Füllstand | Druck | Durchfluss | Temperatur | Flüssigkeits-analyse | Registrierung | Systeme Komponenten | Services | Solutions

Technical Information

# Proline Promag 10H

## Electromagnetic Flow Measuring System
## Flow measurement of liquids in hygienic, food or process applications

**Application**
Electromagnetic flowmeter for bidirectional measurement of liquids with a minimum conductivity of ≥ 50 µS/cm:

- Beverages, e.g. fruit juice, beer, wine
- Dairy products, fruit mixes
- Saline solutions
- Acids, alkalis, etc.

- Flow measurement up to 4,700 m³/h
- Fluid temperature up to +150 °C
- Process pressures up to 40 bar
- CIP-/SIP cleaning

Approvals in food sector/hygiene sector:
- 3A approval, EHEDG-tested, conform to FDA

Application-specific lining material:
- PFA

**Your benefits**
Promag measuring devices offer you cost-effective flow measurement with a high degree of accuracy for a wide range of process conditions.

The uniform Proline transmitter concept comprises:
- High degree of reliability and measuring stability
- Uniform operating concept

The tried-and-tested Promag sensors offer:
- No pressure loss
- Not sensitive to vibrations
- Simple installation and commissioning

TI095D/06/en/06.05
50104876

Endress+Hauser
People for Process Automation

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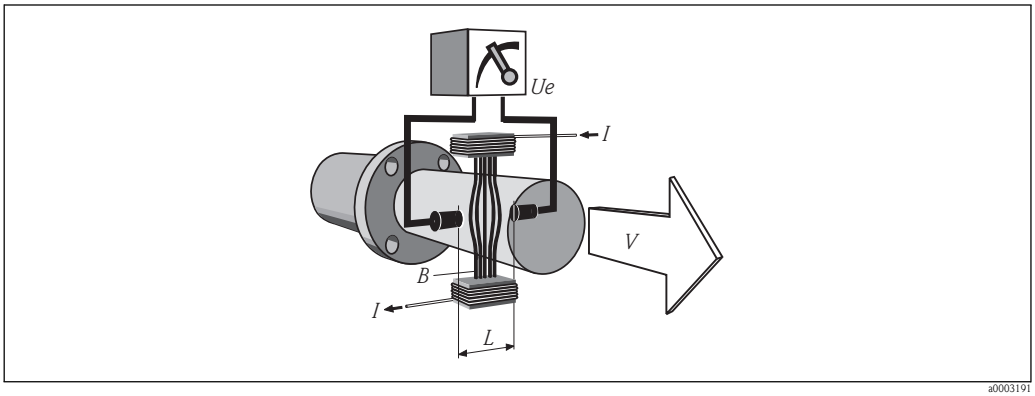
# Function and system design

**Measuring principle**

Following *Faraday's law of magnetic induction*, a voltage is induced in a conductor moving through a magnetic field.
In the electromagnetic measuring principle, the flowing medium is the moving conductor.
The voltage induced is proportional to the flow velocity and is supplied to the amplifier by means of two measuring electrodes. The flow volume is calculated by means of the pipe cross-sectional area. The DC magnetic field is created through a switched direct current of alternating polarity.




$Ue = B \cdot L \cdot v$
$Q = A \cdot v$

*Ue* *Induced voltage*
*B* *Magnetic induction (magnetic field)*
*L* *Electrode spacing*
*v* *Flow velocity*
*Q* *Volume flow*
*A* *Pipe cross-section*
*I* *Current strength*

**Measuring system**

The measuring system consists of a transmitter and a sensor.
Two versions are available:
- Compact version: Transmitter and sensor form a mechanical unit.
- Remote version: Sensor is mounted separate from the transmitter.

Transmitter:
- Promag 10 (key operation, two-line, unilluminated display)

Sensor:
- Promag H (DN 2…100)

# Input

**Measured variable**

Flow velocity (proportional to induced voltage)

**Measuring ranges**

**Measuring ranges for liquids**

Typically v = 0.01...10 m/s with the specified accuracy

**Operable flow range**

Over 1000 : 1

# Output

**Output signal**

**Current output**

- Galvanically isolated
- Active: 4...20 mA, $R_L < 700\ \Omega$ (for HART: $_{RL} \geq 250\ \Omega$)
- Full scale value adjustable
- Temperature coefficient: typ. 2 µA/°C, resolution: 1.5 µA

**Pulse/status output**

- Galvanically isolated
- Passive: 30 V DC / 250 mA
- Open collector
- Can be configured as:
  - Pulse output: Pulse value and pulse polarity can be selected, max. pulse width adjustable (5...2000 ms), pulse frequency max. 100 Hz
  - Status output: for example, can be configured for error messages, empty pipe detection, flow recognition, limit value

**Signal on alarm**

- Current output → Failsafe mode can be selected
- Pulse output → Failsafe mode can be selected
- Status output → "Not conductive" in the event of fault or power supply failure

**Load**

See "output signal"

**Low flow cut off**

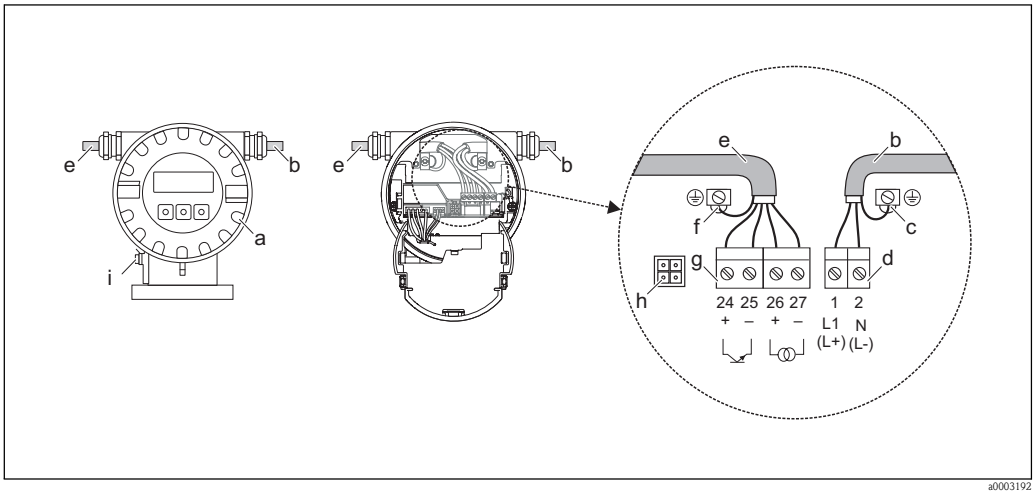
Low flow cut off →Switch-on point can be selected as required.

**Galvanic isolation**

All circuits for inputs, outputs and power supply are galvanically isolated from each other.

# Power supply

**Electrical connection, measuring unit**



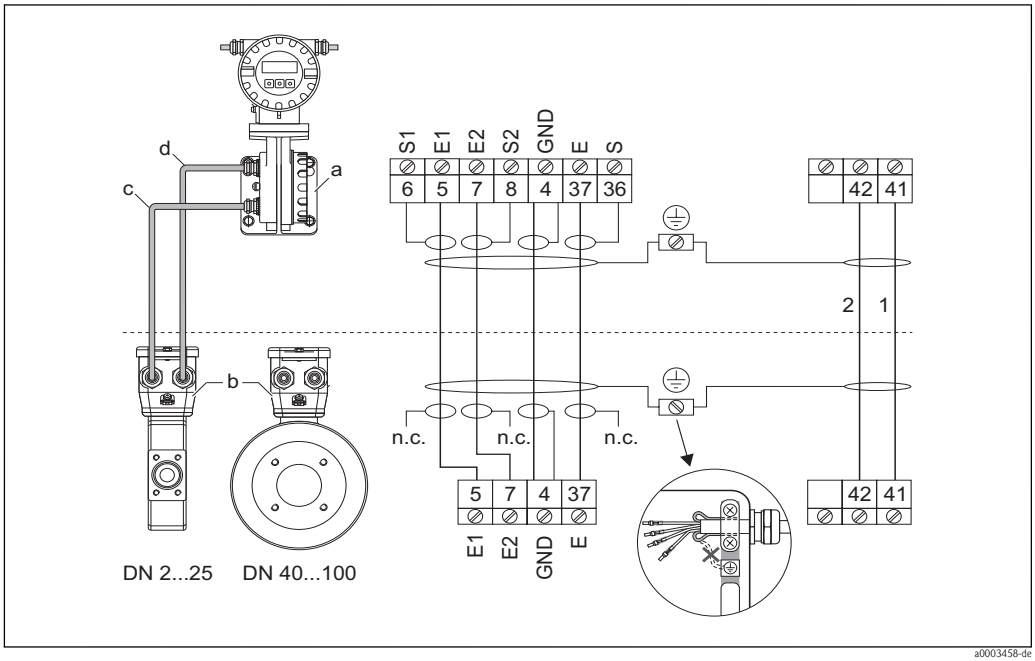

*Connecting the transmitter (aluminum field housing), cable cross-section max. 2.5 mm²*

*a Electronics compartment cover*
*b Power supply cable*
*c Ground terminal for power supply cable*
*d Terminal connector for power supply cable*
*e Signal cable*
*f Ground terminal for signal cable*
*g Terminal connector for signal cable*
*h Service connector*
*i Ground terminal for potential equalization*

**Electrical connection, terminal assignment**

| Order version | Terminal No. | | | | | |
|---|---|---|---|---|---|---|
| | 24 (+) | 25 (–) | 26 (+) | 27 (–) | 1 (L1/L+) | 2 (N/L–) |
| 10***–**********A | Pulse/status output | | HART current output | | Power supply | |
| Functional values | See “output signal” | | | | See “Supply voltage” | |

**Electrical connection, remote version**




*Connecting the remote version*

*a Wall-mount housing connection compartment*
*b Sensor connection housing cover*
*c Signal cable*
*d Coil current cable*
*n.c. Not connected, insulated cable shields*

*Cable colors:*
*terminal numbers 5/6 = brown; 7/8 = white; 4 = green; 37/36 = yellow*

Note!
Grounding the cable shielding in the sensor takes place by means of the strain relief terminal.

**Supply voltage (power supply)**

- 85...250 V AC, 45...65 Hz
- 20...28 V AC, 45...65 Hz, 11...40 V DC

**Cable entry**

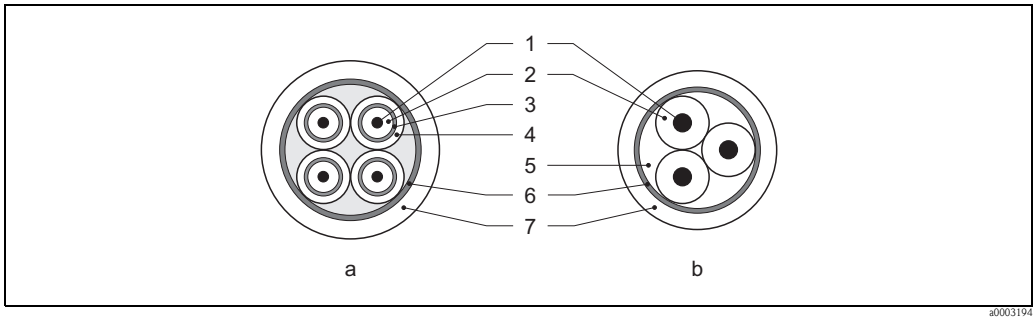
Power supply and signal cables (inputs/outputs):
- Cable entry M20 x 1.5 (8...12 mm)
- Thread for cable entries, ½" NPT, G ½"

Connecting cable for remote version:
- Cable entry M20 x 1.5 (8...12 mm)
- Thread for cable entries, ½" NPT, G ½"

**Remote version cable specifications**

Coil cable
- 2 x 0.75 mm² PVC cable with common, braided copper shield (∅ ~ 7 mm)
- Conductor resistance: ≤ 37 Ω/km
- Capacitance core/core, shield grounded: ≤ 120 pF/m
- Operating temperature: –20...+8o °C
- Cable cross-section: max. 2.5 mm²

Signal cable
- 3 x 0.38 mm² PVC cable with common, braided copper shield (∅ ~ 7 mm) and individual shielded cores
- With empty pipe detection (EPD): 4 x 0.38 mm² PVC cable with common, braided copper shield (∅ ~ 7 mm) and individual shielded cores
- Conductor resistance: ≤ 50 Ω/km
- Capacitance core/shield: ≤ 420 pF/m
- Operating temperature: –20...+8o °C
- Cable cross-section: max. 2.5 mm²




*a* *Signal cable*
*b* *Coil current cable*

*1* *Core*
*2* *Core insulation*
*3* *Core shield*
*4* *Core jacket*
*5* *Core reinforcement*
*6* *Cable shield*
*7* *Outer jacket*

Operation in zones of severe electrical interference
The measuring device complies with the general safety requirements in accordance with EN 61010 and the EMC requirements of EN 61326/A1 (IEC 1326).

Caution!
Grounding is by means of the ground terminals provided for the purpose inside the connection housing. Ensure that the stripped and twisted lengths of cable shield to the ground terminal are as short as possible.

**Power consumption**

- 85...250 V AC: <12 VA (incl. sensor)
- 20...28 V AC: <8 VA (incl. sensor)
- 11...40 V DC: <6 W (incl. sensor)

Switch-on current:
- 250 V AC → max 16 A (< 5 ms)
- 28 V AC → max. 5.5 A (< 5 ms)
- 24 V DC → max. 3.3 A (< 5 ms)

**Power supply failure**

Lasting min. ½ cycle frequency: EEPROM saves measuring system data

**Potential equalization**

To guarantee perfect measurement, the sensor and the fluid have to be on the same electric potential. Potential equalization can take place by means of the metal, process connections in contact with the medium which are mounted directly on the sensors. As a result, further measures for potential equalization are generally not required.

# Performance characteristics

**Reference operating conditions**

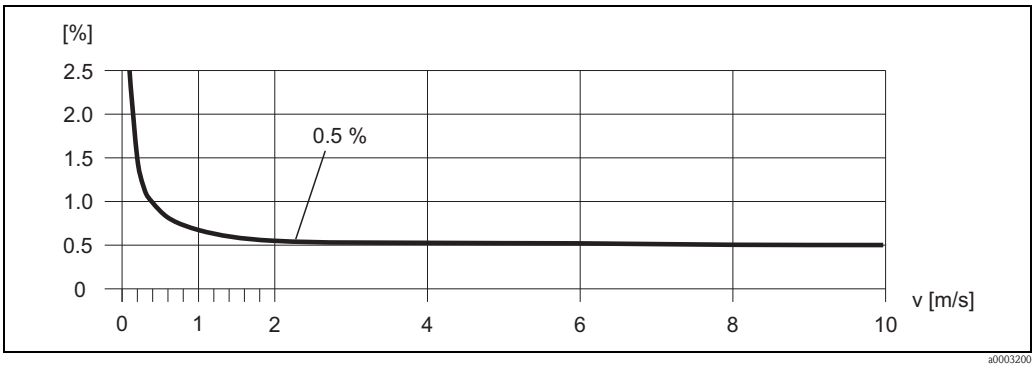
As per DIN EN 29104 and VDI/VDE 2641:
- Fluid temperature: +28 C ±2 K
- Ambient temperature: +22 C ±2 K
- Warm-up period: 30 minutes

Installation:
- Inlet run >10 x DN
- Outlet run > 5 x DN
- Sensor and transmitter grounded.
- The sensor is centered in the pipe.

**Maximum measured error**

- Current output: also typically ± 5 µA
- Pulse output: ± 0.5% o.r. ± 2 mm/s (o.r. = of reading)

Fluctuations in the supply voltage do not have any effect within the specified range.




*Max. measured error in % of reading*

**Repeatability**

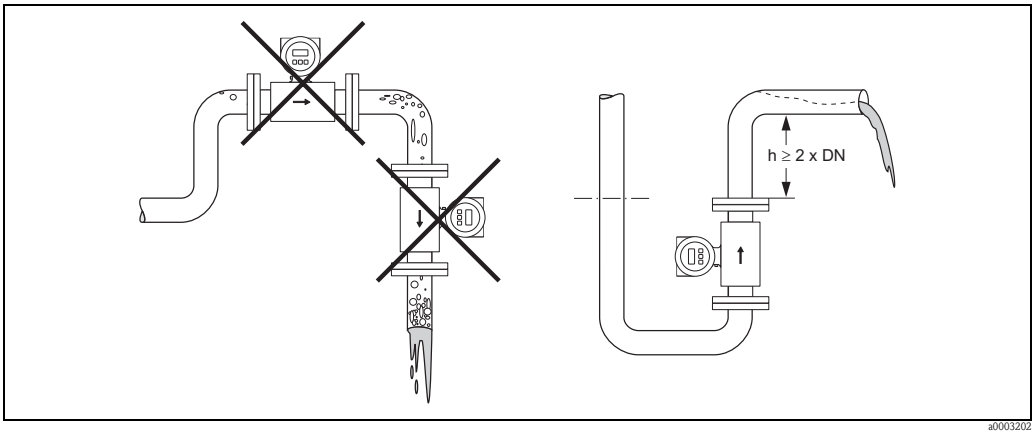
Max. ± 0.2% o.r. ± 2 mm/s (o.r. = of reading)

# Operating conditions: Installation

**Installation instructions**

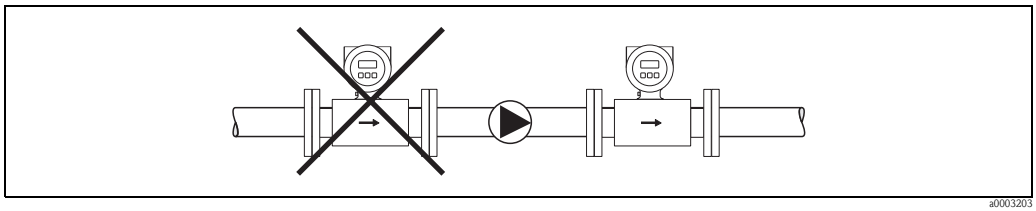
**Mounting location**

Entrained air or gas bubble formation in the measuring tube can result in an increase in measuring errors.
**Avoid** the following installation locations in the pipe:
- Highest point of a pipeline. Risk of air accumulating!
- Directly upstream from a free pipe outlet in a vertical pipeline



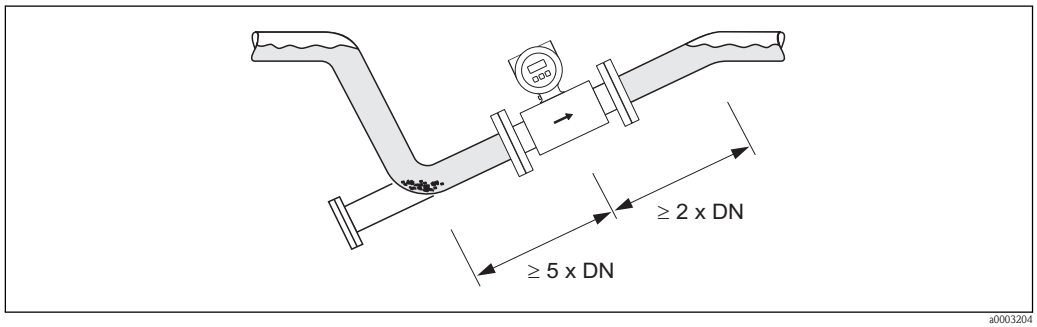

*Mounting location*

**Installation of pumps**
Sensors may not be installed on the pump suction side. This precaution is to avoid low pressure and the consequent risk of damage to the lining of the measuring tube.
Information on the pressure tightness of the measuring tube lining can be found in the “Pressure tightness” section in the “Operating conditions: Process” chapter.
Pulsation dampers may be needed when using piston pumps, piston diaphragm pumps or hose pumps.
Information on the shock and vibration resistance of the measuring system can be found in the “Shock and vibration resistance” section in the “Operating conditions: Environment” chapter.



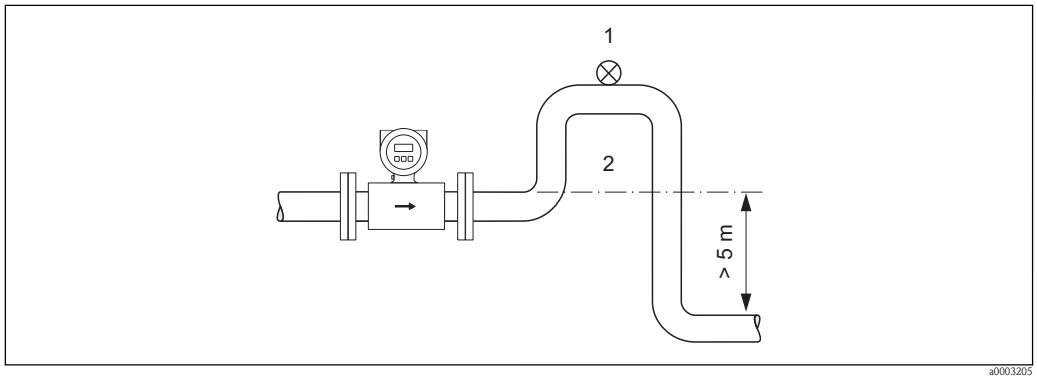

*Installation of pumps*

**Partially filled pipes**
Partially filled pipes with gradients necessitate a drain-type configuration.
The empty pipe detection function (EPD ) provides additional security in detecting empty or partially filled pipes.




*Installation with partially filled pipes*

**Down pipes**
Install a siphon or a vent valve downstream of the sensor in down pipes longer than 5 meters. This precaution is to avoid low pressure and the consequent risk of damage to the lining of the measuring tube. This measure also prevents the liquid current stopping in the pipe which could cause air locks. Information on the pressure tightness of the measuring tube lining can be found in the “Pressure tightness” section in the “Operating conditions: Process” chapter.




*Installation measures for vertical pipes*

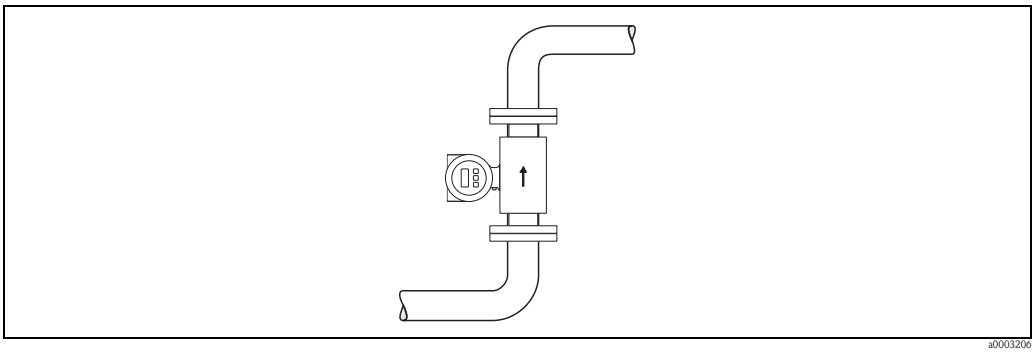
*1 Vent valve*
*2 Pipe siphon*

### Orientation

An optimum orientation helps avoid gas and air accumulations and deposits in the measuring tube. However, the measuring device also offers the additional function of empty pipe detection (EPD) for detecting partially filled measuring tubes or if outgassing fluids or fluctuating operating pressures are present.

### Vertical orientation

This is the ideal orientation for self-emptying piping systems and for use in conjunction with empty pipe detection.



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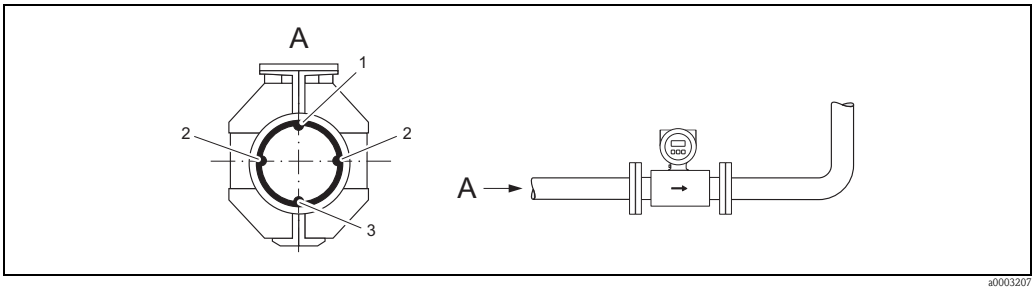
*Vertical orientation*

### Horizontal orientation

The measuring electrode axis should be horizontal. This prevents brief insulation of the two measuring electrodes by entrained air bubbles.

Caution!
Empty pipe detection only works correctly with horizontal orientation if the transmitter housing is facing upwards. Otherwise there is no guarantee that empty pipe detection will respond if the measuring tube is only partially filled or empty.

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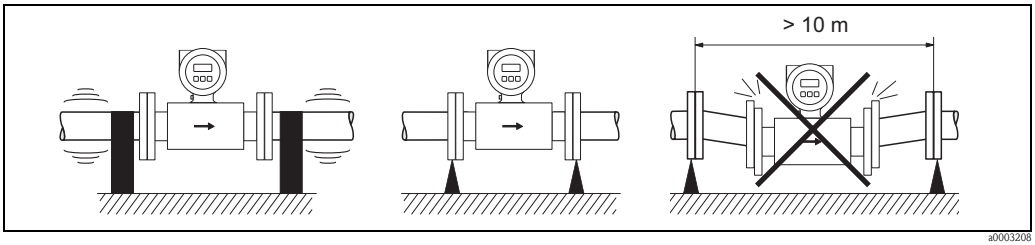
*Horizontal orientation*

*1 EPD electrode for empty pipe detection*
*2 Measuring electrodes for signal detection*
*3 Reference electrode for potential equalization*

### Vibrations

Secure the piping and the sensor if vibration is severe.

Caution!
If vibrations are too severe, we recommend the sensor and transmitter be mounted separately. Information on the permitted shock and vibration resistance can be found in the
“Shock and vibration resistance” section in the “Operating conditions: Environment” chapter.

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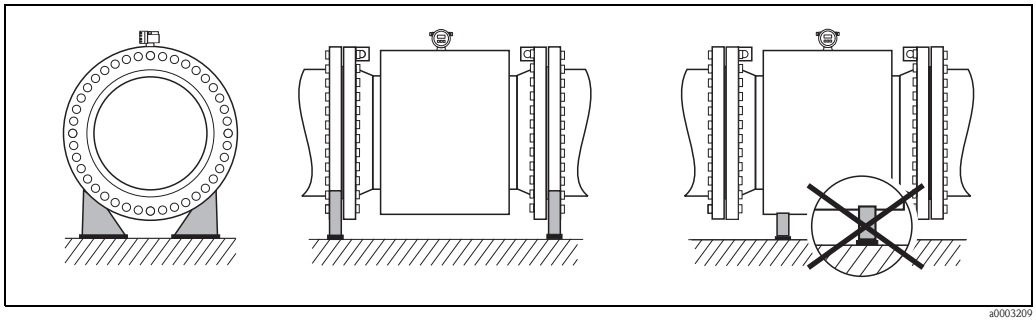
*Measures to prevent vibration of the measuring device*

**Foundation, supports**
For nominal diameters DN ≥ 350, mount the sensor on a foundation of adequate load-bearing strength.

Caution!
Risk of damage!
Do not support the weight of the sensor at the metal casing. The casing would buckle and damage the internal magnetic coils.

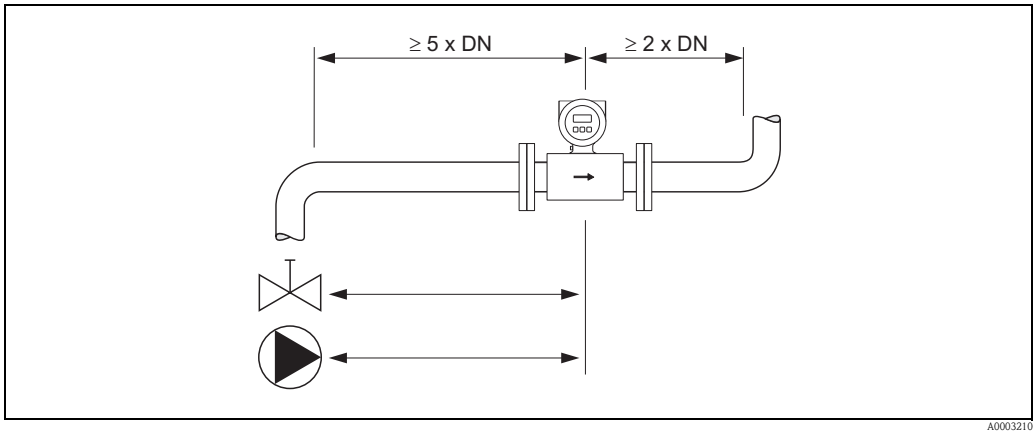



*Support for large nominal diameters (DN≥ 350)*

**Inlet and outlet run**

If possible, install the sensor well clear of assemblies such as valves, T-pieces, elbows, etc.

Note the following inlet and outlet runs to comply with measuring accuracy specifications:
- Inlet run: ≥ 5 x DN
- Outlet run: ≥ 2 x DN



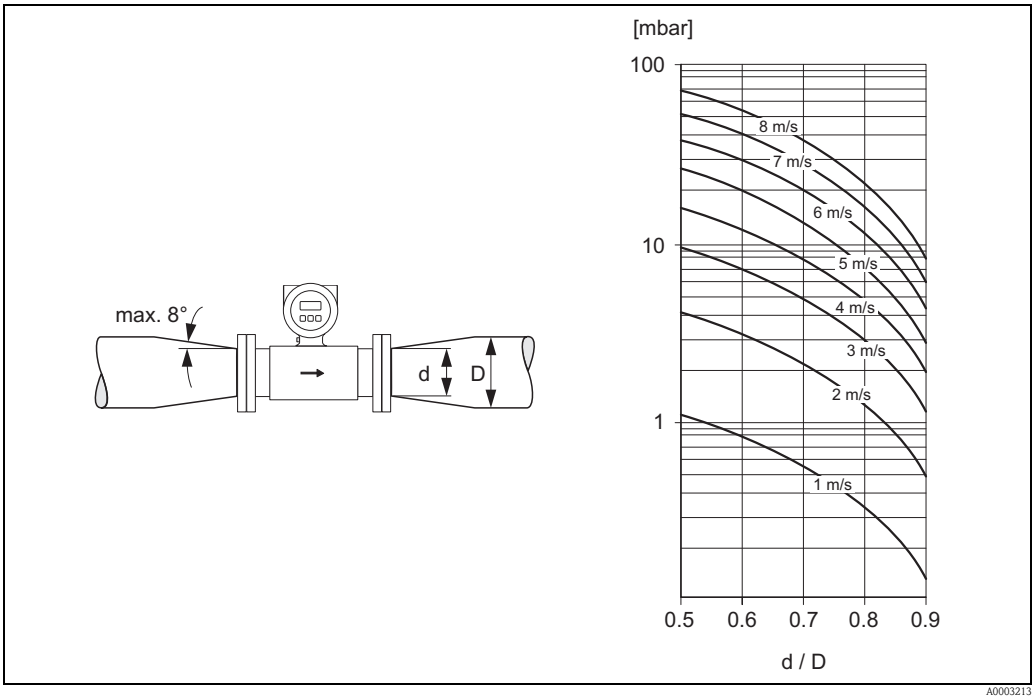

*Inlet and outlet run*

**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.

Note!
The nomogram only applies to liquids of viscosity similar to water.

1. Calculate the ratio of the diameters d/D.
2. From the nomogram read off the pressure loss as a function of flow velocity (downstream from the reduction) and the d/D ratio.

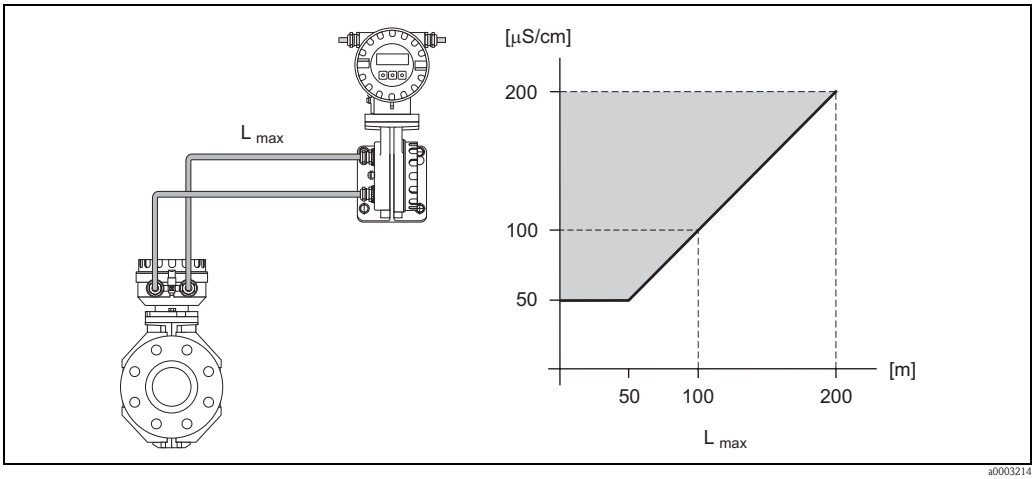



*Pressure loss due to adapters*

**Length of connecting cable**

When mounting the remote version, please note the following to achieve correct measuring results:

- Fix cable run or lay in armored conduit. Cable movements can falsify the measuring signal especially in the case of low fluid conductivities.
- Route the cable well clear of electrical machines and switching elements.
- If necessary, ensure potential equalization between sensor and transmitter.
- The permitted cable length $L_{max}$ is determined by the fluid conductivity.
  A minimum conductivity of 50 µS/cm is needed for all fluids.
- When the empty pipe detection function is switched on (EPD ), the maximum connecting cable length is 10 m.




*Permitted length of connecting cable for remote version*

*Area marked in gray = permitted range; $L_{max}$ = length of connecting cable in [m]; fluid conductivity in [µS/cm]*

# Operating conditions: Environment

**Ambient temperature range**

- Sensor: -20...+60 °C
- Transmitter: -10...+60 °C

Caution!
The permitted temperature range of the measuring tube lining may not be undershot or overshot (→ "Operating conditions: Process" → "Medium temperature range").

Please note the following points:
- Install the device in a shady location. Avoid direct sunlight, particularly in warm climatic regions.
- The transmitter must be mounted separate from the sensor if both the ambient and fluid temperatures are high.

**Storage temperature**

- The temperature range for storing the device corresponds to the permitted ambient temperature range of the transmitter and the sensor (see "Ambient temperature range").
- The measuring device must be protected against direct sunlight during storage in order to avoid unacceptably high surface temperatures.
- A storage location must be selected where moisture does not collect in the measuring device. This will help prevent fungus and bacteria infestation which can damage the liner.
- If protecting caps or protective covers are mounted, these must not be removed before mounting the device.

**Degree of protection**

Standard: IP 67 (NEMA 4X) for transmitter and sensor

**Shock and vibration resistance**

Acceleration up to 2 g following IEC 600 68-2-6

**CIP cleaning**

possible

**SIP cleaning**

possible

**Electromagnetic compatibility (EMC)**

- As per EN 61326
- Emission: to limit value for industry EN 55011

# Operating conditions: Process

**Medium temperature range**

Sensor:
- DN 2...100: –20...+150 °C

Seal:
- EPDM: –20...+130 °C
- Viton: –20...+150 °C
- Kalrez: –20...+150 °C

**Conductivity**

The minimum conductivity is: ≥ 50 µS/cm

Note!
In the remote version, the necessary minimum conductivity also depends on the cable length (→ "Operating conditions: Installation" → "Length of connecting cable").

**Medium pressure range (nominal pressure)**

The permitted nominal pressure depends on the process connection and the seal:
- 40 bar → Flange, weld socket (with O-ring seal)
- 16 bar → All other process connections

**Pressure tightness**

| Diameter | | Measuring tube | Pressure tightness, measuring tube lining | | | | | |
|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] | Material | Limit values for the absolute pressure [mbar] at fluid temperatures: | | | | | |
| | | Lining | 25 °C | 80 °C | 100 °C | 130 °C | 150 °C | 180 °C |
| 2...100 | $^{1}/_{12}$...4" | PFA | 0 | 0 | 0 | 0 | 0 | 0 |

**Limiting flow**

The diameter of the pipe and the flow rate determine the nominal diameter of the sensor.
The optimum flow velocity is between 2…3 m/s.
The velocity of flow (v), moreover, has to be matched to the physical properties of the fluid:
- v > 2 m/s: for fluids causing build-up such as high-fat milk, etc.

**Flow characteristic values (SI units)**

| Diameter | | Recommended flow rate | Factory settings | | |
|---|---|---|---|---|---|
| | | Min./max. full scale value | Full scale value Current output | Pulse value | Low flow cut off |
| [mm] | [inch] | (v ~ 0.3 or 10 m/s) | (v ~ 2.5 m/s) | (~ 2 pulses/s) | (v ~ 0.04 m/s) |
| 2 | $^{1}/_{12}$" | 0.06...1.8 dm³/min | 0.5 dm³/min | 0.005 dm³ | 0.01 dm³/min |
| 4 | $^{5}/_{32}$" | 0.25...7 dm³/min | 2 dm³/min | 0.025 dm³ | 0.05 dm³/min |
| 8 | $^{5}/_{16}$" | 1 ...30 dm³/min | 8 dm³/min | 0.10 dm³ | 0.1 dm³/min |
| 15 | $^{1}/_{2}$" | 4...100 dm³/min | 25 dm³/min | 0.20 dm³ | 0.5 dm³/min |
| 25 | 1" | 9...300 dm³/min | 75 dm³/min | 0.50 dm³ | 1 dm³/min |
| 40 | 1 $^{1}/_{2}$" | 25...700 dm³/min | 200 dm³/min | 1.50 dm³ | 3 dm³/min |
| 50 | 2" | 35...1100 dm³/min | 300 dm³/min | 2.50 dm³ | 5 dm³/min |
| 65 | 2 $^{1}/_{2}$" | 60...2000 dm³/min | 500 dm³/min | 5.00 dm³ | 8 dm³/min |
| 80 | 3" | 90...3000 dm³/min | 750 dm³/min | 5.00 dm³ | 12 dm³/min |
| 100 | 4" | 145...4700 dm³/min | 1200 dm³/min | 10.00 dm³ | 20 dm³/min |

| Flow characteristic values (US units) | | | | | |
|---|---|---|---|---|---|
| **Diameter** | | **Recommended flow rate** | **Factory settings** | | |
| [inch] | [mm] | Min./max. full scale value (v ~ 0.3 or 10 m/s) | Full scale value Current output (v ~ 2.5 m/s) | Pulse value (~ 2 pulses/s) | Low flow cut off (v ~ 0.04 m/s) |
| 1/12" | 2 | 0.015 ...0.5 gal/min | 0.1 gal/min | 0.001 gal | 0.002 gal/min |
| 5/32" | 4 | 0.07...2 gal/min | 0.5 gal/min | 0.005 gal | 0.008 gal/min |
| 5/16" | 8 | 0.25...8 gal/min | 2 gal/min | 0.02 gal | 0.025 gal/min |
| 1/2" | 15 | 1.0...27 gal/min | 6 gal/min | 0.05 gal | 0.10 gal/min |
| 1" | 25 | 2.5...80 gal/min | 18 gal/min | 0.20 gal | 0.25 gal/min |
| 1 1/2" | 40 | 7...190 gal/min | 50 gal/min | 0.50 gal | 0.75 gal/min |
| 2" | 50 | 10...300 gal/min | 75 gal/min | 0.50 gal | 1.25 gal/min |
| 2 1/2" | 65 | 16...500 gal/min | 130 gal/min | 1 gal | 2.0 gal/min |
| 3" | 80 | 24...800 gal/min | 200 gal/min | 2 gal | 2.5 gal/min |
| 4" | 100 | 40...1250 gal/min | 300 gal/min | 2 gal | 4.0 gal/min |

**Pressure loss**

- No pressure loss if the sensor is installed in a pipe with the same nominal diameter.
- Pressure losses for configurations incorporating adapters according to DIN EN 545 (→ “Operating conditions: Installation” → “Adapters”)

# Mechanical construction

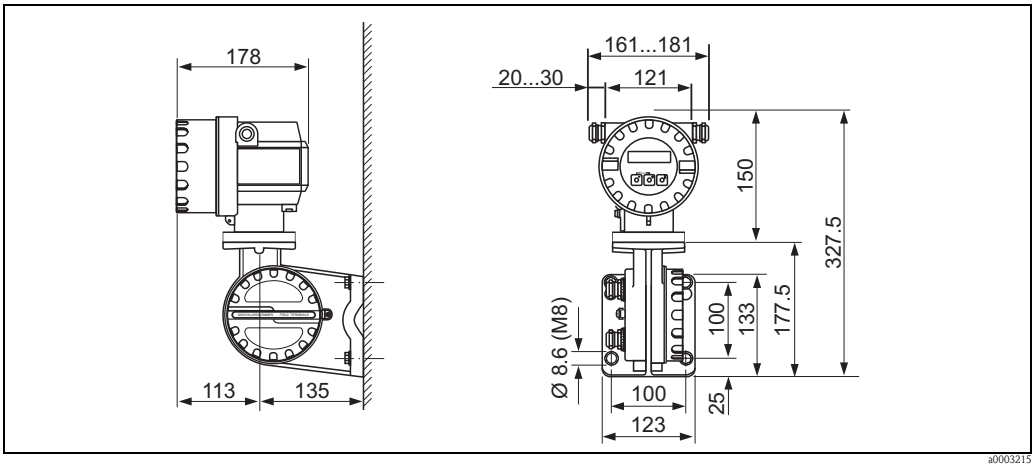
**Measuring tube specifications**

| Diameter | | Pressure rating [1] EN (DIN) | Measuring pipe internal diameter [2] PFA |
|---|---|---|---|
| [mm] | [inch] | [bar] | [mm] |
| 2 | 1/12" | PN 16 / PN 40 | 2.25 |
| 4 | 5/32" | PN 16 / PN 40 | 4.5 |
| 8 | 5/16" | PN 16 / PN 40 | 9.0 |
| 15 | 1/2" | PN 16 / PN 40 | 16.0 |
| – | 1" | PN 16 / PN 40 | 22.6 |
| 25 | – | PN 16 / PN 40 | 26.0 |
| 40 | 1 1/2" | PN 16 | 35.3 |
| 50 | 2" | PN 16 | 48.1 |
| 65 | 2 1/2" | PN 16 | 59.9 |
| 80 | 3" | PN 16 | 72.6 |
| 100 | 4" | PN 16 | 97.5 |

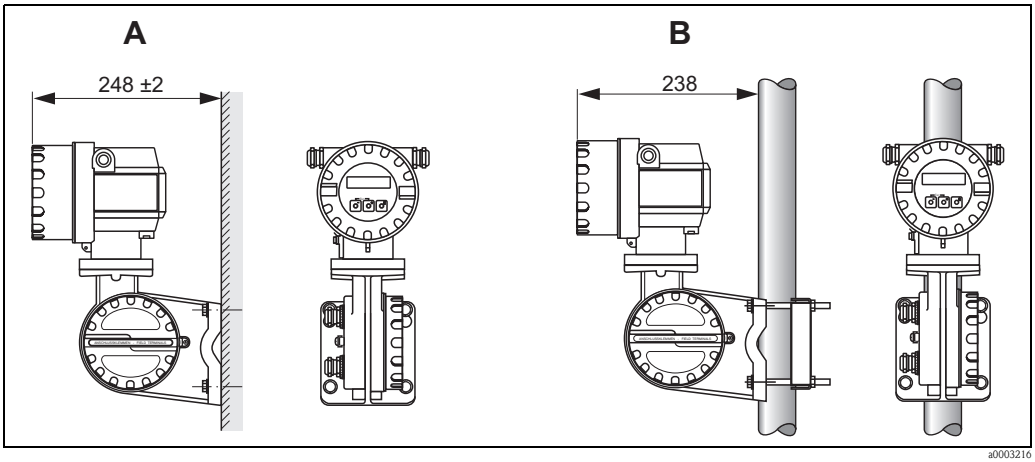
[1] The pressure rating depends on the process connection and the seals used.
[2] Internal diameter of process connections.

**Design, dimensions**

**Transmitter, remote version**



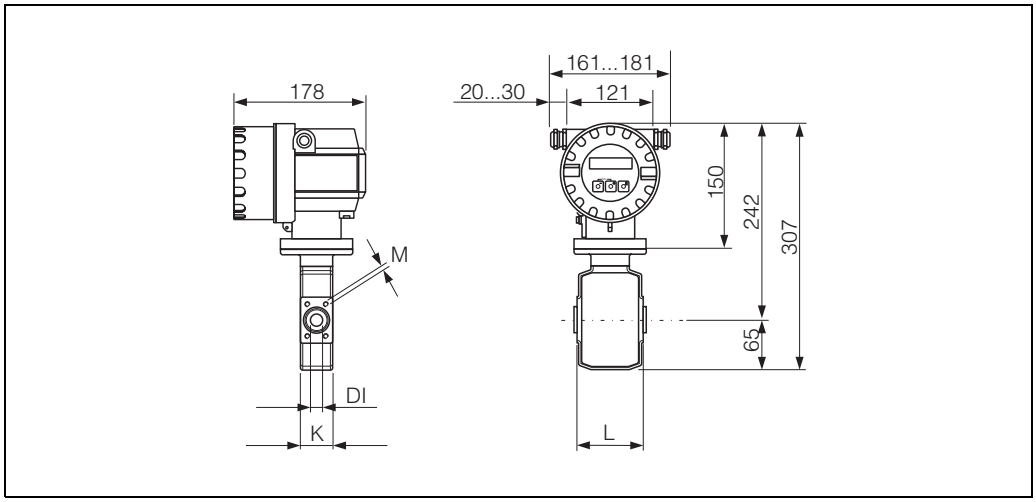

*Transmitter dimensions, remote version*




*Transmitter mounting, remote version*

*A Direct wall mounting*
*B Pipe mounting*

**Compact version DN 2...25**



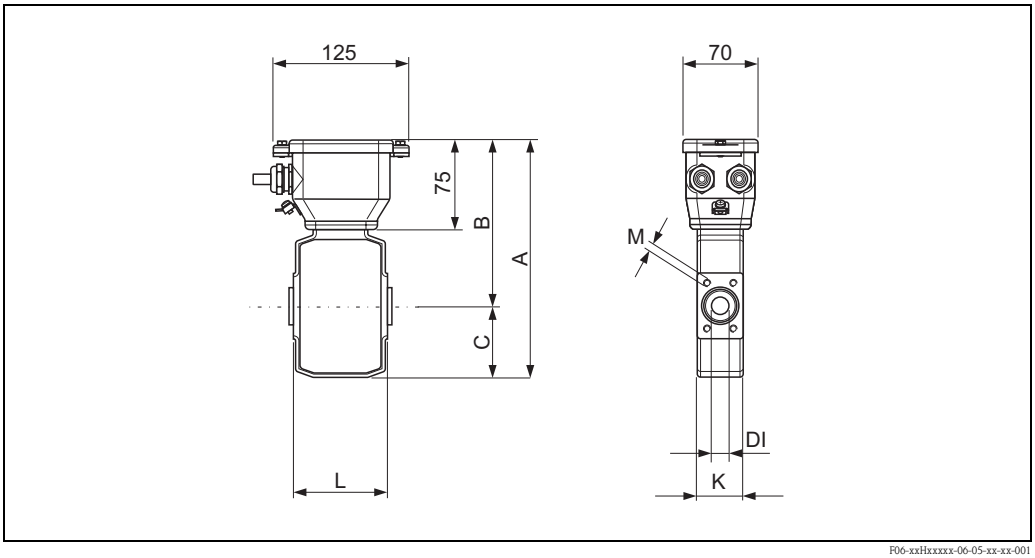

F06-10Hxxxxx-06-00-xx-xx-001

| DN | | PN [1] | DI | L | K | M |
|---|---|---|---|---|---|---|
| [mm] | [inch] | DIN [bar] | [mm] | [mm] | [mm] | [mm] |
| 2 | - | 16 / 40 | 2.25 | 86 | 43 | M 6 x 4 |
| 4 | - | 16 / 40 | 4.5 | 86 | 43 | M 6 x 4 |
| 8 | - | 16 / 40 | 9.0 | 86 | 43 | M 6 x 4 |
| 15 | - | 16 / 40 | 16.0 | 86 | 43 | M 6 x 4 |
| - | 1" | 16 / 40 | 22.6 | 86 | 53 | M 6 x 4 |
| 25 | - | 16 / 40 | 26.0 | 86 | 53 | M 6 x 4 |

Total length depends on the process connections

[1] The permitted nominal pressure depends on the process connection and the seal:
- 40 bar: flange, weld socket for pipeline (with O-ring seal)
- 16 bar: all other process connections

**Remote version DN 2...25**



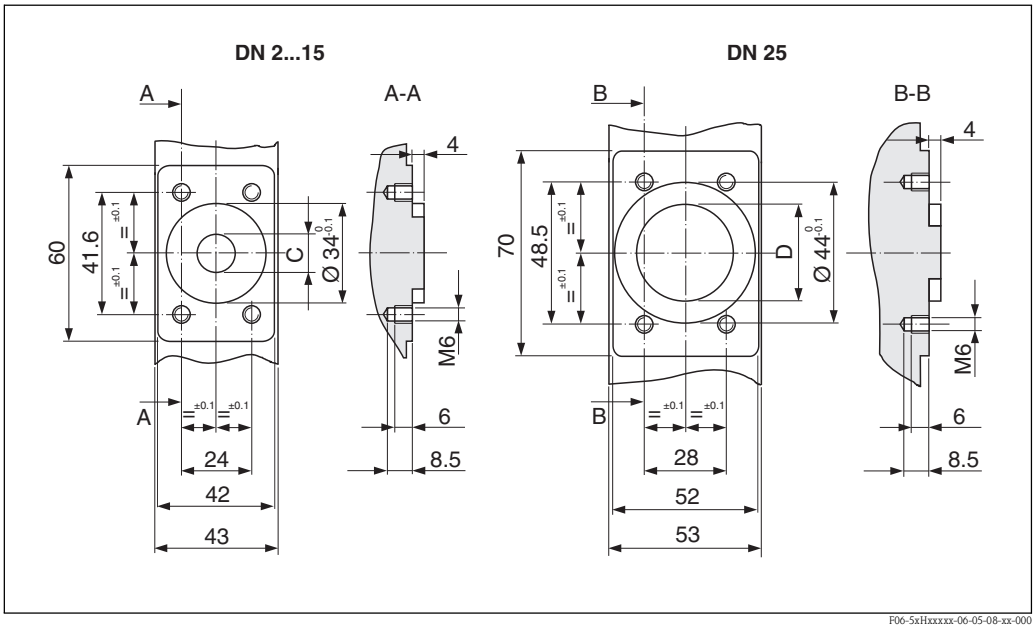

F06-xxHxxxxx-06-05-xx-xx-001

| DN | | PN [1] | DI | L | A | B | C | K | M |
|---|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] | DIN [bar] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 2 | - | 16 / 40 | 2.25 | 86 | 213 | 148 | 65 | 43 | M 6 x 4 |
| 4 | - | 16 / 40 | 4.5 | 86 | 213 | 148 | 65 | 43 | M 6 x 4 |
| 8 | - | 16 / 40 | 9.0 | 86 | 213 | 148 | 65 | 43 | M 6 x 4 |
| 15 | - | 16 / 40 | 16.0 | 86 | 213 | 148 | 65 | 43 | M 6 x 4 |
| - | 1" | 16 / 40 | 22.6 | 86 | 213 | 148 | 65 | 53 | M 6 x 4 |
| 26 | - | 16 / 40 | 26.0 | 86 | 213 | 148 | 65 | 53 | M 6 x 4 |

Total length depends on the process connections

[1] The permitted nominal pressure depends on the process connection and the seal:
- 40 bar: flange, weld socket for pipeline (with O-ring seal)
- 16 bar: all other process connections

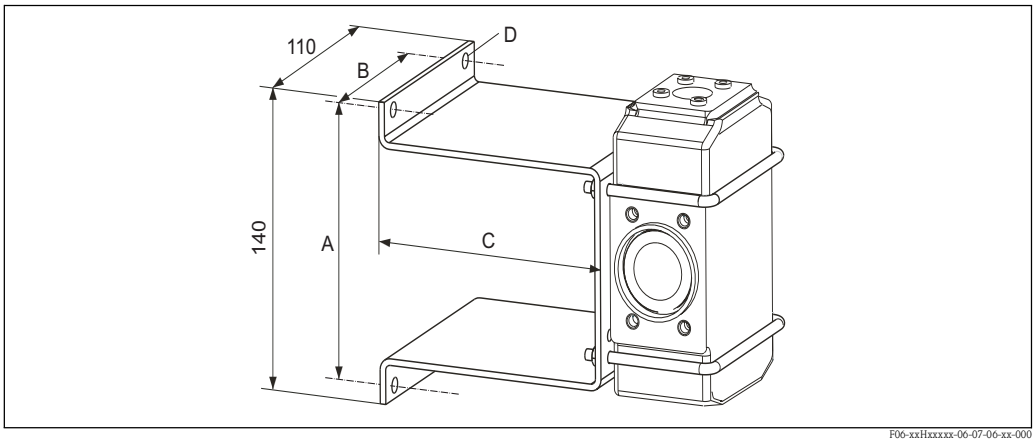
### Front view DN 2...25 (without process connections)




*Front view dimensions for sensor DN 2...25*

| DN | | C | D | |
|---|---|---|---|---|
| [mm] | [inch] | [mm] | DIN [mm] | ANSI [mm] |
| 2 | – | 9 | – | – |
| 4 | – | 9 | – | – |
| 8 | – | 9 | – | – |
| 15 | – | 16 | – | – |
| – | 1" | – | – | 22.6 |
| 25 | – | – | 26 | – |

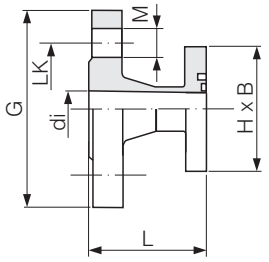
### Wall mounting kit DN 2...25

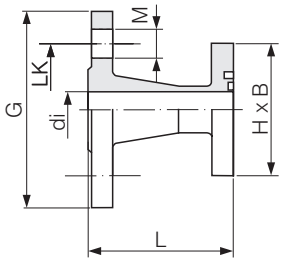


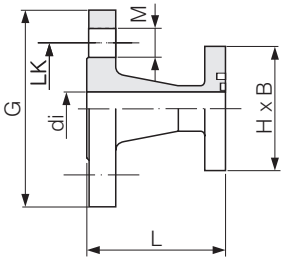

*Wall mounting kit for DN 2...25*

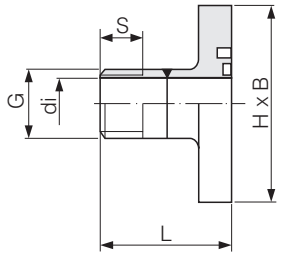
*A 125 mm*
*B 88 mm*
*C 120 mm*
*D Ø 7 mm*

### Process connections with O-ring seals (DN 2...25)

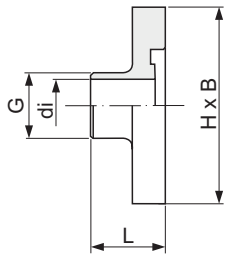
| Flange | Sensor | Fits to | di | G | L | LK | M | H x B |
|---|---|---|---|---|---|---|---|---|
| PN 40/EN 1092-1 (DIN 2501), Form B<br>1.4404 / 316L<br>1*H**-D********** | DN<br>[mm] | Flange[1)]<br>[mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-014 | 2...8 | DN 15 | 17.3 | 95 | 56.2 | 65 | 14 | 60 x 42 |
| | 15 | DN 15 | 17.3 | 95 | 56.2 | 65 | 14 | 60 x 42 |
| | 25 (DIN) | DN 25 | 28.5 | 115 | 56.2 | 85 | 14 | 70 x 52 |
| | [1)] EN 1092-1 (DIN 2501)<br>■ Fitting length = (2 x L) + 86 mm<br>■ Fitting length to DVGW (200 mm) | | | | | | | |

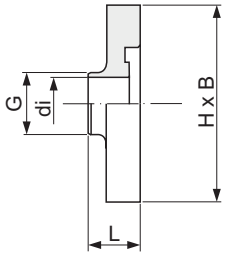
| Flange | Sensor | Fits to | di | G | L | LK | M | H x B |
|---|---|---|---|---|---|---|---|---|
| Cl 150/ ANSI B16.5<br>1.4404 / 316L<br>1*H**-E********** | DN<br>[mm] | Flange<br>ANSI B16.5<br>[inch] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-015 | 2...8 | ½" | 15.7 | 89 | 66.0 | 60.5 | 15.7 | 60 x 42 |
| | 15 | ½" | 16.0 | 89 | 66.0 | 60.5 | 15.7 | 60 x 42 |
| | 25 (1" ANSI) | 1" | 26.7 | 108 | 71.8 | 79.2 | 15.7 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm | | | | | | | |

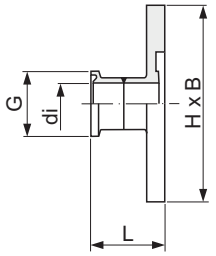
| Flange | Sensor | Fits to | di | G | L | LK | M | H x B |
|---|---|---|---|---|---|---|---|---|
| 20K / JIS B2238; 1.4404 / 316L<br>1*H**-F********** | DN<br>[mm] | Flange<br>B2238 | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-016 | 2...8 | ND 15 | 15 | 95 | 67 | 70 | 15 | 60 x 42 |
| | 15 | ND 15 | 16 | 95 | 67 | 70 | 15 | 60 x 42 |
| | 25 (DIN) | ND 25 | 26 | 125 | 67 | 95 | 19 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm | | | | | | | |

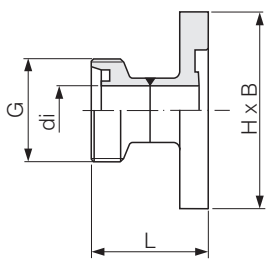
| External pipe thread | Sensor | Fits to | di | G | L | S | H x B |
|---|---|---|---|---|---|---|---|
| ISO 228/ DIN 2999<br>1.4404 / 316L<br>1*H**-K********** | DN<br>[mm] | Internal thread<br>[inch] | [mm] | [inch] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-025 | 2...8 | R 3/8" | 10 | 3/8" | 40 | 10.1 | 60 x 42 |
| | 15 | R 1/2" | 16 | 1/2" | 40 | 13.2 | 60 x 42 |
| | 25 (1" ANSI) | R 1" | 25 | 1" | 42 | 16.5 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm | | | | | | |

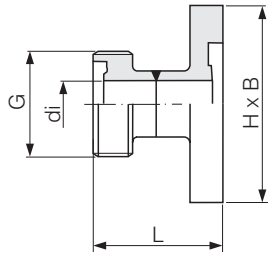
**Process connections with aseptic gasket seal (DN 2...25)**

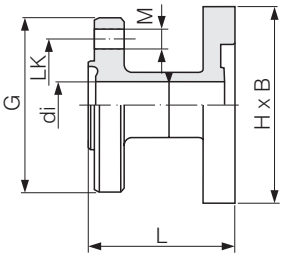
| Weld nipple for DIN | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-U********** | DN<br>[mm] | Piping<br>DIN 11850 | [mm] | [mm] | [mm] | [mm] |
|  <br>A0003870 | 2...8 | 14 x 2 | 9 | 14 | 23.3 | 60 x 42 |
| | 15 | 20 x 2 | 16 | 20 | 23.3 | 60 x 42 |
| | 25 (DIN) | 30 x 2 | 26 | 30 | 23.3 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

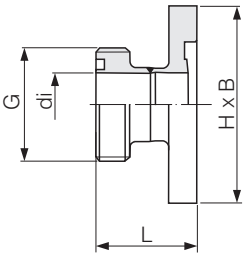
| Weld nipple for ODT/SMS | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-V********** | DN<br>[mm] | Piping<br>ODT/SMS | [mm] | [mm] | [mm] | [mm] |
|  <br>A0003871 | 2...8 | 12.7 x 1.65 | 9.0 | 12.7 | 16.1 | 60 x 42 |
| | 15 | 19.1 x 1.65 | 16.0 | 19.1 | 16.1 | 60 x 42 |
| | 25 (1" ANSI) | 24.5 x 1.65 | 22.6 | 25.4 | 16.1 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

| Tri-Clamp for L14 AM7 | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-1********** | DN<br>[mm] | Piping<br>OD | [mm] | [mm] | [mm] | [mm] |
|  <br>A0003872 | 2...8 | Tube 12.7 x 1.65<br>(OD ½") | 9.4 | 25.0 | 28.5 | 60 x 42 |
| | 15 | Tube 19.1 x 1.65<br>(ODT ¾") | 15.8 | 25.0 | 28.5 | 60 x 42 |
| | 25 (1" ANSI) | Tube 25.5 x 1.65<br>(ODT 1") | 22.1 | 50.4 | 28.5 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

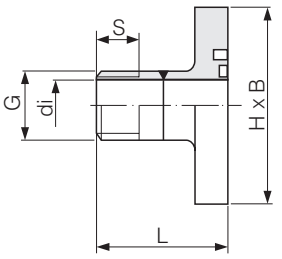
| Coupling SC DIN 11851 | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| Threaded adapter<br>1.4404 / 316L<br>1*H**-2********** | DN<br>[mm] | Piping<br>DIN 11850 | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-017 | 2...8 | Tube 12 x 1<br>(DN 10) | 10 | Rd 28 x 1/8" | 44 | 60 x 42 |
| | 15 | Tube 18 x 1.5<br>(DN 15) | 16 | Rd 34 x 1/8" | 44 | 60 x 42 |
| | 25 (DIN) | Tube 28 x 1<br>or 28 x 1.5<br>(DN 25) | 26 | Rd 52 x 1/6" | 52 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

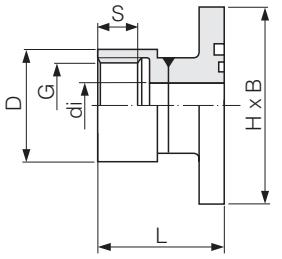
| Coupling DIN 11864-1 | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| Aseptic threaded adapter, Form A<br>1.4404 / 316L<br>1*H**-3********** | DN<br>[mm] | Piping<br>DIN 11850 | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-021 | 2...8 | Tube 13 x 1.5<br>(DN 10) | 10 | Rd 28 x 1/8" | 42 | 60 x 42 |
| | 15 | Tube 19 x 1.5<br>(DN 15) | 16 | Rd 34 x 1/8" | 42 | 60 x 42 |
| | 25 (DIN) | Tube 29 x 1.5<br>(DN 25) | 26 | Rd 52 x 1/6" | 49 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

| Flange DIN 11864-2 | Sensor | Fits to | di | G | L | LK | M | H x B |
|---|---|---|---|---|---|---|---|---|
| Aseptic grooved flange, Form A<br>1.4404 / 316L<br>1*H**-4********** | DN<br>[mm] | Piping<br>DIN 11850 | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-022 | 2...8 | Tube 13 x 1.5<br>(DN 10) | 10 | 54 | 48.5 | 37 | 9 | 60 x 42 |
| | 15 | Tube 19 x 1.5<br>(DN 15) | 16 | 59 | 48.5 | 42 | 9 | 60 x 42 |
| | 25 (DIN) | Tube 29 x 1.5<br>(DN 25) | 26 | 70 | 48.5 | 53 | 9 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

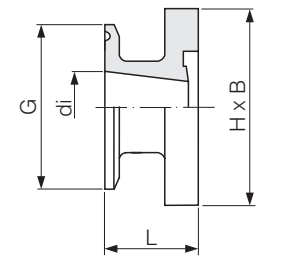
| Coupling SMS 1145 | Sensor | Fits to | SMS 1145 | di | G | L | H x B |
|---|---|---|---|---|---|---|---|
| Threaded adapter<br>1.4404 / 316L<br>1*H**-5********** | DN<br>[mm] | Piping<br>OD | Diameter<br>[mm] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-026 | 25<br>(1" ANSI) | 1" | 25 | 22.6 | Rd 40 x 1/6" | 30.8 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | |

**Process connections orderable only as accessories (with O-ring seal, DN 2...25)**

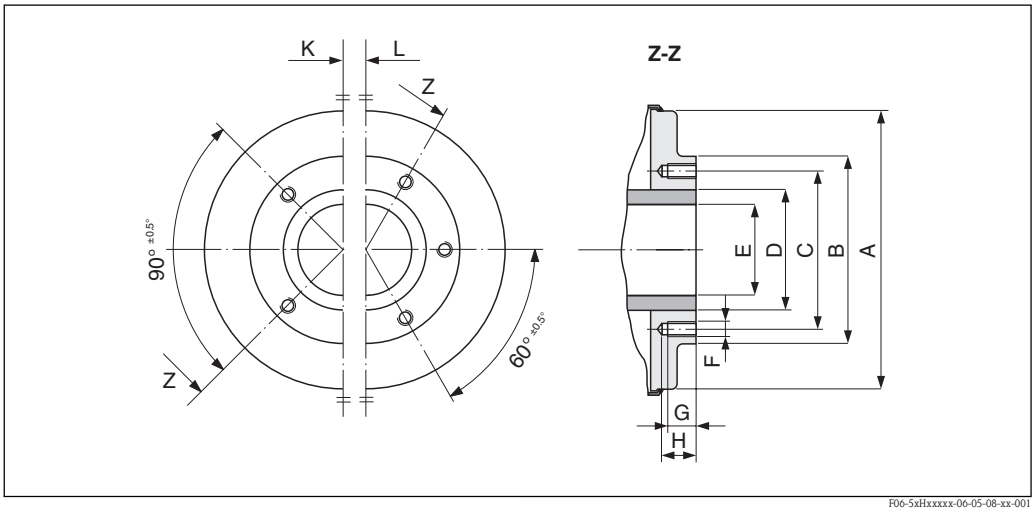
| Exernal pipe thread | Sensor | Fits to | di | G | L | S | H x B |
|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>DKH**-GD** | DN<br>[mm] | NP<br>internal thread | [mm] | [inch] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-025 | 2...8 | NPT 3/8" | 10 | 3/8" | 50 | 15.5 | 60 x 42 |
| | 15 | NPT 1/2" | 16 | 1/2" | 50 | 20.0 | 60 x 42 |
| | 25 (1" ANSI) | NPT 1" | 25 | 1" | 57 | 25.0 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm | | | | | | |

| Internal pipe thread | Sensor | Fits to | di | G | D | L | S | H x B |
|---|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>DKH**-GC** | DN<br>[mm] | NP<br>external thread | [mm] | [inch] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-027 | 2...8 | NPT 3/8" | 8.9 | 3/8" | 22 | 45 | 13 | 60 x 42 |
| | 15 | NPT 1/2" | 16.0 | 1/2" | 27 | 45 | 14 | 60 x 42 |
| | 25<br>(1" ANSI) | NPT 1" | 27.2 | 1" | 40 | 51 | 17 | 70 x 52 |
| | ■ Fitting length = (2 x L) + 86 mm | | | | | | | |

**Process connections orderable only as accessories (with aseptic gasket seal)**

| Tri-Clamp L14 AM17 | Sensor | Fits to | di | G | L | H x B |
|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>DKH**-HF** | DN<br>[mm] | Piping<br>OD | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-018 | 15 | Tube 25.4 x 1.65<br>(ODT 1") | 22.1 | 50.4 | 28.5 | 60 x 42 |
| | ■ Fitting length = (2 x L) + 86 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | |

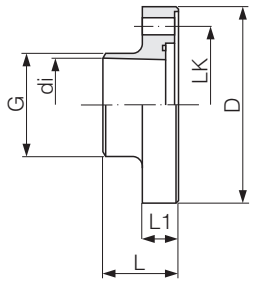
**Front view DN 40...100 (without process connections)**

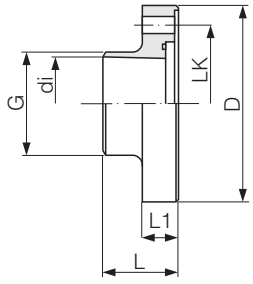


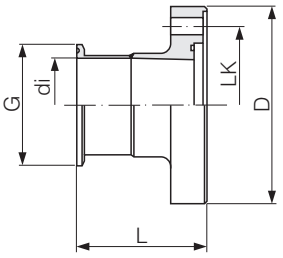

*Front view dimensions for sensor DN 40...100*

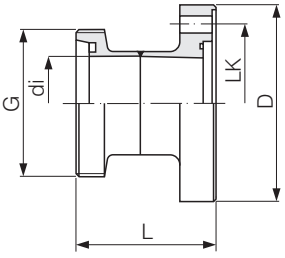
| DN | A | B | C | D | E | F | G | H | L | K |
|---|---|---|---|---|---|---|---|---|---|---|
| [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | Threaded holes | |
| 40 | 122.0 | 86 | 71.0 | 51.0 | 35.3 | M 8 | 15 | 18 | – | 4 |
| 50 | 147.0 | 99 | 83.5 | 63.5 | 48.1 | M 8 | 15 | 18 | – | 4 |
| 65 | 147.0 | 115 | 100.0 | 76.1 | 59.9 | M 8 | 15 | 18 | 6 | – |
| 80 | 197.0 | 141 | 121.0 | 88.9 | 72.6 | M 12 | 15 | 20 | – | 4 |
| 100 | 197.0 | 162 | 141.5 | 114.3 | 97.5 | M 12 | 15 | 20 | 6 | – |

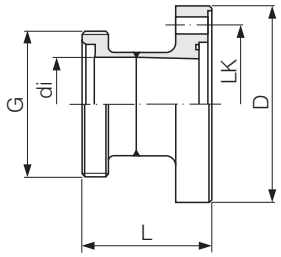
**Process connections with aseptic gasket seal (DN 40...100)**

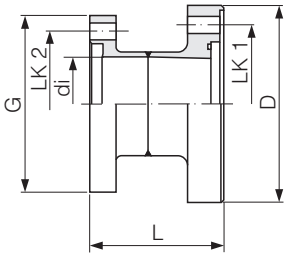
| Weld nipple for DIN | Sensor | Fits to | di | G | D | L | L1 | LK |
|---|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-U********** | DN<br>[mm] | Piping<br>DIN 11850 | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-002 | 40 | 42 x 2 | 38.0 | 43 | 92 | 42 | 19 | 71.0 |
| | 50 | 54 x 2 | 50.0 | 55 | 105 | 42 | 19 | 83.5 |
| | 65 | 70 x 2 | 66.0 | 72 | 121 | 42 | 21 | 100.0 |
| | 80 | 85 x 2 | 81.0 | 87 | 147 | 42 | 24 | 121.0 |
| | 100 | 104 x 2 | 100.0 | 106 | 168 | 42 | 24 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

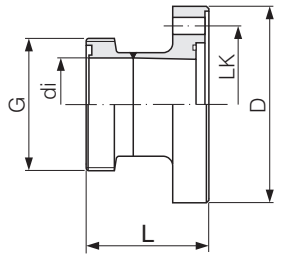
| Weld nipple for ODT/SMS | Sensor | Fits to | di | G | D | L | L1 | LK |
|---|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-V********** | DN<br>[mm] | Piping<br>OD/SMS | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-002 | 40 | 38.1 x 1.65 | 35.3 | 40 | 92 | 42 | 19 | 71.0 |
| | 50 | 50.8 x 1.65 | 48.1 | 55 | 105 | 42 | 19 | 83.5 |
| | 65 | 63.5 x 1.65 | 59.9 | 66 | 121 | 42 | 21 | 100.0 |
| | 80 | 76.2 x 1.65 | 72.6 | 79 | 147 | 42 | 24 | 121.0 |
| | 100 | 101.6 x 1.65 | 97.5 | 104 | 168 | 42 | 24 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

| Tri-Clamp L14 AM7 | Sensor | | Fits to | di | G | D | L | LK |
|---|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-1********** | DN<br>[mm] | DN<br>[inch] | Piping<br>OD | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-004 | 40 | 1½" | 38.1 x 1.65 | 34.8 | 50.4 | 92 | 68.8 | 71.0 |
| | 50 | 2" | 50.8 x 1.65 | 47.5 | 63.9 | 105 | 68.8 | 83.5 |
| | 65 | – | 63.5 x 1.65 | 60.2 | 77.4 | 121 | 68.8 | 100.0 |
| | 80 | 3" | 76.2 x 1.65 | 72.9 | 90.9 | 147 | 68.8 | 121.0 |
| | 100 | 4" | 101.6 x 1.65 | 97.4 | 118.9 | 168 | 68.8 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

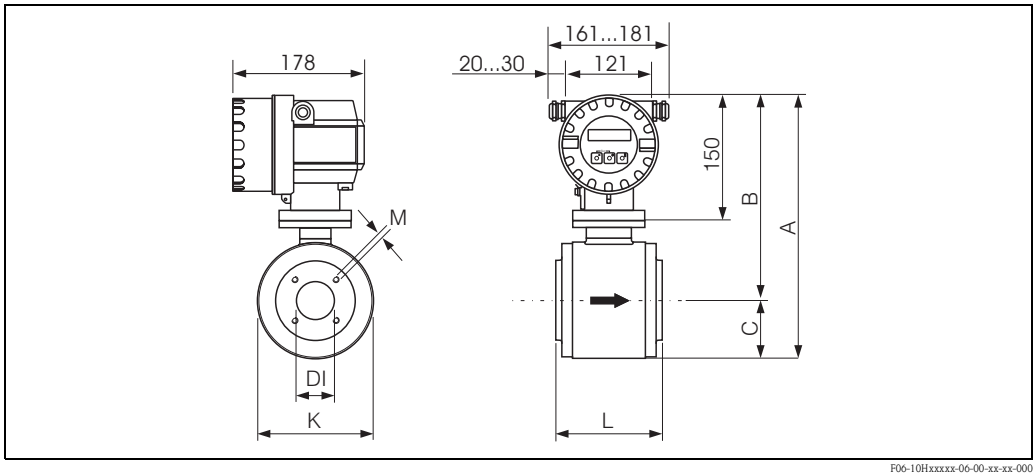
| Coupling SC DIN 11851 | Sensor | Fits to | di | G | D | L | LK |
|---|---|---|---|---|---|---|---|
| 1.4404 / 316L<br>1*H**-2********** | DN<br>[mm] | Piping<br>DN 11850 | [mm] | [mm] | [mm] | [mm] | [mm] |
|  F06-xxHxxxxx-06-09-07-xx-001 | 40 | 42 x 2 | 38 | Rd 65 x 1/6" | 92 | 72 | 71.0 |
| | 50 | 54 x 2 | 50 | Rd 78 x 1/6" | 105 | 74 | 83.5 |
| | 65 | 70 x 2 | 66 | Rd 95 x 1/6" | 121 | 78 | 100.0 |
| | 80 | 85 x 2 | 81 | Rd 110 x 1/6" | 147 | 83 | 121.0 |
| | 100 | 104 x 2 | 100 | Rd 130 x 1/6" | 168 | 92 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | |

| Coupling DIN 11864-1 | Sensor | Fits to | di | G | D | L | LK |
|---|---|---|---|---|---|---|---|
| Aseptic threaded adapter, Form A<br>1.4404 / 316L<br>1*H**-3********** | DN<br>[mm] | Piping<br>DN 11850 | [mm] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-006 | 40 | 42 x 2 | 38 | Rd 65 x 1/6" | 92 | 71 | 71.0 |
| | 50 | 54 x 2 | 50 | Rd 78 x 1/6" | 105 | 71 | 83.5 |
| | 65 | 70 x 2 | 66 | Rd 95 x 1/6" | 121 | 76 | 100.0 |
| | 80 | 85 x 2 | 81 | Rd 110 x 1/6" | 147 | 82 | 121.0 |
| | 100 | 104 x 2 | 100 | Rd 130 x 1/6" | 168 | 90 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | |

| Flange DIN 11864-2 | Sensor | Fits to | di | G | D | L | LK 1 | LK 2 |
|---|---|---|---|---|---|---|---|---|
| Aseptic flat flange, Form A<br>1.4404 / 316L<br>1*H**-4********** | DN<br>[mm] | Piping<br>DN 11850 | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-007 | 40 | 42 x 2 | 38 | 82 | 92 | 64 | 71.0 | 65 |
| | 50 | 54 x 2 | 50 | 94 | 105 | 64 | 83.5 | 77 |
| | 65 | 70 x 2 | 66 | 113 | 121 | 64 | 100.0 | 95 |
| | 80 | 85 x 2 | 81 | 133 | 147 | 98 | 121.0 | 112 |
| | 100 | 104 x 2 | 100 | 159 | 168 | 98 | 141.5 | 137 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

| Coupling SMS 1145 | Sensor | Fits to | SMS 1145 | di | G | D | L | LK |
|---|---|---|---|---|---|---|---|---|
| Threaded adapter<br>1.4404 / 316L<br>1*H**-5********** | DN<br>[mm] | Piping<br>OD | Dia-meter<br>[mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
|  <br>F06-xxHxxxxx-06-09-07-xx-000 | 40 | 38.1 x 1.65 | 38.0 | 35.5 | Rd 60 x 1/6" | 92 | 63 | 71.0 |
| | 50 | 50.8 x 1.65 | 51.0 | 48.5 | Rd 70 x 1/6" | 105 | 65 | 83.5 |
| | 65 | 63.5 x 1.65 | 63.5 | 60.5 | Rd 85 x 1/6" | 121 | 70 | 100.0 |
| | 80 | 76.2 x 1.65 | 76.0 | 72.0 | Rd 98 x 1/6" | 147 | 75 | 121.0 |
| | 100 | 101.6 x 1.65 | 101.6 | 97.6 | Rd 132 x 1/6" | 168 | 70 | 141.5 |
| | ■ – Fitting length for DN 40...65 = (2 x L) + 136 mm<br>– Fitting length for DN 80...100 = (2 x L) + 196 mm<br>■ If pigs are used for cleaning, it is essential to take the inside diameters of measuring tube and process connection (di) into account! | | | | | | | |

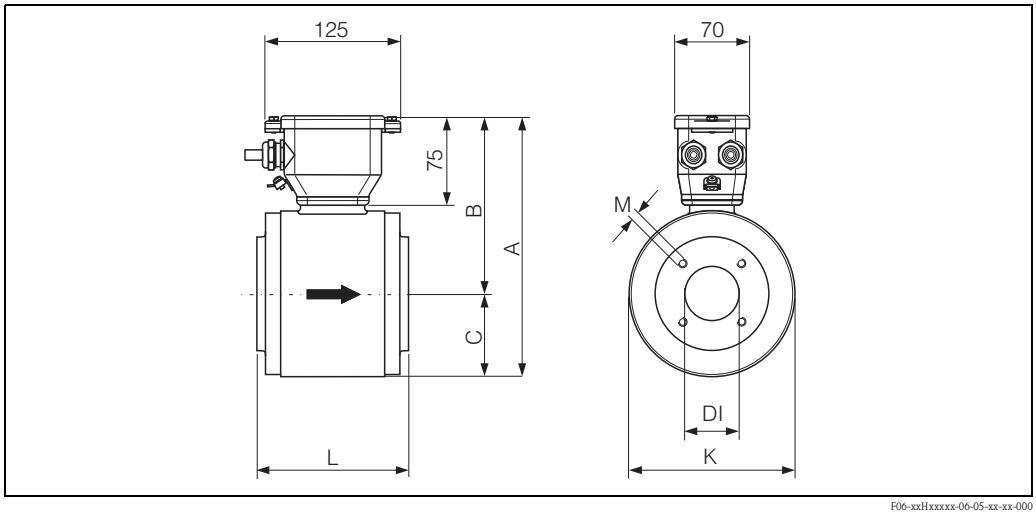
**Compact version DN 40...100**




F06-10Hxxxxx-06-00-xx-xx-000

| DN | | PN | DI | L | A | B | C | K | M |
|---|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] | DIN [bar] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 40 | 1 ½" | 16 | 35.3 | 140 | 309 | 245) | 64 | 128 | M 8 x 4 |
| 50 | 2" | 16 | 48.1 | 140 | 334 | 257 | 77 | 153 | M 8 x 4 |
| 65 | 2 ½" | 16 | 59.9 | 140 | 334 | 257 | 77 | 153 | M 8 x 4 |
| 80 | 3" | 16 | 72.6 | 200 | 384 | 282 | 102 | 203 | M 12 x 4 |
| 100 | 4" | 16 | 97.5 | 200 | 384 | 282 | 102 | 203 | M 12 x 4 |
| Total length depends on the process connections | | | | | | | | | |

**Remote version DN 40...100**




F06-xxHxxxxx-06-05-xx-xx-000

| DN | | PN | DI | L | A | B | C | K | M |
|---|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] | DIN [bar] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 40 | 1 ½" | 16 | 35.3 | 140 | 216 | 151.5 | 64.5 | 129 | M 8 x 4 |
| 50 | 2" | 16 | 48.1 | 140 | 241 | 164.0 | 77.0 | 154 | M 8 x 4 |
| 65 | 2 ½" | 16 | 59.9 | 140 | 241 | 164.0 | 77.0 | 154 | M 8 x 4 |
| 80 | 3" | 16 | 72.6 | 200 | 290 | 188.5 | 101.5 | 203 | M 12 x 4 |
| 100 | 4" | 16 | 97.5 | 200 | 290 | 188.5 | 101.5 | 203 | M 12 x 4 |
| Total length depends on the process connections | | | | | | | | | |

## Weight

| Weight data in kg | | | | |
|---|---|---|---|---|
| Diameter | | Compact version | Remote version (without cable) | |
| [mm] | [inch] | DIN | Sensor | Transmitter |
| 2 | 1/12" | 3.6 | 2.5 | 3.1 |
| 4 | 5/32" | 3.6 | 2.5 | 3.1 |
| 8 | 5/16" | 3.6 | 2.5 | 3.1 |
| 15 | 1/2" | 3.7 | 2.6 | 3.1 |
| 25 | 1" | 3.9 | 2.8 | 3.1 |
| 40 | 1 1/2" | 4.9 | 4.5 | 3.1 |
| 50 | 2" | 7.4 | 7.0 | 3.1 |
| 65 | 2 1/2" | 7.9 | 7.5 | 3.1 |
| 80 | 3" | 17.4 | 17.0 | 3.1 |
| 100 | 4" | 18.5 | 16.5 | 6 |

- Promag transmitter (compact version): 1.8 kg
- Weight data valid for standard pressure ratings and without packaging material

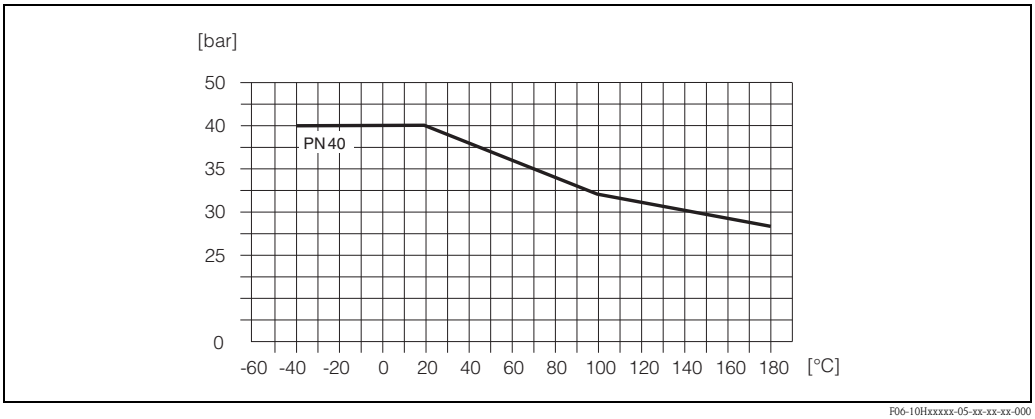
## Material

- Transmitter housing: powder-coated die-cast aluminum
- Sensor housing: 1.4301/304
- Wall mounting kit: 1.4301 (AISI 304)
- Measuring pipe: 1.4301 (AISI 304) or 1.4306/316L
- Grounding rings: 1.4435/316L (optional: Alloy C-22)
- Electrodes: 1.4435 (AISI 316L) (optional: Alloy C-22)
- Seals
  - DN 2...25: O-ring (EPDM, Viton, Kalrez), moulded seal (EPDM, Viton, silicone)
  - DN 40...100: moulded seal (EPDM, Viton, silicone)

## Material load diagram

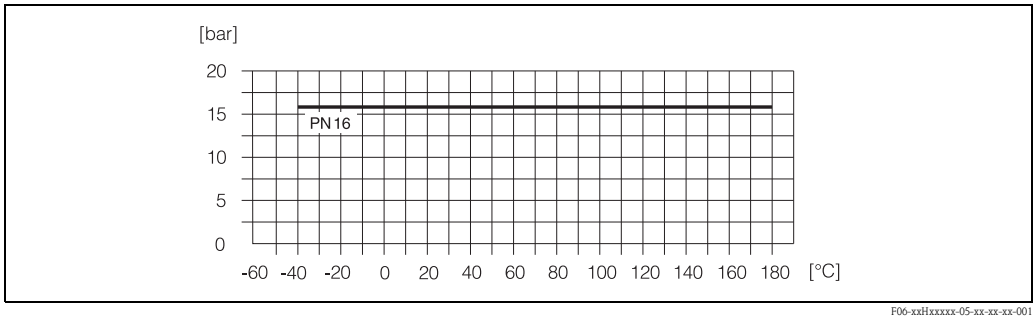
Caution!
The following diagrams contain material load diagrams (reference curves) for flange materials with regard to the medium temperature. However, the maximum medium temperatures permitted always depend on the lining material of the sensor and/or the sealing material.

**Flange connection to EN 1092-1 (DIN 2501), threaded joint to ISO 228 / DIN 2999 / NPT**
Material: 1.4404 / 316L (with O-ring)



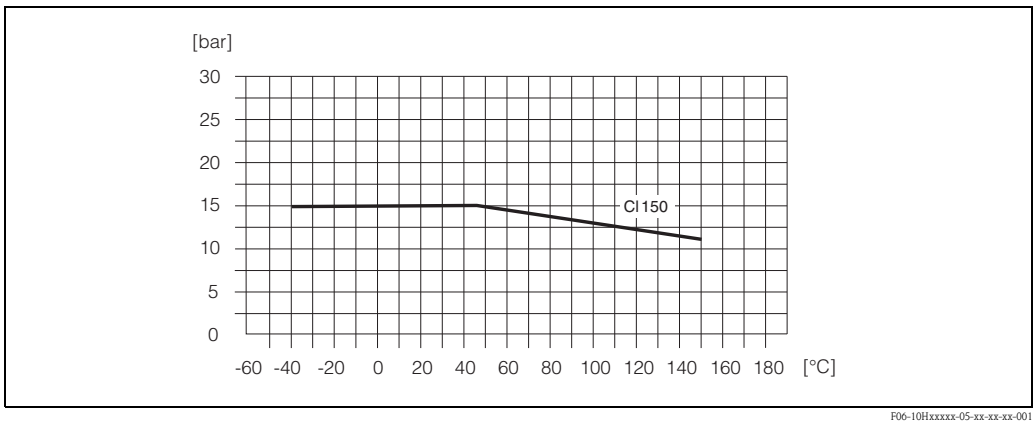

F06-10Hxxxxx-05-xx-xx-xx-000

**Weld socket to DIN 11850, ODT / SMS; Clamp L 14 AM7;**
**threaded joint DIN 11851, DIN 11864-1, SMS 1145; flange DIN 11864-2**
Material: 1.4404 / 316L (with moulded seal)



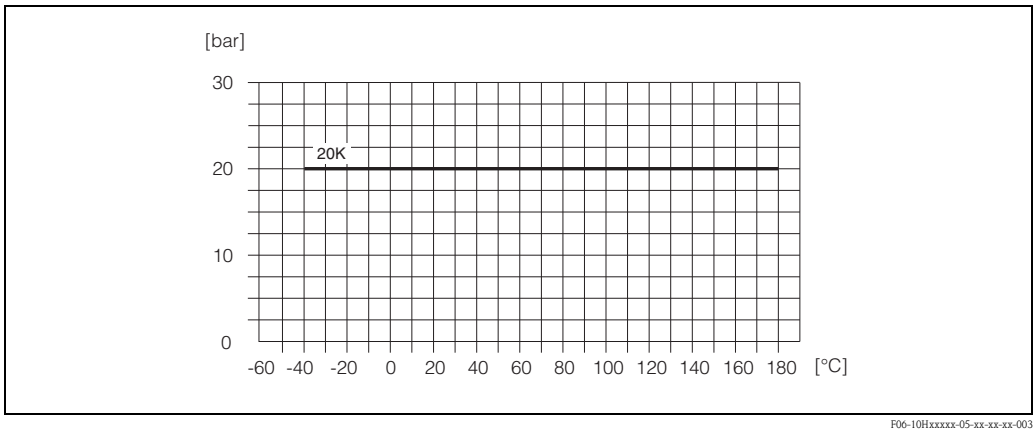

F06-xxHxxxxx-05-xx-xx-xx-001

**Flange connection to ANSI B16.5**
Material: 1.4404 / 316L




F06-10Hxxxxx-05-xx-xx-xx-001

**Flange connection to JIS B2238**
Material: 1.4404 / 316L




F06-10Hxxxxx-05-xx-xx-xx-003

**Fitted electrodes**

Measuring electrodes and empty pipe detection electrodes available as standard with:
- 1.4435,
- Alloy C-22

DN 2…4: without empty pipe detection electrode

**Process connections**

With O-ring:
- Flange EN (DIN), ANSI, JIS
- External thread

With gasket seals:
- Weld sockets DIN 11850, ODT/SMS
- TriClamp L14 AM7
- Threaded joint DIN 11851, DIN 11864-1, SMS 1145
- Flange DIN 11864-2

**Surface roughness**

(All data refer to parts in contact with medium)
- Measuring tube lining with PFA: ≤ 0.4 µm
- Electrodes with 1.4435 (AISI 316L), Alloy C-22: ≤ 0.3...0.5 µm

# Human interface

**Display elements**

- Liquid crystal display: unilluminated, two-line, 16 characters per line
- Display (operating mode) preconfigured: volume flow and totalizer status
- 1 totalizer

**Operating elements**

Local operation via three keys (−, +, E)

**Remote operation**

Operation via HART protocol and ToF Tool – Fieldtool Package

# Certificates and approvals

**CE mark**

The measuring system is in conformity with the statutory requirements of the EC Directives. Endress+Hauser confirms successful testing of the device by affixing to it the CE mark.

**C-tick mark**

The measuring system meets the EMC requirements of the Australian Communications Authority (ACA)

**Ex approval**

Information about currently available Ex versions (ATEX, FM, CSA, etc.) can be supplied by your Endress +Hauser Sales Center on request. All explosion protection data are given in a separate documentation which is available upon request.

**Sanitary compatibility**

- 3A approval and EHEDG-tested
- Seals → conform to FDA (apart from Kalrez seals)

**Other standards and guidelines**

- EN 60529, Degrees of protection by housing (IP code)
- EN 61010, Protection Measures for Electrical Equipment for Measurement, Control, Regulation and Laboratory Procedures.
- EN 61326/A1 (IEC 1326), “Emission in accordance with Class A requirements”. Electromagnetic compatibility (EMC requirements)
- ANSI/ISA-S82.01 Safety Standard for Electrical and Electronic Test, Measuring, Controlling and related Equipment – General Requirements. Pollution degree 2, Installation Category II.
- CAN/CSA-C22.2 No. 1010.1-92 Safety requirements for Electrical Equipment for Measurement and Control and Laboratory Use. Pollution degree 2, Installation Category II

**Pressure measuring device approval**

Measuring devices with a nominal diameter smaller than or equal to DN 25 correspond to Article 3(3) of the EC Directive 97/23/EC (Pressure Equipment Directive) and have been designed and manufactured according to good engineering practice Where necessary (depending on the medium and process pressure), there are additional optional approvals to Category II/III for larger nominal diameters.

## Ordering information

Your Endress +Hauser service organization can provide detailed ordering information and information on the order codes on request.

## Accessories

Various accessories, which can be ordered separately from Endress+Hauser, are available for the transmitter and the sensor. Your Endress+Hauser service organization can provide detailed information on the order codes in question.

## Documentation

- System Information Promag 10 (SI042D/06/en)
- Operating Instructions Promag 10 (BA082D/06/en)

## Registered trademarks

KALREZ® and VITON®
Registered trademarks of E.I. Du Pont de Nemours & Co., Wilmington, USA

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

HART®
Registered trademark of the HART Communication Foundation, Austin, USA

ToF Tool - Fieldtool® Package, Fieldcheck®, Applicator®
Registered or registration-pending trademarks of Endress+Hauser Flowtec AG, Reinach, CH

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