

Flush pressure transmitter

For viscous and particle-laden media

Model S-11

WIKA data sheet PE 81.02



for further approvals
see page 6

Applications

- General industrial applications
- Food and beverage industry
- Filling and packing machinery
- Dosing technology
- Level measurement

Special features

- High-quality product
- Many configurations possible
- Flush process connection
- Large stocks for short delivery times
- Vacuum-tight



Fig. left: Pressure transmitter model S-11

Fig. right: Pressure transmitter model S-11 with cooling element

Description

Expert for viscous and particle-laden media

The model S-11 pressure transmitter with flush diaphragm has been specifically designed for the measurement of viscous, paste-like, adhesive, crystallising, particle-laden and contaminated media, which would clog the pressure channel of conventional process connections.

Through its optimised design, the flush process connection enables cleanability with the wetted diaphragm integrated into the process. Low-maintenance and trouble-free pressure measurement is thus also guaranteed in critical applications with frequently changing media.

High accuracy, a robust design, high-quality workmanship and the high flexibility of configuration are key features of the model S-11.

Flush process connection

All process connections of the flush pressure transmitter are made of stainless steel and are fully welded and isolate the medium from the pressure measuring instrument via a positive seal. A reliable, dead-space free sealing between the process connection and the measuring medium is thus assured.

For high medium temperatures of up to 150 °C (302 °F), the pressure transmitter is also available with an integrated cooling element.

Specifically for the food and beverage industry, a version with internal system fill fluid in accordance with FDA 21 CFR 178.3750 can be chosen.

Measuring ranges

| Gauge pressure | | | | | | | | |
|----------------|-----------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| bar | Measuring range | 0 ... 0.1 | 0 ... 0.16 | 0 ... 0.25 | 0 ... 0.4 | 0 ... 0.6 | 0 ... 1 | 0 ... 1.6 |
| | Overload safety | 1 | 1.5 | 2 | 2 | 4 | 5 | 10 |
| | Measuring range | 0 ... 2.5 | 0 ... 4 | 0 ... 6 | 0 ... 10 | 0 ... 16 | 0 ... 25 | 0 ... 40 |
| | Overload safety | 10 | 17 | 35 | 35 | 80 | 50 | 80 |
| | Measuring range | 0 ... 60 | 0 ... 100 | 0 ... 160 | 0 ... 250 | 0 ... 400 | 0 ... 600 | |
| | Overload safety | 120 | 200 | 320 | 500 | 800 | 1,200 | |
| psi | Measuring range | 0 ... 15 | 0 ... 20 | 0 ... 30 | 0 ... 50 | 0 ... 60 | 0 ... 100 | 0 ... 150 |
| | Overload safety | 145 | 145 | 145 | 240 | 240 | 500 | 500 |
| | Measuring range | 0 ... 160 | 0 ... 200 | 0 ... 250 | 0 ... 300 | 0 ... 400 | 0 ... 500 | 0 ... 600 |
| | Overload safety | 1,160 | 1,160 | 1,160 | 1,160 | 1,160 | 1,160 | 1,160 |
| | Measuring range | 0 ... 750 | 0 ... 1,000 | 0 ... 1,500 | 0 ... 2,000 | 0 ... 3,000 | 0 ... 5,000 | 0 ... 6,000 |
| | Overload safety | 1,740 | 1,740 | 2,900 | 4,600 | 7,200 | 11,600 | 11,600 |

| Absolute pressure | | | | | | | | |
|-------------------|-----------------|------------|-----------|-----------|-----------|-----------|-----------|---------|
| bar | Measuring range | 0 ... 0.25 | 0 ... 0.4 | 0 ... 0.6 | 0 ... 1 | 0 ... 1.6 | 0 ... 2.5 | 0 ... 4 |
| | Overload safety | 2 | 2 | 4 | 5 | 10 | 10 | 17 |
| | Measuring range | 0 ... 6 | 0 ... 10 | 0 ... 16 | | | | |
| | Overload safety | 35 | 35 | 80 | | | | |
| psi | Measuring range | 0 ... 15 | 0 ... 25 | 0 ... 50 | 0 ... 100 | 0 ... 250 | | |
| | Overload safety | 72.5 | 145 | 240 | 500 | 1,160 | | |

| Vacuum and +/- measuring range | | | | | | |
|--------------------------------|-----------------|-------------------|-------------------|------------------|-------------------|-------------------|
| bar | Measuring range | -0.6 ... 0 | -0.4 ... 0 | -0.25 ... 0 | -0.16 ... 0 | -0.1 ... 0 |
| | Overload safety | 4 | 2 | 2 | 1.5 | 1 |
| | Measuring range | -1 ... 0 | -1 ... +0.6 | -1 ... +1.5 | -1 ... +3 | -1 ... +5 |
| | Overload safety | 5 | 10 | 10 | 17 | 35 |
| | Measuring range | -1 ... +9 | -1 ... +15 | -1 ... +24 | | |
| | Overload safety | 35 | 80 | 50 | | |
| psi | Measuring range | -30 inHg ... 0 | -30 inHg ... +30 | -30 inHg ... +60 | -30 inHg ... +100 | -30 inHg ... +160 |
| | Overload safety | 72.5 | 240 | 240 | 500 | 1,160 |
| | Measuring range | -30 inHg ... +200 | -30 inHg ... +300 | | | |
| | Overload safety | 1,160 | 1,160 | | | |

The given measuring ranges are also available in mbar, MPa and further units.

Vacuum tightness

Yes

Output signals

Output signal

| Signal type | Signal |
|------------------|---------------|
| Current (2-wire) | 4 ... 20 mA |
| Current (3-wire) | 0 ... 20 mA |
| Voltage (3-wire) | DC 0 ... 10 V |
| | DC 0 ... 5 V |

Other output signals on request.

Load in Ω

Depending on the signal type the following loads apply:

Current (2-wire): $\leq (\text{power supply} - 10 \text{ V}) / 0.02 \text{ A}$

Current (3-wire): $\leq (\text{power supply} - 3 \text{ V}) / 0.02 \text{ A}$

Voltage (3-wire): $> \text{max. output signal} / 1 \text{ mA}$

Voltage supply

Power supply

The power supply depends on the selected output signal

4 ... 20 mA (2-wire): DC 10 ... 30 V

0 ... 20 mA (3-wire): DC 10 ... 30 V

DC 0 ... 10 V: DC 14 ... 30 V

DC 0 ... 5 V: DC 10 ... 30 V

Reference conditions (per IEC 61298-1)

Temperature

15 ... 25 °C (59 ... 77 °F)

Atmospheric pressure

860 ... 1,060 mbar (12.5 ... 15.4 psi)

Humidity

45 ... 75 % r. h.

Power supply

DC 24 V

Mounting position

Calibrated in vertical mounting position with process connection facing downwards.

Accuracy specifications

Accuracy at reference conditions

| Accuracy | |
|----------|--|
| Standard | $\leq \pm 0.5 \%$ of span |
| Option | $\leq \pm 0.25 \%$ of span ¹⁾ |

1) Only for measuring ranges $\geq 0.25 \text{ bar}$

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position with process connection facing downwards.

Non-linearity (per IEC 61298-2)

$\leq \pm 0.2 \%$ of span BFSL

Non-repeatability

$\leq 0.1 \%$ of span

Temperature error in rated temperature range

Rated temperature range:

0 ... 80 °C (32 ... 176 °F)

Mean temperature coefficient of zero point:

Measuring range $> 0.25 \text{ bar}$: $\leq \pm 0.2 \%$ of span/10 K

Measuring range $\leq 0.25 \text{ bar}$: $< \pm 0.4 \%$ of span/10 K

Mean temperature coefficient of span:

$\leq \pm 0.2 \%$ of span/10 K

long-term stability at reference conditions

$\leq \pm 0.2 \%$ of span/year

Adjustability of zero point and span

Adjustment is made using potentiometers inside the instrument.

Not possible for IP68 cable outlet.

Zero point: $\pm 5 \%$

Span: $\pm 5 \%$

Time response

Settling time

$\leq 2 \text{ ms}$

Operating conditions

Ingress protection (per IEC 60529)

The ingress protection depends on the type of electrical connection.

| Electrical connection | Ingress protection |
|------------------------------------|--------------------|
| Angular connector DIN 175301-803 A | IP65 |
| Circular connector M12 x 1 (4-pin) | IP67 |
| Cable outlet IP67 | IP67 |
| Cable outlet IP68 | IP68 ¹⁾ |

1) Adjustability of zero point and span not possible.

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Vibration resistance

Process connections without cooling element:
20 g (IEC 60068-2-6, under resonance)

Process connections with cooling element:
10 g (IEC 60068-2-6, under resonance)

Shock resistance

Process connections without cooling element:
1,000 g (IEC 60068-2-27, mechanical)

Process connections with cooling element:
400 g (IEC 60068-2-27, mechanical)

Permissible temperature ranges

Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3.

Process connections without cooling element

| Medium | | |
|------------|-----------------|-----------------|
| ■ Standard | -30 ... +100 °C | -22 ... +212 °F |
| ■ Option | -30 ... +125 °C | -22 ... +257 °F |
| Ambient | -20 ... +80 °C | -4 ... +176 °F |
| Storage | -40 ... +100 °C | -40 ... +212 °F |

Process connections with cooling element

| Medium | | |
|---------|-----------------|-----------------|
| Ambient | -20 ... +80 °C | -4 ... +176 °F |
| Storage | -40 ... +100 °C | -40 ... +212 °F |

Electrical connections

Short-circuit resistance

S+ vs. U-

Reverse polarity protection

U+ vs. U-


Overvoltage protection


DC 36 V

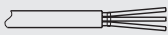
Insulation voltage

DC 500 V with NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions)

Connection diagrams

| Angular connector DIN 175301-803 A | | | |
|--|----|--------|--------|
| | | 2-wire | 3-wire |
|  | U+ | 1 | 1 |
| | U- | 2 | 2 |
| | S+ | - | 3 |
| Wire cross-section max. 1.5 mm ² (AWG 16) Cable diameter 6 ... 8 mm (0.24 ... 0.31") | | | |

| Circular connector M12 x 1 (4-pin) | | | |
|---|----|--------|--------|
| | | 2-wire | 3-wire |
|  | U+ | 1 | 1 |
| | U- | 3 | 3 |
| | S+ | - | 4 |

| Cable outlet | | | |
|--|--------|------------|------------|
| | | 2-wire | 3-wire |
|  | U+ | brown (BN) | brown (BN) |
| | U- | green (GN) | green (GN) |
| | S+ | - | white (WH) |
| | Shield | grey (GY) | grey (GY) |
| Wire cross-section 6 x 0.5 mm ² (AWG 20) Cable diameter 6.8 mm (0.27") Cable lengths 1.5 m, 3 m, 5 m, 10 m, 15 m (4.9 ft, 9.8 ft, 16.4 ft, 32.8 ft, 49.2 ft) | | | |

Other connections on request.

Process connections

| Thread | Available measuring ranges | |
|---|----------------------------|----------------------------|
| G ½ B flush ¹⁾ | 0 ... 2.5 to 0 ... 600 bar | 0... 50 to 0 ... 6,000 psi |
| G 1 B flush ¹⁾ | 0 ... 0.1 to 0 ... 1.6 bar | 0 ... 15 psi |
| Hygienic G 1 B flush (in accordance with 3-A Sanitary Standards) | 0 ... 0.1 to 0 ... 25 bar | 0 ... 15 to 0 ... 300 psi |

1) Process connection also available with cooling element.

Cooling elements

For higher medium temperatures, process connections with a cooling element are available (see "Operating conditions").

Sealing

| Process connection | Max. medium temperature | Sealing material and max. pressure limitation | | |
|-------------------------|-------------------------|--|--|-----------------------------------|
| | | Standard | Option 1 | Option 2 |
| without cooling element | up to 100 °C (212 °F) | NBR up to 600 bar (8,700 psi) | FKM/FPM ¹⁾ up to 600 bar (8,700 psi) | EPDM up to 200 bar (2,900 psi) |
| | up to 125 °C (257 °F) | NBR up to 600 bar (8,700 psi) | FKM/FPM ¹⁾ up to 400 bar (5,800 psi) | EPDM up to 200 bar (2,900 psi) |
| with cooling element | up to 150 °C (302 °F) | FKM/FPM ¹⁾ up to 300 bar (4,350 psi) | EPDM up to 200 bar (2,900 psi) | - |
| Hygienic | up to 150 °C (302 °F) | EPDM up to 200 bar (2,900 psi) | - | - |

1) Minimum permissible medium and ambient temperature -20 °C / -4 °F

O-ring for G ½ B flush process connection optionally available with FFKM seal material (pressure limitation 600 bar (8,700 psi) for all medium temperatures)

The sealings listed under "Standard" are included in the delivery.

Materials









Wetted parts

- G ½ B and G 1 B flush: 316Ti
- G 1 B flush, hygienic: 316L
- For sealing materials see "Process connections"

Internal pressure transmission medium

| Pressure transmission medium | |
|------------------------------|---|
| Standard | Synthetic oil |
| Option | Food-compatible system fill fluid per FDA 21 CFR 178.3750 |

Approvals

| Logo | Description | Country |
|--|--|-----------------------------|
|  | EU declaration of conformity <ul style="list-style-type: none"> ■ EMC directive ¹⁾ EN 61326 emission (group 1, class B) and interference immunity (industrial application) ■ Pressure equipment directive ■ RoHS directive | European Community |
|  | CSA Safety (e.g. electr. safety, overpressure, ...) | Canada |
|  | EAC Electromagnetic compatibility | Eurasian Economic Community |
|  | GOST Metrology, measurement technology | Russia |
|  | KazInMetr Metrology, measurement technology | Kazakhstan |
| - | MTSCHS Permission for commissioning | Kazakhstan |
|  | BelGIM Metrology, measurement technology | Belarus |
|  | Uzstandard Metrology, measurement technology | Uzbekistan |
|  | 3-A Sanitary Standard only for instruments with process connection hygienic G 1 B This instrument is 3-A marked, based on a third party verification for conformance to the 3-A standard. | USA |

1) The existence of strong electromagnetic fields in a frequency range of < 2.7 GHz can result in increased measuring errors up to 1 %. Do not install the instruments in the vicinity of strong electromagnetic sources of interference (e.g. transmitting devices, radio equipment), or use sheath current filters where applicable.

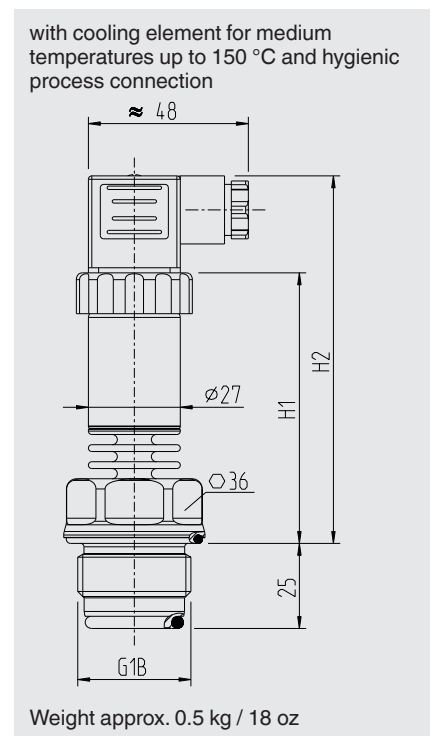
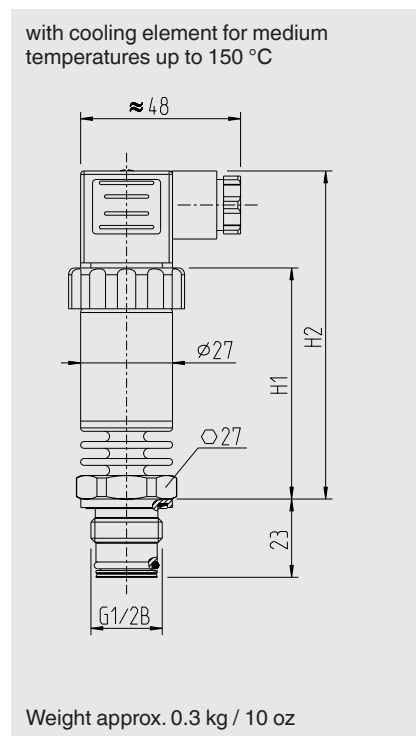
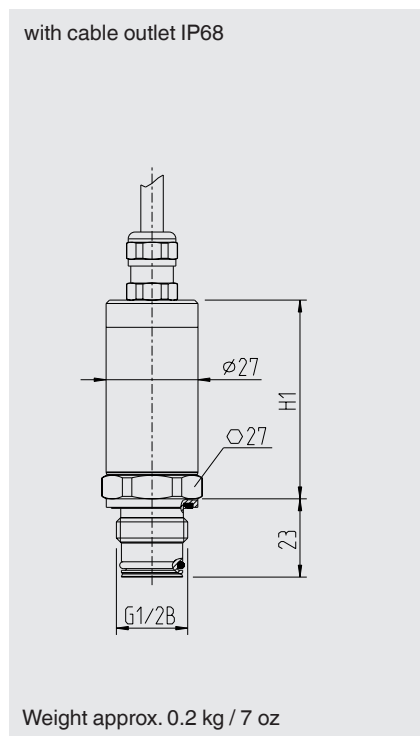
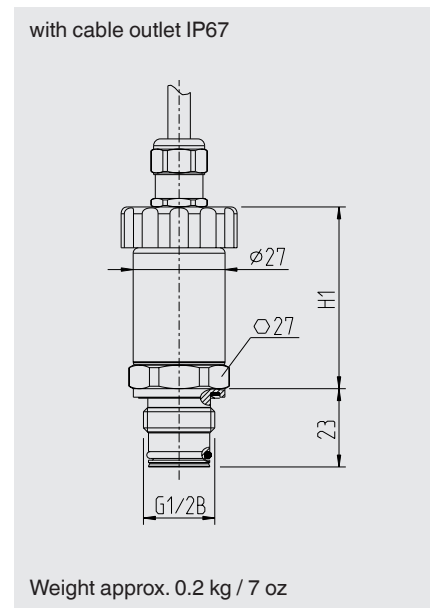
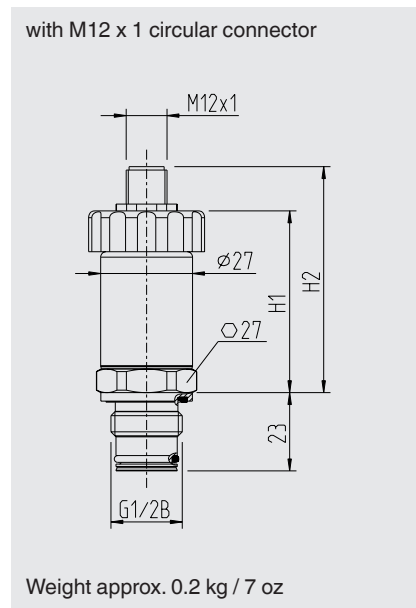
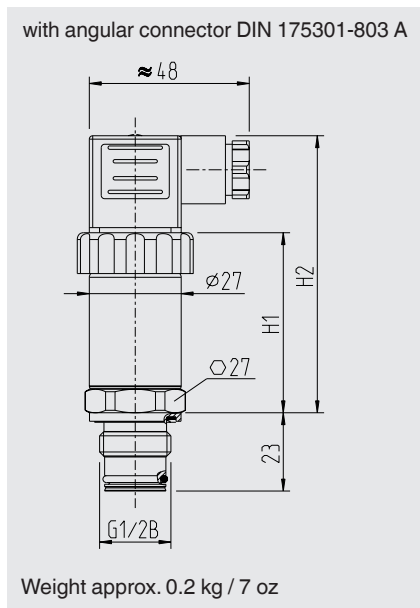
Manufacturer's information and certifications

| Logo | Description |
|------|-----------------------------|
| - | China RoHS directive |
| - | MTTF > 100 years |

Approvals and certificates, see website

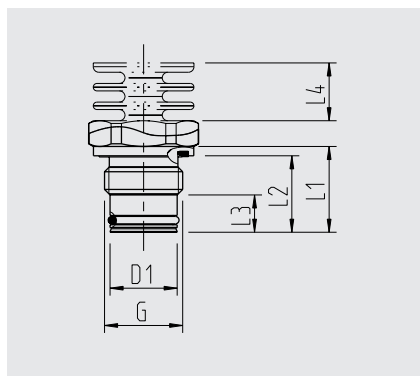
Dimensions in mm (inch)

Pressure transmitter

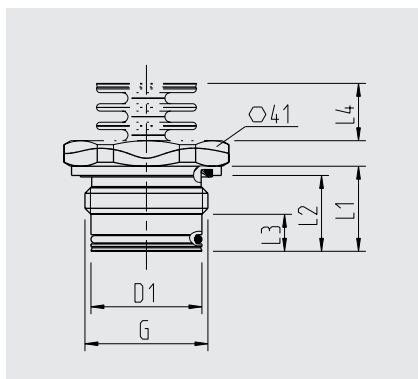


| Electrical connection | Dimension | Process connection | | |
|---------------------------------------|-----------|-------------------------|----------------------|----------------------|
| | | G ½ B, G 1 B | | G 1 hygienic |
| | | without cooling element | with cooling element | with cooling element |
| Angular connector DIN 175301-803 A | H1 | 54 (2.13) | 69 (2.72) | 80 (3.15) |
| | H2 | 83.5 (3.29) | 98 (3.56) | 109 (4.29) |
| Circular connector M12 x 1 | H1 | 54 (2.13) | 69 (2.72) | 80 (3.15) |
| | H2 | 67 (2.64) | 82 (3.23) | 93 (3.66) |
| Cable outlet IP67 | H1 | 54 (2.13) | 69 (2.72) | 80 (3.15) |
| Cable outlet IP68 | H1 | 58 (2.28) | 73 (2.87) | 84 (3.31) |

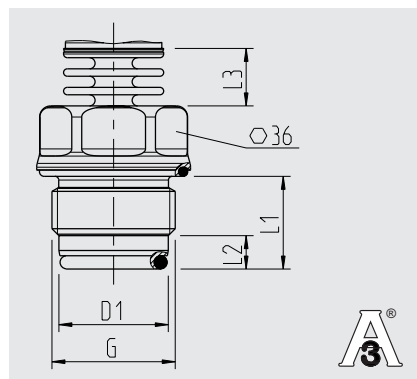
Process connections



| G | D1 | L1 | L2 | L3 | L4 |
|---------|--------------|--------------|----------------|-------------|----------------|
| G 1/2 B | 18 (0.71) | 23 (0.91) | 20.5 (0.81) | 10 (0.4) | 15.5 (0.61) |



| G | D1 | L1 | L2 | L3 | L4 |
|-------|--------------|--------------|----------------|-------------|----------------|
| G 1 B | 30 (1.19) | 23 (0.91) | 20.5 (0.81) | 10 (0.4) | 15.5 (0.61) |





| G | D1 | L1 | L2 | L3 |
|-------------------|----------------|--------------|-------------|----------------|
| G 1 B hygienic | 29.5 (1.17) | 25 (0.99) | 9 (0.36) | 15.5 (0.61) |

Surface roughness of wetted metallic parts, Ra ≤ 0.76 µm

For information on tapped holes and welding sockets, see Technical information IN 00.14 at www.wika.com.

Accessories

Welding socket

| | Designation | Order number |
|---|---|--|
|  | Welding socket for G 1/2 B flush | 1192299 |
| | Welding socket for G 1 B flush | 1192264 |
| | Welding socket for G 1 B hygienic flush | 14145179 |
| | Welding socket for G 1 B hygienic flush with leak-control channel Fulfils the 3-A Sanitary Standards |  14145183 |

For further adapter systems for measuring instruments with G 1 B hygienic process connection, see data sheet AC 09.20.

Mating connector

| Designation | Order number | | | |
|------------------------------------|---------------|------------------------|------------------------|-------------------------|
| | without cable | 2 m cable, shielded | 5 m cable, shielded | 10 m cable, shielded |
| Angular connector DIN 175301-803 A | | | | |
| ■ with cable gland, metric | 11427567 | 14100465 | 14100466 | - |
| ■ with cable gland, conduit | 11022485 | - | - | - |
| Circular connector M12 x 1 (4-pin) | | | | |
| ■ straight | - | 14086880 | 14086883 | 14086884 |
| ■ angled | - | 14086889 | 14086891 | 14086892 |

Sealings for mating connectors

| Mating connector | Order number | |
|---------------------------------------|--------------|-----------------|
| | Blue (WIKA) | Brown (neutral) |
| Angular connector DIN EN 175301-803 A | 1576240 | 11437902 |

Sealings for process connection

| Thread size and sealing | Order number | | | |
|-------------------------|--------------|----------|----------|----------|
| | NBR | FPM/FKM | EPDM | FKKM |
| G ½ B | | | | |
| ■ O-ring | 14072275 | 14072276 | 14072277 | 14073739 |
| ■ Profile sealing | 1039067 | 1039075 | 1538306 | - |
| G 1 B | | | | |
| ■ O-ring | 1108247 | 1099094 | 1535056 | - |
| ■ Profile sealing | 1100386 | 1145967 | 11522381 | - |
| G 1 B hygienic | | | | |
| ■ O-ring | - | - | 2225859 | - |
| ■ Profile sealing | - | - | 11522381 | - |

Ordering information

Model / Measuring range / Output signal / Accuracy / Electrical connection / Medium temperature / Process connection / Sealing / System fill fluid

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