4.5
8	94	9
15K [2]	94	12
15	94	16

1)   Total installation length depends on process connections
2)   Conical version (corresponds to DN 12)

Order code for "Housing", option B "Compact IP67 NEMA4X, stainless steel", DN 25 (1")
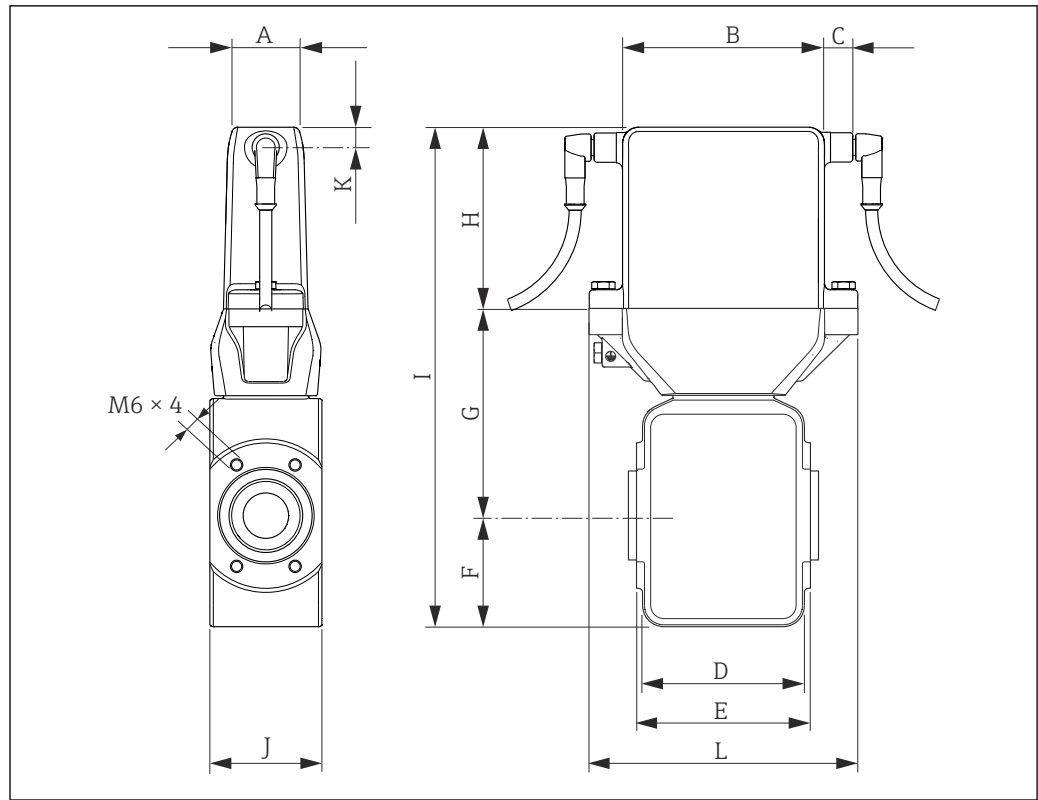
A0025867

L	A	B	C	D	E	F	G	H	I	J	K
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
133	33.4	100	12	80	86	55	102	90	247	55.5	10
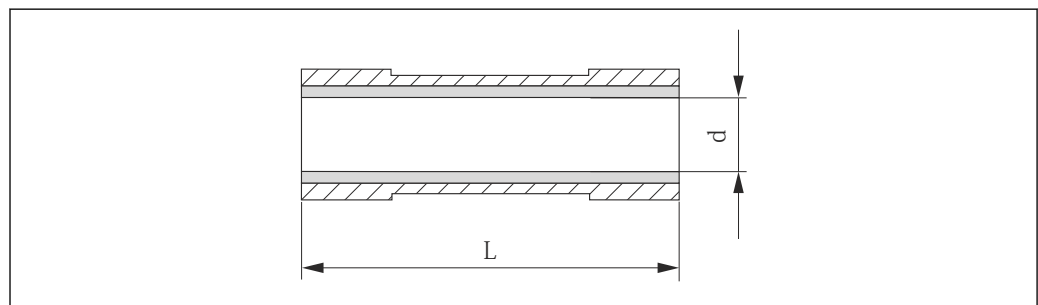
A0025957

▣ *13 Measuring tube dimensions*

DN	L [1]	d
[mm]	[mm]	[mm]
25	94	22.6(ASME)
25	94	26 (DIN)

1) Total length depends on process connections

Welded connections

With O-ring seal
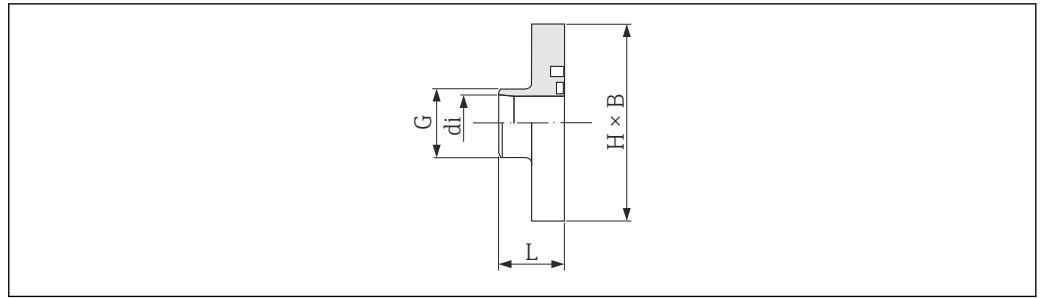
A0005547

Welded connection as per DIN EN ISO 1127 1.4404 (316L) Order code for "Process connection", option B					
DN	Suitable for pipe DIN EN ISO 1127	di	G	L	H × B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
8	13.5 × 1.6	10.3	13.5	20.3	62 × 42
15K [1] 15	21.3 × 1.6	18.1	21.3	20.3	62 × 42
Total length = (2 × L) + 86 mm					

1) Conical version (corresponds to DN 12)
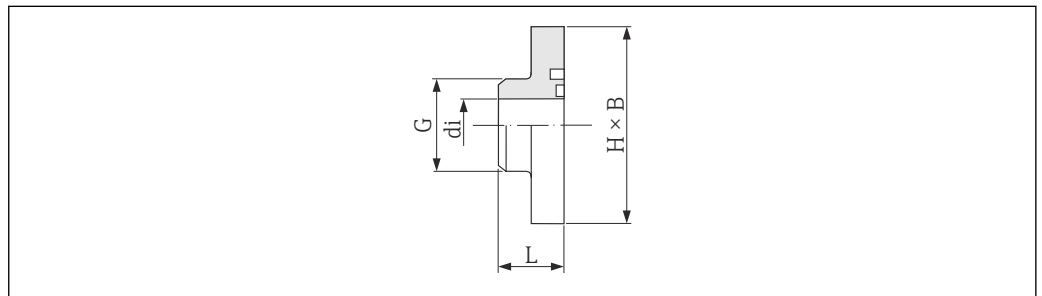
A0005548

Welded connection as per ODT/SMS 1.4404 (316L) Order code for "Process connection", option C					
DN	Suitable for pipe ODT/SMS	di	G	L	H × B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
8	13.5 × 2.30	9	13.5	20.3	62 × 42
15K [1] 15	21.3 × 2.65	16	21.3	20.3	62 × 42
Total length = (2 × L) + 86 mm					

1) Conical version (corresponds to DN 12)

With aseptic molded seal:

A0003870

Welded connection EN 10357 (DIN 11850)					
1.4404 (316L): Order code for "Process connection", option U					
DN sensor	Suitable for pipe EN 10357 (DIN 11850)	di	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
4 8	13 × 1.5	10	13	23	60 × 42
15K [1] 15	19 × 1.5	16	19	23	60 × 42
25	30 × 2	26	30	23.3	72 × 55

- Total length = $(2 \times L) + 86$ mm
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

[1] Conical version (corresponds to DN 12)

A0003871

Weld-in nipple ODT/SMS					
1.4404 (316L): Order code for "Process connection", option V					
DN sensor	Suitable for pipe ODT/SMS	di	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
4 8	12.7 × 1.65	9	12.7	16.1	60 × 42
15K [1] 15	19.1 × 1.65	16	19.1	16.1	60 × 42

Weld-in nipple ODT/SMS
1.4404 (316L): Order code for "Process connection", option V

DN sensor	Suitable for pipe ODT/SMS	di	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
25	25.4 × 1.65	22.6	25.4	16.1	72 × 55

- Total length = (2 × L) + 86 mm
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1)   Conical version (corresponds to DN 12)

Clamp connections

Tri-Clamp L14 AM7
1.4404 (316L): Order code for "Process connection", option 1

DN sensor	Suitable for pipe ODT	di	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
4 8	12.7 × 1.65	9.4	25.0	28.5	60 × 42
15K [1)] 15	19.1 × 1.65	15.8	25.0	28.5	60 × 42
25	25.4 × 1.65	22.1	50.4	28.5	72 × 55

- Total length = (2 × L) + 86 mm
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1)   Conical version (corresponds to DN 12)

Tri-Clamp 1" L14 AM7
1.4404 (316L): Order code for "Process connection", option 8

DN sensor	Suitable for pipe ODT	di	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15K [1] 15	Pipe 25.4 × 1.65	22.1	50.4	28.5	72 × 55
25	Pipe 25.4 × 1.65	22.1	50.4	28.5	72 × 55

- Total length = (2 × L) + 86 mm
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1) Conical version (corresponds to DN 12)

Tri-Clamp 3/4" (conical) L14 AM7
1.4404 (316L): Order code for "Process connection", option 2

DN sensor	Suitable for pipe ODT	d_1	d_2	G	L	H x B
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
4 8	Pipe 19.1 × 1.65	9	15.8	25.0	28.5	60 × 42

- Total length = (2 × L) + 86 mm
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

Cable glands

With O-ring seal

internal thread as per ISO 228/DIN 2999 1.4404 (316L) Order code for "Process connection", option L							
DN	Suitable for external thread ISO 228 / DIN 2999	di	G	D	L	S	H × B
[mm]	[in]	[mm]	[in]	[mm]	[mm]	[mm]	[mm]
8	Rp 3/8	9	3/8	22	45	13	62 × 42
15K[1] 15	Rp ½	16	½	27	45	14	62 × 42
Total length = (2 × L) + 86 mm							

1) Conical version (corresponds to DN 12)

Dimensions in US units

Compact version

Order code for "Housing", option B "Compact IP67 NEMA4X, stainless steel", DN 4 to 15 (⁵⁄₃₂ to ½")
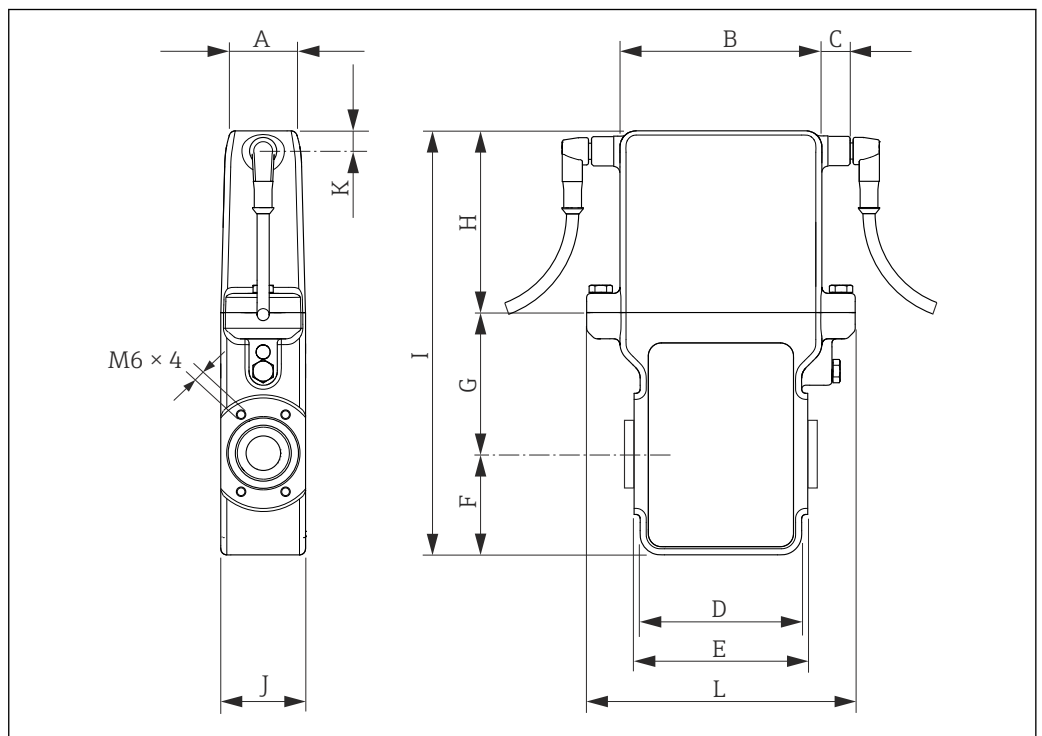
A0003864

L	A	B	C	D	E	F	G	H	I	J	K
[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]
5.24	1.31	3.94	0.47	3.15	3.39	1.97	2.76	3.54	8.27	1.65	0.39
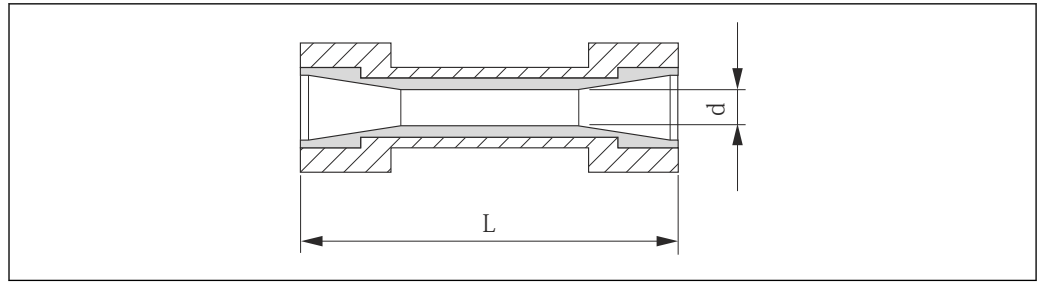
⊡ 14   *Measuring tube dimensions*

DN [in]	L [1] [in]	d [in]
5/32	3.70	0.17
5/16	3.70	0.35
½K [2]	3.70	0.47
½	3.70	0.63

1)   Total length depends on process connections
2)   Conical version (corresponds to DN 12)

Order code for "Housing", option B "Compact IP67 NEMA4X, stainless steel", DN 25 (1")

L [in]	A [in]	B [in]	C [in]	D [in]	E [in]	F [in]	G [in]	H [in]	I [in]	J [in]	K [in]
5.24	1.31	3.94	0.47	3.15	3.39	2.17	4.02	3.54	9.72	2.19	0.39
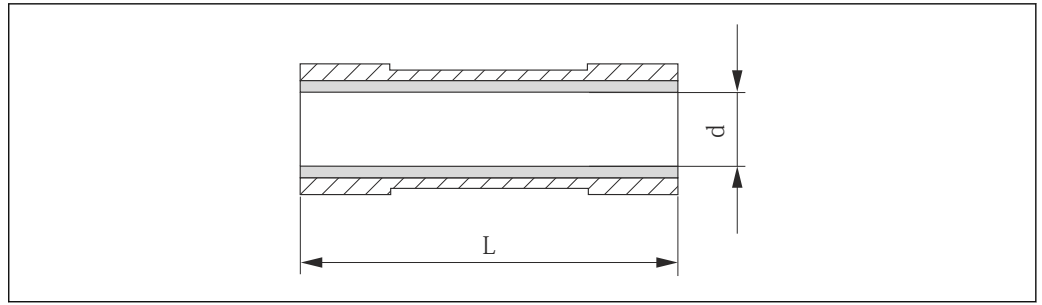
⊡ *15   Measuring tube dimensions*

DN	L [1]	d
[in]	[in]	[in]
1	3.70	0.89 (ASME)
1	3.70	1.02 (DIN)

1)   Total length depends on process connections

Welded connections

With O-ring seal

Welded connection as per ODT/SMS 1.4404 (316L) Order code for "Process connection", option C					
DN	Suitable for pipe ODT/SMS	di	G	L	H × B
[in]	[in]	[in]	[in]	[in]	[in]
⁵⁄₁₆	0.53 × 0.09	0.35	0.53	0.80	2.44 × 1.65
½K [1] ½	0.84 × 0.10	0.63	0.84	0.80	2.44 × 1.65
Total length = (2 × L) + 3.39 in					

1)   Conical version (corresponds to DN 12)

With aseptic molded seal:

A0003870

Welded connection EN 10357 (DIN 11850)					
1.4404 (316L): Order code for "Process connection", option U					
DN sensor	Suitable for pipe EN 10357 (DIN 11850)	di	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]
5/32 5/16	0.51 × 0.06	0.39	0.51	0.91	2.36 × 1.65
½K [1] ½	0.75 × 0.06	0.63	0.75	0.91	2.36 × 1.65
1	1.18 × 0.08	1.02	1.18	0.92	2.83 × 2.16

- Total length = (2 × L) + 3.39 in
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

[1]   Conical version (corresponds to DN 12)

A0003871

Weld-in nipple ODT/SMS					
1.4404 (316L): Order code for "Process connection", option V					
DN sensor	Suitable for pipe ODT/SMS	di	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]
5/32 5/16	0.50 × 0.06	0.35	0.50	0.63	2.36 × 1.65
½K [1] ½	0.75 × 0.06	0.63	0.75	0.63	2.36 × 1.65

Weld-in nipple ODT/SMS
1.4404 (316L): Order code for "Process connection", option V

DN sensor	Suitable for pipe ODT/SMS	di	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]
1	1 × 0.06	0.89	1	0.63	2.83 × 2.16

- Total length = (2 × L) + 3.39 in
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1) Conical version (corresponds to DN 12)

Clamp connections

A0003872

Tri-Clamp L14 AM7
1.4404 (316L): Order code for "Process connection", option 1

DN sensor	Suitable for pipe ODT	di	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]
$5/32$ $5/16$	ODT ½	0.37	0.98	1.12	2.36 × 1.65
½K [1] ½	ODT ¾	0.62	0.62	1.12	2.36 × 1.65
1	ODT 1	0.87	1.98	1.12	2.83 × 2.16

- Total length = (2 × L) + 3.39 in
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1) Conical version (corresponds to DN 12)

Tri-Clamp 1" L14 AM7
1.4404 (316L): Order code for "Process connection", option 8

DN sensor	Suitable for pipe ODT	di	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]
½K [1] ½	1	0.87	1.98	1.12	2.83 × 2.16
1	1	0.87	1.98	1.12	2.83 × 2.16

- Total length = (2 × L) + 3.39 in
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

1) Conical version (corresponds to DN 12)

Tri-Clamp 3/4" (conical) L14 AM7
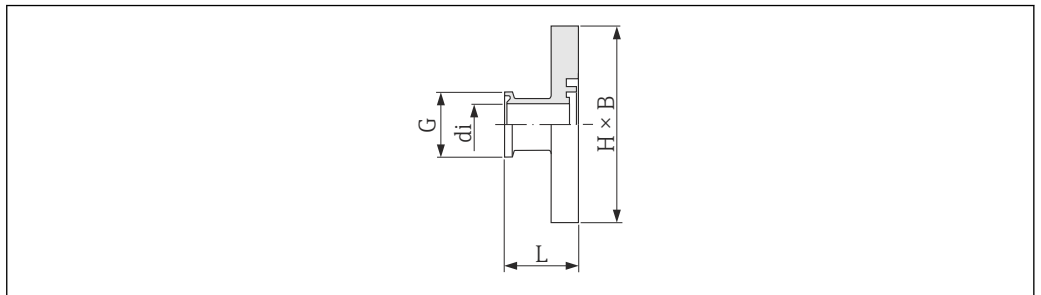*1.4404 (316L): Order code for "Process connection", option 2*

DN sensor	Suitable for pipe ODT	d_1	d_2	G	L	H x B
[in]	[in]	[in]	[in]	[in]	[in]	[in]
⁵/₃₂ ⁵/₁₆	ODT ¾	0.35	0.62	1.12	2.36 × 1.65	2.36 × 1.65

- Total length = (2 × L) + 3.39 in
- It is essential to take the internal diameters of the measuring tube and process connection (di) into account when cleaning with pigs!

Cable glands

With O-ring seal

internal thread as per ISO 228/DIN 2999 1.4404 (316L) Order code for "Process connection", option L							
DN	Suitable for external thread ISO 228 / DIN 2999	di	G	D	L	S	H × B
[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]
$\frac{5}{16}$	Rp 3/8	0.35	3/8	0.87	1.77	0.51	2.44 × 1.65
½K [1] ½	Rp ½	0.63	½	1.06	1.77	0.55	2.44 × 1.65
Total length = (2 × L) + 3.39 in							

1)   Conical version (corresponds to DN 12)

Weight	**Compact version**

Weight in SI units

DN [mm]	Weight [kg]
4	2.8
8	2.8
15	2.8
25	4.3

Weight in US units

DN [in]	Weight [lbs]
$\frac{5}{32}$	6.17
$\frac{5}{16}$	6.17
½	6.17
1	9.48

Materials	**Transmitter housing**

- Acid and alkali-resistant outer surface
- Stainless steel 1.4308 (304)

Device plugs

Electrical connection	Material
Plug M12x1	• Socket: Stainless steel, 1.4404 (316L) • Contact housing: Polyamide • Contacts: Gold-plated brass

Sensor housing

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

Measuring tube

Stainless steel 1.4301 (304)

Liner

PFA

Electrodes

- 1.4435 (316L)
- Alloy C22, 2.4602 (UNS N06022)
- Platinum
- Tantalum

Process connections

- Weld-in nipple: 1.4404 (316L)
- Weld-in nipple, aseptic: 1.4404 (316L)
- Tri-Clamp: 1.4404 (316L)
- Couplings: 1.4404 (316L)

List of all available process connections → 🖹 38

Seals

Molded seal (EPDM, silicone, Viton)

Fitted electrodes	- Standard: stainless steel 1.4435 (316L) - Optional: Alloy C22, 2.4602 (UNS N06022), platinum, tantalum
Process connections	**With O-ring seal** **Welded connections** - DIN EN ISO 1127 - ODT/SMS **Coupling** ISO 228/DIN 2999 **With aseptic molded seal:** **Welded connections** - EN 10357, DIN 11850 - ODT/SMS **Tri-Clamp** L14 AM7 For information on the different materials used in the process connections → 🖹 38
Surface roughness	Stainless steel electrodes, 1.4435 (304L); Alloy C22, 2.4602 (UNS N06022), platinum, tantalum: 0.3 to 0.5 μm (11.8 to 19.7 μin) Liner with PFA: ≤ 0.4 μm (15.7 μin) Process connection: ≤ 0.8 μm (31 μin) (All data relate to parts in contact with fluid)

Operability

Local operation	This device cannot be operated locally using a display or operating elements.
Remote operation	**Via service adapter and Commubox FXA291** The Endress+Hauser service and configuration software FieldCare or DeviceCare can be used for operation and configuration. The device is connected by means of a service adapter and a Commubox FXA291 to the computer's USB interface.

A0003841

1   Supply voltage 24 V DC
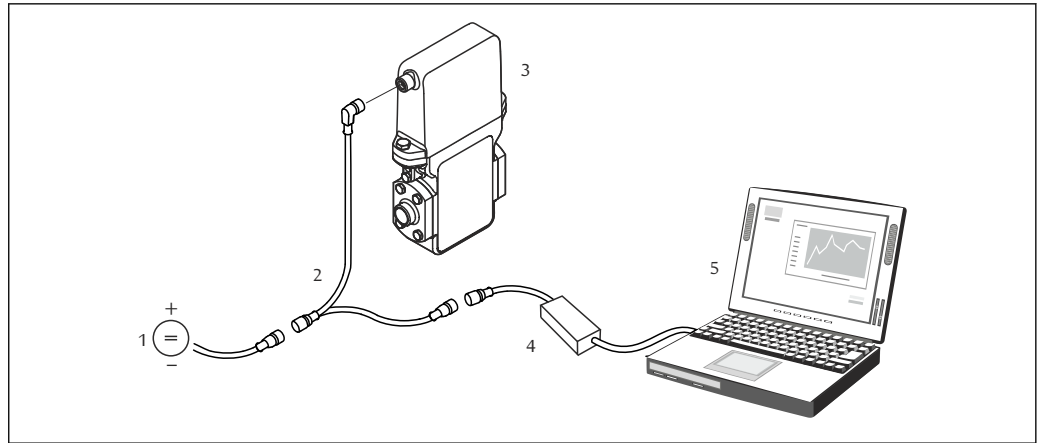*2   Service adapter*
3   Dosimag
4   Commubox FXA291
5   Computer with "FieldCare" or "DeviceCare" operating tool

ℹ️ The service adapter, cable and Commubox FXA291 are not included in the delivery. These
   components can be ordered as accessories → 🔖 40.

Certificates and approvals

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

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

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

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

ℹ️ The separate Ex documentation (XA) containing all the relevant explosion protection data is
   available from your Endress+Hauser sales center.

ATEX, IECEx

Currently, the following versions for use in hazardous areas are available:

Ex nA

Category	Type of protection
II3G	Ex nA IIC T5 to T1 Gc

cCSAus

Currently, the following versions for use in hazardous areas are available:

Class I Division 2 Groups ABCD

Sanitary compatibility
- 3A approval and EHEDG-certified
- Seals → FDA-compliant

Pressure Equipment Directive	• With the PED/G1/x (x = category) marking on the sensor nameplate, Endress+Hauser confirms compliance with the "Essential Safety Requirements" specified in Annex I of the Pressure Equipment Directive 97/23/EC.
	• Devices bearing this marking (PED) are suitable for the following types of medium: Media in Group 1 and 2 with a vapor pressure greater than, or smaller and equal to 0.5 bar (7.3 psi)
	• Devices not bearing this marking (PED) are designed and manufactured according to good engineering practice. They meet the requirements of Art.3 Section 3 of the Pressure Equipment Directive 97/23/EC. The range of application is indicated in tables 6 to 9 in Annex II of the Pressure Equipment Directive.
Measuring instrument approval	Dosimag is suitable as an (optional) component for recording volume in legally regulated measuring systems for AdBlue / DEF (Diesel Exhaust Fluid) in accordance with Appendix MI-005 of the European Measuring Instruments Directive 2014/32/EU. Dosimag is certified in accordance with OIML R117-1:2007 / OIML R117-2:2014 and has an MID evaluation certificate confirming conformity with the basic requirements of the Measuring Instruments Directive.
Other standards and guidelines	• EN 60529 Degrees of protection provided by enclosures (IP code) • EN 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use • IEC/EN 61326 Emission in accordance with Class A requirements. Electromagnetic compatibility (EMC requirements). • CAN/CSA C22.2 No. 61010-1-12 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements • ANSI/ISA-61010-1 (82.02.01) Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use – Part 1: General Requirements

Ordering information

Detailed ordering information is available from the following sources:
• In the Product Configurator on the Endress+Hauser website: www.endress.com → Select your country → Products → Select measuring technology, software or components → Select the product (picklists: measurement method, product family etc.) → Device support (right-hand column): Configure the selected product → The Product Configurator for the selected product opens.
• From your Endress+Hauser Sales Center: www.addresses.endress.com

Product Configurator - the tool for individual product configuration
• Up-to-the-minute configuration data
• Depending on the device: Direct input of measuring point-specific information such as measuring range or operating language
• Automatic verification of exclusion criteria
• Automatic creation of the order code and its breakdown in PDF or Excel output format
• Ability to order directly in the Endress+Hauser Online Shop

Accessories

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

Device-specific accessories

For the sensor

Accessories	Description	Order code
Seal set	For regular replacement of the seals on the process connections.	DK5G**-***
Housing seal	To seal the transmitter	50102857
Mounting set	Consists of: • 2 process connections • Screws • Seals	DKH**-****

Communication-specific accessories

Accessories	Description
FieldCare	FDT-based plant asset management tool from Endress+Hauser. It can configure all smart field units in your system and helps you manage them. By using the status information, it is also a simple but effective way of checking their status and condition. 📖 For details, see Operating Instructions BA00027S and BA00059S
DeviceCare	Tool for connecting and configuring Endress+Hauser field devices. 📖 For details, see Innovation brochure IN01047S
Commubox FXA291	Connects Endress+Hauser field devices with a CDI interface (= Endress+Hauser Common Data Interface) and the USB port of a computer or laptop. 📖 For details, see the "Technical Information" document TI405C/07

Adapter connection	Adapter connections for installation on other electrical connections:
	• Adapter FXA291 (order number: 71035809)
	• Adapter RSE8 (order number: 50107169)
	  RSE8 connection jack, 8-pin adapter (RSE8), 24 V DC, pulse, status
	• Adapter RSE5 (order number: 50107168)
	  RSE8 connection jack, 5-pin adapter (RSE5), 24 V DC, pulse, status
	• Adapter RSE4 (order number: 50107167)
	  RSE8 connection jack, 4-pin adapter (RSE4), 24 V DC, pulse

Connecting cable RSE8	Cable RKWTN8-56/5 P92, length: 5 m (Order number: 50107895)

Service-specific accessories

Accessories	Description
Applicator	Software for selecting and sizing Endress+Hauser measuring devices: • Calculation of all data required to determine the optimum flowmeter: e.g. nominal diameter, pressure loss, accuracy or process connections. • Graphic illustration of the calculation results Administration, documentation and access to all project-related data and parameters throughout the entire life cycle of a project. Applicator is available: • Via the Internet: https://wapps.endress.com/applicator • On CD-ROM for local PC installation.
W@M	Life cycle management for your plant W@M supports you with a wide range of software applications over the entire process: from planning and procurement, to the installation, commissioning and operation of the measuring devices. All the relevant information is available for every measuring device over time entire life cycle, such as the Device status, spare parts, device-specific documentation. The application already contains the data of your Endress+Hauser device. Endress+Hauser also takes care of maintaining and updating the data records. W@M is available: • Via the Internet: www.endress.com/lifecyclemanagement • On CD-ROM for local PC installation.

FieldCare	FDT-based plant asset management tool from Endress+Hauser. It can configure all smart field units in your system and helps you manage them. By using the status information, it is also a simple but effective way of checking their status and condition. 📖 For details, see Operating Instructions BA00027S and BA00059S
DeviceCare	Tool for connecting and configuring Endress+Hauser field devices. 📖 For details, see Innovation brochure IN01047S
Commubox FXA291	Connects Endress+Hauser field devices with a CDI interface (= Endress+Hauser Common Data Interface) and the USB port of a computer or laptop. 📖 For details, see "Technical Information" TI00405C

Supplementary documentation

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

Standard documentation

Brief Operating Instructions

Measuring device	Documentation code
Dosimag	KA01175D

Operating Instructions

Measuring device	Documentation code	
	Pulse/frequency/status output Option 3	Modbus RS485 Options 4, 5 and 6
Dosimag	BA00098D	BA01321D

Description of device parameters

Measuring device	Documentation code	
	Pulse/frequency/status output Option 3	Modbus RS485 Options 4, 5 and 6
Dosimag	GP01049D	GP01048D

Supplementary device-dependent documentation

Safety Instructions

Contents	Documentation code
ATEX/IECEx Ex nA	XA01332D
cCSAus	FES0231
UL Class 1 Division 2	XA01377D

Special Documentation

Contents	Documentation code
Information on Custody Transfer Measurement	SD01514D

Registered trademarks

Modbus®
Registered trademark of SCHNEIDER AUTOMATION, INC.

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

Applicator®, FieldCare®, DeviceCare®
Registered or registration-pending trademarks of the Endress+Hauser Group

Endress+Hauser

People for Process Automation

www.addresses.endress.com