

PRESSURE TRANSMITTER

PRODUCT CATALOGUE



PRESSURE at the highest LEVEL.

BD|SENSORS
pressure measurement

>> www.bdsensors.de

PRESSURE AT THE HIGHEST LEVEL

„Successful medium-sized companies are not successful because they are active in many areas, but rather because they concentrate on one area and do it better than anyone else“

This is our philosophy. That´s why BDESENSORS has concentrated on electronic pressure measurement technology from the beginning.

With our unremitting product and and quality strategy we have been successful in becoming a major player on the world market for electronic pressure sensing devices within a few years.

With 300 employees at 4 locations in Germany, the Czech Republic, Russia and China BD|SENSORS has solutions from 0.1 mbar to 6000 bar:

- > pressure sensors, pressure transducers
pressure transmitters

- > electronic pressure switches

- > pressure measuring devices with display and
switching outputs

- > hydrostatic level probes

Two pressure transmitters and a submersible probe, based on a stainless steel silicon sensor were the beginning. Today the range extends to more than 70 standard products, from economical OEM devices to high-end products with HART® communication or field bus interface.

In addition we have developed hundreds of customer-specific applications, underlining the competence and flexibility of BD|SENSORS. The excellent price/performance ratio of our products is proof of the fact that we are able to meet the toughest demand: Being a problem-solver for our customers.

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For large production batches as well as for small production numbers, no matter for what medium or external factors, with almost any mechanical or electrical connection - we solve your problem

flexibly, quickly and cost-efficiently.

PRODUCT MATRIX „PRESSURE TRANSMITTER ANALOG“

| PRODUCT | PREFERRED APPLICATION | | | | | MEDIA WETTED PARTS | | | | | NOMINAL PRESSURE | | ACCURACY | APPROVAL | | | | PAGE | | | |
|---|-----------------------|----------------------|------------------|----------|-----|--------------------|--------|---------|-----------------|-----------------|------------------|---------|----------|----------|-------|----------|-----|------|--------|-----------|-----------------|
| | process industry | industry „universal“ | industry „flush“ | maritime | OEM | pressure port | | | PRESSURE SENSOR | | | bar min | bar max | standard | HART | EX | SIL | | nautic | | |
| | | | | | | stainless steel | CuNiFe | PVDF/PP | silicon | stainless steel | ceramic | | | | | | | | | elastomer | without, welded |
| Precision (Accuracy ≤ 0.1 % FSO) | | | | | | | | | | | | | | | | | | | | | |
| x act i | • | | | | | • | | | | • | | • | | 0.4 | 40 | ≤± 0.1% | • | • | • | 6 | |
| x act ci | • | | | | | • | | • | | | • | | | 0.16 | 20 | ≤± 0.1% | • | • | | 11 | |
| XMP i | • | | | | | • | | | | • | | • | | 0.4 | 600 | ≤± 0.1% | • | • | • | 16 | |
| XMP ci | • | | | | | • | | • | | | • | | | 0.16 | 20 | ≤± 0.1% | • | • | | 22 | |
| DMP 331 i | | • | | | | • | | | | • | | • | • | 0.4 | 60 | ≤± 0.1% | | • | | 27 | |
| DMP 333 i | | • | | | | • | | | | • | | • | | 100 | 600 | ≤± 0.1% | | • | | 27 | |
| DMP 320 | | • | | | | • | | | | • | | • | | 0.1 | 600 | ≤± 0.1% | | | | 34 | |
| DMP 334 i | | • | | | | • | | | | • | | • | • | 600 | 2.200 | ≤± 0.1% | | | | 39 | |
| DMP 331 Pi | | | • | | | • | | | | • | | • | • | 0.4 | 40 | ≤± 0.1% | | • | | 44 | |
| Industry (Accuracy ≤ 0.5 % FSO) | | | | | | | | | | | | | | | | | | | | | |
| DMP 343 | | • | | | | • | | | • | | | • | | 0.01 | 1 | ≤± 0.35% | | • | | 50 | |
| DMP 331 | | • | | | | • | | | | • | | • | • | 0.1 | 60 | ≤± 0.35% | | • | • | 55 | |
| DMP 333 | | • | | | | • | | | | • | | • | | 100 | 600 | ≤± 0.35% | | • | • | 61 | |
| DMP 321 | | • | | | | • | | | | • | | • | • | 0.1 | 600 | ≤± 0.25% | | • | | 67 | |
| DMP 335 | | • | | | | • | | | | • | | • | • | 6 | 600 | ≤± 0.5% | | • | | 73 | |
| DMP 336 | | • | | | | • | | | | • | | • | • | 16 | 1.000 | ≤± 0.5% | | • | | 78 | |
| DMP 334 | | • | | | | • | | | | • | | • | • | 600 | 2.200 | ≤± 0.35% | | • | | 82 | |
| DMP 304 | | • | | | | • | | | | • | | • | • | 2.000 | 6.000 | ≤± 0.5% | | • | | 86 | |
| DMK 351 | | • | | | | • | | • | | | • | • | | 0.04 | 20 | ≤± 0.35% | | • | | 90 | |
| DMK 331 | | • | | | | • | | • | | | • | • | | 0.4 | 600 | ≤± 0.5% | | • | • | 95 | |
| DMK 387 | | • | | | | • | | • | | | • | • | | 0.1 | 60 | ≤± 0.35% | | • | | 100 | |
| DMP 331P | | | • | | | • | | | | • | | • | • | 0.1 | 40 | ≤± 0.35% | | • | • | 105 | |
| DMP 339P | | | • | | | • | | | | • | | • | | 25 | 600 | ≤± 0.5% | | • | | 111 | |
| DMK 331P | | | • | | | • | | | | • | | • | | 60 | 400 | ≤± 0.5% | | • | • | 115 | |
| DMK 351P | | | • | | | • | | | | • | | • | | 0.04 | 20 | ≤± 0.35% | | • | | 120 | |
| DMP 457 | | | | • | | • | | | | • | | • | • | 0.1 | 600 | ≤± 0.35% | | • | | • | 125 |
| DMK 457 | | | | • | | • | • | | | | • | • | | 0.4 | 600 | ≤± 0.5% | | • | | • | 130 |
| DMK 458 | | | | • | | • | • | | | | • | • | | 0.04 | 20 | ≤± 0.25% | | • | | • | 135 |

PRODUCT MATRIX „PRESSURE TRANSMITTER ANALOG“

| PRODUCT | PREFERRED APPLICATION | | | | | MEDIA WETTED PARTS | | | | | | NOMINAL PRESSURE | | ACCURACY | APPROVAL | | | | PAGE | |
|---|-----------------------|----------------------|------------------|----------|-----|--------------------|--------|---------|---------------------------|-----------------|---------|------------------|-----------------|----------|----------|------------------|------|----|------|-----|
| | | | | | | pressure port | | | PRESSURE SENSOR diaphragm | | | seal | | bar min | bar max | standard | HART | EX | | SIL |
| | process industry | industry „universal“ | industry „flush“ | maritime | OEM | stainless steel | CuNiFe | PVDF/PP | silicon | stainless steel | ceramic | elastomer | without, welded | | | | | | | |
| OEM (Accuracy \geq 0.5 % FSO) | | | | | | | | | | | | | | | | | | | | |
| 17.609 | | | | | • | • | | | | • | | | • | -1 | 60 | $\leq \pm 0.5\%$ | | | | 141 |
| 17.600 | | | | | • | • | | | | • | | | • | 6 | 600 | $\leq \pm 0.5\%$ | | | | 144 |
| 17.620 | | | | | • | • | | | | • | | | • | 16 | 1.000 | $\leq \pm 0,5\%$ | | | | 147 |
| 18.600 | | | | | • | • | | | • | | | • | | 0.1 | 6 | $\leq \pm 0.5\%$ | | | | 150 |
| 18.601 | | | | | • | • | | | | • | | | • | 0.1 | 6 | $\leq \pm 0.5\%$ | | | | 153 |
| 18.605 | | | | | • | • | | | | • | | | • | 0.1 | 10 | $\leq \pm 0.5\%$ | | | | 156 |
| 26.600 | | | | | • | • | | | | | • | | • | 1 | 400 | $\leq \pm 0.5\%$ | | | | 159 |
| 30.600 | | | | | • | • | | | | | • | | • | 1.6 | 250 | $\leq \pm 1.0\%$ | | | | 162 |



x|act i

Precision Pressure Transmitter for Food Industry, Pharmacy and Biotechnology with SIL2 (optionally)

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ turn-down 1:10
- ▶ hygienic version
- ▶ flush welded diaphragm
- ▶ several process connections (G1" cone, Clamp, dairy pipe, etc.)
- ▶ integrated display and operating module

Optional versions

- ▶ explosion protection intrinsic safety (ia)
- ▶ SIL2 -version according to IEC 61508 / IEC 61511
- ▶ HART®-communication
- ▶ cooling element for media temperatures up to 300 °C

The precise pressure transmitter x|act i has been especially designed for the food industry, pharmacy and biotechnology and measures vacuum, gauge and absolute pressure of gases, steam, and fluids up to 40 bar.

Several process connections e.g. thread or hygienic versions like Varivent®, dairy pipe and Clamp with a flush welded diaphragm are available, which can be combined with a cooling element for media temperatures up to 300 °C. The robust stainless steel globe housing has a high ingress protection IP 67 and all characteristics for a residue-free and antibacterial cleaning.

Preferred areas of use are



Food industry



Pharmacy

Material and test certificates

- ▶ Inspection certificate 3.1 according to EN 10204
- ▶ Test report 2.2 according to EN 10204



| Pressure ranges ¹ | | | | | | | | |
|--|-------|-----|-----|----|----|----|-----|-----|
| Nominal pressure gauge / abs. ² | [bar] | 0.4 | 1 | 2 | 4 | 10 | 20 | 40 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 | 80 | 105 |
| Burst pressure \geq | [bar] | 3 | 7.5 | 15 | 25 | 50 | 120 | 210 |

¹ higher pressure ranges on request; on demand we adjust the devices within the turn-down-possibility by software on the required pressure ranges
² absolute pressure possible from 1 bar

| Vacuum ranges | | | | | | |
|------------------------|-------|--------------|----------|----------|----------|-----------|
| Nominal pressure gauge | [bar] | -0.4 ... 0.4 | -1 ... 1 | -1 ... 2 | -1 ... 4 | -1 ... 10 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 |
| Burst pressure | [bar] | 3 | 7.5 | 15 | 25 | 50 |

| Output signal / Supply | |
|------------------------|---|
| 2-wire: 4 ... 20 mA | standard: analogue signal $V_S = 12 \dots 30 V_{DC}$ options: intrinsic safety (ia) $V_S = 12 \dots 28 V_{DC}$ intrinsic safety (ia) with HART [®] -communication $V_S = 12 \dots 28 V_{DC}$ SIL2 $V_S = 12 \dots 30 V_{DC}$ SIL2 / intrinsic safety (ia) $V_S = 12 \dots 28 V_{DC}$ SIL2 / intrinsic safety (ia) with HART [®] communication $V_S = 12 \dots 28 V_{DC}$ |
| Current consumption | max. 25 mA |

| Performance | |
|---|--|
| Accuracy ³ performance after turn-down (TD) | $\leq \pm 0.1 \% \text{ FSO}$ |
| - TD $\leq 1:5$ | no change of accuracy |
| - TD $> 1:5$ | the accuracy is calculated as follows: $\leq 0.1 + 0.015 \times (\text{turn-down} - 5) \% \text{ FSO}$ e.g. turn-down 9: $\leq 0.1 + 0.015 \times (9 - 5) \% \text{ FSO} = 0.16 \% \text{ FSO}$ |
| Permissible load | $R_{max} = [(V_S - V_{Smin}) / 0.02 \text{ A}] \Omega$ load during HART [®] communication: $R_{min} = 250 \Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V permissible load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm (0.1 \times \text{turn-down}) \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | 100 msec – without consideration of electronic damping measuring rate 10/sec |
| Adjustability | electronic damping: 0 ... 100 sec offset: 0 ... 90 % FSO turn-down of span: max. 1:10 |

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | |
|-----------------------------------|---|
| Tolerance band ^{4,5} | $\leq \pm 0.2 \% \text{ FSO} \times \text{turn-down}$ |
| in compensated range | -20 ... 85 °C |

⁴ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

⁵ for flange-, Varivent-, DRD-version: tolerance band offset $\leq \pm 1.6 \% \text{ FSO} / \text{tolerance band span} \leq \pm 0.6 \% \text{ FSO}$

| Permissible temperatures | | |
|--|--|--|
| Filling fluid | silicone oil | food compatible oil |
| Medium ⁶ | -40 ... 125 °C | -10 ... 125 °C |
| Medium with cooling element ⁷ | overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C | overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C |
| Electronics / environment | | -20 ... 70 °C |
| Storage | | -30 ... 80 °C |

⁶ for vacuum ranges and absolute pressure the max. medium temperature is 70 °C; max. temperature of the medium for nominal pressure gauge $> 0 \text{ bar}$: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element).

⁷ max. temperature depends on the used sealing material, type of seal and installation

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|--|
| Vibration | 5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 100 g / 11 msec according to DIN EN 60068-2-27 |

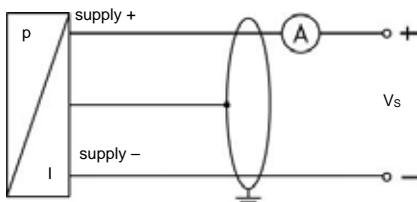
| Filling fluids | |
|----------------|--|
| Standard | silicone oil |
| Options | food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request |

| Materials | |
|----------------------|--|
| Pressure port | stainless steel 1.4435 (316 L) |
| Housing | stainless steel 1.4301 (304) |
| Viewing glass | laminated safety glass |
| Seals (media wetted) | none, not included in the scope of delivery |
| Diaphragm | standard: stainless steel 1.4435 (316 L) options: Hastelloy [®] C-276 (2.4819); tantalum (possible from 1 bar on) on request |
| Media wetted parts | pressure port, diaphragm, seals (if existing) |

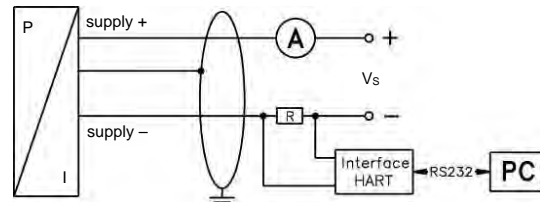
| Explosion protection | |
|--|---|
| Approvals | IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X) |
| AX12-x act i | zone 0: II 1G Ex ia IIC T4 Ga |
| AX2 - x act i (with SIL2) | zone 20: II 1D Ex ia IIIC T85 °C Da |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 98 \text{ mA}$, $P_i = 680 \text{ mW}$, $C_i = 0 \text{ nF}$, $L_i = 0 \text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line 160 pF/m cable inductance: signal line/shield also signal line/signal line 1 $\mu\text{H}/\text{m}$ |
| Option | |
| SIL2-version | according to IEC 61508 / IEC 61511 |
| Miscellaneous | |
| EHDG certificate Type EL Class I | EHDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH |
| Display | LC display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ± 9999 ; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% \pm 1 digit |
| Ingress protection | IP 67 |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 2 \text{ bar}$ have to be specified in the order) |
| Surface roughness | pressure port $R_a < 0.8 \text{ }\mu\text{m}$ (media wetted parts) diaphragm $R_a < 0.15 \text{ }\mu\text{m}$ weld seam $R_a < 0.8 \text{ }\mu\text{m}$ |
| Weight | min. 400 g (depending on mechanical connection) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

Wiring diagrams

2-wire-system (current)



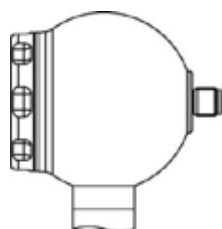
2-wire-system (current) HART® - communication



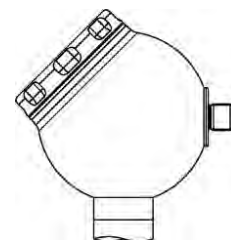
Pin configuration / electrical connection (dimensions in mm)

| | | |
|------------------------|----------------------|--|
| Electrical connections | M12x1 (4-pin), metal | |
| Supply + | 1 | |
| Supply - | 3 | |
| Shield | plug housing | |

Designs ⁸



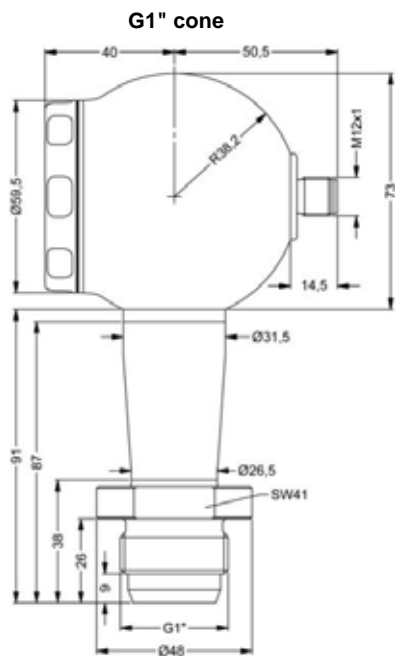
side display



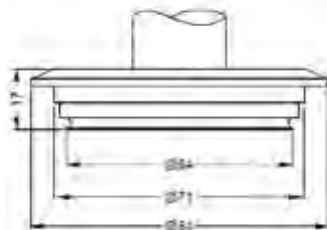
45° display

⁸ all designs in combination with G1" cone in horizontal rotatable housing as standard; other mech. connections in rotatable housing on request

Dimensions (in mm)

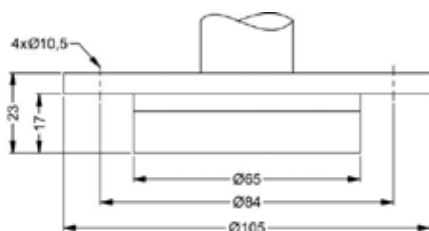


Varivent®

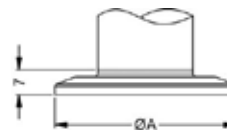


DN40/50
p_N ≤ 25 bar

DRD⁹ (for p_N ≤ 25 bar)

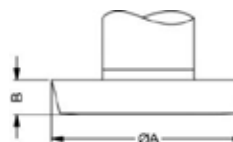


Clamp (DIN 32676)



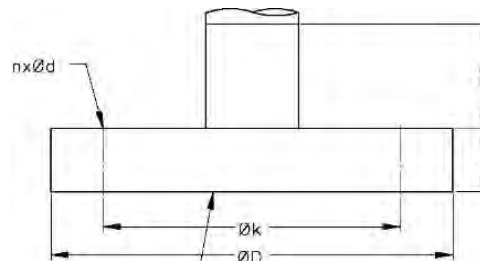
| dimensions in mm | | | | |
|----------------------|------------|----------------|-------|-------|
| size | 3/4" | DN 25 | DN 32 | DN 50 |
| A | 25 | 50.5 | 50.5 | 64 |
| p _N [bar] | ≥ 4 ≤ 8 | ≥ 0,25 ≤ 16 | ≤ 16 | ≤ 16 |

dairy pipe⁹ (DIN 11851)



| dimensions in mm | | | |
|----------------------|----------------|----------------|----------------|
| size | DN 25 | DN 40 | DN 50 |
| A | 44 | 56 | 68,5 |
| B | 10 | 10 | 11 |
| p _N [bar] | ≥ 0,25 ≤ 40 | ≥ 0,25 ≤ 40 | ≥ 0,25 ≤ 25 |

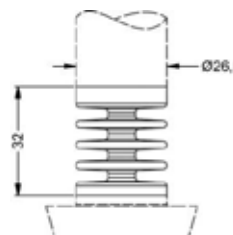
flange (DIN 2501)



flush diaphragm Ø E

| dimensions in mm | | | |
|----------------------|-------|-------|-------|
| size | DN 25 | DN 50 | DN 80 |
| D | 115 | 165 | 200 |
| E | 30 | 89 | 89 |
| k | 85 | 125 | 160 |
| b | 18 | 20 | 20 |
| n | 4 | 4 | 8 |
| d | 14 | 18 | 18 |
| p _N [bar] | ≤ 40 | ≤ 40 | ≤ 16 |

cooling element up to 300 °C⁷



⁷ max. temperature depends on the used sealing material, type of seal and installation

⁹ cup nut resp. mounting flange is included in the delivery (already pre-assembled)

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Varivent® is a trademark of GEA Tuchenhagen GmbH; Windows® is a registered trademark of Microsoft Corporation

Ordering code x|act i

| x act i | | [][] - [][][] - [][] - [][] - [][] - [][][] - [][][] - [][] - [][] - [][][] | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|--|--|----|---------|
| Pressure | | | | | | | | | | | | |
| | gauge | 5 | 1 | 1 | | | | | | | | |
| | absolute ¹ | 5 | 1 | 2 | | | | | | | | |
| Input | [bar] | | | | | | | | | | | |
| | 0 ... 0.4 ¹ | 4 | 0 | 0 | 0 | | | | | | | |
| | 0 ... 1 | 1 | 0 | 0 | 1 | | | | | | | |
| | 0 ... 2 | 2 | 0 | 0 | 1 | | | | | | | |
| | 0 ... 4 | 4 | 0 | 0 | 1 | | | | | | | |
| | 0 ... 10 | 1 | 0 | 0 | 2 | | | | | | | |
| | 0 ... 20 | 2 | 0 | 0 | 2 | | | | | | | |
| | 0 ... 40 | 4 | 0 | 0 | 2 | | | | | | | |
| | -0.4 ... 0.4 | S | 4 | 0 | 0 | | | | | | | |
| | -1 ... 1 | S | 1 | 0 | 2 | | | | | | | |
| | -1 ... 2 | V | 2 | 0 | 2 | | | | | | | |
| | -1 ... 4 | V | 4 | 0 | 2 | | | | | | | |
| | -1 ... 10 | V | 1 | 0 | 3 | | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | | consult |
| Design | | | | | | | | | | | | |
| | side display | | | | | K | H | | | | | |
| | 45° display | | | | | K | 4 | | | | | |
| Output | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | 1 | |
| | intrinsic safety (ia) | | | | | | | | | | E | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | I | |
| | intrinsic safety (ia) | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | |
| | with HART®-communication | | | | | | | | | | | |
| SIL2: | 4 ... 20 mA / 2-wire | | | | | | | | | | 1S | |
| SIL2: | intrinsic safety (ia) | | | | | | | | | | ES | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | |
| | intrinsic safety (ia) | | | | | | | | | | | |
| SIL2: | 4 ... 20 mA / 2-wire | | | | | | | | | | IS | |
| | with HART®-communication | | | | | | | | | | | |
| | customer | | | | | | | | | | 9 | consult |
| Accuracy | | | | | | | | | | | | |
| | 0.1 % FSO | | | | | | | | | | 1 | |
| Electrical connection | | | | | | | | | | | | |
| | male plug M12x1 (4-pin), metal | | | | | M | 1 | 0 | | | | |
| | customer | | | | | 9 | 9 | 9 | | | | consult |
| Mechanical connection | | | | | | | | | | | | |
| | G1" cone | | | | | K | 3 | 1 | | | | |
| | Clamp DN 25 / 1" (DIN 32676) / 3A | | | | | C | 6 | 1 | | | | |
| | Clamp DN 32 / 1 1/2" (DIN 32676) / 3A | | | | | C | 6 | 2 | | | | |
| | Clamp DN 50 / 2" (DIN 32676) / 3A | | | | | C | 6 | 3 | | | | |
| | Clamp 3/4" (DIN 32676) / 3A | | | | | C | 6 | 9 | | | | |
| | dairy pipe DN 25 (DIN 11851) ² | | | | | M | 7 | 3 | | | | |
| | dairy pipe DN 40 (DIN 11851) ² | | | | | M | 7 | 5 | | | | |
| | dairy pipe DN 50 (DIN 11851) ² | | | | | M | 7 | 6 | | | | |
| | Varivent® DN 40/50 / 3A | | | | | P | 4 | 1 | | | | |
| | flange DN 25 / PN 40 (DIN 2501) | | | | | F | 2 | 0 | | | | |
| | flange DN 50 / PN 40 (DIN 2501) | | | | | F | 2 | 3 | | | | |
| | flange DN 80 / PN 16 (DIN 2501) | | | | | F | 1 | 4 | | | | |
| | DRD Ø 65 mm ² | | | | | D | R | D | | | | |
| Diaphragm | | | | | | | | | | | | |
| | stainless steel 1.4435 (316L) | | | | | | | | | | 1 | |
| | Hastelloy® C-276 (2.4819) | | | | | | | | | | H | |
| | tantalum ³ | | | | | | | | | | T | consult |
| Seals | | | | | | | | | | | | |
| | without | | | | | | | | | | 0 | |
| Filling fluids | | | | | | | | | | | | |
| | silicone oil | | | | | | | | | | 1 | |
| | food compatible oil (FDA) / 3A | | | | | | | | | | 2 | |
| | Halocarbon | | | | | | | | | | C | consult |
| | customer | | | | | | | | | | 9 | consult |
| Special version | | | | | | | | | | | | |
| | standard | | | | | | | | | | 0 | 0 |
| | with cooling element up to 300°C / 3A | | | | | | | | | | 2 | 0 |
| | customer | | | | | | | | | | 9 | 9 |
| | | | | | | | | | | | 9 | 9 |

⚠ if setting range shall be different from nominal range please specify in your order

¹ absolute pressure possible from 1 bar

² cup nut resp. mounting flange is included in the delivery (already pre-assembled)

³ tantalum diaphragm possible with nominal pressure ranges from 1 bar

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Varivent® is a brand name of GEA Tuchemhaagen GmbH



XMP ci

Process Pressure Transmitter with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 160 mbar up to 0... 20 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ turn-down 1:5
- ▶ two chamber aluminium die cast case or stainless field housing
- ▶ internal or flush mounted capacitive ceramic sensor
- ▶ HART®-communication
- ▶ explosion protection intrinsic safety (ia)
- ▶ diaphragm Al₂O₃ 99.9 %



Optional versions

- ▶ explosion protection flameproof equipment (d)
- ▶ with integrated display and operating module
- ▶ several process connections (thread, flange, DRD etc.)



The process pressure transmitter XMP ci measures the pressure of gases, steam and fluids. The special-developed capacitive ceramic sensor for this transmitter has a high overpressure capability and excellent media stability.

Several process connections e.g. thread or flange are available. The transmitter is as a standard equipped with HART®-communication, the customer can choose between a two chamber aluminium die cast case or a stainless field housing.

Preferred areas of use are

-  Oil and gas industry
-  Chemical and petrochemical industry

Preferred using in

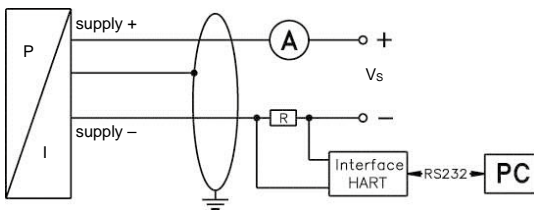
-  Fuel and oil
-  Aggressive media



| Pressure ranges ¹ | | | | | | | |
|--|---|------|----------------------------|--|------------------------|--|----|
| Nominal pressure gauge [bar] | 0.16 | 0.4 | 1 | 2 | 5 | 10 | 20 |
| Overpressure [bar] | 4 | 6 | 8 | 15 | 25 | 35 | 45 |
| Permissible vacuum [bar] | -0.3 | -0.5 | | | -1 | | |
| ¹ On customer request we adjust the devices by software to the required pressure ranges. Within the turn-down-possibility (starting at 0.02 bar). | | | | | | | |
| Output signal / Supply | | | | | | | |
| 2-wire: 4 ... 20 mA with explosion protection | standard: intrinsic safety (ia) with HART [®] -communication option: flameproof equipment (d) with HART [®] -communication | | | | | V _S = 12 ... 28 V _{DC} V _S = 13 ... 28 V _{DC} | |
| Current consumption | max. 25 mA | | | | | | |
| Performance | | | | | | | |
| Accuracy ² | nominal pressure < 1 bar: ≤ ± 0.2 % FSO nominal pressure ≥ 1 bar: ≤ ± 0.1 % FSO for nominal pressure ranges from 0.16 bar up to 0.4 bar: ≤ ± (0.2 + (TD-1) x 0.02) % FSO for nominal pressure ranges from 1 bar up to 20 bar: ≤ ± (0.1 + (TD-1) x 0.01) % FSO with turn-down = nominal pressure range / adjusted range | | | | | | |
| Permissible load | R _{max} ≤ [(V _S - V _{Smin}) / 0.02 A] Ω | | | load during HART [®] -communication: R _{min} = 250 Ω | | | |
| Influence effects | supply: 0.05 % FSO / 10 V | | | permissible load: 0.05 % FSO / kΩ | | | |
| Long term stability | ≤ ± 0.1 % FSO / year at reference conditions | | | | | | |
| Response time | 200 msec – without consideration of electronic damping | | | | | measuring rate 5/sec | |
| Adjustability | electronic damping: 0 ... 100 sec offset 0 ... 80 % FSO turn-down of span: max. 1:5 (span min. 0.02 bar) | | | | | | |
| ² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | |
| Thermal effects (offset and span) | | | | | | | |
| Tolerance band | ≤ ± 1 % FSO | | | | | | |
| in compensated range | -20 ... 80 °C | | | | | | |
| Permissible temperatures | | | | | | | |
| Permissible temperatures ³ | without display: medium: -25 ... 125 °C | | environment: -40 ... 70 °C | | storage: -40 ... 80 °C | | |
| | with display: medium: -25 ... 125 °C | | environment: -20 ... 70 °C | | storage: -30 ... 80 °C | | |
| ³ for pressure port in PVDF the medium temperature is -25 ... 60 °C | | | | | | | |
| Electrical protection | | | | | | | |
| Short-circuit protection | permanent | | | | | | |
| Reverse polarity protection | no damage, but also no function | | | | | | |
| Electromagnetic compatibility | emission and immunity according to EN 61326 | | | | | | |
| Mechanical stability | | | | | | | |
| Vibration | 5 g RMS (20 ... 2000 Hz) | | | according to DIN EN 60068-2-6 | | | |
| Shock | 100 g / 11 msec | | | according to DIN EN 60068-2-27 | | | |
| Materials | | | | | | | |
| Pressure port | standard: stainless steel 1.4404 (316L) optionally for G1 1/2" flush: PVDF | | | | | | |
| Housing | aluminium die cast, powder-coated or stainless steel 1.4404 (316L) | | | | | | |
| Cable gland | brass, nickel plated | | | | | | |
| Viewing glass | laminated safety glass | | | | | | |
| Seals (media wetted) | FKM; EPDM others on request | | | | | | |
| Diaphragm | ceramics Al ₂ O ₃ 99.9 % | | | | | | |
| Media wetted parts | pressure port, seal, diaphragm | | | | | | |
| Explosion protection | | | | | | | |
| Approval AX12-XMP ci | intrinsic safety IBExU 05 ATEX 1106 X stainless steel field housing: zone 0/1 ⁴ : II 1G Ex ia IIC T4 Ga II 1/2G Ex ia IIC T4 Ga/Gb II 2G Ex ia IIC T4 Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety techn. maximum values: U _i = 28 V, I _i = 98 mA, P _i = 680 mW, C _i = 0 nF, L _i = 0 μH, C _{GND} = 27 nF | | | | | | |
| | aluminium die cast case: zone 0/1 ⁵ : II 1/2G Ex ia IIB T4 Ga/Gb II 2G Ex ia IIB T4 Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety techn. maximum values: U _i = 28 V, I _i = 98 mA, P _i = 680 mW, C _i = 0 nF, L _i = 0 μH, C _{GND} = 33 nF | | | | | | |
| Approval AX17-XMP ci | flameproof enclosure with aluminium die cast case IBExU 12 ATEX 1045 X zone 1: II 2G Ex db IIC T5 Gb | | | | | | |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: intrinsic safety: -40 ... 70 °C flameproof enclosure: -20 ... 70 °C | | | | | | |
| ⁴ The designation depends on the nominal pressure range. Nominal pressure ranges ≤ 160 mbar are marked with „2G“. Nominal pressure ranges > 160 mbar and ≤ 10 bar are marked with „1/2G“. Nominal pressure ranges > 10 bar are marked with „1G“. | | | | | | | |
| ⁵ The designation depends on the nominal pressure range. Nominal pressure ranges < 160 mbar are marked with „2G“. Nominal pressure ranges ≥ 160 mbar are marked with „1/2G“. | | | | | | | |

| Miscellaneous | |
|-----------------------|---|
| Display (optionally) | LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ± 9999 ; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1 % ± 1 digit |
| Ingress protection | IP 67 |
| Installation position | any |
| Weight | min. 400 g (depending on housing and mechanical connection) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

Wiring diagram

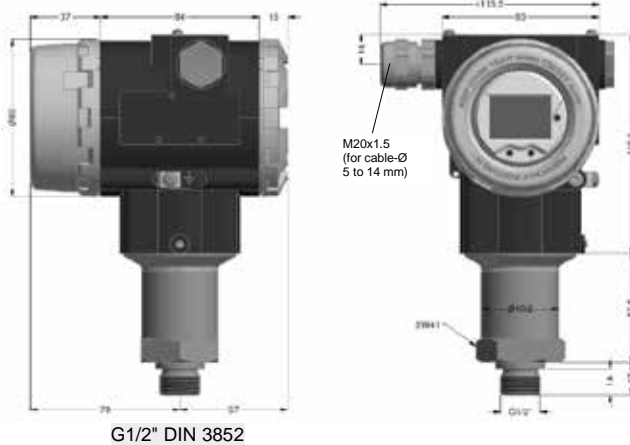


Pin configuration

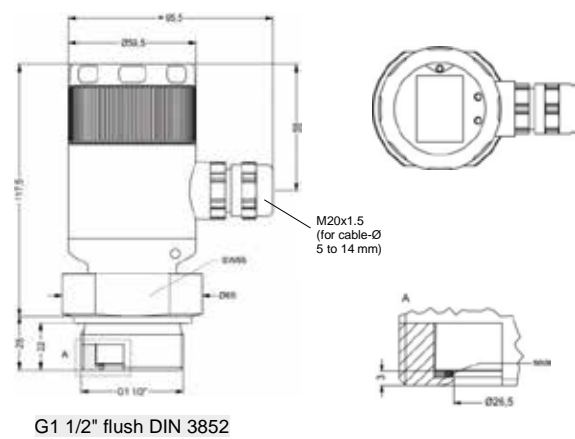
| Electrical connections | aluminium die cast case: terminal clamps (clamp section: 2.5 mm ²) | stainless steel field housing: terminal clamps (clamp section: 1.5 mm ²) |
|------------------------|--|--|
| Supply + | IN+ | IN+ |
| Supply - | IN- | IN- |
| Test | Test | - |
| Shield | ⊕ | ⊕ |

Housing designs ⁶ (dimensions in mm)

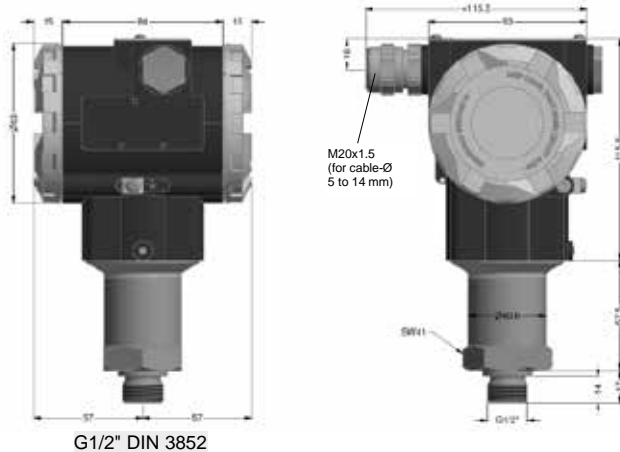
aluminium die cast case with display



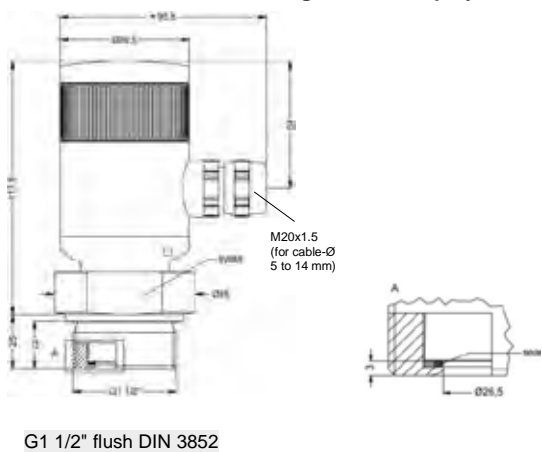
stainless steel field housing with display



aluminium die cast case without display

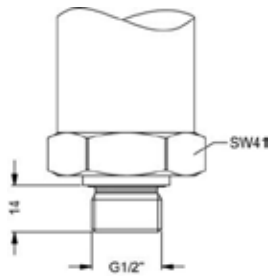


stainless steel field housing without display

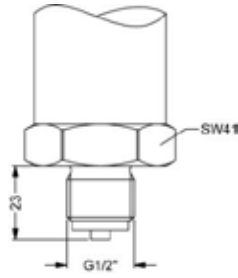


⁶ aluminium die cast case is horizontally rotatable as standard

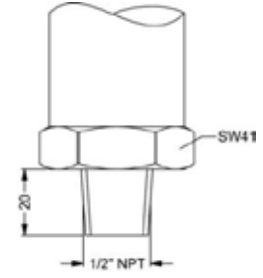
Standard pressure ports (dimensions in mm)



G1/2" DIN 3852



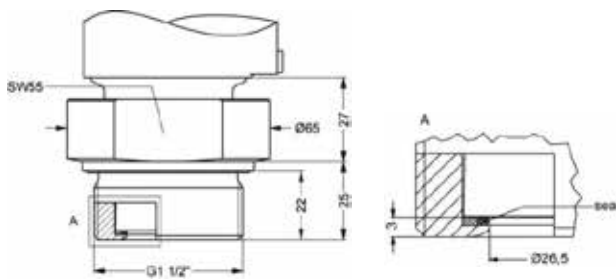
G1/2" EN 837



1/2" NPT

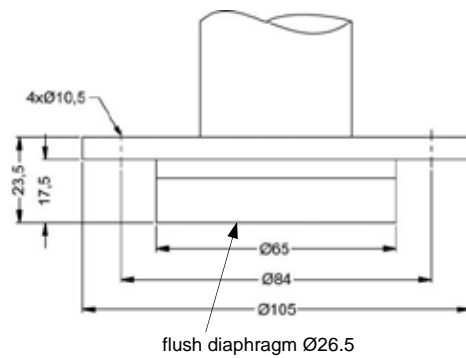
Process connections (dimensions in mm)

Inch thread



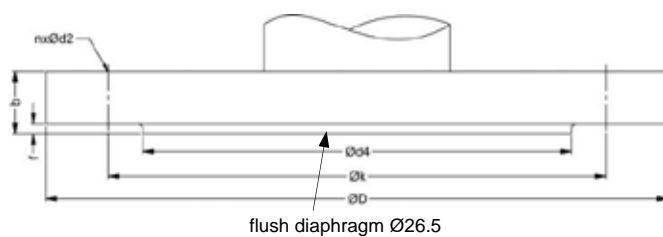
G1 1/2" flush DIN 3852

DRD⁷



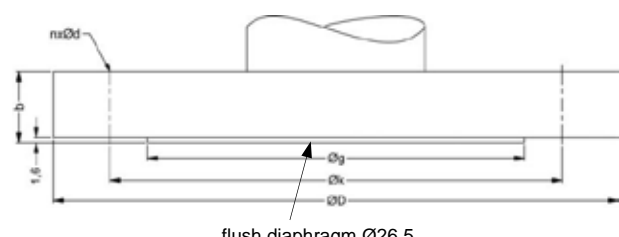
flush diaphragm Ø26.5

Flange (DIN 2501)



flush diaphragm Ø26.5

Flange (ANSI)



flush diaphragm Ø26.5


| | dimensions in mm | | |
|----------------|------------------|----------|----------|
| size | DN25 | DN50 | DN80 |
| D | 115 | 165 | 200 |
| k | 85 | 125 | 160 |
| d4 | 68 | 102 | 138 |
| b | 18 | 20 | 20 |
| f | 2 | 3 | 3 |
| n | 4 | 4 | 8 |
| d2 | 14 | 18 | 18 |
| p _N | ≤ 40 bar | ≤ 40 bar | ≤ 16 bar |

| | dimensions in mm | |
|----------------|------------------|------------|
| size | 2"/150 lbs | 3"/150 lbs |
| D | 152.4 | 190.5 |
| g | 91.9 | 127 |
| k | 120.7 | 152.4 |
| b | 19.1 | 23.9 |
| n | 4 | 4 |
| d | 19.1 | 19.1 |
| p _N | ≤ 10 bar | ≤ 10 bar |

⁷ mounting flange is included in the delivery (already pre-assembled)
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 Windows® is a registered trademark of Microsoft Corporation

Ordering code XMP ci

| XMP ci | | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | [] | |
|---------------------------------------|--|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|---------|---------|---------|---------|--|
| Pressure | | | | | | | | | | | | | | | | | | | | | |
| | gauge | 5 | 1 | E | | | | | | | | | | | | | | | | | |
| Input | | [bar] | | | | | | | | | | | | | | | | | | | |
| | 0.16 | 1 | 6 | 0 | 0 | | | | | | | | | | | | | | | | |
| | 0.40 | 4 | 0 | 0 | 0 | | | | | | | | | | | | | | | | |
| | 1 | 1 | 0 | 0 | 1 | | | | | | | | | | | | | | | | |
| | 2 | 2 | 0 | 0 | 1 | | | | | | | | | | | | | | | | |
| | 5 | 5 | 0 | 0 | 1 | | | | | | | | | | | | | | | | |
| | 10 | 1 | 0 | 0 | 2 | | | | | | | | | | | | | | | | |
| | 20 | 2 | 0 | 0 | 2 | | | | | | | | | | | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | consult | |
| Design | | | | | | | | | | | | | | | | | | | | | |
| Aluminium die cast case | | | | | | | | | | | | | | | | | | | | | |
| | with display | | | | | | | | | | | | | | | A | 0 | | | | |
| | without display | | | | | | | | | | | | | | | A | N | | | | |
| Stainless steel field housing | | | | | | | | | | | | | | | | | | | | | |
| | with display | | | | | | | | | | | | | | | F | V | | | | |
| | without display | | | | | | | | | | | | | | | F | N | | | | |
| | customer | 9 | 9 | | | | | | | | | | | | | | | consult | | | |
| Output | | | | | | | | | | | | | | | | | | | | | |
| | intrinsic safety (ia) | | | | | | | | | | | | | | | I | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | | | | |
| | with HART®-communication | | | | | | | | | | | | | | | G | | | | | |
| | flameproof equipment (d) | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | | | | |
| | with HART®-communication ¹ | | | | | | | | | | | | | | | 9 | | | | | |
| | customer | | | | | | | | | | | | | | | consult | | | | | |
| Accuracy | | | | | | | | | | | | | | | | | | | | | |
| $p_N < 1$ bar: | 0.2 % FSO | | | | | | | | | | | | | | | B | | | | | |
| $p_N \geq 1$ bar: | 0.1 % FSO | | | | | | | | | | | | | | | 1 | | | | | |
| | customer | | | | | | | | | | | | | | | 9 | consult | | | | |
| Electrical connection | | | | | | | | | | | | | | | | | | | | | |
| | terminal clamp alu housing | | | | | | | | | | | | | | | A | K | 0 | | | |
| | terminal clamp field housing | | | | | | | | | | | | | | | 8 | 8 | 0 | | | |
| | customer | | | | | | | | | | | | | | | 9 | 9 | 9 | consult | | |
| Mechanical connection | | | | | | | | | | | | | | | | | | | | | |
| <i>standard pressure connections:</i> | | | | | | | | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | | | | | | | | | | | 1 | 0 | 0 | | | |
| | G1/2" EN 837 | | | | | | | | | | | | | | | 2 | 0 | 0 | | | |
| | 1/2" NPT | | | | | | | | | | | | | | | N | 0 | 0 | | | |
| <i>process connections:</i> | | | | | | | | | | | | | | | | | | | | | |
| | G 1 1/2" DIN flush (DIN 3852) | | | | | | | | | | | | | | | M | 0 | 0 | | | |
| | flange DN 25 / PN 40 (DIN 2501) | | | | | | | | | | | | | | | F | 2 | 0 | | | |
| | flange DN 50 / PN 40 (DIN 2501) | | | | | | | | | | | | | | | F | 2 | 3 | | | |
| | flange DN 80 / PN 16 (DIN 2501) | | | | | | | | | | | | | | | F | 1 | 4 | | | |
| | flange DN 2" / 150 lbs (ANSI B16.5) ² | | | | | | | | | | | | | | | F | 3 | 2 | | | |
| | flange DN 3" / 150 lbs (ANSI B16.5) ² | | | | | | | | | | | | | | | F | 3 | 3 | | | |
| | DRD Ø 65 mm ³ | | | | | | | | | | | | | | | D | R | D | | | |
| | customer | | | | | | | | | | | | | | | 9 | 9 | 9 | consult | | |
| Diaphragm | | | | | | | | | | | | | | | | | | | | | |
| | ceramics Al ₂ O ₃ 99,9 % | | | | | | | | | | | | | | | C | | | | | |
| | customer | | | | | | | | | | | | | | | 9 | consult | | | | |
| Seals | | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | 1 | | | | | |
| | EPDM | | | | | | | | | | | | | | | 3 | | | | | |
| | customer | | | | | | | | | | | | | | | 9 | consult | | | | |
| Pressure port | | | | | | | | | | | | | | | | | | | | | |
| <i>standard:</i> | | | | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4404 (316L) | | | | | | | | | | | | | | | 1 | | | | | |
| <i>option for G 1 1/2" flush:</i> | | | | | | | | | | | | | | | | | | | | | |
| | PVDF ⁴ | | | | | | | | | | | | | | | B | | | | | |
| | customer | | | | | | | | | | | | | | | 9 | consult | | | | |
| Special version | | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | 0 | 0 | 0 | | | |
| | customer | | | | | | | | | | | | | | | 9 | 9 | 9 | consult | | |

 if setting range shall be different from nominal range please specify in your order

¹ only possible in combination with aluminium die cast case

² 2"/150 lbs and 3"/150 lbs only possible for nominal pressure ranges $p_N \leq 10$ bar

³ mounting flange is included in the delivery (already pre-assembled)

⁴ for pressure port in PVDF the operation medium temperature is -25 ... 60 °C



XMP i

Precision Pressure Transmitter for the Process Industry with HART®-Communication and SIL2 (optionally)

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ turn-down 1:10
- ▶ two chamber aluminium die cast case or stainless field housing
- ▶ internal or flush welded diaphragm
- ▶ HART®-communication
- ▶ explosion protection intrinsic safety (ia)

Optional versions

- ▶ explosion protection flameproof equipment (d)
- ▶ SIL2 - version according to IEC 61508 / IEC 61511
- ▶ integrated display and operating module
- ▶ special materials as Hastelloy® and Tantalum
- ▶ cooling element for media temperatures up to 300 °C

The process pressure transmitter XMP i has been especially designed for the process industry as well as food and pharmaceutical industry (version stainless steel field housing) and measures vacuum, gauge and absolute pressure ranges of gases, steam, fluids up to 600 bar.

Different process connections such as threads and flanges with an internal or flush welded diaphragm are available and can be combined with a cooling element for media temperatures up to 300 °C. The transmitter is as a standard equipped with HART®-communication; the customer can choose between an aluminium die cast case or a stainless field housing.

Preferred areas of use are



Oil and gas industry / chemical and petrochemical industry



Food / pharmaceutical industry

Material and test certificates

- ▶ Inspection certificate 3.1 according to EN 10204
- ▶ Test report 2.2 according to EN 10204



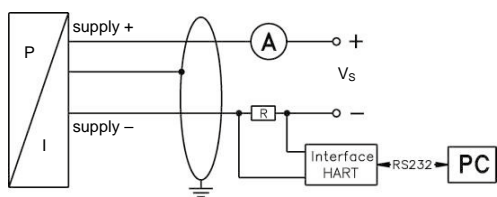
| Pressure ranges ¹ | | | | | | | | | | | | | |
|---|-------|--|-----|------------------------------|-----------------------|----------|---|------------------------------|--|-----------|------|------|--|
| Nominal pressure gauge / abs. ² | [bar] | 0.4 | 1 | 2 | 4 | 10 | 20 | 40 | 100 | 200 | 400 | 600 | |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 | 80 | 105 | 210 | 600 | 1000 | 1000 | |
| Burst pressure ≥ | [bar] | 3 | 7.5 | 15 | 25 | 50 | 120 | 210 | 420 | 1000 | 1250 | 1250 | |
| ¹ on customer request we adjust the devices within the turn-down-possibility by software to the required pressure ranges | | | | | | | | | | | | | |
| ² absolute pressure possible from 1 bar | | | | | | | | | | | | | |
| Vacuum ranges | | | | | | | | | | | | | |
| Nominal pressure gauge | [bar] | -0.4 ... 0.4 | | -1 ... 1 | | -1 ... 2 | | -1 ... 4 | | -1 ... 10 | | | |
| Overpressure | [bar] | 2 | | 5 | | 10 | | 20 | | 40 | | | |
| Burst pressure ≥ | [bar] | 3 | | 7.5 | | 15 | | 25 | | 50 | | | |
| Output signal / Supply | | | | | | | | | | | | | |
| 2-wire: 4 ... 20 mA with explosion protection | | standard: intrinsic safety (ia) with HART®-communication options: flameproof equipment (d) with HART®-communication SIL2 / intrinsic safety (ia) with HART®-communication SIL2 / flameproof equipment (d) with HART®-communication | | | | | | | V _S = 12 ... 28 V _{DC} V _S = 13 ... 28 V _{DC} V _S = 12 ... 28 V _{DC} V _S = 13 ... 28 V _{DC} | | | | |
| Current consumption | | max. 25 mA | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | |
| Accuracy ³ performance after turn-down (TD) | | ≤ ± 0.1 % FSO no change of accuracy the accuracy is calculated as follows: ≤ 0.1 + 0.015 x (turn-down - 5) % FSO e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO | | | | | | | | | | | |
| | | - TD ≤ 1:5 - TD > 1:5 | | | | | | | | | | | |
| Permissible load | | R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω | | | | | load during HART® communication: R _{min} = 250 Ω | | | | | | |
| Influence effects | | supply: 0.05 % FSO / 10 V | | | | | permissible load: 0.05 % FSO / kΩ | | | | | | |
| Long term stability | | ≤ ± 0.1 % FSO / year at reference conditions | | | | | | | | | | | |
| Response time | | 100 msec – without consideration of electronic damping | | | | | | | measuring rate 10/sec | | | | |
| Adjustability | | electronic damping: 0 ... 100 sec | | | offset 0 ... 90 % FSO | | | turn-down of span up to 1:10 | | | | | |
| ³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | |
| Thermal errors / Permissible temperatures | | | | | | | | | | | | | |
| Tolerance band ^{4,5} | | ≤ 0.2 % FSO x turn-down (in compensated range -20 ... 85 °C) | | | | | | | | | | | |
| Permissible temperatures ⁶ | | medium: -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil | | | | | without display: environment: -40 ... 80 °C storage: -40 ... 80 °C | | with display: environment: -20 ... 70 °C storage: -30 ... 80 °C | | | | |
| Permissible temperature medium for cooling element ⁷ | | filling fluid silicone oil | | overpressure: -40 ... 300 °C | | | low pressure: -40 ... 150 °C | | filling fluid food compatible oil overpressure: -10 ... 250 °C low pressure: -10 ... 150 °C | | | | |
| ⁴ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions | | | | | | | | | | | | | |
| ⁵ for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO | | | | | | | | | | | | | |
| ⁶ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element). | | | | | | | | | | | | | |
| ⁷ max. temperature depends on the used sealing material, type of seal and installation | | | | | | | | | | | | | |
| Electrical protection | | | | | | | | | | | | | |
| Short-circuit protection | | permanent | | | | | | | | | | | |
| Reverse polarity protection | | no damage, but also no function | | | | | | | | | | | |
| Electromagnetic compatibility | | emission and immunity according to EN 61326 | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | |
| Vibration | | 5 g RMS (25 ... 2000 Hz) | | | | | according to DIN EN 60068-2-6 | | | | | | |
| Shock | | 100 g / 11 msec | | | | | according to DIN EN 60068-2-27 | | | | | | |
| Filling fluids | | | | | | | | | | | | | |
| Standard | | silicone oil | | | | | | | | | | | |
| Options for process connections | | food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request | | | | | | | | | | | |
| Materials | | | | | | | | | | | | | |
| Pressure port | | stainless steel 1.4435 (316L) | | | | | | | | | | | |
| Housing | | aluminium die cast, powder-coated or stainless steel 1.4404 (316L) | | | | | | | | | | | |
| Cable gland | | brass, nickel plated | | | | | | | | | | | |
| Viewing glass | | laminated safety glass | | | | | | | | | | | |
| Seals (media wetted) | | thread: standard: FKM (recommended for medium temperatures ≤ 200 °C) options: FFKM (recommended for medium temperatures < 260 °C; min. permissible temperature from -15 °C, possible for p _N ≤ 100 bar); others on request welded version for pressure ports EN 837 with p _N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery Clamp, Varivent®: none | | | | | | | | | | | |
| Diaphragm | | standard: stainless steel 1.4435 (316 L) | | | | | options for process connections: Hastelloy® C-276 (2.4819); tantalum (possible from 1 bar) on request | | | | | | |
| Media wetted parts | | pressure port, seal, diaphragm | | | | | | | | | | | |

| Explosion protection | |
|--|--|
| Approvals AX12-XMP i AX2-XMP i (with SIL2) | intrinsic safety IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X) stainless steel field housing: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da safety technical maximum values: $U_i = 28 \text{ V}$, $I_i = 98 \text{ mA}$, $P_i = 680 \text{ mW}$, $C_i = 0 \text{ nF}$, $L_i = 0 \mu\text{H}$, $C_{\text{GND}} = 27 \text{ nF}$ aluminium die cast case: zone 0/1: II 1/2G Ex ia IIB T4 Ga/Gb zone 20: II 1D Ex ia IIIC T85 °C Da safety technical maximum values: $U_i = 28 \text{ V}$, $I_i = 98 \text{ mA}$, $P_i = 680 \text{ mW}$, $C_i = 0 \text{ nF}$, $L_i = 0 \mu\text{H}$, $C_{\text{GND}} = 33 \text{ nF}$ |
| Approvals AX17-XMP i AX7-XMP i (with SIL2) | flameproof enclosure with aluminium die cast case IBExU 12 ATEX 1045 X (with SIL2: IBExU 12 ATEX1073 X) zone 1: II 2G Ex db IIC T5 Gb |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 or higher: intrinsic safety: -40 ... 70 °C / flameproof enclosure: -20 ... 70 °C |
| Connecting cables (by factory) | capacitance: signal line/shield also signal line/signal line: 160 pF/m inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |
| Options | |
| SIL2-version | according to IEC 61508 / IEC 61511 |
| Display | LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ± 9999 ; 8-digit 14-segment additional display, digit height 5 mm; 52-segment bargraph; accuracy 0.1% \pm 1 digit |
| Miscellaneous | |
| EHDG certificate Type EL Class I | EHDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed |
| Ingress protection | IP 67 |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order) |
| Surface roughness | pressure port $R_a < 0.8 \mu\text{m}$ (media wetted parts) diaphragm $R_a < 0.15 \mu\text{m}$ weld seam $R_a < 0.8 \mu\text{m}$ |
| Weight | min. 400 g (depending on housing and mechanical connection) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁸ |
| ATEX Directive | 2014/34/EU |

⁸ this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram / pin configuration

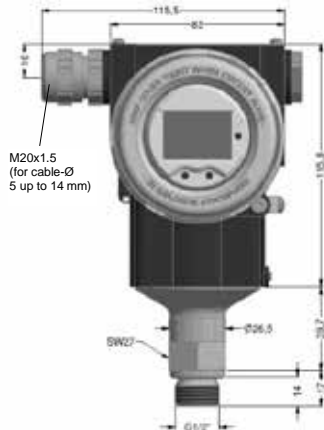
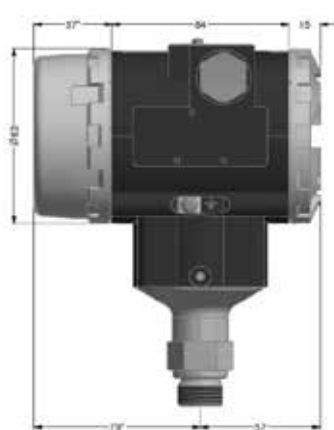
2-wire-system (current) and HART® - communication



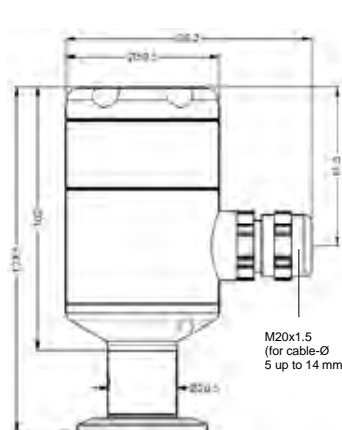
| Electrical connections | aluminium case | stainless steel field housing |
|------------------------|--------------------------------------|--------------------------------------|
| | clamp section 2.5 mm ² | clamp section 1.5 mm ² |
| Supply + | IN+ | IN+ |
| Supply - | IN- | IN- |
| Test (HART) | Test | - |
| Shield | ⊕ | ⊕ |

Housing designs ⁹ (dimensions in mm)

aluminium die cast case



stainless steel field housing

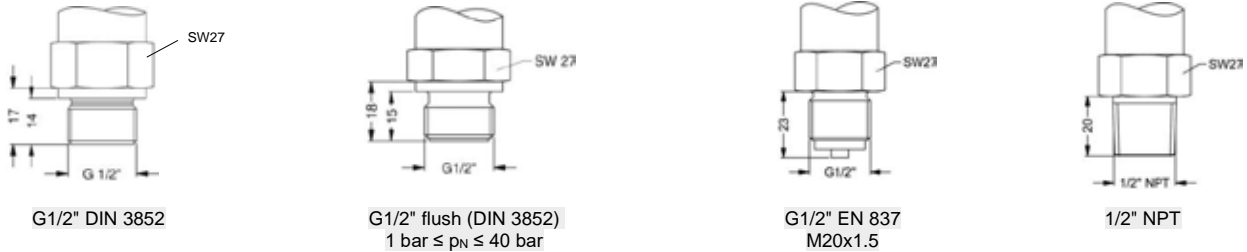


* without display and operating module marked dimensions decrease by 22 mm (with aluminium case)

⇒ for nominal pressure $p_N > 400 \text{ bar}$ increases the length of devices by 39 mm

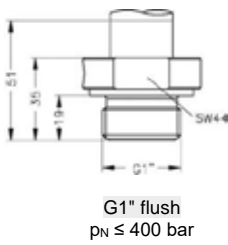
⁹ aluminium case is horizontally rotatable as standard

Standard pressure ports (dimensions in mm)



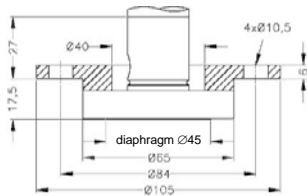
Process connections (dimensions in mm)

Inch thread (DIN 3852)



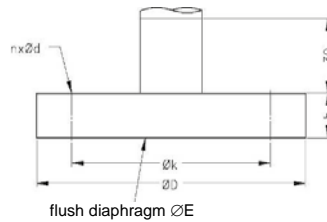
G1" flush
p_N ≤ 400 bar

DRD¹⁰



p_N ≤ 25 bar

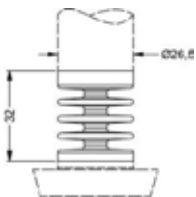
Flange (DIN 2501)



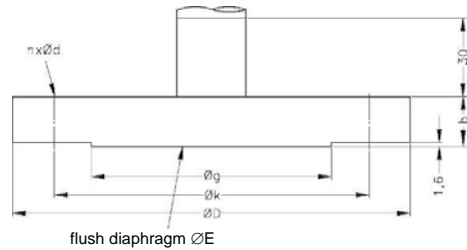
flush diaphragm ØE

| dimensions in mm | | | |
|----------------------|------|------|------|
| size | DN25 | DN50 | DN80 |
| D | 115 | 165 | 200 |
| E | 30 | 89 | 89 |
| k | 85 | 125 | 160 |
| b | 18 | 20 | 20 |
| n | 4 | 4 | 8 |
| d | 14 | 18 | 18 |
| p _N [bar] | ≤ 40 | ≤ 40 | ≤ 16 |

Cooling element up to 300 °C⁷



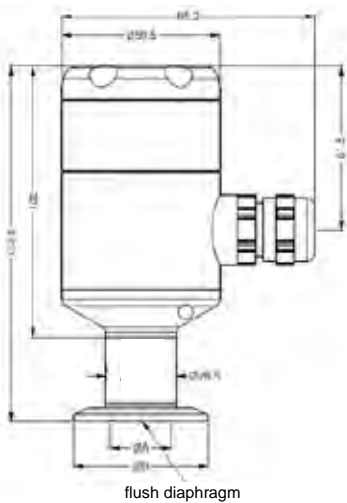
Flange (ANSI B16.5)



flush diaphragm ØE

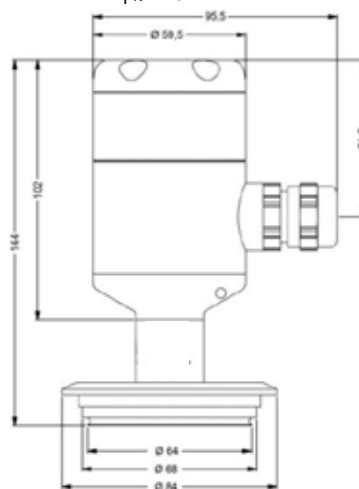
| dimensions in mm | | |
|----------------------|-------|-------|
| size | 2\"/> | |
| D | 152.4 | 190.5 |
| E | 86 | 89 |
| g | 91.9 | 127 |
| k | 120.7 | 152.4 |
| b | 19.1 | 23.9 |
| n | 4 | 4 |
| d | 19.1 | 19.1 |
| p _N [bar] | ≤ 10 | ≤ 10 |

Clamp (DIN 32676)



flush diaphragm

**Varivent® (DN 40/50)
p_N ≤ 25 bar**



| dimensions in mm | | | | |
|----------------------|------------|----------------|------|------|
| size | 3/4\"/> | | | |
| A | 14 | 23 | 32 | 45 |
| B | 25 | 50.5 | 50.5 | 64 |
| p _N [bar] | ≥ 4 ≤ 8 | ≥ 0.25 ≤ 16 | ≤ 16 | ≤ 16 |

⁷ max. temperature depends on the used sealing material, type of seal and installation

¹⁰ mounting flange is included in the delivery (already pre-assembled)

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| Ordering code XMP i | | | | | | | | | |
|---|--|---|---|---|---|----|---|---|---------|
| XMP i | | [] - [] - [] - [] - [] - [] - [] - [] - [] - [] | | | | | | | |
| Pressure | | | | | | | | | |
| | gauge | 5 | 1 | 1 | | | | | |
| | absolute ¹ | 5 | 1 | 2 | | | | | |
| Input | | | | | | | | | |
| | [bar] Δ | | | | | | | | |
| | 0 ... 0.4 ¹ | 4 | 0 | 0 | 0 | | | | |
| | 0 ... 1 | 1 | 0 | 0 | 1 | | | | |
| | 0 ... 2 | 2 | 0 | 0 | 1 | | | | |
| | 0 ... 4 | 4 | 0 | 0 | 1 | | | | |
| | 0 ... 10 | 1 | 0 | 0 | 2 | | | | |
| | 0 ... 20 | 2 | 0 | 0 | 2 | | | | |
| | 0 ... 40 | 4 | 0 | 0 | 2 | | | | |
| | 0 ... 100 | 1 | 0 | 0 | 3 | | | | |
| | 0 ... 200 | 2 | 0 | 0 | 3 | | | | |
| | 0 ... 400 | 4 | 0 | 0 | 3 | | | | |
| | 0 ... 600 | 6 | 0 | 0 | 3 | | | | |
| | -0.4 ... 0.4 | S | 4 | 0 | 0 | | | | |
| | -1 ... 1 | S | 1 | 0 | 2 | | | | |
| | -1 ... 2 | V | 2 | 0 | 2 | | | | |
| | -1 ... 4 | V | 4 | 0 | 2 | | | | |
| | -1 ... 10 | V | 1 | 0 | 3 | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | consult |
| Design | | | | | | | | | |
| Aluminium die cast case | | | | | | | | | |
| | with display | | | | | A | 0 | | |
| | without display | | | | | A | N | | |
| Stainless steel field housing | | | | | | | | | |
| | with display | | | | | F | V | | |
| | without display | | | | | F | N | | |
| | customer | | | | | 9 | 9 | | consult |
| Output | | | | | | | | | |
| | intrinsic safety (ia) | | | | | I | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | |
| | with HART [®] -communication | | | | | | | | |
| | flameproof equipment (d) | | | | | G | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | |
| | with HART [®] -communication ² | | | | | | | | |
| SIL2: | intrinsic safety (ia) | | | | | IS | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | |
| | with HART [®] -communication | | | | | | | | |
| SIL2: | flameproof equipment (d) | | | | | GS | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | |
| | with HART [®] -communication ² | | | | | | | | |
| | customer | | | | | 9 | | | consult |
| Accuracy | | | | | | | | | |
| | 0.1 % FSO | | | | | | | 1 | |
| Electrical connection | | | | | | | | | |
| | terminal clamp alu housing | | | | | A | K | 0 | |
| | terminal clamp field housing | | | | | 8 | 8 | 0 | |
| | customer | | | | | 9 | 9 | 9 | consult |
| Mechanical connection | | | | | | | | | |
| Standard pressure connections | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | 1 | 0 | 0 | |
| | G1/2" with flush ³ | | | | | Z | 0 | 0 | |
| | welded diaphragm (DIN 3852) | | | | | | | | |
| | G1/2" EN 837 | | | | | 2 | 0 | 0 | |
| | 1/2" NPT | | | | | N | 0 | 0 | |
| Process connections (up to 40 bar) | | | | | | | | | |
| | G1" with flush welded | | | | | Z | 3 | 1 | |
| | diaphragm (DIN 3852) | | | | | | | | |
| | flange DN 25 / PN 40 (DIN 2501) | | | | | F | 2 | 0 | |
| | flange DN 50 / PN 40 (DIN 2501) | | | | | F | 2 | 3 | |
| | flange DN 80 / PN 16 (DIN 2501) | | | | | F | 1 | 4 | |
| | flange DN 2" / 150 lbs (ANSI B16.5) ⁴ | | | | | F | 3 | 2 | |
| | flange DN 3" / 150 lbs (ANSI B16.5) ⁴ | | | | | F | 3 | 3 | |
| | DRD Ø 65 mm ⁵ | | | | | D | R | D | |
| | Clamp DN 25 / 1" (DIN 32676) / 3A | | | | | C | 6 | 1 | |
| | Clamp DN 32 / 1 1/2" (DIN 32676) / 3A | | | | | C | 6 | 2 | |
| | Clamp DN 50 / 2" (DIN 32676) / 3A | | | | | C | 6 | 3 | |
| | Clamp 3/4" (DIN 32676) / 3A | | | | | C | 6 | 9 | |
| | Varivent [®] DN 40/50 / 3A | | | | | P | 4 | 1 | |
| Diaphragm | | | | | | | | | |
| | stainless steel 1.4435 (316L) | | | | | | | 1 | |
| | Hastelloy [®] ⁶ | | | | | | | H | |
| | Tantalum ^{6,7} | | | | | | | T | consult |
| Seals | | | | | | | | | |
| Inch thread: | | | | | | | | | |
| | FKM | | | | | | | 1 | |
| | FFKM ⁸ | | | | | | | 7 | |
| EN 837: | without (welded version) ⁹ | | | | | | | 2 | |
| DRD, flange: | without | | | | | | | 0 | |
| Filling fluids | | | | | | | | | |
| | silicone oil | | | | | | | 1 | |
| | food compatible oil ⁶ | | | | | | | 2 | |
| | Halocarbon ⁶ | | | | | | | C | consult |
| | customer | | | | | | | 9 | consult |

Ordering code XMP i

XMP i

□□□□ - □□□□□ - □□□ - □□ - □□ - □□□□ - □□□□ - □□ - □□ - □□ - □□□□

| Special version | | | |
|-----------------|---|---|---|
| | standard | 0 | 0 |
| | with cooling element up to 300 °C ⁶ | 2 | 0 |
| | special compensation -40 ... +60 °C ¹⁰ | 0 | 2 |

⚠ if setting range shall be different from nominal range please specify in your order

- ¹ absolute pressure possible from 1 bar
- ² only possible in combination with aluminium die cast case
- ³ only possible for $p_N \geq 1$ bar up to 40 bar
- ⁴ 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $p_N \leq 10$ bar
- ⁵ mounting flange is included in the delivery (already pre-assembled)
- ⁶ only possible with process connections
- ⁷ tantal diaphragm possible with nominal pressure ranges from 1 bar
- ⁸ min. permissible temperature from -15 °C, possible for nominal pressure ranges $p_N \leq 100$ bar
- ⁹ possible with pressure ranges between 1 bar and 40 bar
- ¹⁰ option for version without display

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 Varivent[®] is a brand name of GEA Tuchenhausen GmbH



XMP ci

Druckmessumformer für die Prozessindustrie mit HART®-Kommunikation

Keramiksensoren

Genauigkeit nach IEC 60770:
0,1 % FSO

Nenndrücke

von 0 ... 160 mbar bis 0 ... 20 bar

Ausgangssignale

2-Leiter: 4 ... 20 mA
andere auf Anfrage

Besondere Merkmale

- ▶ Turn-Down 1:5
- ▶ Zwei-Kammer-Aluminium-Druckgussgehäuse oder Edelstahl-Feldgehäuse
- ▶ innenliegender oder frontbündig montierter kapazitiver Keramiksensoren
- ▶ HART®-Kommunikation
- ▶ Explosionsschutz
Eigensichere Ausführung (ia)
- ▶ Trennmembrane Al₂O₃ 99,9 %



Optionale Ausführungen

- ▶ Explosionsschutz
Druckfeste Kapselung (d)
- ▶ integriertes Anzeige- und Bedienmodul
- ▶ vielfältige Prozessanschlüsse
(Gewinde, Flansch, DRD u.a.)



Der Druckmessumformer XMP ci erfasst den Druck von Gasen, Dämpfen und Flüssigkeiten. Der für dieses Gerät eigenentwickelte kapazitiv-keramische Drucksensoren zeichnet sich durch hohe Überlastfähigkeit und exzellente Medien-beständigkeit aus.

Als Prozessanschlüsse stehen Gewinde- und Flanschausführung zur Verfügung. Das Gerät ist serienmäßig mit HART®-Kommunikation ausgestattet und verfügt wahlweise über ein Aluminium-Druckguss- oder Edelstahl-Feldgehäuse.

Bevorzugte Anwendungsgebiete

-  Öl- und Gasindustrie
-  Chemie, Petrochemie

Bevorzugt eingesetzt in

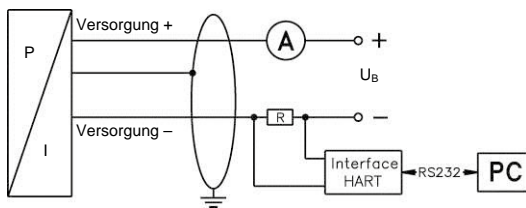
-  Kraftstoffe und Öle
-  aggressive Medien



| Druckbereiche ¹ | | | | | | | | | |
|---|--|--|-------------------------|----------------------|---|--------------|--|----|--|
| Nenndruck rel. | [bar] | 0,16 | 0,4 | 1 | 2 | 5 | 10 | 20 | |
| Überlast | [bar] | 4 | 6 | 8 | 15 | 25 | 35 | 45 | |
| zul. Unterdruck | [bar] | -0,3 | -0,5 | | | -1 | | | |
| ¹ Auf Wunsch stellen wir die Geräte softwaremäßig auf die benötigten Messbereiche ein (im Rahmen der Turn-Down-Möglichkeit ab 0,02 bar). | | | | | | | | | |
| Ausgangssignal / Hilfsenergie | | | | | | | | | |
| 2-Leiter: 4 ... 20 mA mit Ex-Schutz | Standard: | Eigensichere Ausführung (ia) mit HART®-Kommunikation | | | | | U _B = 12 ... 28 V _{DC} | | |
| | Option: | Druckfeste Kapselung (d) mit HART®-Kommunikation | | | | | U _B = 13 ... 28 V _{DC} | | |
| Stromaufnahme | max. 25 mA | | | | | | | | |
| Signalverhalten | | | | | | | | | |
| Genauigkeit ² | Nenndruck < 1 bar: ≤ ± 0,2 % FSO Nenndruck ≥ 1 bar: ≤ ± 0,1 % FSO für Nenndrücke von 0,16 bar bis 0,4 bar: ≤ ± (0,2 + (TD-1) x 0,02) % FSO für Nenndrücke von 1 bar bis 20 bar: ≤ ± (0,1 + (TD-1) x 0,01) % FSO mit Turn-Down = Nenndruckbereich / eingestellter Bereich | | | | | | | | |
| Zul. Bürde | R _{max} ≤ [(U _B - U _{B min}) / 0,02 A] Ω | | | | Bürde bei HART®-Kommunikation: R _{min} = 250 Ω | | | | |
| Einflusseffekte | Hilfsenergie: 0,05 % FSO / 10 V | | | | Bürde: 0,05 % FSO / kΩ | | | | |
| Langzeitstabilität | ≤ ± 0,1 % FSO / Jahr bei Referenzbedingungen | | | | | | | | |
| Einstellzeit | 200 ms – ohne Berücksichtigung der elektronischen Dämpfung | | | | | Messrate 5/s | | | |
| Verstellbarkeit | Elektronische Dämpfung 0 ... 100 s Offset 0 ... 80 % FSO Turn-Down der Spanne bis 1:5 (Spanne minimal 0,02 bar) | | | | | | | | |
| ² Kennlinienabweichung nach IEC 60770 - Grenzpunkteinstellung (Nichtlinearität, Hysterese, Reproduzierbarkeit) | | | | | | | | | |
| Temperaturfehler (Nullpunkt und Spanne) | | | | | | | | | |
| Fehlerband | ≤ ± 1 % FSO | | | | | | | | |
| im kompensierten Bereich | -20 ... 80 °C | | | | | | | | |
| Temperatureinsatzbereiche | | | | | | | | | |
| Temperatureinsatzbereiche ³ | ohne Display: | Messstoff: -25 ... 125 °C | Umgebung: -40 ... 70 °C | Lager: -40 ... 80 °C | | | | | |
| | mit Display: | Messstoff: -25 ... 125 °C | Umgebung: -20 ... 70 °C | Lager: -30 ... 80 °C | | | | | |
| ³ für Druckanschlüsse aus PVDF beträgt der Messstofftemperaturbereich -25 ... 60 °C | | | | | | | | | |
| Elektrische Schutzmaßnahmen | | | | | | | | | |
| Kurzschlussfestigkeit | permanent | | | | | | | | |
| Verpolschutz | bei vertauschten Anschlüssen keine Schädigung, aber auch keine Funktion | | | | | | | | |
| Elektromagnet. Verträglichkeit | Störaussendung und Störfestigkeit nach EN 61326 | | | | | | | | |
| Mechanische Festigkeit | | | | | | | | | |
| Vibration | 5 g RMS (20 ... 2000 Hz) | | | | nach DIN EN 60068-2-6 | | | | |
| Schock | 100 g / 11 ms | | | | nach DIN EN 60068-2-27 | | | | |
| Werkstoffe | | | | | | | | | |
| Druckanschluss | Standard: | Edelstahl 1.4404 | | | | | | | |
| | Option für G1 1/2" frontbündig: | PVDF | | | | | | | |
| Gehäuse | Aluminiumguss, pulverbeschichtet oder Edelstahl 1.4404 | | | | | | | | |
| Kabelverschraubung | Messing, vernickelt | | | | | | | | |
| Sichtscheibe | Verbundsicherheitsglas | | | | | | | | |
| Dichtungen (medienberührt) | FKM; EPDM | | | andere auf Anfrage | | | | | |
| Trennmembrane | Keramik Al ₂ O ₃ 99,9 % | | | | | | | | |
| Medienberührte Teile | Druckanschluss, Dichtung, Trennmembrane | | | | | | | | |
| Explosionsschutz | | | | | | | | | |
| Zulassung AX12-XMP ci | Eigensichere Ausführung IBExU 05 ATEX 1106 X | | | | | | | | |
| | Edelstahl-Feldgehäuse: | | | | Aluminiumguss-Gehäuse: | | | | |
| | Zone 0/1 ⁴ : II 1G Ex ia IIC T4 Ga II 1/2G Ex ia IIC T4 Ga/Gb II 2G Ex ia IIC T4 Gb | | | | Zone 0/1 ⁵ : II 1/2G Ex ia IIB T4 Ga/Gb II 2G Ex ia IIB T4 Gb | | | | |
| | Zone 20: II 1D Ex ia IIIC T85 °C Da | | | | Zone 20: II 1D Ex ia IIIC T85 °C Da | | | | |
| | Sicherheitstechn. Höchstwerte: U _i = 28 V, I _i = 98 mA, P _i = 680 mW, C _i = 0 nF, L _i = 0 µH, C _{GND} = 27 nF | | | | Sicherheitstechn. Höchstwerte: U _i = 28 V, I _i = 98 mA, P _i = 680 mW, C _i = 0 nF, L _i = 0 µH, C _{GND} = 33 nF | | | | |
| Zulassung AX17-XMP ci | Druckfeste Kapselung bei Aluminiumguss-Gehäuse IBExU 12 ATEX 1045 X | | | | | | | | |
| | Zone 1: II 2G Ex db IIC T5 Gb | | | | | | | | |
| Max. Umgebungstemperatur | in Zone 0: -20 ... 60 °C bei p _{atm} 0,8 bar bis 1,1 bar ab Zone 1: Eigensichere Ausführung : -40 ... 70 °C Druckfeste Kapselung : -20 ... 70 °C | | | | | | | | |
| ⁴ Die Kennzeichnung ist abhängig vom verwendeten Druckbereich. Bei Druckbereichen ≤ 160 mbar erfolgt die Kennzeichnung mit „2G“. Bei Druckbereichen > 160 mbar und ≤ 10 bar erfolgt die Kennzeichnung mit „1/2G“. Bei Druckbereichen > 10 bar erfolgt die Kennzeichnung mit „1G“. | | | | | | | | | |
| ⁵ Die Kennzeichnung ist abhängig vom verwendeten Druckbereich. Bei Druckbereichen < 160 mbar erfolgt die Kennzeichnung mit „2G“. Bei Druckbereichen ≥ 160 mbar erfolgt die Kennzeichnung mit „1/2G“. | | | | | | | | | |

Sonstiges

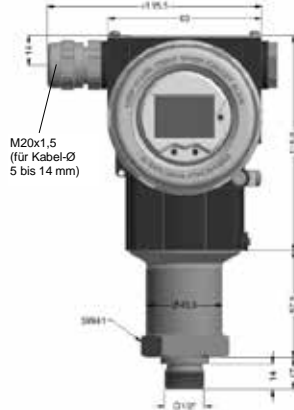
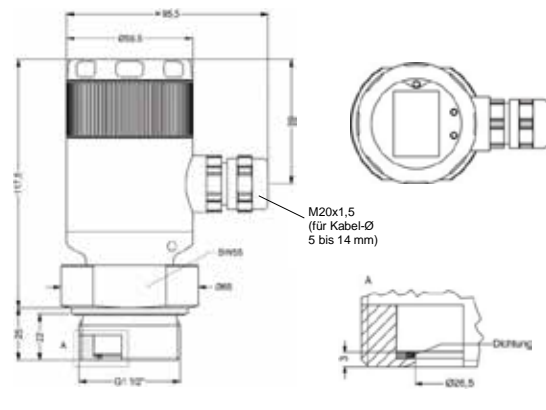
| | |
|--------------------|--|
| Display (optional) | LC-Display, sichtbarer Bereich 32,5 x 22,5 mm; 5-stellige 7-Segment-Hauptanzeige, Ziffernhöhe 8 mm, Anzeigebereich ± 9999 ; 8-stellige 14-Segment-Zusatzanzeige, Ziffernhöhe 5 mm; 52-Segment-Bargraph; Genauigkeit $0,1\% \pm 1$ Digit |
| Schutzart | IP 67 |
| Einbaulage | beliebig |
| Gewicht | mind. 400 g (abhängig von Gehäuse und mechanischem Anschluss) |
| Lebensdauer | 100 Millionen Lastwechsel |
| CE-Konformität | EMV-Richtlinie: 2014/30/EU |
| ATEX-Richtlinie | 2014/34/EU |

Anschlusschaltbild**Anschlussbelegungstabelle**

| Elektrische Anschlüsse | Aluminium-Druckguss-Gehäuse: Anschlussklemmen (Klemmenquerschnitt 2,5 mm ²) | Edelstahl-Feldgehäuse: Anschlussklemmen (Klemmenquerschnitt: 1,5 mm ²) |
|------------------------|---|--|
| Versorgung + | IN+ | IN+ |
| Versorgung - | IN- | IN- |
| Test | Test | - |
| Schirm | ⊕ | ⊕ |

Gehäusevarianten ⁶ (Maße in mm)**Aluminium-Druckguss-Gehäuse mit Display**

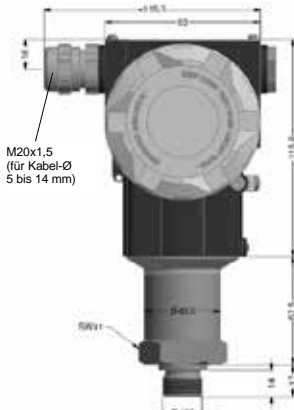
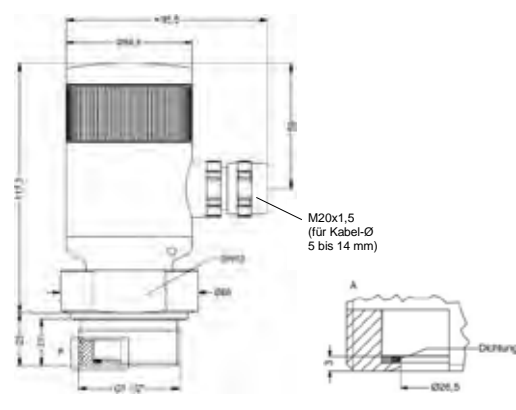
G1/2" DIN 3852

**Edelstahl-Feldgehäuse mit Display**

G1 1/2" frontbündig DIN 3852

Aluminium-Druckguss-Gehäuse ohne Display

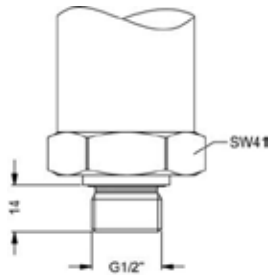
G1/2" DIN 3852

**Edelstahl-Feldgehäuse ohne Display**

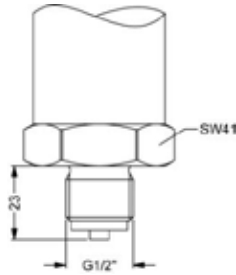
G1 1/2" frontbündig DIN 3852

⁶ das Aluminium-Druckguss-Gehäuse ist standardmäßig horizontal drehbar

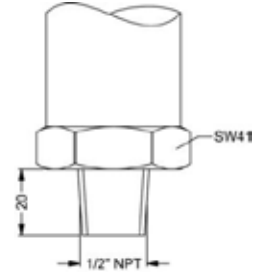
Standard-Druckanschlüsse (Maße in mm)



G1/2" DIN 3852



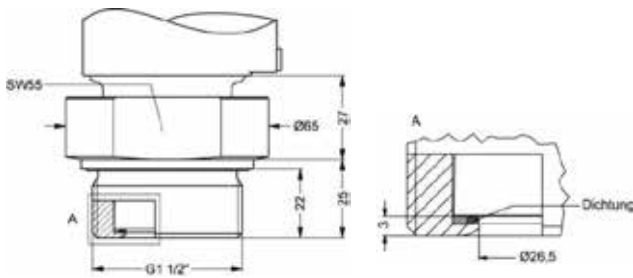
G1/2" EN 837



1/2" NPT

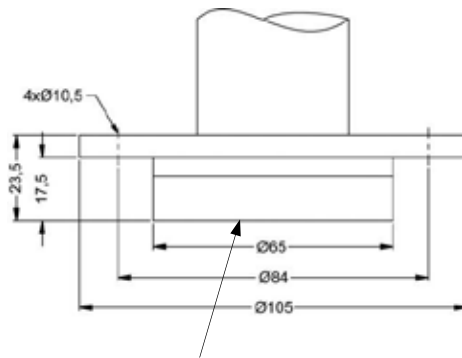
Prozessanschlüsse (Maße in mm)

Zollgewinde



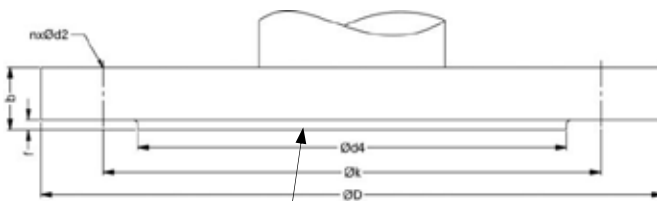
G1 1/2" frontbündig DIN 3852

DRD⁷



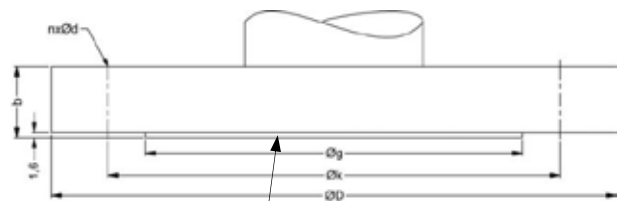
frontbündige Membrane Ø26,5

Flansch (DIN 2501)



frontbündige Membrane Ø26,5

Flansch (ANSI)



frontbündige Membrane Ø26,5

| Abmessungen in mm | | | |
|-------------------|-----------|-----------|-----------|
| Maß | DN25/PN40 | DN50/PN40 | DN80/PN16 |
| D | 115 | 165 | 200 |
| k | 85 | 125 | 160 |
| d4 | 68 | 102 | 138 |
| b | 18 | 20 | 20 |
| f | 2 | 3 | 3 |
| n | 4 | 4 | 8 |
| d2 | 14 | 18 | 18 |
| pN | ≤ 40 bar | ≤ 40 bar | ≤ 16 bar |

| Abmessungen in mm | | |
|-------------------|------------|------------|
| Maß | 2"/150 lbs | 3"/150 lbs |
| D | 152,4 | 190,5 |
| g | 91,9 | 127 |
| k | 120,7 | 152,4 |
| b | 19,1 | 23,9 |
| n | 4 | 4 |
| d | 19,1 | 19,1 |
| pN | ≤ 10 bar | ≤ 10 bar |

⁷ Befestigungsflansch ist im Lieferumfang enthalten (bereits vormontiert)

HART® ist eingetragenes Warenzeichen der HART Communication Foundation;

Windows® ist eingetragenes Warenzeichen der Microsoft Corporation

Bestellschlüssel XMP ci

XMP ci

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|---|-----|-----|-----|-----|---|-----|---|-----|-----|-----|---|-----|-----|-----|---|-----|---|-----|-----|-----|---|-----|-----|-----|
| [] | [] | [] | - | [] | [] | [] | [] | - | [] | - | [] | [] | [] | - | [] | [] | [] | - | [] | - | [] | [] | [] | - | [] | [] | [] |
|-----|-----|-----|---|-----|-----|-----|-----|---|-----|---|-----|-----|-----|---|-----|-----|-----|---|-----|---|-----|-----|-----|---|-----|-----|-----|

| Messgröße | | relativ | 5 | 1 | E | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------|-------------|
| Eingang | [bar] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0,16 | | 1 | 6 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| | 0,40 | | 4 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | | 1 | 0 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | | 2 | 0 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | | 5 | 0 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | | 1 | 0 | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| | 20 | | 2 | 0 | 0 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| | Sondermessbereiche | | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | auf Anfrage | |
| Bauform | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aluminium-Druckguss-Gehäuse | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | mit Display | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ohne Display | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Edelstahl-Feldgehäuse | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | mit Display | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ohne Display | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Ausgang | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Eigensichere Ausführung (ia) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-Leiter | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | mit HART®-Kommunikation | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Druckfeste Kapselung (d) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-Leiter | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | mit HART®-Kommunikation ¹ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Genauigkeit | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| p _N < 1 bar: | 0,2 % FSO | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| p _N ≥ 1 bar: | 0,1 % FSO | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Elektrischer Anschluss | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Anschlussklemmen Alugehäuse | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Anschlussklemmen Feldgehäuse | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Mechanischer Anschluss | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Standard-Druckanschlüsse:</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G 1/2" DIN 3852 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G 1/2" EN 837 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1/2" NPT | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Prozessanschlüsse:</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G 1 1/2" frontbündig (DIN 3852) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Flansch DN 25 / PN 40 (DIN 2501) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Flansch DN 50 / PN 40 (DIN 2501) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Flansch DN 80 / PN 16 (DIN 2501) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Flansch DN 2" / 150 lbs (ANSI B16.5) ² | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Flansch DN 3" / 150 lbs (ANSI B16.5) ² | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | DRD Ø 65 mm ³ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | 9 | 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Trennmembrane | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Keramik Al ₂ O ₃ 99,9 % | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Dichtung | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | EPDM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Druckanschluss | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Standard:</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Edelstahl 1.4404 (316L) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Option für G 1 1/2" frontbündig:</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PVDF ⁴ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |
| Sonderausführungen | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Standard | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | andere | | | | | | | | | | | | | | | | | | | | | | | | | | | auf Anfrage |

Einstellbereiche abweichend vom Nenndruck bitte bei Bestellung angeben

¹ nur möglich in Verbindung mit Aluminium-Druckguss-Gehäuse

² 2"/150 lbs und 3"/150 lbs nur möglich für Nenndruckbereiche p_N ≤ 10 bar

³ Befestigungsflansch ist im Lieferumfang enthalten (bereits vormontiert)

⁴ für Druckanschluss aus PVDF beträgt der Messstofftemperaturbereich -25 ... 60 °C



DMP 331i DMP 333i

Precision Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signal

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Product characteristics

- ▶ thermal error in compensated range
-20 ... 80 °C: 0.2 % FSO
TC 0.02 % FSO / 10K
- ▶ Turn-Down 1:10
- ▶ communication interface for adjusting
of offset, span and damping

Optional versions

- ▶ IS-versions
Ex ia = intrinsically safe
for gases and dusts
- ▶ adjustment of nominal pressure
ranges (factory-provided)

The precision pressure transmitter DMP 331i and DMP 333i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analogue digital converter. Consequently, it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

Preferred areas of use are



Laboratory techniques



Energy production (gas consumption
and thermal energy measurement)



| Pressure ranges DMP 331i ¹ | | | | | | | | | |
|---------------------------------------|-------|-----|-----|----|----|----|-----|-----|-----|
| Nominal pressure gauge / absolute | [bar] | 0.4 | 1 | 2 | 4 | 10 | 20 | 40 | 60 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 | 80 | 105 | 105 |
| Burst pressure | [bar] | 3 | 7.5 | 15 | 25 | 50 | 120 | 210 | 210 |

| Vacuum ranges | | | | | | |
|------------------------|-------|--------------|----------|----------|----------|-----------|
| Nominal pressure gauge | [bar] | -0.4 ... 0.4 | -1 ... 1 | -1 ... 2 | -1 ... 4 | -1 ... 10 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 |
| Burst pressure | [bar] | 3 | 7.5 | 15 | 25 | 50 |

| Pressure ranges DMP 333i ¹ | | | | | |
|---------------------------------------|-------|-----|------|------|------|
| Nominal pressure gauge / absolute | [bar] | 100 | 200 | 400 | 600 |
| Overpressure | [bar] | 210 | 600 | 1000 | 1000 |
| Burst pressure | [bar] | 420 | 1000 | 1250 | 1250 |

¹ on customer request we adjust the device within the turn-down-possibility by software on the required pressure range

| Output signal / Supply | |
|-------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$ |
| Option IS-version | 2-wire: 4 ... 20 mA / $V_S = 14 \dots 28 V_{DC}$ |
| Options analogue signal | 2-wire: 4 ... 20 mA with communication interface ² 3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$ 0 ... 10 V with communication interface ² |

² only possible with el. connection Binder series 723 (7-pin)

| Performance | |
|---|---|
| Accuracy performance after turn-down | IEC 60770 ³ : $\leq \pm 0.1 \% \text{ FSO}$ - TD $\leq 1:5$ no change of accuracy ⁴ - TD $> 1:5$ for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 4): $\leq \pm [0.1 + 0.015 \times \text{turn-down}] \% \text{ FSO}$ with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: $\leq \pm (0.1 + 0.015 \times 10) \% \text{ FSO}$ i.e. accuracy is $\leq \pm 0.25 \% \text{ FSO}$ |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_{S_{min}}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm (0.1 \times \text{turn-down}) \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | approx. 5 msec |
| Adjustability (with option communication interface RS232) | configuration of following parameters possible (interface / software necessary ⁵): - electronic damping: 0 ... 100 sec - offset: 0 ... 90 % FSO - turn down of span: max. 1:10 |

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

⁴ except nominal pressure ranges ≤ 0.40 bar; for these calculation of accuracy is as follows:

$\leq \pm (0.1 + 0.02 \times \text{turn-down}) \% \text{ FSO}$ e.g. turn-down of 1:3: $\leq \pm (0.1 + 0.02 \times 3) \% \text{ FSO}$ i.e. accuracy is $\leq \pm 0.16 \% \text{ FSO}$

⁵ software, interface, and cable have to be ordered separately (software appropriate for Windows[®] 95, 98, 2000, NT Version 4.0 or higher, and XP)

| Thermal effects (offset and span) | | |
|-----------------------------------|----------------|---|
| Tolerance band | [% FSO] | $\leq \pm (0.2 \times \text{turn-down})$ in compensated range -20 ... 80 °C |
| TC, average | [% FSO / 10 K] | $\pm (0.02 \times \text{turn-down})$ in compensated range -20 ... 80 °C |

| Permissible temperatures | |
|---------------------------|---------------|
| Medium | -25 ... 125°C |
| Electronics / environment | -25 ... 85°C |
| Storage | -40 ... 100°C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Materials | |
|------------------------------|---|
| Pressure port | stainless steel 1.4404 (316 L) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | FKM NBR welded version ⁶ others on request |
| Diaphragm | stainless steel 1.4435 (316L) |
| Media wetted parts | pressure port, seal, diaphragm |

⁶ welded version only with pressure ports according to EN 837; welded version not available with pressure ranges > 60 bar

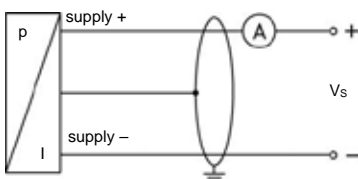
| Mechanical stability | | |
|--|---|--------------------------------|
| Vibration | 10 g RMS (20 ... 2000 Hz) | according to DIN EN 60068-2-6 |
| Shock | 100 g / 11 msec. | according to DIN EN 60068-2-27 |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | | |
| Approvals | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIC T135 °C Da | |
| Safety technical max. values | $U_i = 28\text{ V}$, $I_i = 93\text{ mA}$, $P_i = 660\text{ mW}$, $C_i \approx 0\text{ nF}$, $L_i \approx 0\text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing | |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 65 °C | |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ | |
| Miscellaneous | | |
| Current consumption | signal output current: | max. 25 mA |
| | signal output voltage: | max. 7 mA |
| Weight | approx. 200 g | |
| Installation position | any ⁷ | |
| Operational life | 100 million load cycles | |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁸ | |
| ATEX Directive | 2014/34/EU | |

⁷ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1\text{ bar}$.

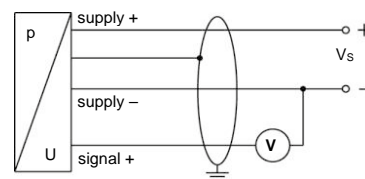
⁸ This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)



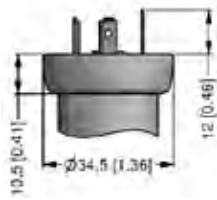
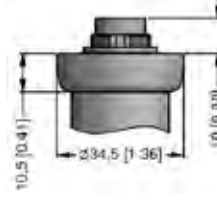
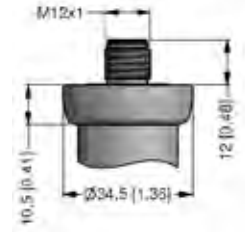
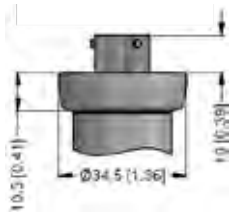
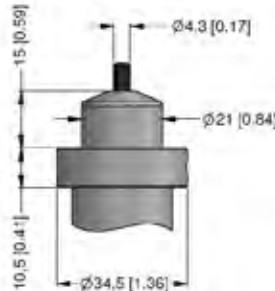
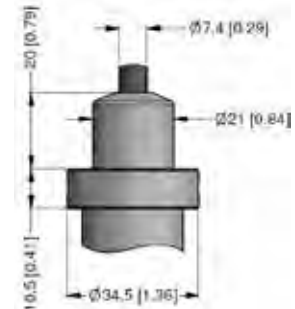
Pin configuration

| Electrical connections | ISO 4400 | Binder 723 (5-pin) | Binder 723/423 (7-pin) | M12x1 / metal (4-pin) | Bayonet MIL-C-26482 (10-6) | |
|--|----------------|--------------------|------------------------|-----------------------|----------------------------|-----------------|
| | | | | | | |
| | | | | | | 2-wire 3-wire |
| Supply + | 1 | 3 | 3 | 1 | A | A |
| Supply - | 2 | 4 | 1 | 2 | B | D |
| Signal + (only for 3-wire) | 3 | 1 | 6 | 3 | - | B |
| Communication interface RS232 ⁹ | | | | | | |
| RxD | - | - | 4 | - | - | - |
| TxD | - | - | 5 | - | - | - |
| GND | - | - | 7 | - | - | - |
| Shield | ground contact | 5 | 2 | 4 | | pressure port |

⁹ may not be transmitted directly with the PC (the suitable adapter is available as accessory)

| Electrical connections | compact field housing | |
|----------------------------|--------------------------|---------------------------|
| | | |
| | V_{S+} V_{S-} S+ GND | cable colours (IEC 60757) |
| Supply + | V_{S+} | WH (white) |
| Supply - | V_{S-} | BN (brown) |
| Signal + (only for 3-wire) | S+ | GN (green) |
| Shield | GND | GNYE (green-yellow) |

Electrical connections (dimensions mm / in)

ISO 440
(IP 65)Binder series 723
(IP 67)M12x1, 4-pin
(IP 67)Bayonet MIL-C-26482 (10-6)
(IP 67)cable outlet with PVC cable
(IP 67)¹⁰cable outlet, cable with
ventilation tube (IP 68)¹¹compact field housing
(IP 67)

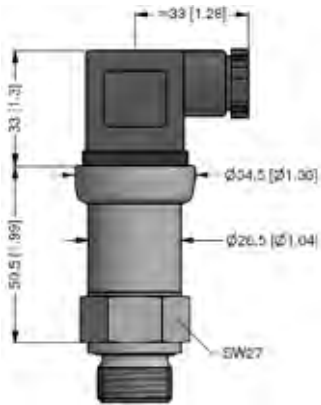
⇒ universal-field housing stainless steel 316L with cable gland M20x1.5 (ordering code 880) and other versions on request

¹⁰ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

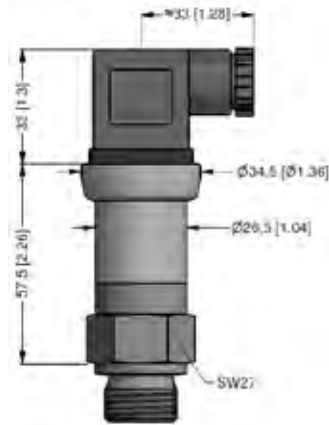
¹¹ different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

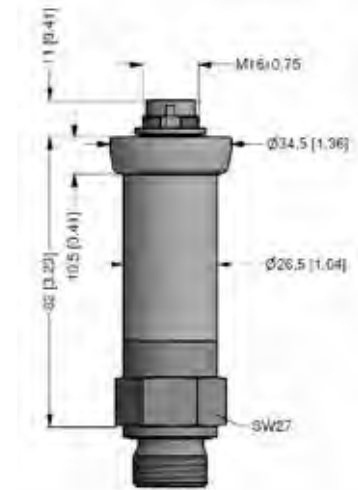
DMP331i¹²



DMP 333i^{12, 13}

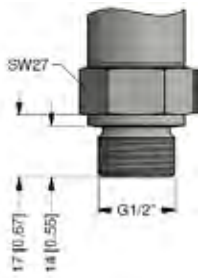


DMP 331i with communication interface RS232

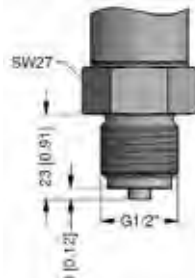


¹² with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm
¹³ for nominal pressure $p_N > 400$ bar increases the length without IS-version by 19 mm and with IS-version by 39 mm

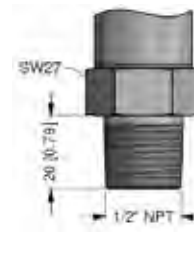
Mechanical connections (dimensions mm / in)



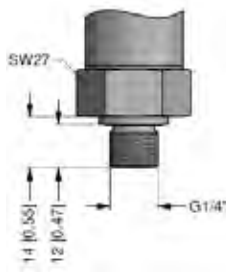
G1/2" DIN 3852



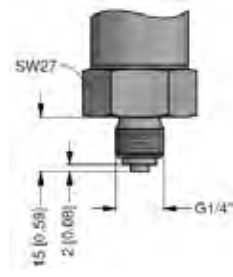
G1/2" EN 837



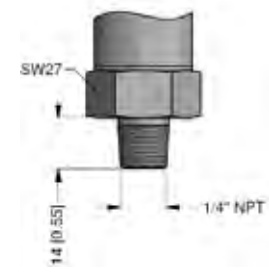
1/2" NPT



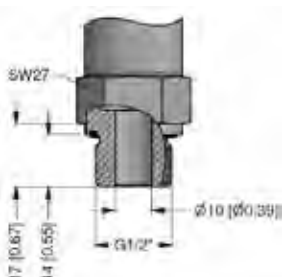
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
 $(p_N \leq 40 \text{ bar})$

↪ metric threads and others on request

Ordering code DMP 331i / DMP 333i

DMP 331i / DMP 333i



| Pressure | | | | | | | | | | | | | | | | | | | |
|----------------------------------|--|--|-------|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|---------|
| For DMP 331i | | gauge | 1 | 1 | 0 | | | | | | | | | | | | | | |
| | | absolute | 1 | 1 | 1 | | | | | | | | | | | | | | |
| For DMP 333i | | gauge ¹ | 1 | 3 | 0 | | | | | | | | | | | | | | |
| | | absolute | 1 | 3 | 1 | | | | | | | | | | | | | | |
| Input | | [mH ₂ O] | [bar] | | | | | | | | | | | | | | | | |
| For DMP 331i ² | | 4 | 0.40 | 4 | 0 | 0 | 0 | | | | | | | | | | | | |
| | | 10 | 1.0 | 1 | 0 | 0 | 1 | | | | | | | | | | | | |
| | | 20 | 2.0 | 2 | 0 | 0 | 1 | | | | | | | | | | | | |
| | | 40 | 4.0 | 4 | 0 | 0 | 1 | | | | | | | | | | | | |
| | | 100 | 10 | 1 | 0 | 0 | 2 | | | | | | | | | | | | |
| | | 200 | 20 | 2 | 0 | 0 | 2 | | | | | | | | | | | | |
| | | 400 | 40 | 4 | 0 | 0 | 2 | | | | | | | | | | | | |
| | | 600 | 60 | 6 | 0 | 0 | 2 | | | | | | | | | | | | |
| For DMP 333i ² | | | 100 | 1 | 0 | 0 | 3 | | | | | | | | | | | | |
| | | | 200 | 2 | 0 | 0 | 3 | | | | | | | | | | | | |
| | | | 400 | 4 | 0 | 0 | 3 | | | | | | | | | | | | |
| | | | 600 | 6 | 0 | 0 | 3 | | | | | | | | | | | | |
| For DMP 331i | | -0.40 ... 0.40 | | S | 4 | 0 | 0 | | | | | | | | | | | | |
| | | -1 ... 1 | | S | 1 | 0 | 2 | | | | | | | | | | | | |
| | | -1 ... 2 | | V | 2 | 0 | 2 | | | | | | | | | | | | |
| | | -1 ... 4 | | V | 4 | 0 | 2 | | | | | | | | | | | | |
| | | -1 ... 10 | | V | 1 | 0 | 3 | | | | | | | | | | | | |
| | | customer | | 9 | 9 | 9 | 9 | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | | |
| | | 4 ... 20 mA / 2-wire | | | | | | 1 | | | | | | | | | | | |
| | | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | E | | | | | | | | | | | |
| | | 0 ... 10 V / 3-wire | | | | | | 3 | | | | | | | | | | | |
| | | customer | | | | | | 9 | | | | | | | | | | | consult |
| Accuracy (at nominal pressure) | | | | | | | | | | | | | | | | | | | |
| | | 0.1 % FSO | | | | | | 1 | | | | | | | | | | | |
| | | customer | | | | | | 9 | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | |
| | | male and female plug ISO 4400 | | | | | | 1 | 0 | 0 | | | | | | | | | |
| | | male plug Binder series 723 (5-pin) | | | | | | 2 | 0 | 0 | | | | | | | | | |
| | | male plug Binder series 723 (7-pin) and female plug Binder series 423 (7-pin) | | | | | | A | 0 | 0 | | | | | | | | | |
| | | male plug M12x1 (4-pin) / metal - for analog output | | | | | | M | 1 | 0 | | | | | | | | | |
| | | male plug M12x1 (4-pin) / metal - for digital output | | | | | | M | 1 | 3 | | | | | | | | | |
| | | Bayonet MIL-C-26482 (10-6); 2 wire | | | | | | B | G | 0 | | | | | | | | | |
| | | Bayonet MIL-C-26482 (10-6); 3 wire | | | | | | B | G | 4 | | | | | | | | | |
| | | cable outlet with PVC cable (IP67) ³ | | | | | | T | A | 0 | | | | | | | | | |
| | | cable outlet, cable with ventilation tube (IP68) ⁴ | | | | | | T | R | 0 | | | | | | | | | |
| | | compact field housing stainless steel 1.4301 (304) | | | | | | 8 | 5 | 0 | | | | | | | | | |
| | | customer | | | | | | 9 | 9 | 9 | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | | |
| | | G1/2" DIN 3852 | | | | | | 1 | 0 | 0 | | | | | | | | | |
| | | G1/2" EN 837 | | | | | | 2 | 0 | 0 | | | | | | | | | |
| | | G1/4" DIN 3852 | | | | | | 3 | 0 | 0 | | | | | | | | | |
| | | G1/4" EN 837 | | | | | | 4 | 0 | 0 | | | | | | | | | |
| | | G1/2" DIN 3852 with flush sensor ⁵ | | | | | | F | 0 | 0 | | | | | | | | | |
| | | G1/2" DIN 3852 open pressure port ⁵ | | | | | | H | 0 | 0 | | | | | | | | | |
| | | 1/2" NPT | | | | | | N | 0 | 0 | | | | | | | | | |
| | | 1/4" NPT | | | | | | N | 4 | 0 | | | | | | | | | |
| | | customer | | | | | | 9 | 9 | 9 | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | | |
| For DMP 331i | | FKM | | | | | | | | | | | | | | | | | |
| | | without (welded version) ^{5,6} | | | | | | | | | | | | | | | | | |
| For DMP 333i | | FKM | | | | | | | | | | | | | | | | | |
| | | NBR | | | | | | | | | | | | | | | | | |
| | | customer | | | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | |
| | | standard | | | | | | | | | | | | | | | | | |
| | | communication interface RS232 ⁷ | | | | | | | | | | | | | | | | | |
| | | customer | | | | | | | | | | | | | | | | | consult |

Ordering code

¹ measurement starts with ambient pressure

² pressure ranges ≤ 60 bar as DMP 331i; pressure ranges > 60 bar as DMP 333i

³ standard: 2 m PVC cable without ventilation tube (permissible temperature: $-5 \dots 70$ °C); others on request

⁴ code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

⁵ only possible for DMP 331i and $p_N \leq 40$ bar

⁶ welded version only with pressure ports according to EN 837

⁷ Communication interface RS232 only possible with el. connection Binder serie 723/423 (7pin)

Software, Interface and cable for DMP 331i and DMP 333i with option RS232 have to be order separately
(ordering code: CIS-G; software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)



DMP 320

Precision Pressure Transmitter with Fast Response Time

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0...100 mbar up to 0...600 bar

Output signal

3-wire: 0.1 ... 10 V
4 ... 20 mA
others on request

Special characteristics

- ▶ extremely fast response time ≤ 0.5 msec
- ▶ internal sample rate 10 kHz
- ▶ accuracy 0.1 % FSO
- ▶ excellent thermal behaviour
- ▶ outstanding long term stability

Optional versions



- ▶ customer specific versions

DMP 320 stands for speed and precision.

With a response time of ≤ 0.5 msec and a sampling rate of 10 kHz, the pressure transmitter was designed for applications, in which an extremely fast and exact pressure measuring is required. Pressure curves, peaks and hits can be monitored and evaluated exactly.

The signal processing of the sensor signal is done by newly developed digital electronics, which detect the signal with a sampling rate of 10 kHz. Sensor-specific deviations such as non-linearity, hysteresis and temperature errors are compensated actively.

Preferred areas of use are

-  Plant and machine engineering
-  Energy industry



| Input pressure range | | | | | | | | | | | | |
|------------------------|-------|--------|------|------|------|------|------|-----|-----|-----|----|----|
| Nominal pressure gauge | [bar] | -1...0 | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 |
| Nominal pressure abs. | [bar] | - | - | - | - | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 |
| Overpressure | [bar] | 5 | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 | 10 | 20 | 40 |
| Burst pressure \geq | [bar] | 7.5 | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 | 15 | 25 | 50 |

| | | | | | | | | | | | |
|------------------------------|-------|--|-----|-----|-----|-----|------|------|------|------|------|
| Nominal pressure gauge / abs | [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 |
| Overpressure | [bar] | 40 | 80 | 80 | 105 | 210 | 600 | 600 | 1000 | 1000 | 1000 |
| Burst pressure \geq | [bar] | 50 | 120 | 120 | 210 | 420 | 1000 | 1000 | 1250 | 1250 | 1250 |
| Vacuum resistance | | $p_N \geq 1$ bar: unlimited vacuum resistance $p_N < 1$ bar: on request | | | | | | | | | |

| Output signal / Supply | |
|------------------------|---|
| 3-wire voltage | 0.1 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |
| 3-wire current | 4 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | nominal pressure ≥ 0.25 bar: $\leq \pm 0.10$ % FSO nominal pressure < 0.25 bar: $\leq \pm 0.25$ % FSO |
| Permissible load | current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $k\Omega$ |
| Long term stability | $\leq \pm 0.1$ % FSO / year at reference conditions |
| Response time | ≤ 0.5 msec |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | |
|-----------------------------------|-------------------------|
| Tolerance band | $\leq \pm 0.2$ % FSO |
| TC, average | ± 0.02 % FSO / 10 K |
| in compensated range | -20 ... 80 °C |

| Permissible temperatures | |
|---------------------------|---------------|
| Medium | -40 ... 125°C |
| Electronics / environment | -40 ... 85°C |
| Storage | -40 ... 100°C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|---|
| Vibration | 10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

| Materials | |
|------------------------------|---|
| Pressure Port | stainless steel 1.4404 (316 L) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM options: EPDM others on request |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |

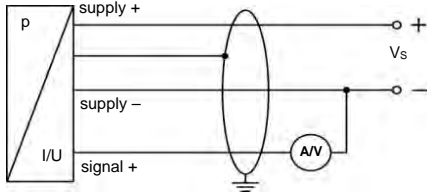
| Miscellaneous | |
|-----------------------|---|
| Current consumption | 3-wire voltage: < 30 mA 3-wire current: < 55 mA |
| Weight | approx. 200 g |
| Installation position | any ² |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³ |

² Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar.

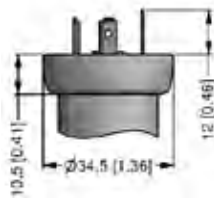
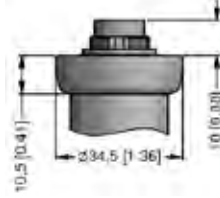
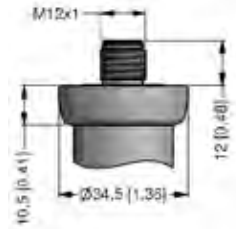
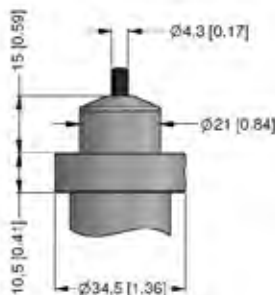
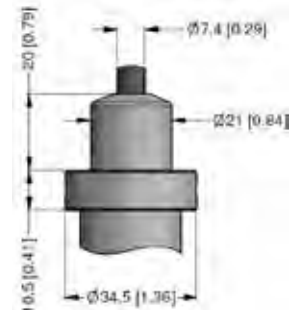
³ This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

3-wire-system (current / voltage)

**Pin configuration**

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|-----------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| | | | | | |
| Supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| Supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| Signal + | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

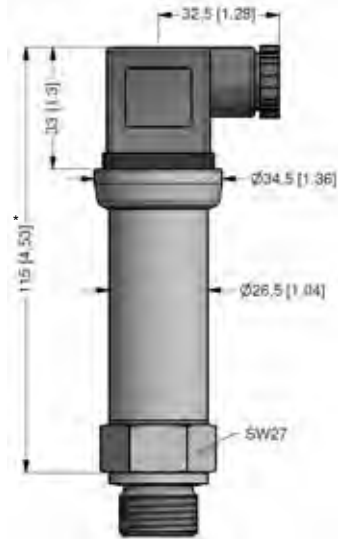
Electrical connections (dimensions mm / in)ISO 4400
(IP 65)Binder series 723, 5-pin
(IP 67)M12x1, 4-pin
(IP 67)compact field housing
(IP 67)cable outlet
with PVC-cable (IP 67)⁴cable outlet, cable with
ventilation tube (IP 68)⁵

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

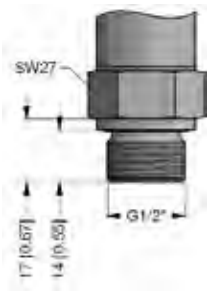
⁵ different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

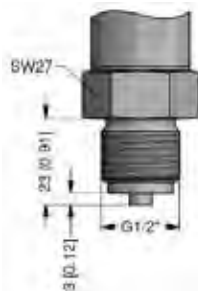


* for nominal pressure $p_N > 40$ bar the length of devices increases by 9 mm

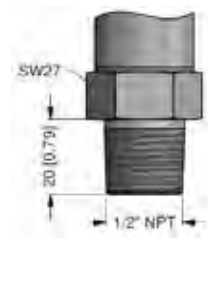
Mechanical connections (dimensions mm / in)



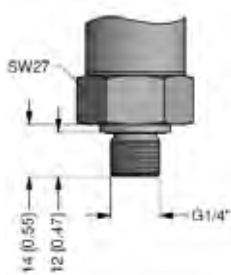
G1/2" DIN 3852



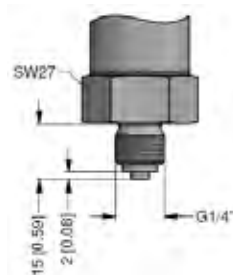
G1/2" EN 837



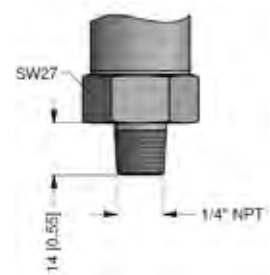
1/2" NPT



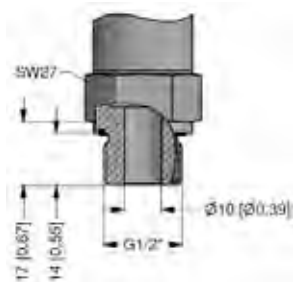
G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
($p_N \leq 40$ bar)

⇒ metric threads and other versions on request



DMP 334i

Precision-Pressure Transmitter for High Pressure

Thinfilm Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 600 bar up to 0 ... 2200 bar

Analogue output

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ welded pressure sensor
- ▶ turn-down 1:10
- ▶ excellent accuracy
- ▶ robust and long-term stable

Optional versions

- ▶ communication interface for adjusting offset, span and damping
- ▶ pressure port M20x1.5 or 9/16 UNF
- ▶ different kinds of electrical connections

The precision pressure transmitter DMP 334i is a consistent further development of the approved industrial pressure transmitter DMP 334. Basic element is a thinfilm sensor which is welded with the pressure port.

The integrated digital electronics compensates actively sensor specific deviations like non-linearity and thermal error.

It is therefore possible to offer a high pressure transmitter with excellent metrological qualities.

Preferred areas of use are



Plant and machine engineering
Test benches



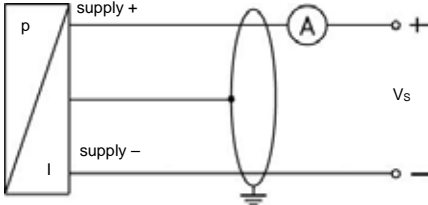
Commercial vehicles and
mobile hydraulics



| Input pressure range | | | | | | |
|--|---|------------------|--------------------------------|------|------|------|
| Nominal pressure gauge | [bar] | 600 ¹ | 1000 | 1600 | 2000 | 2200 |
| Overpressure | [bar] | 800 | 1400 | 2200 | 2800 | 2800 |
| ¹ only available with pressure port G1/2" EN 837 | | | | | | |
| Output signal / Supply | | | | | | |
| Standard | 2-wire: 4 ... 20 mA / V _S = 12 ... 36 V _{DC} | | | | | |
| Option | 2-wire: 4 ... 20 mA with communication interface ² | | | | | |
| ² only possible with electrical connection Binder series 723 (7-pin) | | | | | | |
| Performance | | | | | | |
| Accuracy performance after turn-down | IEC 60770 ³ : ≤ ± 0.1 % FSO no change of accuracy for calculation use the following formula: ≤ ± (0.1 + 0.015 x turn down) % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: ≤ ± (0.1 + 0.015 x 10) % FSO i.e. accuracy is ≤ ± 0.25 % FSO | | | | | |
| - TD ≤ 1:5 | | | | | | |
| - TD > 1:5 | | | | | | |
| Permissible load | R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω | | | | | |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ | | | | | |
| Long term stability | ≤ ± (0.1 x turn-down) % FSO / year at reference conditions | | | | | |
| Response time | approx. 10 msec | | | | | |
| Adjustability (option) ⁴ | configuration of following parameters possible (interface / software necessary): - electronic damping: 0 ... 100 sec - offset: 0 ... 90 % FSO - turn down of span: max. 1:10 | | | | | |
| ³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | |
| ⁴ adjustable version is only possible in combination with Binder Series 723, 7-pin; software, interface and cable have to be ordered separately (software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP) | | | | | | |
| Thermal effects (offset and span) | | | | | | |
| TC, average | < 0.25 % FSO / 10 K | | | | | |
| in compensated range | -20 ... 85 °C | | | | | |
| Permissible temperatures | | | | | | |
| Medium | -40 ... 140 °C | | | | | |
| Electronics / environment | -25 ... 85 °C | | | | | |
| Storage | -40 ... 100 °C | | | | | |
| Electrical protection | | | | | | |
| Short-circuit protection | permanent | | | | | |
| Reverse polarity protection | no damage, but also no function | | | | | |
| Electromagnetic compatibility | emission and immunity according to EN 61326 | | | | | |
| Mechanical stability | | | | | | |
| Vibration | 10 g RMS (20 ... 2000 Hz) | | according to DIN EN 60068-2-6 | | | |
| Shock | 100 g / 11 msec. | | according to DIN EN 60068-2-27 | | | |
| Materials | | | | | | |
| Pressure port | stainless steel 1.4542 (17-4 PH) | | | | | |
| Housing | stainless steel 1.4404 (316L) | | | | | |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | | | | |
| Seals | none (welded) | | | | | |
| Diaphragm | stainless steel 1.4542 (17-4 PH) | | | | | |
| Media wetted parts | pressure port, diaphragm | | | | | |
| Miscellaneous | | | | | | |
| Current consumption | max. 25 mA | | | | | |
| Weight | approx. 300 g | | | | | |
| Installation position | any | | | | | |
| Operational life | p _N = 600 bar: 100 million load cycles p _N > 600 bar: 10 million load cycles | | | | | |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) | | | | | |

Wiring diagram

2-wire-system (current)

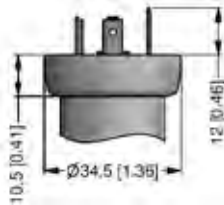


Pin configuration

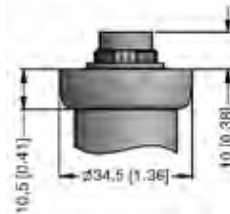
| Electrical connections | ISO 4400 | Binder 723 (5-pin) | Binder 723/423 (7-pin) | M12x1 / metal (4-pin) | compact field housing | cable colour (IEC 60757) |
|--------------------------------------|------------|--------------------|------------------------|-----------------------|-----------------------|--------------------------|
| Supply + | 1 | 3 | 3 | 1 | V _{S+} | WH (white) |
| Supply - | 2 | 4 | 1 | 2 | V _{S-} | BN (brown) |
| Shield | ground pin | 5 | 2 | 4 | GND | GYE (green-yellow) |
| Communication interface ⁵ | | | | | | |
| RxD | - | - | 4 | - | - | - |
| TxD | - | - | 5 | - | - | - |
| GND | - | - | 7 | - | - | - |

⁵ may not be connected directly with the PC (the suitable adapter is available as accessory)

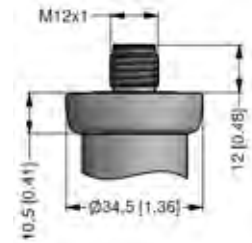
Electrical connections (dimensions mm / in)



ISO 4400 (IP 65)



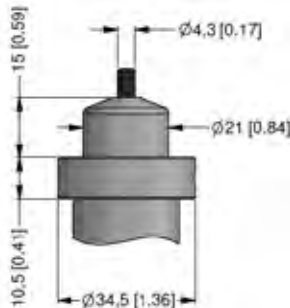
Binder series 723 (IP 67)



M12x1, 4-pin (IP 67)



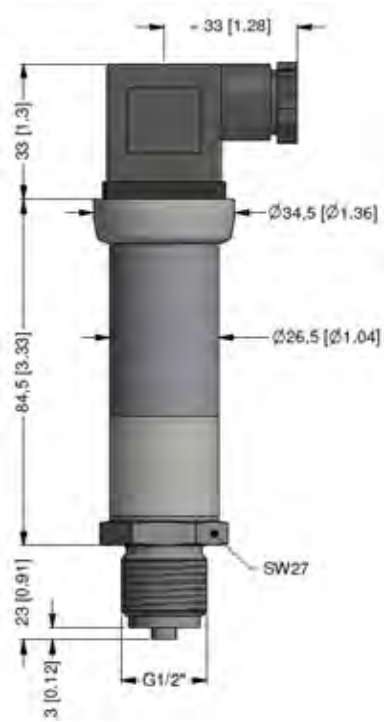
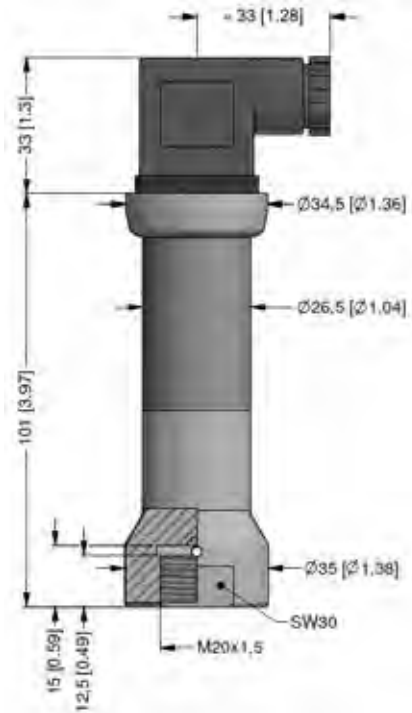
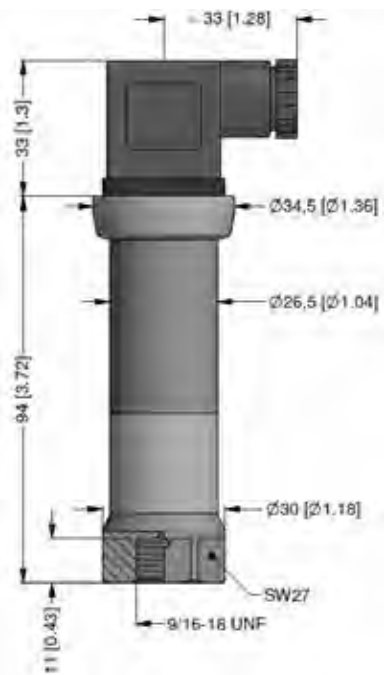
compact field housing (IP 67)



cable outlet with PVC cable (IP 67) ⁶

⇒ universal field housing in stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁶ standard: 2 m PVC cable, without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

Mechanical connection (dimensions mm / in)

G1/2" EN 837 ⁷

M20x1.5 internal thread

9/16-18 UNF internal thread

⁷ According to EN 837, the pressure port and the complement at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of $R_P > 260 \text{ N/mm}^2$ in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

Ordering code DMP 334i

DMP 334i



| | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|---------|
| Pressure | gauge | 1 | 4 | 0 | | | | | | | | | | | | | | | | |
| Input | [bar] | | | | | | | | | | | | | | | | | | | |
| | 600 ¹ | 6 | 0 | 0 | 3 | | | | | | | | | | | | | | | |
| | 1000 | 1 | 0 | 0 | 4 | | | | | | | | | | | | | | | |
| | 1600 | 1 | 6 | 0 | 4 | | | | | | | | | | | | | | | |
| | 2000 | 2 | 0 | 0 | 4 | | | | | | | | | | | | | | | |
| | 2200 | 2 | 2 | 0 | 4 | | | | | | | | | | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | 1 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | | | |
| | 0.1 % FSO | | | | | 1 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | 1 | 0 | 0 | | | | | | | | | | | | |
| | male plug Binder series 723 (5-pin) | | | | | 2 | 0 | 0 | | | | | | | | | | | | |
| | male plug Binder series 723 (7-pin) | | | | | A | 0 | 0 | | | | | | | | | | | | |
| | and female plug Binder series 423 (7-pin) | | | | | | | | | | | | | | | | | | | |
| | cable outlet with PVC cable (IP67) ² | | | | | T | A | 0 | | | | | | | | | | | | |
| | male plug M12x1 (4-pin) / metal | | | | | M | 1 | 0 | | | | | | | | | | | | |
| | compact field housing | | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4301 (304) | | | | | 8 | 5 | 0 | | | | | | | | | | | | |
| | customer | | | | | 9 | 9 | 9 | | | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | | | |
| | G1/2" EN 837 ³ | | | | | | 2 | 0 | 0 | | | | | | | | | | | |
| | M20x1.5 internal thread | | | | | | D | 2 | 8 | | | | | | | | | | | |
| | 9/16 UNF internal thread | | | | | | V | 0 | 0 | | | | | | | | | | | |
| | customer | | | | | | 9 | 9 | 9 | | | | | | | | | | | consult |
| Seal | | | | | | | | | | | | | | | | | | | | |
| | without (welded version) | | | | | | | | | 2 | | | | | | | | | | |
| | customer | | | | | | | | | 9 | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | 1 | 1 | 1 | | | | | | | | |
| | RS232 interface ⁴ | | | | | | | | | 1 | 2 | 1 | | | | | | | | |
| | customer | | | | | | | | | 9 | 9 | 9 | | | | | | | | consult |

¹ only available with pressure port G1/2" EN 837

² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), others on request

³ According to EN 837, the pressure port and the complement, at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of R_p > 260 N/mm² in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!

⁴ RS232 interface only possible with electrical connection Binder serie 723/423 (7-pin)

software, interface and cable for DMP 334i with option RS232 have to be order separately

(ordering code: CIS Set 510; software appropriate for Windows® 95, 98, 2000, NT version 4.0 or newer and XP)

Windows® is a registered trademark of Microsoft Corporation



DMP 331Pi

Precision Pressure Transmitter

Pressure Ports and Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Product characteristics

- ▶ excellent temperature response
0.04 % FSO / 10K
- ▶ Turn-Down 1:10
- ▶ processing of the sensor signal using digital electronics
- ▶ process connections suitable for hygienic application
- ▶ vacuum resistant

Optional versions




- ▶ communication interface for adjustment of offset, span and damping
- ▶ IS-version (on request)
- ▶ cooling element for media temperatures up to 300 °C

The precision pressure transmitter DMP 331Pi demonstrates the further development of well-tried industrial pressure transmitter DMP 331P.

The signal from the specially designed piezoresistive stainless steel sensor is processed by the newly developed digital electronic system, performing thus an active compensation of sensor-specific deviations such as hysteresis, thermal errors and non-linearity.

The temperature range of -40 ... 125 °C can be extended by the integration of a cooling element up to 300 °C.

Preferred areas of use are

-  Laboratory techniques
-  Food and beverage
-  Pharmaceutical industry



| Pressure ranges ¹ | | | | | | | | |
|--|-------|---|-----|----|---------------------------|----|-----|-----|
| Nominal pressure gauge / absolute ² | [bar] | 0.4 | 1 | 2 | 4 | 10 | 20 | 40 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 | 80 | 105 |
| Burst pressure \geq | [bar] | 3 | 7.5 | 15 | 25 | 50 | 120 | 210 |
| Vacuum resistance | | $p_N \geq 1$ bar: unlimited vacuum resistance | | | $p_N < 1$ bar: on request | | | |

¹ on customer request we adjust the device within the turn-down-possibility by software on the required pressure range
² absolute pressure permissible from 1 bar

| Vacuum ranges | | | | | | |
|-----------------------|-------|--------------|----------|----------|----------|-----------|
| Nominal pressure | [bar] | -0.4 ... 0.4 | -1 ... 1 | -1 ... 2 | -1 ... 4 | -1 ... 10 |
| Overpressure | [bar] | 2 | 5 | 10 | 20 | 40 |
| Burst pressure \geq | [bar] | 3 | 7.5 | 15 | 25 | 50 |

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$ |
| Option IS-version | 2-wire: 4 ... 20 mA / $V_S = 14 \dots 28 V_{DC}$ |
| Options | 2-wire: 4 ... 20 mA with communication interface ³ 3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$ 0 ... 10 V with communication interface ³ |

³ only possible with electrical connection Binder series 723 (7-pin)

| Performance | |
|---|--|
| Accuracy ⁴ performance after turn-down - TD \leq 1:5 - TD $>$ 1:5 | IEC 60770: $\leq \pm 0.1$ % FSO no change of accuracy ⁵ for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 5): $\leq \pm [0.1 + 0.015 \times \text{turn-down}]$ % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: $\leq \pm (0.1 + 0.015 \times 10)$ % FSO i.e. accuracy is $\leq \pm 0.25$ % FSO |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm (0.1 \times \text{turn-down})$ % FSO / year at reference conditions |
| Response time | current 2-wire: approx. 5 msec voltage 3-wire: 25 msec |
| Adjustability (option) ⁶ | configuration of following parameters possible (interface / software necessary): electronic damping: 0 ... 100 sec offset: 0 ... 90 % FSO turn down of span: max. 1:10 |

⁴ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)
⁵ except nominal pressure ranges ≤ 0.40 bar; for these calculation of accuracy is as follows:
 $\leq \pm (0.1 + 0.02 \times \text{turn-down})$ % FSO e.g. turn-down of 1:3: $\leq \pm (0.1 + 0.02 \times 3)$ % FSO i.e. accuracy is $\leq \pm 0.16$ % FSO
⁶ adjustable version is only possible in combination with Binder Series 723, 7-pin;
software, interface and cable have to be ordered separately (software appropriate for Windows[®] 95, 98, 2000, NT Version 4.0 or higher, and XP)

| Thermal effects ⁷ (offset and span) | |
|--|--|
| Tolerance band [% FSO] | $\leq \pm (0.35 \times \text{turn-down})$ |
| TC, average [% FSO / 10 K] | $\leq \pm (0.035 \times \text{turn-down})$ |
| in compensated range | 0 ... 80 °C |

⁷ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

| Permissible temperatures | | |
|--|--|--|
| Filling fluid | silicone oil | food compatible oil |
| Medium ⁸ | -40 ... 125 °C | -10 ... 125 °C |
| Medium with cooling element ⁹ | overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C ¹⁰ | overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C ¹⁰ |
| Electronics / environment | -25 ... 85 °C | |
| Storage | -40 ... 100 °C | |

⁸ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

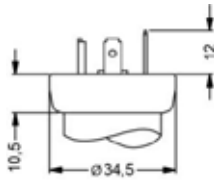
⁹ max. temperature depends on the used sealing material, type of seal and installation

¹⁰ also for $p_{abs} \leq 1$ bar

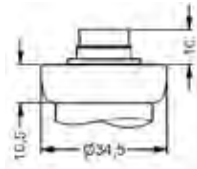
| Electrical protection | |
|---|--|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |
| Filling fluids | |
| Standard | silicone oil |
| Options | food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request |
| Mechanical stability | |
| Vibration according to DIN EN 60068-2-6 | G 1/2": 20 g RMS (25 ... 2000 Hz) others: 10 g RMS (25 ... 2000 Hz) |
| Shock according to DIN EN 60068-2-27 | G 1/2": 500 g / 1 msec others: 100 g / 1 msec |

| Materials | | | | | | |
|---|---|--------------------|------------------------|----------------------|-----------------------|---------------------------|
| Pressure port | stainless steel 1.4435 (316 L) others on request | | | | | |
| Housing | stainless steel 1.4404 (316 L) | | | | | |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | | | | |
| Seals (O-ring) | standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) others on request Clamp, dairy pipe, Varivent®: without | | | | | |
| Diaphragm | standard: stainless steel 1.4435 (316L) option: Hastelloy® C-276 (2.4819) and Tantalum on request | | | | | |
| Media wetted parts | pressure port, diaphragm | | | | | |
| Explosion protection (on request for 4 ... 20 mA / 2-wire) | | | | | | |
| Approvals DX19-DMP 331Pi | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIC T135 °C Da | | | | | |
| Safety technical maximum values | $U_i = 28$ V, $I_i = 93$ mA, $P_i = 660$ mW, $C_i \approx 0$ nF, $L_i \approx 0$ μ H, the supply connections have an inner capacity of max. 27 nF to the housing | | | | | |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 65 °C | | | | | |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μ H/m | | | | | |
| Miscellaneous | | | | | | |
| EHDG certificate Type EL Class I | EHDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH | | | | | |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA | | | | | |
| Surface roughness | pressure port $R_a < 0.8$ μ m (media wetted parts) diaphragm $R_a < 0.15$ μ m weld seam $R_a < 0.8$ μ m | | | | | |
| Weight | approx. 200 g | | | | | |
| Installation position | any ¹¹ | | | | | |
| Operational life | 100 million load cycles | | | | | |
| CE-conformity | EMC Directive: 2014/30/EU | | | | | |
| ATEX Directive | 2014/34/EU | | | | | |
| ¹¹ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1$ bar. | | | | | | |
| Wiring diagrams | | | | | | |
| <p>2-wire-system (current)</p> | <p>3-wire-system (voltage)</p> | | | | | |
| Pin configuration | | | | | | |
| Electrical connections | ISO 4400 | Binder 723 (5-pin) | Binder 723/423 (7-pin) | M12x1/ metal (4-pin) | compact field housing | cable colours (IEC 60757) |
| Supply + | 1 | 3 | 3 | 1 | IN + | WH (white) |
| Supply - | 2 | 4 | 1 | 2 | IN - | BN (brown) |
| Signal + (only for 3-wire) | 3 | 1 | 6 | 3 | OUT + | GN (green) |
| shield | ground pin | 5 | 2 | 4 | | GNYE (green-yellow) |
| Communication interface ¹² | RxD | - | 4 | - | - | - |
| | TxD | - | 5 | - | - | - |
| | GND | - | 7 | - | - | - |
| ¹² may not be connected directly with the PC (the suitable adapter is available as accessory) | | | | | | |

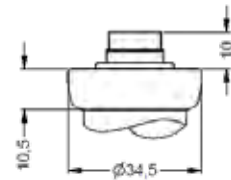
Electrical connections (dimensions in mm)



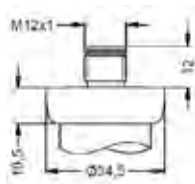
ISO 4400
(IP 65)



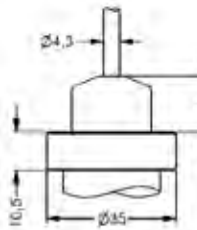
Binder series 723, 5-pin
(IP 67)



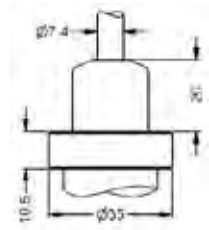
Binder series 723, 7-pin
(IP 67)



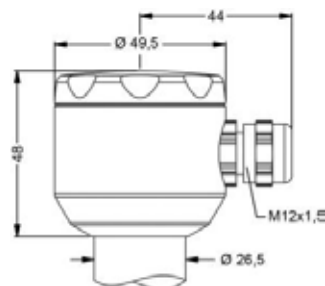
M12x1, 4-pin
(IP 67)



cable outlet with PVC cable
(IP 67)¹³



cable outlet, cable with
ventilation tube (IP 68)¹⁴



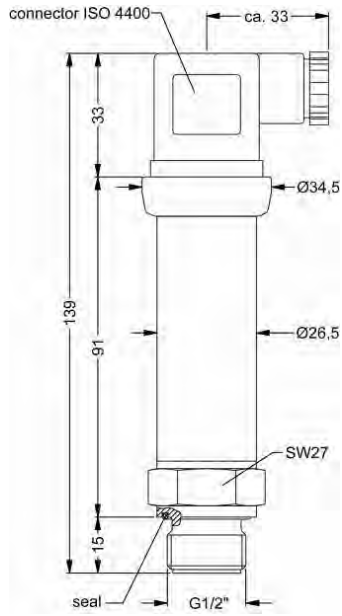
compact field housing
(IP 67)

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

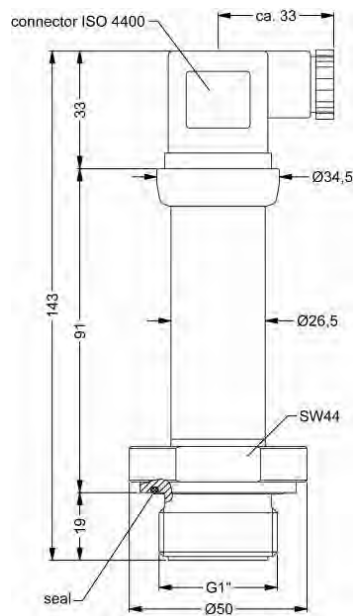
¹³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

¹⁴ different cable types and lengths available, permissible temperature depends on kind of cable

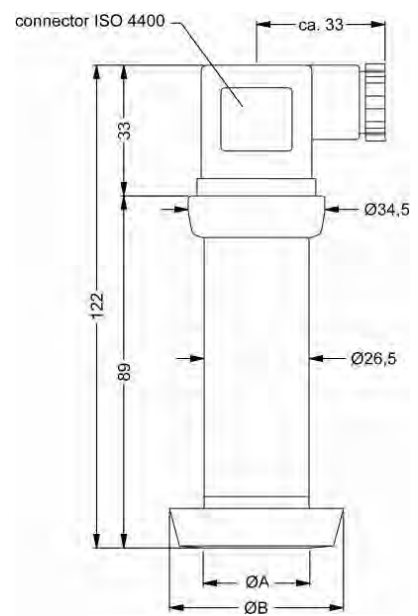
Mechanical connection (dimensions in mm)



G1/2" flush DIN 3852

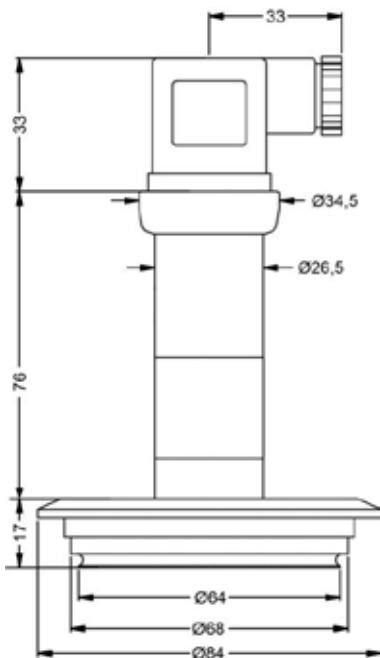


G1" flush DIN 3852

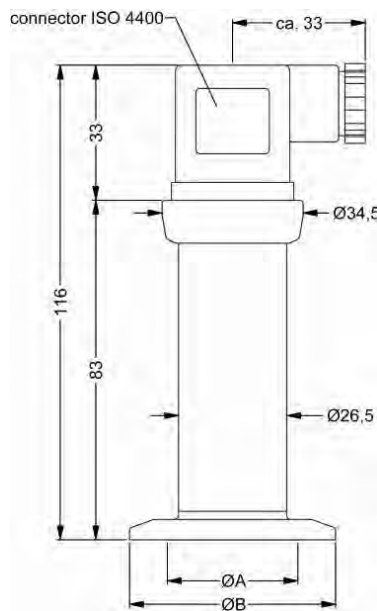


dairy pipe (DIN 11851)

| dimensions in mm | | | |
|----------------------|-------|-------|-------|
| size | DN 25 | DN 40 | DN 50 |
| A | 23 | 32 | 45 |
| B | 44 | 56 | 68.5 |
| P _N [bar] | ≤ 40 | ≤ 40 | ≤ 25 |

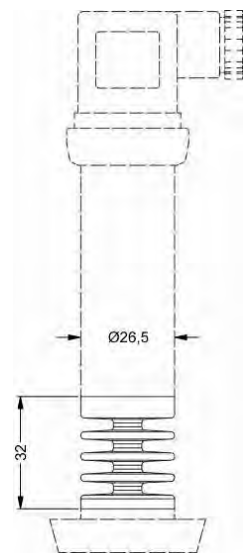


Varivent®
p_N ≤ 25 bar



Clamp (DIN 32676)

| dimensions in mm | | | |
|----------------------|-------|-------|-------|
| size | DN 25 | DN 32 | DN 50 |
| A | 23 | 32 | 45 |
| B | 50.5 | 50.5 | 64 |
| P _N [bar] | ≤ 16 | ≤ 16 | ≤ 16 |



cooling element up to 300 °C⁹

⇒ metric threads and others on request

⁹ max. temperature depends on the used sealing material, type of seal and installation
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DMP 343

Industrial Pressure Transmitter

Without Media Isolation

accuracy according to IEC 60770:
0.35 % FSO

Nominal pressure

from 0 ... 10 mbar up to 0 ... 1000 mbar

Product characteristics

- ▶ excellent linearity
- ▶ small thermal effect
- ▶ excellent long term stability

Optional versions

- ▶ IS-version:
Ex ia = intrinsically safe for
gases and dusts
- ▶ different electrical and
mechanical connections
- ▶ customer specific versions

The pressure transmitter DMP 343 has been especially designed for the measurement of very low gauge pressure and for vacuum applications. Permissible media are non-aggressive, dry gases and non-aggressive, low viscos oils.

The DMP 343 features excellent thermal behaviour and outstanding long term stability. A variety of standard output signals as well as mechanical and electrical connections make the DMP 343 covering a wide field of applications.

Preferred areas of use are



Plant and machine engineering



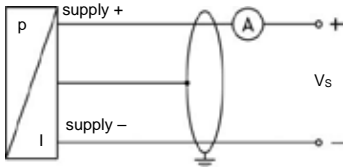
Heating and air conditioning



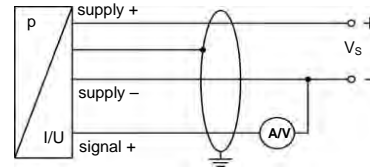
| Input pressure range | | | | | | | | | | | | | |
|--|---------|--|----------------|-----|-----|--------------|------|--------------------------------|-----------------|-----|-----|-----|------|
| Nominal pressure gauge | [mbar] | -1000 ... 0 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 1000 |
| Overpressure | [bar] | 3 | 0.2 | 0.2 | 0.2 | 0.5 | 0.5 | 1 | 2 | 3 | 3 | 3 | 3 |
| Permissible vacuum | [bar] | -1 | -0.2 | | | -0.5 | | | -1 | | | | |
| Burst pressure | [bar] | 5 | 0.3 | 0.3 | 0.3 | 0.75 | 0.75 | 1.5 | 3 | 5 | 5 | 5 | 5 |
| Output signal / Supply | | | | | | | | | | | | | |
| Standard | | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ | | | | | | | | | | | |
| Option IS-version | | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | | | | | | | | | | | |
| Options 3-wire | | 3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | |
| Accuracy ¹ | | standard: $\leq \pm 0.35 \% \text{ FSO}$ nominal pressure $\leq 100 \text{ mbar}$: $\leq \pm 0.50 \% \text{ FSO}$ | | | | | | | | | | | |
| Permissible load | | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{\max} = 240 \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ | | | | | | | | | | | |
| Influence effects | | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$ | | | | | | | | | | | |
| Response time | | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ | | | | | | | | | | | |
| Long term stability | | $\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions, for $p_N < 100 \text{ mbar}$ $\leq \pm 0.1 \% \text{ FSO} / \text{year}$ at reference conditions, for $p_N \geq 100 \text{ mbar}$ | | | | | | | | | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | |
| Thermal effects (offset and span) | | | | | | | | | | | | | |
| Nominal pressure p_N | [mbar] | -1000 ... 0 | ≤ 100 | | | ≤ 400 | | | > 400 | | | | |
| Tolerance band | [% FSO] | $\leq \pm 0.75$ | $\leq \pm 1.5$ | | | $\leq \pm 1$ | | | $\leq \pm 0.75$ | | | | |
| in compensated range | [°C] | -20 ... 85 | 0 ... 50 | | | 0 ... 70 | | | -20 ... 85 | | | | |
| Permissible temperatures | | | | | | | | | | | | | |
| Medium | | -40 ... 125 °C | | | | | | | | | | | |
| Electronics / environment | | -40 ... 85 °C | | | | | | | | | | | |
| Storage | | -40 ... 100 °C | | | | | | | | | | | |
| Electrical protection | | | | | | | | | | | | | |
| Short-circuit protection | | permanent | | | | | | | | | | | |
| Reverse polarity protection | | no damage, but also no function | | | | | | | | | | | |
| Electromagnetic compatibility | | emission and immunity according to EN 61326 | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | |
| Vibration | | 10 g RMS (25 ... 2000 Hz) | | | | | | according to DIN EN 60068-2-6 | | | | | |
| Shock | | 500 g / 1 msec | | | | | | according to DIN EN 60068-2-27 | | | | | |
| Materials | | | | | | | | | | | | | |
| Pressure port | | stainless steel 1.4404 (316L) | | | | | | | | | | | |
| Housing | | stainless steel 1.4404 (316L) | | | | | | | | | | | |
| Option compact field housing | | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | | | | | | | | | | |
| Seals | | FKM | | | | | | | | | | | |
| Sensor | | stainless steel 1.4404 (316L), silicon, epoxy or RTV, mineral glass | | | | | | | | | | | |
| Media wetted parts | | pressure port, seals, sensor | | | | | | | | | | | |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | | | | | | | | | | | | | |
| Approvals DX19-DMP 343 | | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da | | | | | | | | | | | |
| Safety technical maximum values | | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF opposite the housing | | | | | | | | | | | |
| Permissible temperatures for environment | | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C | | | | | | | | | | | |
| Connecting cables (by factory) | | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ | | | | | | | | | | | |
| Miscellaneous | | | | | | | | | | | | | |
| Current consumption | | signal output current: max. 25 mA signal output voltage: max. 7 mA | | | | | | | | | | | |
| Weight | | approx. 140 g | | | | | | | | | | | |
| Installation position | | any | | | | | | | | | | | |
| Operational life | | 100 million load cycles | | | | | | | | | | | |
| CE-conformity | | EMC Directive: 2014/30/EU | | | | | | | | | | | |
| ATEX Directive | | 2014/34/EU | | | | | | | | | | | |

Wiring diagrams

2-wire-system (current)



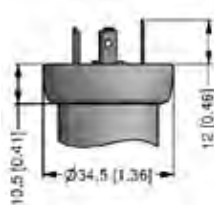
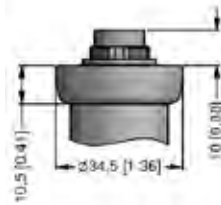
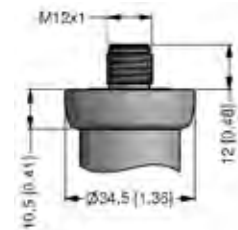
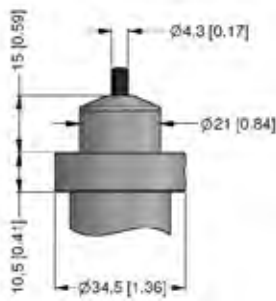
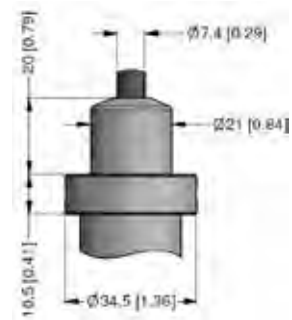
3-wire-system (current / voltage)



Pin configuration

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|----------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| | | | | | |
| Supply + | 1 | 3 | 1 | V _S + | WH (white) |
| Supply - | 2 | 4 | 2 | V _S - | BN (brown) |
| Signal + (only for 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

Electrical connections (dimensions mm / in)

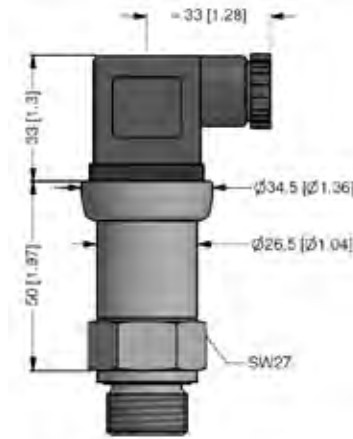
ISO 4400
(IP 65)Binder series 723, 5-pin
(IP 67)M12x1, 4-pin
(IP 67)compact field housing
(IP 67)cable outlet
with PVC-cable (IP 67)²cable outlet, cable with
ventilation tube (IP 68)³

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

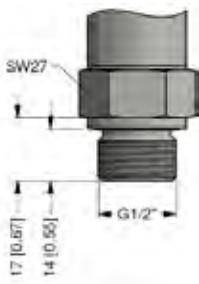
² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

³ different cable types and lengths available, permissible temperature depends on kind of cable

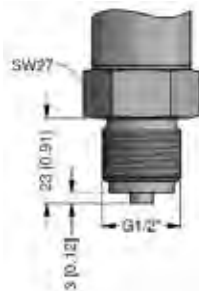
Dimensions (mm / in)



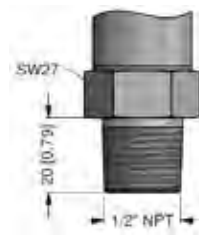
Mechanical connections (dimensions mm / in)



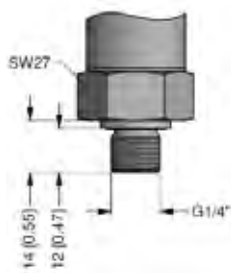
G1/2" DIN 3852



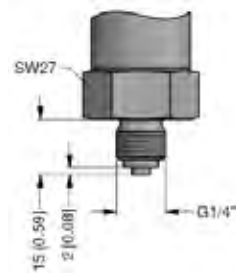
G1/2" EN 837



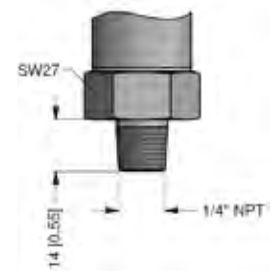
1/2" NPT



G1/4" DIN 3852

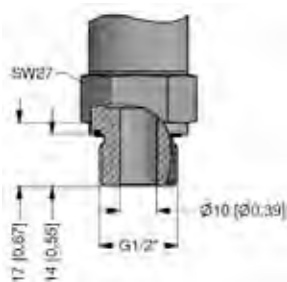


G1/4" EN 837



1/4" NPT

⇒ metric threads and other versions on request



G1/2" DIN 3852
open port



DMP 331

Industrial Pressure Transmitter for Low Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 / 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 60 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristic

- ▶ perfect thermal behaviour
- ▶ excellent long term stability
- ▶ pressure port
G 1/2" flush from 100 mbar




Optional versions

- ▶ IS-version
Ex ia = intrinsically safe
for gases and dusts
- ▶ SIL 2-according to
IEC 61508 / IEC 61511
- ▶ welded pressure sensor
- ▶ customer specific versions

The pressure transmitter DMP 331 can be used in all industrial areas when the medium is compatible with stainless steel 1.4404 (316 L) or 1.4435 (316 L). Additional are different elastomer seals as well as a helium tested welded version available.

The modulare concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions. Thus a diversity of variations is created, meeting almost all requirements in industrial applications.

Preferred areas of use are

-  Plant and machine engineering
-  Environmental engineering
(water - sewage - recycling)
-  Energy industry



| Input pressure range | | | | | | | | | |
|------------------------|-------|--------|------|------|------|------|------|-----|-----|
| Nominal pressure gauge | [bar] | -1...0 | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 |
| Nominal pressure abs. | [bar] | - | - | - | - | 0.40 | 0.60 | 1 | 1.6 |
| Overpressure | [bar] | 5 | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 |
| Burst pressure \geq | [bar] | 7.5 | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 |

| | | | | | | | | | |
|-------------------------------|-------|--|----|----|----|-----|-----|-----|-----|
| Nominal pressure gauge / abs. | [bar] | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 |
| Overpressure | [bar] | 10 | 20 | 40 | 40 | 80 | 80 | 105 | 105 |
| Burst pressure \geq | [bar] | 15 | 25 | 50 | 50 | 120 | 120 | 210 | 210 |
| Vacuum resistance | | $p_N \geq 1$ bar: unlimited vacuum resistance $p_N < 1$ bar: on request | | | | | | | |

| Output signal / Supply | | | |
|------------------------|---------|---|---|
| Standard | 2-wire: | 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Option IS-protection | 2-wire: | 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Options 3-wire | 3-wire: | 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ | |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | standard: nominal pressure < 0.4 bar: $\leq \pm 0.50$ % FSO nominal pressure ≥ 0.4 bar: $\leq \pm 0.35$ % FSO option 1: nominal pressure ≥ 0.4 bar: $\leq \pm 0.25$ % FSO option 2: for all nominal pressure ranges: $\leq \pm 0.10$ % FSO |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ current 3-wire: $R_{max} = 240 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $k\Omega$ |
| Long term stability | $\leq \pm 0.1$ % FSO / year at reference conditions |
| Response time | 2-wire: ≤ 10 msec 3-wire: ≤ 3 msec |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | | | | |
|-----------------------------------|---------|-----------------|--------------|-----------------|
| Nominal pressure p_N | [bar] | -1 ... 0 | < 0.40 | ≥ 0.40 |
| Tolerance band | [% FSO] | $\leq \pm 0.75$ | $\leq \pm 1$ | $\leq \pm 0.75$ |
| in compensated range | [°C] | -20 ... 85 | 0 ... 70 | -20 ... 85 |

| Permissible temperatures | |
|---------------------------|----------------|
| Medium | -40 ... 125 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 100 °C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | | |
|----------------------|---------------------------|--------------------------------|
| Vibration | 10 g RMS (25 ... 2000 Hz) | according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec | according to DIN EN 60068-2-27 |

| Materials | |
|------------------------------|--|
| Pressure port | stainless steel 1.4404 (316 L) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM options: EPDM welded version ² (for $p_N \leq 40$ bar) others on request |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |

² welded version only with pressure ports according to EN 837, $p_N \leq 40$ bar

| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|---|
| Approvals DX19-DMP 331 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28\text{ V}$, $I_i = 93\text{ mA}$, $P_i = 660\text{ mW}$, $C_i \approx 0\text{ nF}$, $L_i \approx 0\text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |

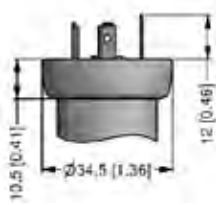
| Miscellaneous | |
|----------------------------------|---|
| Option SIL2 version ³ | according to IEC 61508 / IEC 61511 |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | approx. 200 g |
| Installation position | any ⁴ |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

³ only for 4 ... 20 mA / 2-wire, not in combination with accuracy 0.1 %

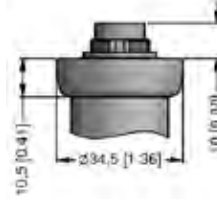
⁴ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1\text{ bar}$.

| Wiring diagrams | |
|--------------------------------|--|
| <p>2-wire-system (current)</p> | <p>3-wire-system (current / voltage)</p> |

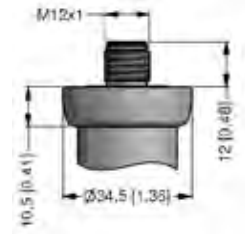
| Pin configuration | | | | | |
|-----------------------|-----------------------|--------------------|---------------------------|----------------------------|--------|
| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | Bayonet MIL-C-26482 (10-6) | |
| | | | | | |
| | | | | 2-wire | 3-wire |
| Supply + | 1 | 3 | 1 | A | A |
| Supply - | 2 | 4 | 2 | B | D |
| Signal + (for 3-wire) | 3 | 1 | 3 | - | B |
| Shield | ground pin | 5 | 4 | pressure port | |
| Electrical connection | compact field housing | | cable colours (IEC 60757) | | |
| | | | | | |
| Supply + | V_{S+} | | WH (white) | | |
| Supply - | V_{S-} | | BN (brown) | | |
| Signal + (for 3-wire) | S+ | | GN (green) | | |
| Shield | GND | | GNYE (green-yellow) | | |

Electrical connections (dimensions mm / in)


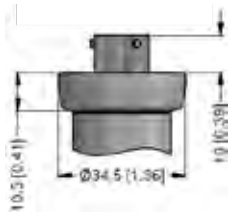
ISO 4400
(IP 65)



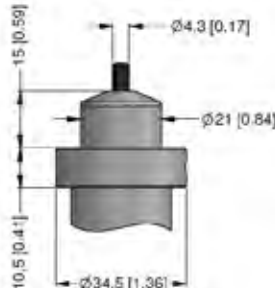
Binder series 723, 5-pin
(IP 67)



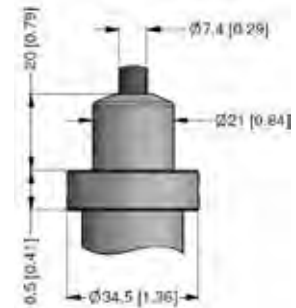
M12x1, 4-pin
(IP 67)



Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67)⁵



cable outlet, cable with
ventilation tube (IP 68)⁶



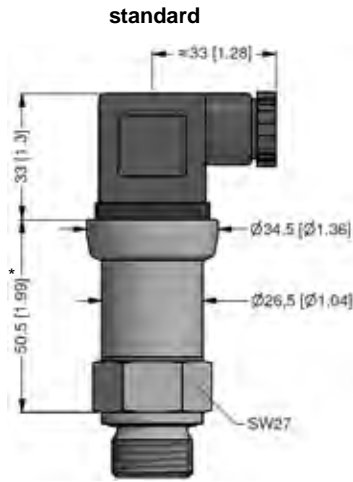
compact field housing
(IP 67)

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

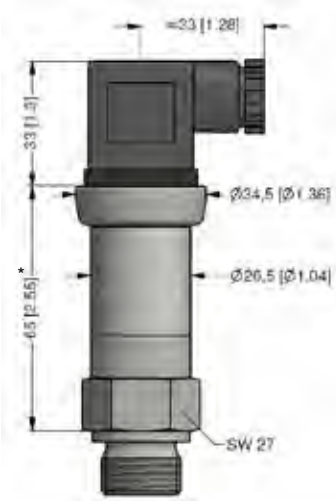
⁵ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁶ different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

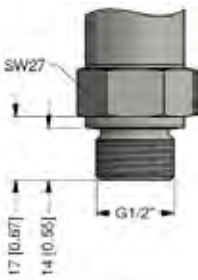


SIL- and SIL-IS version

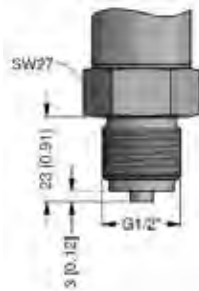


* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

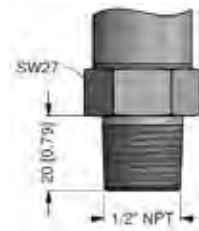
Mechanical connections (dimensions mm / in)



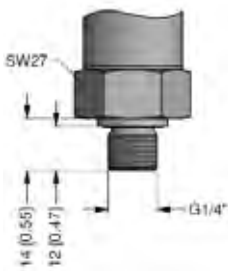
G1/2" DIN 3852



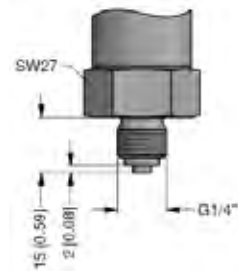
G1/2" EN 837



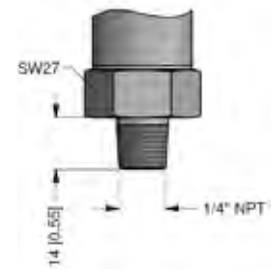
1/2" NPT



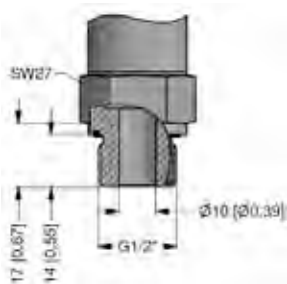
G1/4" DIN 3852



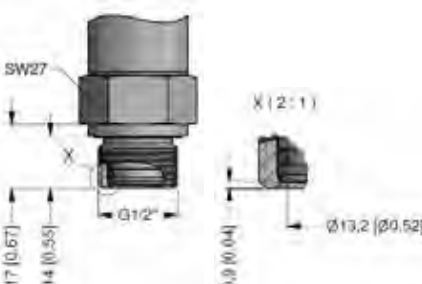
G1/4" EN 837



1/4" NPT



G1/2" open port DIN 3852
($P_N \leq 40$ bar)



G1/2" flush DIN 3852
($P_N \leq 40$ bar)

↪ metric threads and other versions on request



DMP 333

Industrial Pressure Transmitter for High Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 / 0.1 % FSO

Nominal pressure

from 0 ... 100 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- ▶ excellent long-term stability, also with high dynamic pressure loads
- ▶ insensitive to pressure peaks
- ▶ high overpressure capability

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2 version according to IEC 61508 / IEC 61511
- ▶ customer specific versions

The pressure transmitter type DMP 333 has been especially designed for use in hydraulic applications with high static and dynamic pressure. The transmitter is characterized by an excellent long term stability, also under fast changing pressure as well as positive and negative pressure peaks.

The modular concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions. Thus a diversity of variations is created, meeting almost all requirements in hydraulic applications.

Preferred areas of use are

Plant and machine engineering

Machine tools

Hydraulic presses

Injection moulding machine

Handling equipment

Elevated platforms

Test benches



Mobile hydraulics



| Input pressure range | | | | | | |
|--|---|---|------|------|---|------|
| Nominal pressure gauge / abs. | [bar] | 100 | 160 | 250 | 400 | 600 |
| Overpressure | [bar] | 210 | 600 | 1000 | 1000 | 1000 |
| Burst pressure \geq | [bar] | 1000 | 1000 | 1250 | 1250 | 1800 |
| Output signal / Supply | | | | | | |
| Standard | 2-wire: | 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ | | | SIL-version: $V_S = 14 \dots 28 V_{DC}$ | |
| Option IS-protection | 2-wire: | 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | | | SIL-version: $V_S = 14 \dots 28 V_{DC}$ | |
| Options 3-wire | 3-wire: | 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ | | | | |
| Performance | | | | | | |
| Accuracy ¹ | standard: | $\leq \pm 0.35 \% \text{ FSO}$ | | | | |
| | option 1: | $\leq \pm 0.25 \% \text{ FSO}$ | | | | |
| | option 2: | $\leq \pm 0.10 \% \text{ FSO}$ | | | | |
| Permissible load | current 2-wire: | $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ | | | | |
| | current 3-wire: | $R_{\max} = 240 \Omega$ | | | | |
| | voltage 3-wire: | $R_{\min} = 10 \text{ k}\Omega$ | | | | |
| Influence effects | supply: | 0.05 % FSO / 10 V | | | | |
| | load: | 0.05 % FSO / $\text{k}\Omega$ | | | | |
| Long term stability | $\leq \pm 0.1 \% \text{ FSO} / \text{year}$ at reference conditions | | | | | |
| Response time | 2-wire: | $\leq 10 \text{ msec}$ | | | | |
| | 3-wire: | $\leq 3 \text{ msec}$ | | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | |
| Thermal effects (offset and span) | | | | | | |
| Tolerance band | $\leq \pm 0.75 \% \text{ FSO}$ | | | | | |
| in compensated range | 0 ... 70 °C | | | | | |
| Permissible temperatures | | | | | | |
| Medium | -40 ... 125 °C | | | | | |
| Electronics / environment | -40 ... 85 °C | | | | | |
| Storage | -40 ... 100 °C | | | | | |
| Electrical protection | | | | | | |
| Short-circuit protection | permanent | | | | | |
| Reverse polarity protection | no damage, but also no function | | | | | |
| Electromagnetic compatibility | emission and immunity according to EN 61326 | | | | | |
| Mechanical stability | | | | | | |
| Vibration | 10 g RMS (25 ... 2000 Hz) | according to DIN EN 60068-2-6 | | | | |
| Shock | 100 g / 11 msec | according to DIN EN 60068-2-27 | | | | |
| Materials | | | | | | |
| Pressure port | stainless steel 1.4404 (316 L) | | | | | |
| Housing | stainless steel 1.4404 (316 L) | | | | | |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | | | | |
| Seals | standard: FKM options: EPDM (for $p_N \leq 160 \text{ bar}$) others on request | | | | | |
| Diaphragm | stainless steel 1.4435 (316 L) | | | | | |
| Media wetted parts | pressure port, seals, diaphragm | | | | | |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | | | | | | |
| Approvals DX19-DMP 333 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da | | | | | |
| Safety technical maximum values | $U_i = 28 V_{DC}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing | | | | | |
| Permissible temperatures for environment | in zone 0: | -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar | | | | |
| | in zone 1 or higher: | -40/-20 ... 70 °C | | | | |
| Connecting cables (by factory) | cable capacitance: | signal line/shield also signal line/signal line: 160 pF/m | | | | |
| | cable inductance: | signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ | | | | |

| Miscellaneous | |
|----------------------------------|---|
| Option SIL2 version ² | according to IEC 61508 / IEC 61511 |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | approx. 140 g |
| Installation position | any ³ |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁴ |
| ATEX Directive | 2014/34/EU |

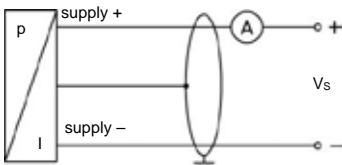
² only for 4 ... 20 mA / 2-wire, not in combination with accuracy 0.1 %

³ Pressure transmitters are calibrated in a vertical position with the pressure connection down.

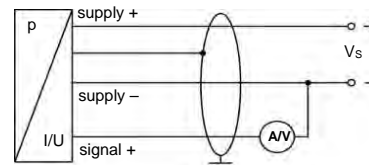
⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

2-wire-system (current)

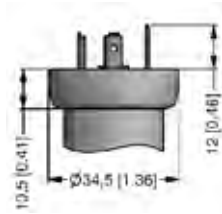


3-wire-system (current / voltage)

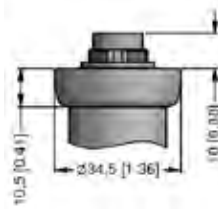


Pin configuration

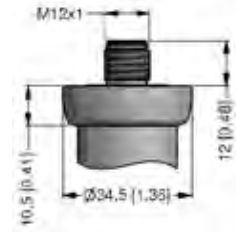
| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | Bayonet MIL-C-26482 (10-6) | |
|-----------------------|---------------------------|--------------------|---------------------------|----------------------------|--------|
| | | | | | |
| | | | | 2-wire | 3-wire |
| Supply + | 1 | 3 | 1 | A | A |
| Supply - | 2 | 4 | 2 | B | D |
| Signal + (for 3-wire) | 3 | 1 | 3 | - | B |
| Shield | ground pin | 5 | 4 | pressure port | |
| Electrical connection | compact field housing | | cable colours (IEC 60757) | | |
| Supply + | V _{s+} | | WH (white) | | |
| Supply - | V _{s-} | | BN (brown) | | |
| Signal + (for 3-wire) | S+ | | GN (green) | | |
| Shield | GND | | GNYE (green-yellow) | | |

Electrical connections (dimensions mm / in)


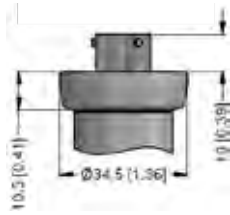
ISO 4400
(IP 65)



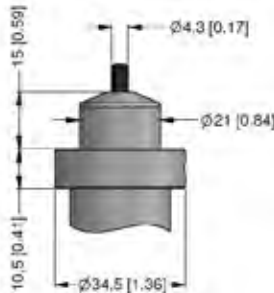
Binder series 723, 5-pin
(IP 67)



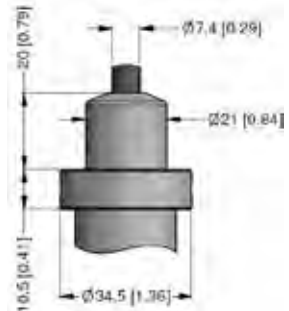
M12x1, 4-pin
(IP 67)



Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67)⁵



cable outlet, cable with
ventilation tube (IP 68)⁶



compact field housing
(IP 67)

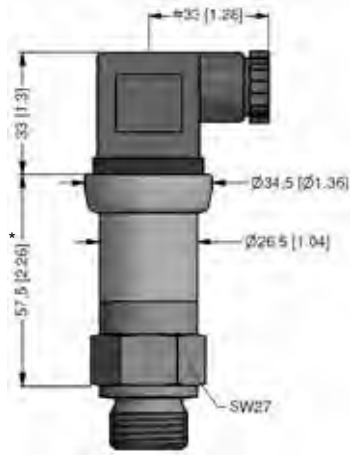
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁵ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

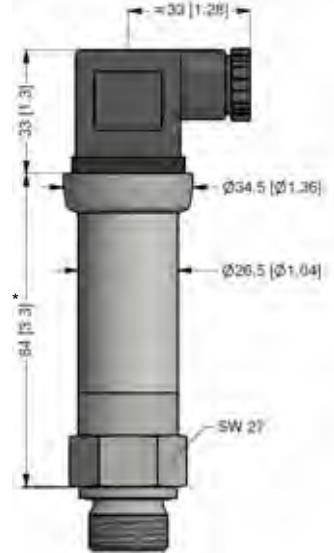
⁶ different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)

standard

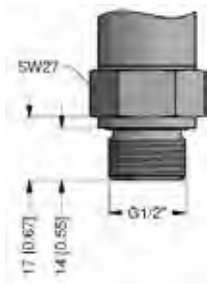


SIL- and SIL-IS-version

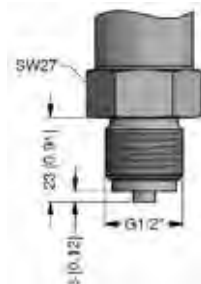


* with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm

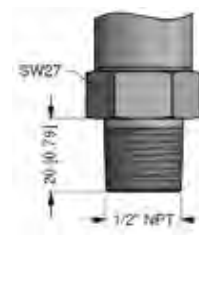
Mechanical connections (dimensions mm / in)



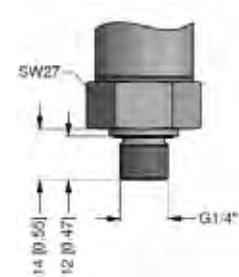
G1/2" DIN 3852



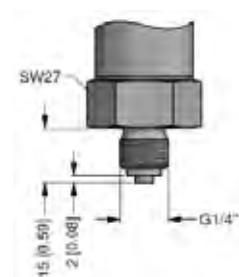
G1/2" EN 837



1/2" NPT



G1/4" DIN 3852



G1/4" EN 837

⇒ metric threads and other versions on request



DMP 321

Industrial Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.25 % FSO
option: 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 20 mA / 0 ... 10 V
others on request

Special characteristics

- ▶ perfect thermal behaviour
- ▶ excellent long-term stability
- ▶ compact design

Optional versions





- ▶ IS-version
Ex ia = intrinsically safe for gases and dusts
- ▶ welded pressure sensor
- ▶ customer specific versions

The pressure transmitter DMP 321 is the consistent further development of our in many applications approved DMP 331. It shows an improved signal behaviour and sets new standards in the industrial class.

Its metallic diaphragm made of stainless steel (1.4435 / 316L) offers a good corrosion resistance in many industrial processes.

The modular device concept allows to combine different pressure ranges with a variety of electrical and mechanical connections. Thus, a diversity of variations is created, meeting almost all requirements in industrial applications.

Preferred areas of use are

-  Plant and machine engineering
-  Environmental engineering
-  Energy industry
-  Mobile hydraulics



| Input pressure range | | | | | | | | | | | | |
|---------------------------|-------|--------|------|------|------|------|------|-----|-----|-----|----|----|
| Nominal pressure gauge | [bar] | -1...0 | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 |
| Nominal pressure absolute | [bar] | - | - | - | - | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 |
| Overpressure | [bar] | 5 | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 | 10 | 20 | 40 |
| Burst pressure \geq | [bar] | 7.5 | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 | 15 | 25 | 50 |

| | | | | | | | | | | | |
|-----------------------------------|-------|--|-----|-----|-----|-----|------|------|------|------|------|
| Nominal pressure gauge / absolute | [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 |
| Overpressure | [bar] | 40 | 80 | 80 | 105 | 210 | 600 | 600 | 1000 | 1000 | 1000 |
| Burst pressure \geq | [bar] | 50 | 120 | 120 | 210 | 420 | 1000 | 1000 | 1250 | 1250 | 1800 |
| Vacuum resistance | | $p_N \geq 1$ bar: unlimited vacuum resistance $p_N < 1$ bar: on request | | | | | | | | | |

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 32 V_{DC}$ |
| Option IS-protection | 2-wire: 4 ... 20 mA / $V_S = 12 \dots 28 V_{DC}$ |
| Options 3-wire | 3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | standard: $\leq \pm 0.25$ % FSO option: $\leq \pm 0.1$ % FSO |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $k\Omega$ |
| Long term stability | $\leq \pm 0.1$ % FSO / year at reference conditions |
| Response time | 2-wire: ≤ 10 msec 3-wire: ≤ 3 msec |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | |
|-----------------------------------|-----------------------|
| Tolerance band | $\leq \pm 0.75$ % FSO |
| in compensated range | -20 ... 85 °C |

| Permissible temperatures | |
|---------------------------|----------------|
| Medium | -40 ... 125 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 100 °C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|---|
| Vibration | 10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 100 g / 11 msec according to DIN EN 60068-2-27 |

| Materials | |
|------------------------------|--|
| Pressure port | stainless steel 1.4404 (316 L) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM options: EPDM (for $p_N \leq 160$ bar) welded version ² (for $p_N \leq 40$ bar) others on request |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |

² welded version only with pressure ports according to EN 837, $p_N \leq 40$ bar

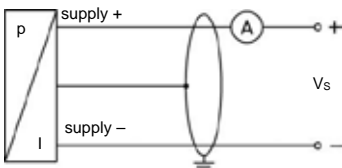
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|---|
| Approvals DX19-DMP 321 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28 V_{DC}$, $I_i = 93 mA$, $P_i = 660 mW$, $C_i \approx 0 nF$, $L_i \approx 0 \mu H$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu H/m$ |
| Miscellaneous | |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | approx. 140 g |
| Installation position | any ³ |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁴ |
| ATEX Directive | 2014/34/EU |

³ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $p_N \leq 1 bar$.

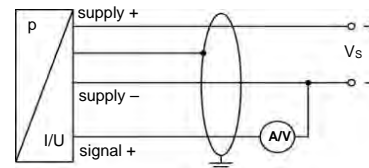
⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)

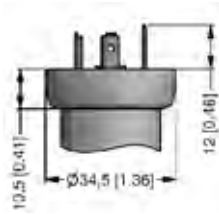


3-wire-system (current / voltage)

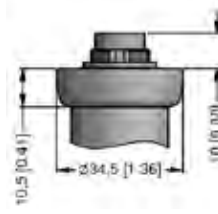


Pin configuration

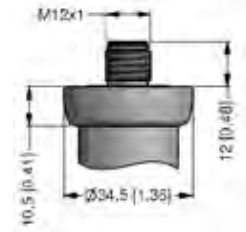
| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | Bayonet MIL-C-26482 (10-6) | |
|-----------------------|-----------------------|--------------------|---------------------------|----------------------------|--------|
| | | | | | |
| | | | | 2-wire | 3-wire |
| Supply + | 1 | 3 | 1 | A | A |
| Supply - | 2 | 4 | 2 | B | D |
| Signal + (for 3-wire) | 3 | 1 | 3 | - | B |
| Shield | ground pin | 5 | 4 | pressure port | |
| Electrical connection | compact field housing | | cable colours (IEC 60757) | | |
| | | | | | |
| Supply + | Vs+ | | WH (white) | | |
| Supply - | Vs- | | BN (brown) | | |
| Signal + (for 3-wire) | S+ | | GN (green) | | |
| Shield | GND | | GNYE (green-yellow) | | |

Electrical connections (dimensions mm / in)


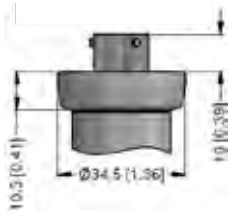
ISO 4400
(IP 65)



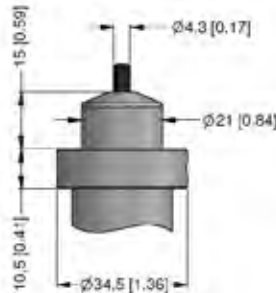
Binder series 723, 5-pin
(IP 67)



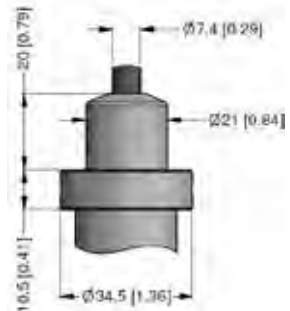
M12x1, 4-pin
(IP 67)



Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67)⁵



cable outlet, cable with
ventilation tube (IP 68)⁶



compact field housing
(IP 67)

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁵ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁶ different cable types and lengths available, permissible temperature depends on kind of cable

Ordering code DMP 321

DMP 321

□□□ - □□□□ - □ - □ - □□□□ - □□□□ - □ - □□□□

| Pressure | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---|--------------|---|---|---|---|---|---|---|---|--|--|--|--|---|---|---|--|--|---------|
| | gauge | | 1 | 1 | 5 | | | | | | | | | | | | | | | |
| | absolute ¹ | | 1 | 1 | 6 | | | | | | | | | | | | | | | |
| Input | | [bar] | | | | | | | | | | | | | | | | | | |
| | 0.10 | ¹ | | 1 | 0 | 0 | 0 | | | | | | | | | | | | | |
| | 0.16 | ¹ | | 1 | 6 | 0 | 0 | | | | | | | | | | | | | |
| | 0.25 | ¹ | | 2 | 5 | 0 | 0 | | | | | | | | | | | | | |
| | 0.40 | | | 4 | 0 | 0 | 0 | | | | | | | | | | | | | |
| | 0.60 | | | 6 | 0 | 0 | 0 | | | | | | | | | | | | | |
| | 1.0 | | | 1 | 0 | 0 | 1 | | | | | | | | | | | | | |
| | 1.6 | | | 1 | 6 | 0 | 1 | | | | | | | | | | | | | |
| | 2.5 | | | 2 | 5 | 0 | 1 | | | | | | | | | | | | | |
| | 4.0 | | | 4 | 0 | 0 | 1 | | | | | | | | | | | | | |
| | 6.0 | | | 6 | 0 | 0 | 1 | | | | | | | | | | | | | |
| | 10 | | | 1 | 0 | 0 | 2 | | | | | | | | | | | | | |
| | 16 | | | 1 | 6 | 0 | 2 | | | | | | | | | | | | | |
| | 25 | | | 2 | 5 | 0 | 2 | | | | | | | | | | | | | |
| | 40 | | | 4 | 0 | 0 | 2 | | | | | | | | | | | | | |
| | 60 | | | 6 | 0 | 0 | 2 | | | | | | | | | | | | | |
| | 100 | | | 1 | 0 | 0 | 3 | | | | | | | | | | | | | |
| | 160 | | | 1 | 6 | 0 | 3 | | | | | | | | | | | | | |
| | 250 | | | 2 | 5 | 0 | 3 | | | | | | | | | | | | | |
| | 400 | | | 4 | 0 | 0 | 3 | | | | | | | | | | | | | |
| | 600 | | | 6 | 0 | 0 | 3 | | | | | | | | | | | | | |
| | -1 ... 0 | | X | 1 | 0 | 2 | | | | | | | | | | | | | | |
| | customer | | | 9 | 9 | 9 | 9 | | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | 1 | | | | | | | | | | | | |
| | 0 ... 20 mA / 3-wire | | | | | | | 2 | | | | | | | | | | | | |
| | 0 ... 10 V / 3-wire | | | | | | | 3 | | | | | | | | | | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | E | | | | | | | | | | | | |
| | customer | | | | | | | 9 | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | | | |
| standard: | 0.25 % FSO | | | | | | | 2 | | | | | | | | | | | | |
| option: | 0.10 % FSO | | | | | | | 1 | | | | | | | | | | | | |
| | customer | | | | | | | 9 | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | | | 1 | 0 | 0 | | | | | | | | | | |
| | male plug Binder series 723 (5-pin) | | | | | | | 2 | 0 | 0 | | | | | | | | | | |
| | cable outlet with PVC cable (IP67) ² | | | | | | | T | A | 0 | | | | | | | | | | |
| | cable outlet, | | | | | | | | | | | | | | | | | | | |
| | cable with ventilation tube (IP68) ³ | | | | | | | T | R | 0 | | | | | | | | | | |
| | male plug M12x1 (4-pin) / metal | | | | | | | M | 1 | 0 | | | | | | | | | | |
| | Bayonet MIL-C-26482 (10-6); 2 wire | | | | | | | B | G | 0 | | | | | | | | | | |
| | Bayonet MIL-C-26482 (10-6); 3 wire | | | | | | | B | G | 4 | | | | | | | | | | |
| | compact field housing | | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4301 (304) | | | | | | | 8 | 5 | 0 | | | | | | | | | | |
| | customer | | | | | | | 9 | 9 | 9 | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | | | 1 | 0 | 0 | | | | | | | | | | |
| | G1/2" EN 837 | | | | | | | 2 | 0 | 0 | | | | | | | | | | |
| | G1/4" DIN 3852 | | | | | | | 3 | 0 | 0 | | | | | | | | | | |
| | G1/4" DIN 3852, internal thread | | | | | | | J | 0 | 0 | | | | | | | | | | |
| | G1/4" EN 837 | | | | | | | 4 | 0 | 0 | | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | | | | | | | | | | | | | | | |
| | with flush sensor ⁴ | | | | | | | F | 0 | 0 | | | | | | | | | | |
| | G1/2" DIN 3852 open pressure port ⁴ | | | | | | | H | 0 | 0 | | | | | | | | | | |
| | 1/2" NPT | | | | | | | N | 0 | 0 | | | | | | | | | | |
| | 1/4" NPT | | | | | | | N | 4 | 0 | | | | | | | | | | |
| | customer | | | | | | | 9 | 9 | 9 | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | 1 | | | | | | | | | | | | |
| | EPDM | | | | | | | 3 | | | | | | | | | | | | |
| | without (welded version) ⁵ | | | | | | | 2 | | | | | | | | | | | | |
| | customer | | | | | | | 9 | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | 0 | 0 | 0 | | | |
| | customer | | | | | | | | | | | | | | 9 | 9 | 9 | | | consult |

¹ absolute pressure possible from 0.4 bar² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request³ code TR0 = PVC cable, cable with ventilation tube available in different types and lengths⁴ not possible for nominal pressure $p_N > 40$ bar⁵ welded version only with pressure ports according to EN 837, possible for $p_N \leq 40$ bar



DMP 335

Industrial Pressure Transmitter

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 6 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Special characteristics

- ▶ suitable for oxygen applications
- ▶ insensitive to pressure peaks
- ▶ high overpressure capability






Optional versions

- ▶ IS-version
Ex ia = intrinsically safe
for gases and dusts
- ▶ customer specific versions

The industrial pressure transmitter DMP 335 is based on a welded stainless steel pressure sensor without fluid.

This characteristic has a special advantage with applications where silicone oil or elastomeric seals cannot be used.

Preferred areas of use are

-  Medical technology
-  Plant and machine engineering
-  Commercial vehicles and mobile hydraulics
-  Refrigeration
-  Oxygen application



| Input pressure range | | | | | | | | | | | | |
|------------------------|-------|-----------|----|----|-----|-----|-----|-----|-----|-------|-------|-------|
| Nominal pressure gauge | [bar] | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 |
| Overpressure | [bar] | 12 | 20 | 32 | 50 | 80 | 120 | 200 | 320 | 500 | 800 | 1 200 |
| Burst pressure \geq | [bar] | 30 | 50 | 80 | 125 | 200 | 300 | 500 | 800 | 1 400 | 2 000 | 3 000 |
| Vacuum resistance | | unlimited | | | | | | | | | | |

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ |
| Option IS-version | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ |
| Option 3-wire | 3-wire: 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | $\leq \pm 0.5 \% \text{ FSO}$ |
| Permissible load | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$ |
| Long term stability | $\leq \pm 0.2 \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | |
|-----------------------------------|---|
| Thermal error | $\pm 0.3 \% \text{ FSO} / 10 \text{ K}$ |
| in compensated range | 0 ... 70 °C |

| Permissible temperatures | |
|---------------------------|----------------|
| Medium | -40 ... 125 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 100 °C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|---|
| Vibration | 20 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

| Materials | |
|------------------------------|---|
| Pressure port | stainless steel 1.4571 (316 Ti) |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | none (welded) |
| Diaphragm | stainless steel 1.4542 (17-4PH) |
| Media wetted parts | pressure port, diaphragm |

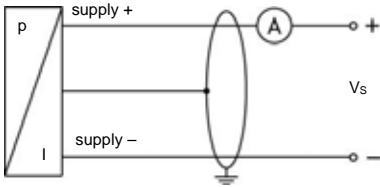
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|---|
| Approvals DX19-DMP 335 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28 V_{DC}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |

| Miscellaneous | |
|-----------------------|---|
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | approx. 140 g |
| Installation position | any |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ² |
| ATEX Directive | 2014/34/EU |

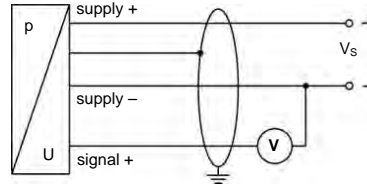
² This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams

2-wire-system (current)



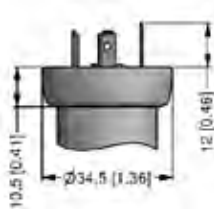
3-wire-system (voltage)



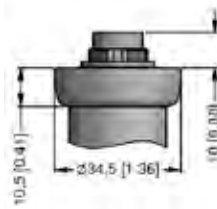
Pin configuration

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|----------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| Supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| Supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| Signal + (only for 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

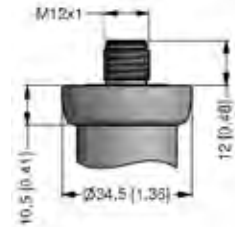
Electrical connections (dimensions mm / in)



ISO 4400 (IP 65)



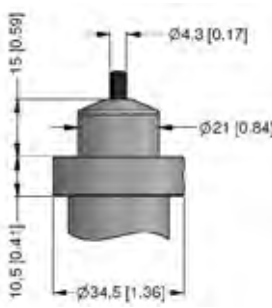
Binder series 723, 5-pin (IP 67)



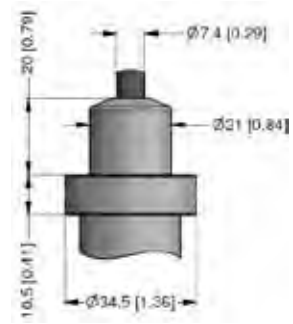
M12x1, 4-pin (IP 67)



compact field housing (IP 67)



cable outlet with PVC-cable (IP 67)³

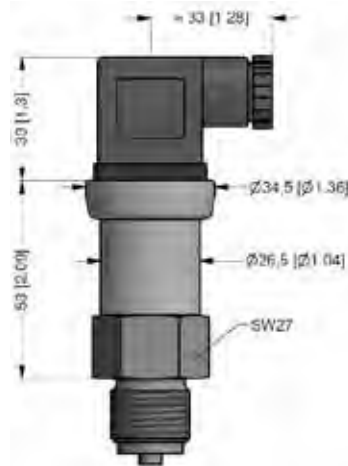
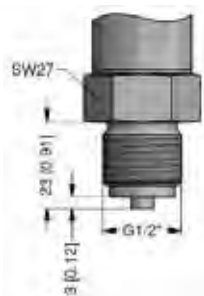


cable outlet, cable with ventilation tube (IP 68)⁴

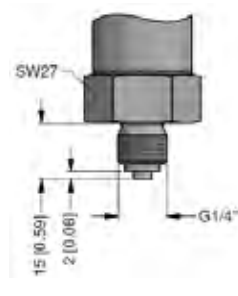
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

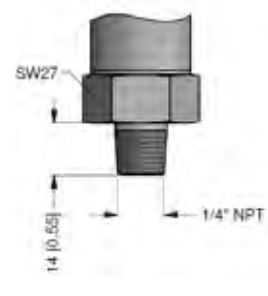
⁴ different cable types and lengths available, permissible temperature depends on kind of cable

Dimensions (mm / in)**Mechanical connections (dimensions mm / in)**

G1/2" EN 837



G1/4" EN 837



1/4" NPT

⇒ metric threads and other versions on request

Accessories**Plug-on Display PA 430****Functional range**

- ▶ free scalable display
- ▶ switch mode, hysteresis, parameterizable deceleration of the contacts
- ▶ display 330 ° rotatable
- ▶ connector 300 ° rotatable
- ▶ no external power supply necessary

Product characteristics

- ▶ plug-on display for pressure transmitter with output signal: 4 ... 20 mA / 2-wire or 0 ... 10 V / 3-wire
- ▶ 4-digit LED display

Optional versions

- ▶ IS-version
- ▶ 1 or 2 programmable contacts

Ordering code DMP 335

DMP 335



| | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|--|---------|
| Pressure | | | | | | | | | | |
| | gauge | 2 | 1 | 0 | | | | | | |
| Input | | | | | | | | | | |
| | [bar] | | | | | | | | | |
| | 6 | 6 | 0 | 0 | 1 | | | | | |
| | 10 | 1 | 0 | 0 | 2 | | | | | |
| | 16 | 1 | 6 | 0 | 2 | | | | | |
| | 25 | 2 | 5 | 0 | 2 | | | | | |
| | 40 | 4 | 0 | 0 | 2 | | | | | |
| | 60 | 6 | 0 | 0 | 2 | | | | | |
| | 100 | 1 | 0 | 0 | 3 | | | | | |
| | 160 | 1 | 6 | 0 | 3 | | | | | |
| | 250 | 2 | 5 | 0 | 3 | | | | | |
| | 400 | 4 | 0 | 0 | 3 | | | | | |
| | 600 | 6 | 0 | 0 | 3 | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | consult |
| Output | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | 1 | | | | |
| | 0 ... 10 V / 3-wire | | | | | 3 | | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | E | | | | |
| | customer | | | | | 9 | | | | consult |
| Accuracy | | | | | | | | | | |
| | 0.5 % FSO | | | | | 5 | | | | |
| | customer | | | | | 9 | | | | consult |
| Electrical connection | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | 1 | 0 | 0 | | |
| | male plug Binder series 723 (5-pin) | | | | | 2 | 0 | 0 | | |
| | cable outlet with PVC cable (IP67) ¹ | | | | | T | A | 0 | | |
| | cable outlet, | | | | | | | | | |
| | cable with ventilation tube (IP68) ² | | | | | T | R | 0 | | |
| | male plug M12x1 (4-pin) / metal | | | | | M | 1 | 0 | | |
| | compact field housing | | | | | | | | | |
| | stainless steel 1.4301 (304) | | | | | 8 | 5 | 0 | | |
| | customer | | | | | 9 | 9 | 9 | | consult |
| Mechanical connection | | | | | | | | | | |
| | G1/2" EN 837 | | | | | 2 | 0 | 0 | | |
| | G1/4" EN 837 | | | | | 4 | 0 | 0 | | |
| | 1/4" NPT | | | | | N | 4 | 0 | | |
| | customer | | | | | 9 | 9 | 9 | | consult |
| Seals | | | | | | | | | | |
| | without (welded version) | | | | | 2 | | | | |
| | customer | | | | | 9 | | | | consult |
| Special version | | | | | | | | | | |
| | standard | | | | | 0 | 0 | 0 | | |
| | customer | | | | | 9 | 9 | 9 | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)
² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths



DMP 336

Industrial Pressure Transmitter for Technical Gases and H₂ Applications

Welded, Dry
Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 16 bar up to 0 ... 1000 bar

Output signal

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ media wetted parts of special stainless steel
- ▶ insensitive to pressure peaks
- ▶ high overpressure capability
- ▶ oil and grease free according to ISO 15001 (e.g. for oxygen applications)

Optional version





- ▶ IS-version zone 0
Ex ia = intrinsically safe for gases and dusts

The industrial pressure transmitter DMP 336 was especially developed for hydrogen applications and can also be used with other technical gases (e.g. oxygen).

This is achieved by using an alloy based on 316L which prevents hydrogen embrittlement of the media-wetted parts. Level of hydrocarbon and particle contamination are significantly reduced by special treatment during production and cleaning.

An IS- version is optionally available for explosion-protected applications zone 0 / 20.

Preferred areas of use are

-  Technical gases
-  Hydrogen
-  Fuel cell
-  Medical technology



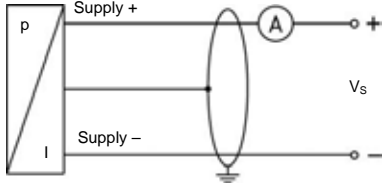
| Input pressure range | | | | | | | | | | | |
|------------------------|-------|-----------|-----|-----|-----|-----|-----|------|------|------|-------------------|
| Nominal pressure gauge | [bar] | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 1000 |
| Overpressure | [bar] | 50 | 50 | 80 | 120 | 200 | 320 | 500 | 800 | 1200 | 1500 |
| Burst pressure \geq | [bar] | 125 | 125 | 200 | 300 | 500 | 800 | 1250 | 2000 | 2000 | 3000 ¹ |
| Vacuum resistance | | unlimited | | | | | | | | | |

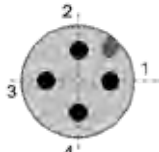
¹ UL confirmed max. burst pressure 2420 bar

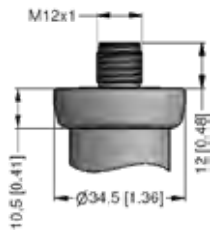
| Output signal / Supply | |
|--|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ |
| Option IS-protection | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ |
| Performance | |
| Accuracy ² | $\leq \pm 0.5 \% \text{ FSO}$ |
| Permissible load | $R_{\max} = [(V_S - V_{S_{\min}}) / 0.02 \text{ A}] \Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm 0.2 \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | $\leq 10 \text{ msec}$ |
| ² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | |
| Thermal effects (Offset and Span) | |
| Thermal error | $\pm 0.2 \% \text{ FSO} / 10 \text{ K}$ |
| in compensated range | -25 ... 85 °C |
| Permissible temperatures | |
| Permissible temperatures | medium: -40 ... 125 °C electronics / environment: -40 ... 100 °C storage: -40 ... 85 °C |
| Electrical protection | |
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |
| Mechanical stability | |
| Vibration | 20 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |
| Materials | |
| Housing | stainless steel 316L (1.4404) |
| Pressure port, sensor, diaphragm | stainless steel 316L (1.4435) |
| Seals | none (welded) |
| Media wetted parts | pressure port, sensor, diaphragm |
| Explosion protection | |
| Approvals DX19-DMP 336 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 135°C Da |
| Safety technical maximum values | $U_i = 28 V_{DC}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, the supply connections have an inner capacity of max. 27 nF |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |
| Miscellaneous | |
| Current consumption | max. 25 mA |
| Weight | approx. 140 g |
| Installation position | any |
| Operational life | $p_N \leq 600 \text{ bar}$: 100 million load cycles $p_N > 600 \text{ bar}$: 10 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³ |
| ATEX Directive | 2014/34/EU |
| ³ This directive is only valid for devices with maximum permissible overpressure > 200 bar. | |
| Purity regarding residual particles / greases | |
| Oil and grease free version | residual particles: no particles > 100 μm (based on 10 dm ²) residual greases: residual grease content < 0.2 mg/dm ² |

Wiring diagram

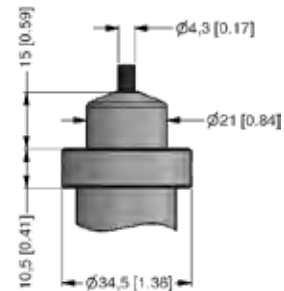
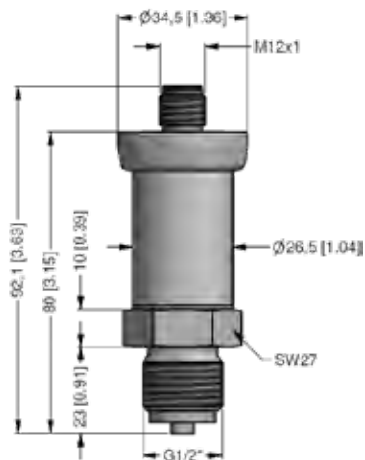
2-wire-system (current)

**Pin configuration**

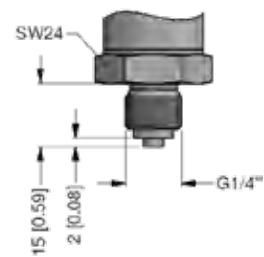
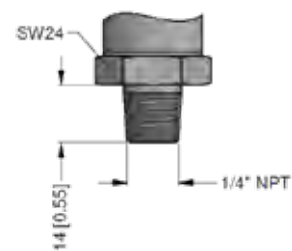
| Electrical connections | M12x1 / metal (4-pin) |  | cable colours (IEC 60757) |
|------------------------|-----------------------|---|---------------------------|
| supply + | 1 | | WH (white) |
| supply - | 2 | | BN (brown) |
| Shield | 4 | | GNYE (green-yellow) |

Electrical connections (dimensions mm / in)**standard**

M12x1 4-pin (IP 67)

optioncable outlet with PVC cable (IP 67) ⁴⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)**Mechanical connections (dimensions mm / in)****standard**

G1/2" EN 837

optionsG1/4" EN 837
pN ≤ 600 bar

1/4" NPT

⇒ metric threads and different types on demand

Ordering code DMP 336

DMP 336



| | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---------|
| Pressure | | | | | | | | | | |
| | gauge | 2 | 1 | 5 | | | | | | |
| Input | | | | | | | | | | |
| | [bar] | | | | | | | | | |
| | 16 | | | 1 | 6 | 0 | 2 | | | |
| | 25 | | | 2 | 5 | 0 | 2 | | | |
| | 40 | | | 4 | 0 | 0 | 2 | | | |
| | 60 | | | 6 | 0 | 0 | 2 | | | |
| | 100 | | | 1 | 0 | 0 | 3 | | | |
| | 160 | | | 1 | 6 | 0 | 3 | | | |
| | 250 | | | 2 | 5 | 0 | 3 | | | |
| | 400 | | | 4 | 0 | 0 | 3 | | | |
| | 600 | | | 6 | 0 | 0 | 3 | | | |
| | 1000 | | | 1 | 0 | 0 | 4 | | | |
| | customer | | | 9 | 9 | 9 | 9 | | | consult |
| Output | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | 1 | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | E | | |
| | customer | | | | | | | 9 | | consult |
| Accuracy | | | | | | | | | | |
| | 0.5 % FSO | | | | | | | 5 | | |
| | customer | | | | | | | 9 | | consult |
| Electrical connection | | | | | | | | | | |
| | male plug M12x1 (4-pin) / metal | | | | | | | M | 1 | 0 |
| | cable outlet with PVC cable (IP67) ¹ | | | | | | | T | A | 0 |
| | customer | | | | | | | 9 | 9 | 9 |
| Mechanical connection | | | | | | | | | | |
| | G1/2" EN 837 | | | | | | | 2 | 0 | 0 |
| $p_N \leq 600$ bar | G1/4" EN 837 | | | | | | | 4 | 0 | 0 |
| | 1/4" NPT | | | | | | | N | 4 | 0 |
| | customer | | | | | | | 9 | 9 | 9 |
| Seal | | | | | | | | | | |
| | without (welded version) | | | | | | | | 2 | |
| | customer | | | | | | | | 9 | consult |
| Special version | | | | | | | | | | |
| | oil-and grease free -oxygen | | | | | | | | 0 | 0 |
| | customer | | | | | | | | 9 | 9 |
| | | | | | | | | | | 7 |
| | | | | | | | | | | 9 |
| | | | | | | | | | | 9 |
| | | | | | | | | | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request



DMP 334

Industrial Pressure Transmitter for High Pressure

Thinfilm Sensor

accuracy according to IEC 60770:
0.35 % FSO

Nominal pressure

from 0 ... 600 bar up to 0 ... 2200 bar

Analogue output

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Special characteristics

- ▶ extremely robust and excellent long-term stability
- ▶ welded pressure sensor

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dusts
- ▶ pressure port:
M20 x 1.5 or 9/16 UNF
- ▶ adjustability of span and offset
- ▶ different kinds of electrical connections

The industrial pressure transmitter DMP 334 has been especially designed for use in hydraulic systems up to 2200 bar. The base element of DMP 334 is a thinfilm sensor, which is welded with the pressure port and meets high demands of operational safety and reliability.

These characteristics and the excellent measurement data of DMP 334 as well as distinguished offset stability offer a pressure transmitter with easy handling, reliability, and robustness for hydraulic user. The DMP 334 is deliverable with standard HP connections.

Preferred areas of use are



Plant and machine engineering



Commercial vehicles and mobile hydraulics



| Input pressure range | | | | | | |
|------------------------|-------|------------------|------|------|------|------|
| Nominal pressure gauge | [bar] | 600 ¹ | 1000 | 1600 | 2000 | 2200 |
| Overpressure | [bar] | 800 | 1400 | 2200 | 2800 | 2800 |
| Burst pressure ≥ | [bar] | 3000 | 4000 | 6000 | 6000 | 6000 |

¹ only available with pressure port G1/2" EN 837

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / V _S = 12 ... 36 V _{DC} |
| Option IS-protection | 2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC} |
| Option 3-wire | 3-wire: 0 ... 10 V / V _S = 14 ... 30 V _{DC} |

| Performance | |
|----------------------------|--|
| Accuracy ² | ≤ ± 0.35 % FSO |
| Permissible load | current 2-wire: R _{max} = [(V _S - V _S min) / 0.02 A] Ω voltage 3-wire: R _{min} = 10 kΩ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Long term stability | ≤ ± 0.2 % FSO / year at reference conditions |
| Response time | < 5 msec |
| Adjustability ³ | adjustment of offset and span is possible within the range of ± 5 % of the nominal pressure range; please select "041" as a special version in the ordering code |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

³ adjustable version is not possible in combination with IS-version, compact field housing and cable outlet

| Thermal effects (offset and span) | |
|-----------------------------------|-----------------------|
| Thermal error | ≤ ± 0.25 % FSO / 10 K |
| in compensated range | -20 ... 85 °C |

| Permissible temperatures | |
|---------------------------|----------------|
| Medium | -40 ... 140 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 100 °C |

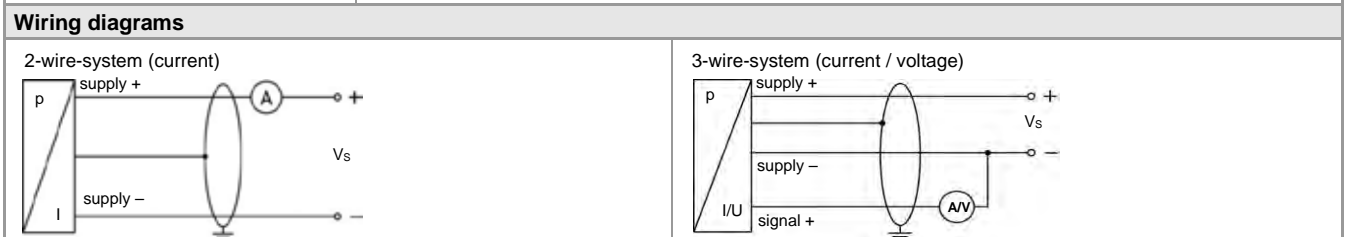
| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

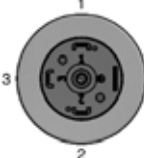
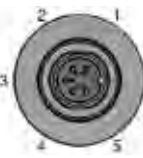

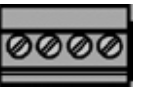

| Mechanical stability | |
|----------------------|--|
| Vibration | 10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 100 g / 11 msec. according to DIN EN 60068-2-27 |

| Materials | |
|------------------------------|---|
| Pressure port | stainless steel 1.4542 (17-4 PH) |
| Housing | stainless steel 1.4404 (316L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | none (welded version) |
| Diaphragm | stainless steel 1.4542 (17-4 PH) |
| Media wetted parts | pressure port, diaphragm |

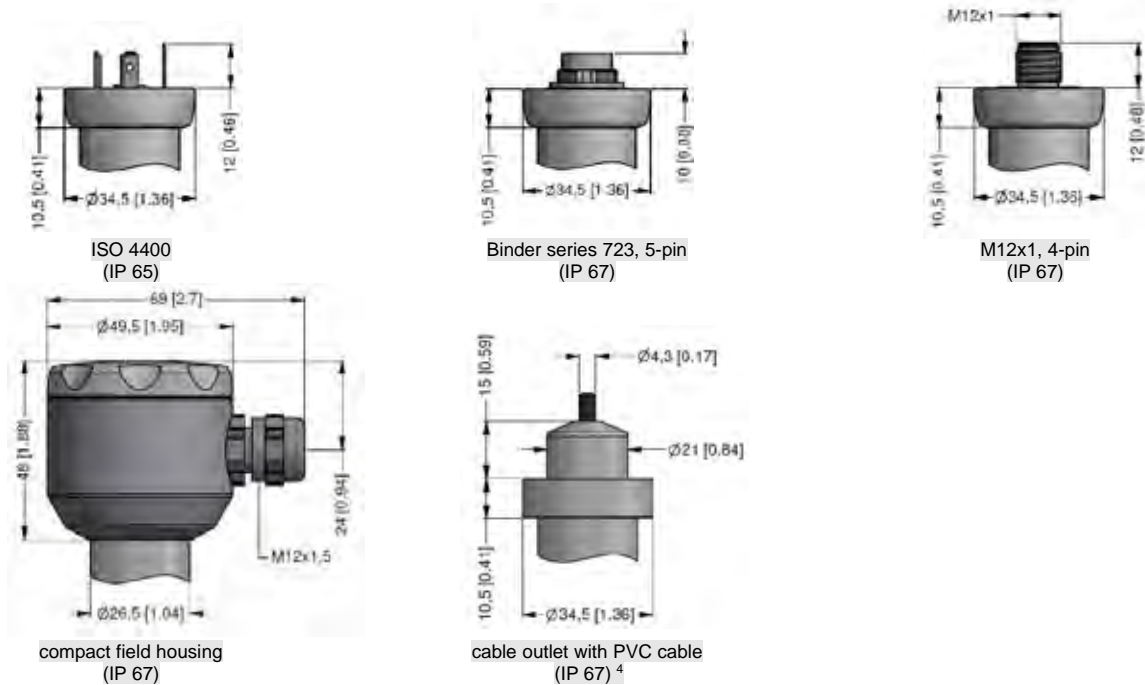
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|---|
| Approvals | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X |
| DX19-DMP 334 | zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m |

| Miscellaneous | |
|-----------------------|---|
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 8.5 mA |
| Weight | approx. 240 g |
| Installation position | any |
| Operational life | p _N = 600 bar: 100 million load cycles p _N > 600 bar: 10 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) |
| ATEX Directive | 2014/34/EU |



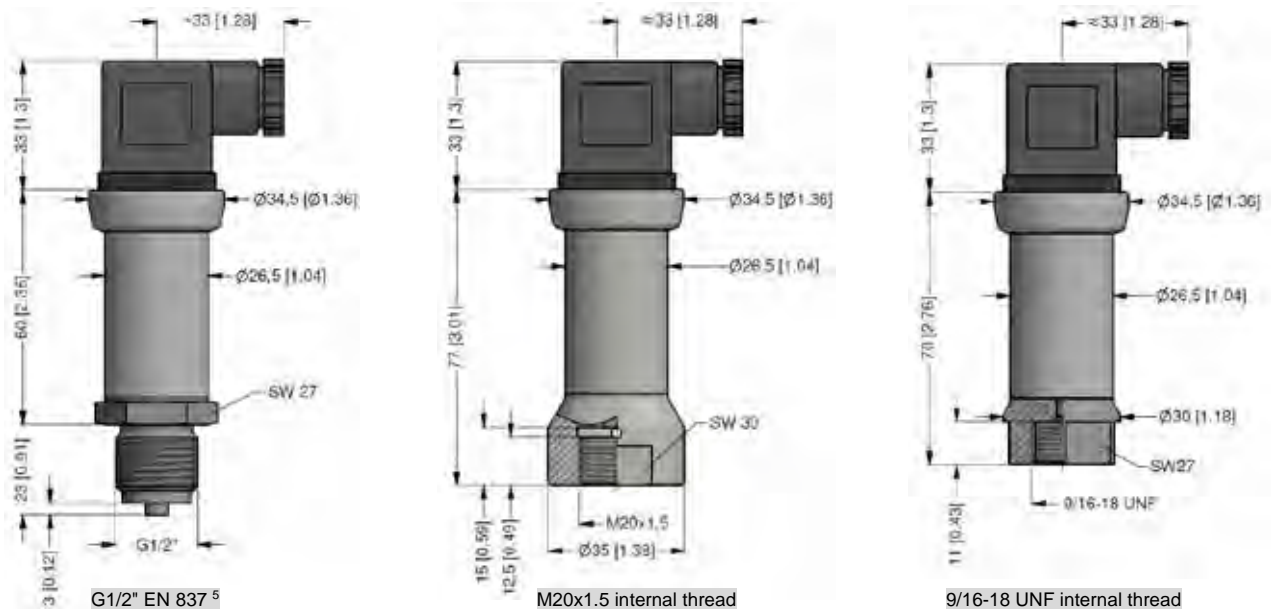
| Pin configuration | | | | | |
|----------------------------|--|---|--|---|---------------------------|
| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
| |  |  |  |  V _{S+} V _{S-} S+ GND | |
| Supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| Supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| Signal + (only for 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin  | 5 | 4 | GND | GNYE (green-yellow) |

Electrical connections (dimensions mm / in)



⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

Mechanical connection (dimensions mm / in)



⁵ According to EN 837, the pressure port and the complement at pressure over 1000 bar must be preferably made of stainless steel with a tensile strength of $R_p > 260 \text{ N/mm}^2$ in accordance with DIN 17440. The maximum allowed pressure is 1600 bar!



DMP 304

Industrial Pressure Transmitter for Ultra High Pressure

accuracy according to IEC 60770:
standard: 0.5 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 2 000 bar up to 0 ... 6 000 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V

Special characteristics

- ▶ adjustability of offset and span via front sided potentiometers
- ▶ pressure port 9/16" UNF
- ▶ 80 % calibration signal with MIL / Bendix plug




Optional versions

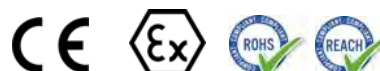
- ▶ IS-version:
Ex ia
- ▶ accuracy according to IEC 60770:
0.25 % FSO
- ▶ pressure port M20x1.5 and M16x1.5

The ultra-high-pressure transmitter type DMP 304 has been especially designed for applications with highest demand on precision and reliability. DMP 304 series is based on a compensated strain gauge, bonded onto a hardened stainless steel diaphragm.

Due to the rugged stainless steel housing usage under extreme conditions and in IS-required areas is no problem.

Preferred areas of use are

-  High pressure hydraulic circuits
-  Water jet cutting
-  High pressure applications in chemical and petrochemical industry



| Input pressure range | | | | | |
|--|-------|--|---|---|--------|
| Nominal pressure gauge | [bar] | 2 000 | 4 000 | 5 000 | 6 000 |
| Overpressure | [bar] | 3 000 | 5 000 | 6 000 | 7 000 |
| Burst pressure | [bar] | 4 000 | 8 000 | 10 000 | 10 000 |
| Output signal / Supply | | | | | |
| Standard | | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 30 V_{DC}$ | | | |
| IS-protection | | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | | | |
| Option 3-wire | | 3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$ | | | |
| Performance | | | | | |
| Accuracy ¹ | | standard: $\leq \pm 0.50 \% \text{ FSO}$ option: $\leq \pm 0.25 \% \text{ FSO}$ (on request) | | | |
| Permissible load | | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ | | | |
| Influence effects | | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$ | | | |
| Long term stability | | $\leq \pm 0.2 \% \text{ FSO} / \text{year}$ at reference conditions | | | |
| Response time | | < 2.5 msec | | | |
| Adjustability | | Via a front sided potentiometer is an adjustment of the offset possible within the range of $\pm 5 \%$ of the nominal pressure range, without an influence of characteristic curve and accuracy. | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | |
| Calibration (only with MIL / Bendix plug) | | | | | |
| Calibration signal accuracy | | $\leq \pm 0.25 \% \text{ FSO}$ | | | |
| Calibration | | 80 % FSO calibration (e.g. for 4 ... 20 mA / 2-wire: signal = $0.8 \cdot 16 \text{ mA} + 4 \text{ mA} = 16.8 \text{ mA}$) | | | |
| Thermal effects (Offset and Span) | | | | | |
| Thermal error | | $\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ | in compensated range -20 ... 85 °C | | |
| Permissible temperatures | | | | | |
| Permissible temperatures | | medium: | -40 ... 85 °C | | |
| | | electronics / environment: | -25 ... 85 °C | | |
| | | storage: | -40 ... 85 °C | | |
| Electrical protection | | | | | |
| Short-circuit protection | | permanent | | | |
| Reverse polarity protection | | no damage, but also no function | | | |
| Electromagnetic compatibility | | emission and immunity according to EN 61326 | | | |
| Mechanical stability | | | | | |
| Vibration | | 10 g RMS (20 ... 2000 Hz) | | | |
| Shock | | 100 g / 11 msec | | | |
| Materials | | | | | |
| Pressure port / diaphragm | | stainless steel 1.4548 (17-4 PH) | | | |
| Housing | | stainless steel 1.4301 (304) | | | |
| Seals (media wetted) | | none (welded version) | | | |
| Media wetted parts | | pressure port, diaphragm | | | |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | | | | | |
| Approval DX17-DMP 304 | | IBExU 09 ATEX 1144 X zone 0: II 1G Ex ia IIC T4 | | | |
| Safety technical maximum values | | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing | | | |
| Permissible temperatures for environment | | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C | | | |
| Connecting cables (by factory) | | cable capacity: signal line/shield as well as signal line/signal line: 160 pF/m cable inductance: signal line/shield as well as signal line/signal line: 1 $\mu\text{H}/\text{m}$ | | | |
| Miscellaneous | | | | | |
| Insulation strength / resistance | | standard: insulation strength | 100 M Ω @ 35 V | | |
| | | IS-version: insulation resistance | 100 M Ω @ 35 V_{DC} 100 M Ω @ 500 V_{AC} (relative to housing) | | |
| Current consumption | | 2-wire signal output current: | max. 28 mA | | |
| | | 3-wire signal output voltage: | max. 15 mA | | |
| Weight | | approx. 260 g | | | |
| Operational life | | 10 million load cycles | | | |
| Installation position | | any | | | |
| CE-conformity | | EMC Directive: 2014/30/EU | | Pressure Equipment Directive: 2014/68/EU (module A) | |
| ATEX Directive | | 2014/34/EU | | | |

| Wiring diagrams | | | | | | |
|--|--------------------------------|--|----------|--|---------------|---------------|
| <p>2-wire-system (current)</p> | <p>3-wire-system (voltage)</p> | | | | | |
| Pin configuration | | | | | | |
| Electrical connections | Binder 723 (5-pin) | M12x1 (4-pin) | ISO 4400 | cable colour (IEC 60757) | | |
| Supply + | 3 | 1 | 1 | wh (white) | | |
| Supply - | 4 | 2 | 2 | bn (brown) | | |
| Signal + (only for 3-wire) | 1 | 3 | 3 | gn (green) | | |
| Shield | 5 | 4 | pin | gnye (green-yellow) | | |
| Pin configuration MIL-/ Bendix plug (optional) | | | | | | |
| Version | Pin A | Pin B | Pin C | Pin D | Pin E | Pin F |
| 2-wire current signal 4 ... 20 mA | supply +/ signal + | supply -/ signal - | - | - | calibration + | calibration - |
| 3-wire | signal + | supply -/ signal - / calibration - | supply + | - | - | calibration + |
| Electrical connections (dimensions in mm) | | | | | | |
| <p>Binder series 723 (IP 67)</p> | | <p>M12x1 4-pin (IP 67)</p> | | <p>cable outlet with PVC-cable (IP 67)²</p> | | |
| <p>ISO 4400 (IP 65)</p> | | <p>cable outlet (IP 68)³</p> | | <p>MIL-/ Bendix plug (type PT 02 A 10-6 P)</p> | | |
| <p>² standard: 2 m PVC-cable without air tube (permissible temperature: -5 ... 70 °C)</p> <p>³ different cable types and lengths available, permissible temperature depends on kind of cable</p> | | | | | | |
| Mechanical connections (dimensions in mm) | | | | | | |
| <p>Standard</p> <p>9/16" UNF internal thread</p> | | <p>Options</p> <p>M20x1.5 internal thread</p> <p>M16x1.5 internal thread</p> | | | | |

Ordering code DMP 304

DMP 304



| Pressure | | | | | | | | | | | | | | | |
|-----------------------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|---------|
| | gauge | 2 | 2 | 0 | | | | | | | | | | | |
| Input | | | | | | | | | | | | | | | |
| | [bar] | | | | | | | | | | | | | | |
| | 2 000 | | 2 | 0 | 0 | 4 | | | | | | | | | |
| | 4 000 | | 4 | 0 | 0 | 4 | | | | | | | | | |
| | 5 000 | | 5 | 0 | 0 | 4 | | | | | | | | | |
| | 6 000 | | 6 | 0 | 0 | 4 | | | | | | | | | |
| | customer | | 9 | 9 | 9 | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | 1 |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | E |
| | 0 ... 10 V / 3-wire | | | | | | | | | | | | | | 3 |
| | customer | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | |
| standard: | 0.50 % FSO | | | | | | | | | | | | | | 5 |
| option: | 0.25 % FSO | | | | | | | | | | | | | | 2 |
| | customer | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | | | | | | | | | | 1 0 0 |
| | male plug Binder series 723 (5-pin) | | | | | | | | | | | | | | 2 0 0 |
| | cable outlet with PVC cable (IP67) ¹ | | | | | | | | | | | | | | T A 0 |
| | cable outlet, | | | | | | | | | | | | | | T R 0 |
| | cable with ventilation tube (IP68) ² | | | | | | | | | | | | | | |
| | male plug M12x1 (4-pin), metal | | | | | | | | | | | | | | M 1 0 |
| | MIL-/Bendix (type PT 02 A 10-6 P) | | | | | | | | | | | | | | B G 0 |
| | customer | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | consult |
| | | | | | | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | |
| | 9/16" UNF internal thread | | | | | | | | | | | | | | V 0 0 |
| | M16x1.5 internal thread | | | | | | | | | | | | | | P 0 0 |
| | M20x1.5 internal thread | | | | | | | | | | | | | | D 2 8 |
| | customer | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | |
| | adjustable | | | | | | | | | | | | | | 0 4 1 |
| | customer | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
² code TR0 = PVC cable, cable with ventilation tube available in different types and lengths



DMK 351

Pressure Transmitter

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signal

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

others on request

Product characteristics

- ▶ high media resistance

Optional versions

- ▶ IS-version (temperature class T4)
Ex ia = intrinsically safe for
gases and dusts
- ▶ IS-version (temperature class T6)
- ▶ diaphragm 99.9 % Al₂O₃
- ▶ customer specific versions

The pressure transmitter DMK 351 has been specially designed for applications in plant and machine engineering as well as laboratory techniques and is suitable for measuring small system pressure and filling heights.

By using our own-developed capacitive sensor, optionally available as Al₂O₃ 99.9%, the DMK 351 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for a use in explosive environments.

Preferred areas of use are



Plant and machine engineering



Laboratory techniques

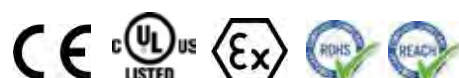
Preferred used for



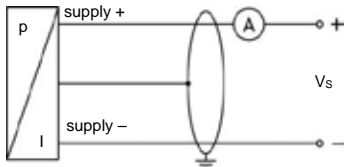
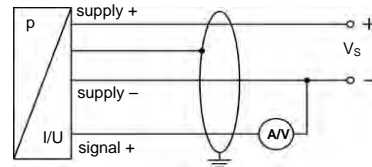
Fuel and oil



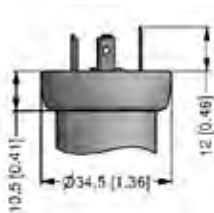
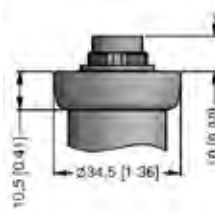
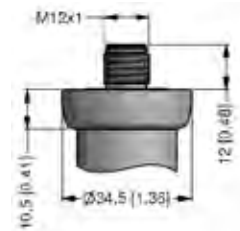
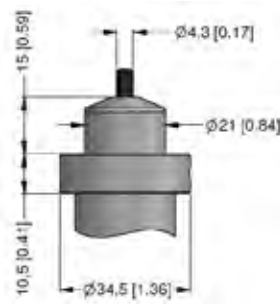
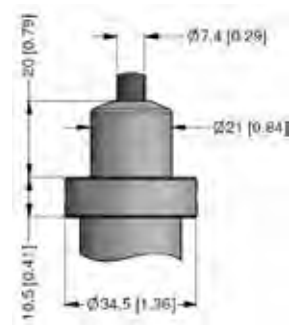
Water



| Pressure ranges | | | | | | | | | | | | | | | | |
|---|--|------|------|------|------|------|-----|-----|----|-----|-----|----|----|-----|-----|-----|
| Nominal pressure ¹ | [bar] | 0.04 | 0.06 | 0.1 | 0.16 | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 20 |
| Level | [mH ₂ O] | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 200 |
| Overpressure | [bar] | 2 | 2 | 4 | 4 | 6 | 6 | 8 | 8 | 15 | 25 | 25 | 35 | 35 | 45 | 45 |
| Permissible vacuum | [bar] | -0.2 | | -0.3 | | -0.5 | | | -1 | | | | | | | |
| ¹ available in gauge and absolute; nominal pressure ranges absolute from 1 bar | | | | | | | | | | | | | | | | |
| Output signal / Supply | | | | | | | | | | | | | | | | |
| Standard | 2-wire: 4 ... 20 mA / V _S = 9 ... 32 V _{DC} | | | | | | | | | | | | | | | |
| Option IS-version | 2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC} | | | | | | | | | | | | | | | |
| Option 3-wire | 3-wire: 0 ... 10 V / V _S = 12.5 ... 32 V _{DC} | | | | | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | | | | |
| Accuracy ² | standard: ≤ ± 0.35 % FSO option for p _N ≥ 0.6 bar: ≤ ± 0.25 % FSO | | | | | | | | | | | | | | | |
| Permissible load | current 2-wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω voltage 3-wire: R _{min} = 10 kΩ | | | | | | | | | | | | | | | |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ | | | | | | | | | | | | | | | |
| Long term stability | ≤ ± 0.1 % FSO / year at reference conditions | | | | | | | | | | | | | | | |
| Turn-on time | 700 msec | | | | | | | | | | | | | | | |
| Mean measuring rate | 5/sec | | | | | | | | | | | | | | | |
| Response time | mean response time: < 200 msec max. response time: 380 msec | | | | | | | | | | | | | | | |
| ² accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | | | | |
| Thermal effects (offset and span) | | | | | | | | | | | | | | | | |
| Tolerance band | ≤ ± 1 % FSO | | | | | | | | | | | | | | | |
| in compensated range | -20 ... 80 °C | | | | | | | | | | | | | | | |
| Permissible temperatures | | | | | | | | | | | | | | | | |
| Medium ³ | -40 ... 125 °C | | | | | | | | | | | | | | | |
| Electronics / environment | -40 ... 85 °C | | | | | | | | | | | | | | | |
| Storage | -40 ... 100 °C | | | | | | | | | | | | | | | |
| ³ for pressure port in PVDF or PP the medium temperature is -30 ... 60 °C | | | | | | | | | | | | | | | | |
| Electrical protection | | | | | | | | | | | | | | | | |
| Short-circuit protection | permanent | | | | | | | | | | | | | | | |
| Reverse polarity protection | no damage, but also no function | | | | | | | | | | | | | | | |
| Electromagnetic compatibility | emission and immunity according to EN 61326 | | | | | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | | | | |
| Vibration | 10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6 | | | | | | | | | | | | | | | |
| Shock | 100 g / 1 msec according to DIN EN 60068-2-27 | | | | | | | | | | | | | | | |
| Materials | | | | | | | | | | | | | | | | |
| Pressure port | standard: stainless steel 1.4404 (316L) option ⁴ : PP, PVDF | | | | | | | | | | | | | | | |
| Housing | standard: stainless steel 1.4404 (316L) option ⁴ : PP, PVDF | | | | | | | | | | | | | | | |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | | | | | | | | | | | | | | |
| Seal | standard: FKM option: EPDM | | | | | | | | | | | | | | | |
| Diaphragm | standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % | | | | | | | | | | | | | | | |
| Media wetted parts | pressure port, seals, diaphragm | | | | | | | | | | | | | | | |
| ⁴ only with mech. connection G1/2" DIN 3852 open port, bore 12 mm, p _N ≤ 10 bar and without explosion protection possible | | | | | | | | | | | | | | | | |
| Explosion protection (only for 4 ... 20 mA / 2-wire with stainless steel version) | | | | | | | | | | | | | | | | |
| Approval DX 14-DMK 351 | IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga option: II 1G Ex ia IIC T6 Ga zone 20: II 1D Ex ia IIIC T110 °C Da | | | | | | | | | | | | | | | |
| Safety technical maximum values | U _i = 28 V _{DC} , I _i = 93 mA, P _i = 660 mW, C _i = 14 nF, L _i ≈ 0 μH, C _{gnd} = 27 nF | | | | | | | | | | | | | | | |
| Max. permissible temperature for environment | in zone 0: -20 ... 60 °C for p _{atm} 0.8 bar up to 1.1 bar in zone 1 and higher: -25 ... 70 °C for T6: -25 ... 60 °C | | | | | | | | | | | | | | | |
| Connecting cables (by factory) | cable capacity: signal line / shield also signal line / signal line: 220 pF/m cable inductance: signal line / shield also signal line / signal line: 1.5 μH/m | | | | | | | | | | | | | | | |
| Miscellaneous | | | | | | | | | | | | | | | | |
| Installation position | any | | | | | | | | | | | | | | | |
| Current consumption | signal output current: max. 21 mA signal output voltage: max. 5 mA | | | | | | | | | | | | | | | |
| Weight | min. 200 g | | | | | | | | | | | | | | | |
| Operational life | 100 million load cycles | | | | | | | | | | | | | | | |
| CE-conformity | EMC-directive: 2014/30/EU | | | | | | | | | | | | | | | |
| ATEX Directive | 2014/34/EU | | | | | | | | | | | | | | | |

Wiring diagram**2-wire-system (current)****3-wire-system (current / voltage)****Pin configuration**

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|----------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| Supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| Supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| Signal + (only for 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

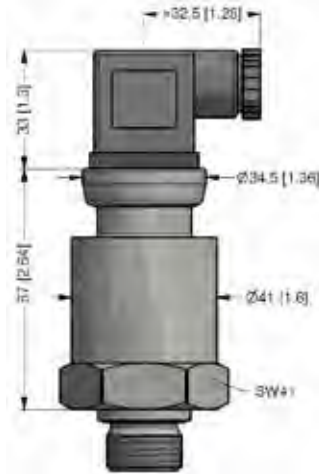
Electrical connections (dimensions mm / in)ISO 4400
(IP 65)Binder series 723, 5-pin
(IP 67)M12x1, 4-pin
(IP 67)compact field housing
(IP 67)cable outlet
with PVC-cable (IP 67)⁵cable outlet, cable with
ventilation tube (IP 68)⁶

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

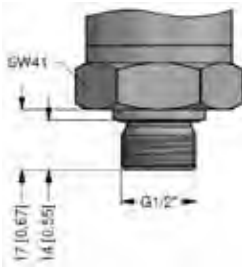
⁵ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁶ different cable types and lengths available, permissible temperature depends on kind of cable

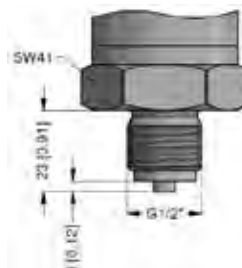
Dimensions (mm / in)



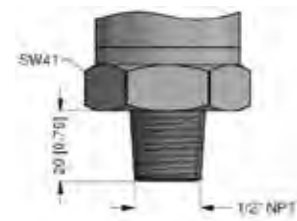
Mechanical connection (dimensions mm / in)



G1/2" DIN 3852

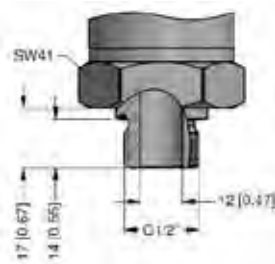


G1/2" EN 837

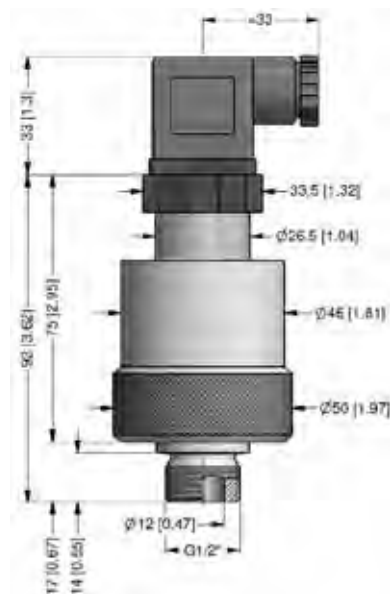


1/2" NPT

G1/2" DIN 3852 open port, bore 12 mm:



housing and pressure port in stainless steel



housing and pressure port in PP / PVDF
for $p_N \leq 10$ bar, without explosion protection



DMK 331P

Industrial Pressure Transmitter

Pressure Ports with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 60 bar up to 0 ... 400 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- ▶ suited for viscous and pasty media



Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2
according to IEC 61508 / IEC 61511
- ▶ food compatible filling fluid with FDA approval
- ▶ cooling element for media temperatures up to 300 °C
- ▶ customer specific versions


The pressure transmitter DMK 331P is suitable for measuring the pressure of viscous and pasty media, where a totally flush pressure port is required.

As on all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331P.

Preferred areas of use are

-  Plant and machine engineering
-  Food industry

Preferred used for

-  Viscous and pasty media



| Input pressure range | | | | | |
|-----------------------------------|-----|-----|-----|-----|------|
| Nominal pressure gauge/abs. [bar] | 60 | 100 | 160 | 250 | 400 |
| Overpressure [bar] | 100 | 200 | 400 | 400 | 600 |
| Burst pressure \geq [bar] | 180 | 300 | 500 | 750 | 1000 |

| Output signal / Supply | | |
|------------------------|---|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Option IS-protection | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Options 3-wire | 3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ | |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | $\leq \pm 0.5 \% \text{ FSO}$ |
| Permissible load | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{\max} = 500 \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$ |
| Long term stability | $\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) ² | |
|--|--|
| Thermal error | $\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ |
| In compensated range | 0 ... 85°C |

² an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

| Permissible temperatures | | |
|--|--|--|
| Filling fluid | silicone oil | food compatible oil |
| Medium ³ | -40 ... 125 °C | -10 ... 125 °C |
| Medium with cooling element ⁴ | overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C | overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C |
| Electronics / environment | -40 ... 85 °C | |
| Storage | -40 ... 100 °C | |

³ max. temperature of the medium for overpressure > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

⁴ max. temperature depends on the used sealing material, type of seal and installation

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | | |
|----------------------|---------------------------|--------------------------------|
| Vibration | 20 g RMS (25 ... 2000 Hz) | according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec | according to DIN EN 60068-2-27 |

| Filling fluids | |
|----------------|---|
| Standard | silicone oil |
| Options | food compatible oil (with FDA approval) (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request |

| Materials | |
|------------------------------|---|
| Pressure port / housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM (recommended for medium temperatures $\leq 200 \text{ }^\circ\text{C}$) option: FFKM ⁵ (recommended for medium temperatures $< 260 \text{ }^\circ\text{C}$) others on request |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |

⁵ for pressure ranges $p_N \leq 100 \text{ bar}$

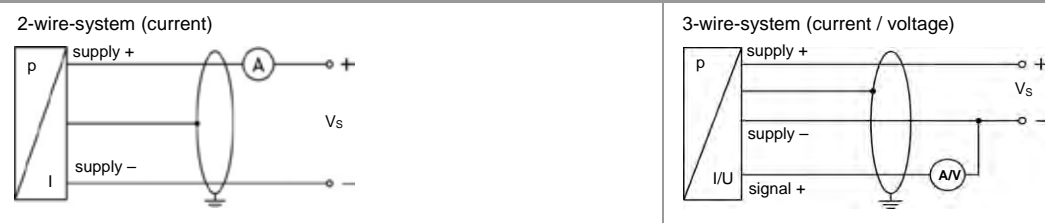
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|--|
| Approvals DX19-DMK 331P | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with $p_{\text{atm}} 0.8 \text{ bar}$ up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |

| Miscellaneous | |
|-----------------------------------|---|
| Option SIL 2 version ⁶ | according to IEC 61508 / IEC 61511 |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | min. 200 g (depending on process connection) |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁷ |
| ATEX Directive | 2014/34/EU |

⁶ only for 4 ... 20 mA / 2-wire

⁷ this directive is only valid for devices with maximum permissible overpressure > 200 bar

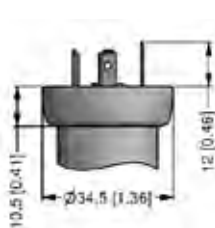
Wiring diagrams



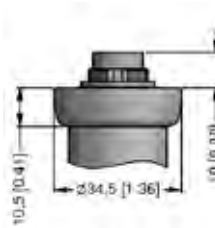
Pin configuration

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| | | | | | |
| supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| signal + (only 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GYE (green-yellow) |

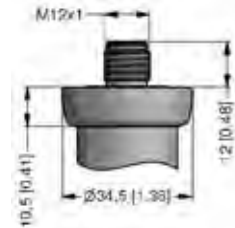
Electrical connections (dimensions mm / in)



ISO 4400 (IP 65)



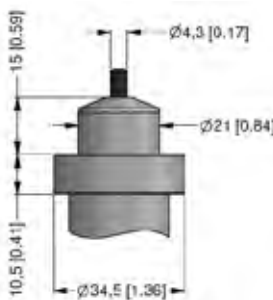
Binder series 723, 5-pin (IP 67)



M12x1, 4-pin (IP 67)



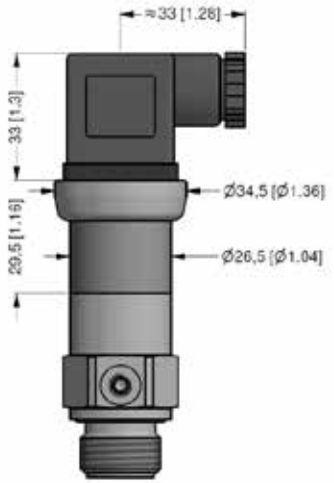

compact field housing (IP 67)



cable outlet with PVC-cable (IP 67) ⁸

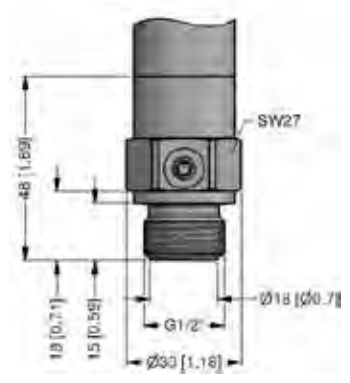
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁸ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

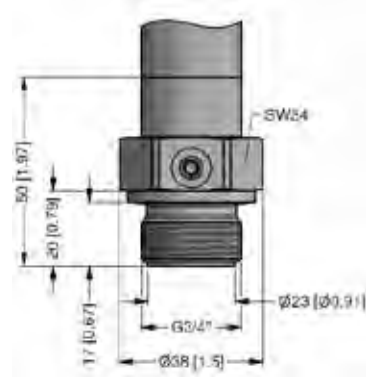
| Dimensions (mm / in) | cooling element up to 300 °C ⁴ (optionally) |
|---|--|
|  |  <p data-bbox="1021 862 1244 896">possible for p_N ≤ 160 bar</p> |

⁴ max. temperature depends on the used sealing material, type of seal and installation

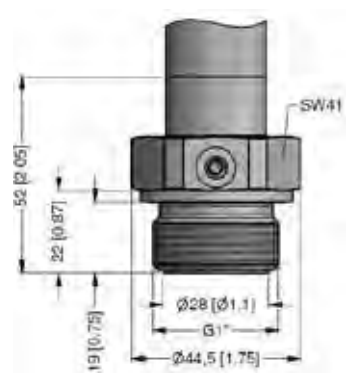
Mechanical connections (dimensions mm / in)



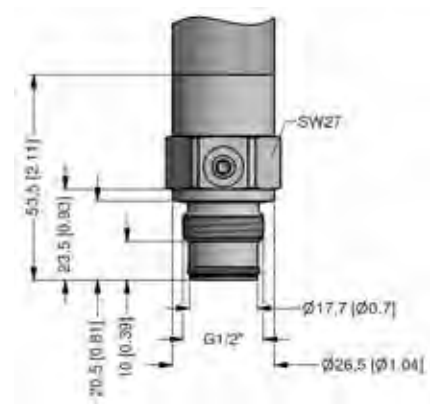
G1/2" flush DIN 3852



G3/4" flush DIN 3852



G1" flush DIN 3852



G1/2" flush with radial o-ring

⇒ SIL- and SIL-Ex version: total length increases by 26.5 mm!
 ⇒ metric threads and other versions on request

Ordering code DMK 331P

DMK 331P



| | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|---------|---------|
| Pressure | | | | | | | | | | | | | | | | | | |
| | gauge | 5 | 0 | 5 | | | | | | | | | | | | | | |
| | absolute | 5 | 0 | 6 | | | | | | | | | | | | | | |
| Input [bar] | | | | | | | | | | | | | | | | | | |
| | 60 | | 6 | 0 | 0 | 2 | | | | | | | | | | | | |
| | 100 | | 1 | 0 | 0 | 3 | | | | | | | | | | | | |
| | 160 | | 1 | 6 | 0 | 3 | | | | | | | | | | | | |
| | 250 | | 2 | 5 | 0 | 3 | | | | | | | | | | | | |
| | 400 | | 4 | 0 | 0 | 3 | | | | | | | | | | | | |
| | customer | | 9 | 9 | 9 | 9 | | | | | | | | | | | consult | |
| Output | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | 1 |
| | 0 ... 20 mA / 3-wire | | | | | | | | | | | | | | | | | 2 |
| | 0 ... 10 V / 3-wire | | | | | | | | | | | | | | | | | 3 |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | E |
| | SIL2 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | 1S |
| | SIL2 with intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | ES |
| | customer | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | |
| | 0.5 % FSO | | | | | | | | | | | | | | | | | 5 |
| | customer | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | | | | | | | | | | | | | 1 0 0 |
| | male plug Binder series 723 (5-pin) | | | | | | | | | | | | | | | | | 2 0 0 |
| | cable outlet with PVC-cable (IP67) ¹ | | | | | | | | | | | | | | | | | T A 0 |
| | male plug M12x1 (4-pin) / metal compact field housing | | | | | | | | | | | | | | | | | M 1 0 |
| | stainless steel 1.4301 (304) | | | | | | | | | | | | | | | | | 8 5 0 |
| | customer | | | | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 with flush diaphragm | | | | | | | | | | | | | | | | | Z 0 0 |
| | G3/4" DIN 3852 with flush diaphragm | | | | | | | | | | | | | | | | | Z S 0 |
| | G1" DIN 3852 with flush diaphragm | | | | | | | | | | | | | | | | | Z S 1 |
| | G 1/2" DIN 3852 with rad. o-ring and flush diaphragm | | | | | | | | | | | | | | | | | Z 6 1 |
| | customer | | | | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Diaphragm | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4435 (316L) | | | | | | | | | | | | | | | | | 1 |
| | customer | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | 1 |
| | FFKM ² | | | | | | | | | | | | | | | | | 7 |
| | customer | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Filling fluids | | | | | | | | | | | | | | | | | | |
| | silicone oil | | | | | | | | | | | | | | | | | 1 |
| | food compatible oil | | | | | | | | | | | | | | | | | 2 |
| | customer | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | 0 0 0 |
| | with cooling element up to 300°C ³ | | | | | | | | | | | | | | | | | 2 0 0 |
| | customer | | | | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | | | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

² only for p_N ≤ 100 bar possible

³ only for p_N ≤ 160 bar possible



DMK 387

Pressure Transmitter

Ceramic sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 60 bar

Output signal

2-wire: 4 ... 20 mA
3-wire and others on request

Product characteristics

- ▶ diaphragm
ceramics 99.9 % Al₂O₃
- ▶ high long-term stability





Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for
gases and dust
- ▶ different kinds of inch threads
- ▶ pressure port in PVDF or PP-HT
for aggressive media

The pressure transmitter DMK 387 has been specially designed for applications in plant and machine engineering as well as laboratory techniques and is suitable for measuring small system pressure and filling heights.

By using our own-developed capacitive sensor, available in Al₂O₃ 99.9%, the DMK 387 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for usage in explosive environments.

Preferred areas of use

-  Plant and machine engineering
-  Laboratory techniques
-  Water
-  Aggressive media



| Input pressure range | | | | | | | | | | | | | | | | |
|------------------------------|------|------|------|-----|-----|----|-----|-----|----|----|-----|-----|-----|-----|-----|--|
| Nominal pressure gauge [bar] | 0.1 | 0.16 | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | |
| Level [mH ₂ O] | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | |
| Overpressure [bar] | 3 | 4 | 5 | 5 | 5 | 7 | 7 | 12 | 12 | 20 | 20 | 20 | 40 | 70 | 70 | |
| Burst pressure ≥ [bar] | 4 | 6 | 8 | 8 | 7 | 9 | 9 | 18 | 18 | 25 | 30 | 30 | 45 | 80 | 80 | |
| Permissible vacuum [bar] | -0.2 | -0.3 | -0.5 | | | | | | | | | -1 | | | | |

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / V _S = 14 ... 36 V _{DC} |
| Option IS-version | 2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC} |
| On request | 3-wire: 0 ... 10 V / V _S = 14 ... 36 V _{DC} |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO others on request |
| Permissible load | current 2-wire: R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω voltage 3-wire: R _{min} = 10 kΩ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Long term stability | ≤ ± 0.1 % FSO / year |
| Turn-on time | 450 msec |
| Mean response time | ≤ 70 msec |
| Measuring rate | 80 Hz |

¹ accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) | |
|-----------------------------------|---------------|
| Tolerance band | ≤ ± 1 % FSO |
| in compensated range | -20 ... 80 °C |

| Permissible temperatures | |
|---------------------------|----------------|
| Medium ² | -40 ... 125 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 85 °C |

² for pressure port in PVDF or PP-HT the operation medium temperature is -30 ... 60 °C

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

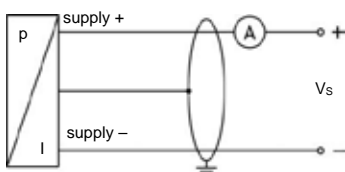
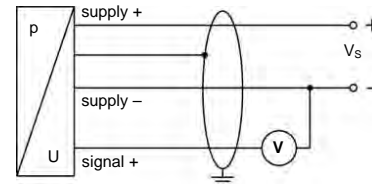
| Mechanical stability | |
|----------------------|---|
| Vibration | 10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6 |

| Materials | | | |
|------------------------------|---|---|---|
| Pressure port / housing | standard: | pressure port | housing |
| | options for G3/4" flush: | stainless steel 1.4404 (316 L) PVDF PP-HT | stainless steel 1.4404 (316 L) PVDF PP-HT |
| Option compact field housing | stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) | | |
| Seals (O-rings) | FKM, EPDM, FFKM | others on request | |
| Diaphragm | ceramics Al ₂ O ₃ 99.9 % | others on request | |
| Media wetted parts | pressure port, seals, diaphragm | | |

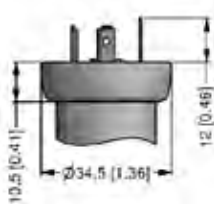
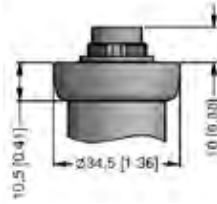
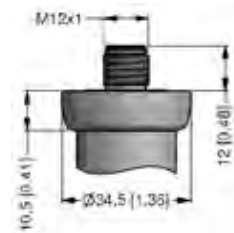
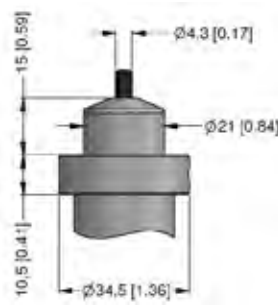
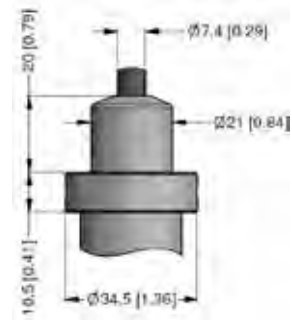
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|---|
| Approval DX14B-DMK 387 | IBExU 15 ATEX 1066 X / IECEx IBE 18.0019X pressure port: stainless steel zone 0: II 1G Ex ia IIC T4 Ga pressure port: PVDF or PP-HT zone 1: II 2G Ex ia IIC T4 Gb for all pressure ports zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 14 nF, L _i = 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -25 ... 65 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m |

Miscellaneous

| | |
|---------------------|---------------------------|
| Current consumption | max. 22 mA |
| Weight | approx. 180 g |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

Wiring diagrams**2-wire-system (current)****3-wire-system (voltage)****Pin configuration**

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|--|-------------|--------------------|-----------------------|--|--|
| | | | | | |
| supply + supply - signal + (only 3-wire) | 1 2 3 | 3 4 1 | 1 2 3 | V _{S+} V _{S-} S+ | WH (white) BN (brown) GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

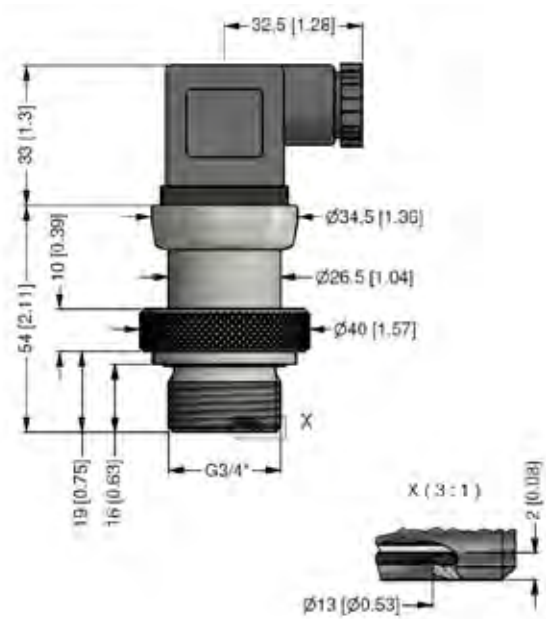
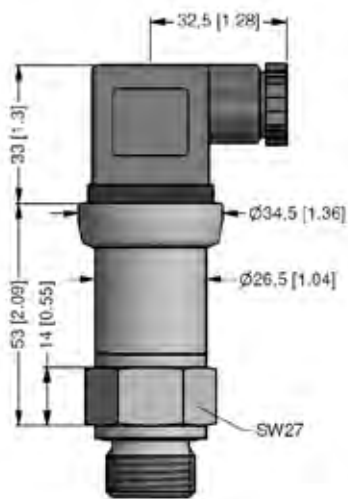
Electrical connections (dimensions mm / in)ISO 4400
(IP 65)Binder series 723, 5-pin
(IP 67)M12x1, 4-pin
(IP 67)compact field housing
(IP 67)cable outlet
with PVC-cable (IP 67)³cable outlet, cable with
ventilation tube (IP 68)⁴

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

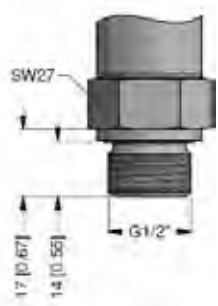
³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁴ different cable types and lengths available, permissible temperature depends on kind of cable

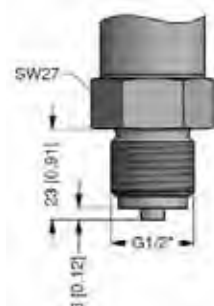
Dimensions (mm / in)



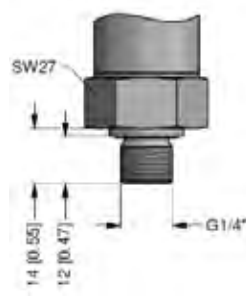
G 3/4" flush⁵



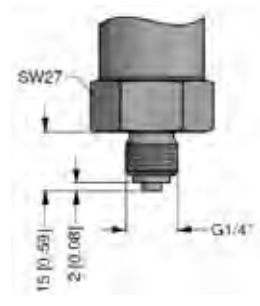
G1/2" DIN 3852



G1/2" EN 837



G1/4" DIN 3852



G1/4" EN 837

⁵ not in combination with field housing



DMP 331P

Industrial Pressure Transmitter

Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

Output signals

2-wire: 4 ... 20 mA / 3-wire: 0 ... 10 V
others on request

Special characteristics

- ▶ hygienic version
- ▶ diaphragm with low surface roughness
- ▶ CIP / SIP cleaning up to 150 °C
- ▶ vacuum resistant

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dust
- ▶ SIL 2 version according to IEC 61508 / IEC 61511
- ▶ diaphragm in Hastelloy® or Tantalum
- ▶ cooling element for media temperatures up to 300 °C

The pressure transmitter DMP 331P was designed for use in the food / beverage and pharmaceutical industry. The compact design with hygienic versions makes it possible to achieve an outstanding performance in terms of accuracy, temperature behaviour and long term stability.

The modular construction concept allows a combination of various process connections with different filling fluids and a cooling element. Several electrical connections complete the profile of DMP 331P.

Preferred areas of use are



Food and beverage



Pharmaceutical industry

Material and test certificates

- ▶ Inspection certificate 3.1 according to EN 10204
- ▶ Test report 2.2 according to EN 10204



| Input pressure range ¹ | | | | | | | | | |
|-----------------------------------|-------|--------|------|------|------|------|------|-----|-----|
| Nominal pressure gauge | [bar] | -1...0 | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 |
| Nominal pressure absolute | [bar] | - | - | - | - | 0.40 | 0.60 | 1 | 1.6 |
| Overpressure | [bar] | 5 | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 |
| Burst pressure ≥ | [bar] | 7.5 | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 |

| | | | | | | | | |
|-----------------------------------|-------|--|----|----|----|-----|-----|-----|
| Nominal pressure gauge / absolute | [bar] | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 |
| Overpressure | [bar] | 10 | 20 | 40 | 40 | 80 | 80 | 105 |
| Burst pressure ≥ | [bar] | 15 | 25 | 50 | 50 | 120 | 120 | 210 |
| Vacuum resistance | | $p_N > 1$ bar: unlimited vacuum resistance $p_N \leq 1$ bar: on request | | | | | | |

¹ consider the pressure resistance of fittings and clamps

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Option IS-version | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Options 3-wire | 3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |

| Performance | |
|-----------------------|--|
| Accuracy ² | standard: nominal pressure < 0.4 bar: $\leq \pm 0.5\%$ FSO nominal pressure ≥ 0.4 bar: $\leq \pm 0.35\%$ FSO option: nominal pressure ≥ 0.4 bar: $\leq \pm 0.25\%$ FSO |
| Permissible load | current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm 0.1\%$ FSO / year at reference conditions |
| Response time | 2-wire: < 10 msec 3-wire: ≤ 3 msec |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) ³ | | | | |
|--|---------|-----------------|----------------|-----------------|
| Nominal pressure p_N | [bar] | -1 ... 0 | < 0.40 | ≥ 0.40 |
| Tolerance band | [% FSO] | $\leq \pm 0.75$ | $\leq \pm 1.5$ | $\leq \pm 0.75$ |
| in compensated range | [°C] | -20 ... 85 | 0 ... 50 | -20 ... 85 |

³ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

| Permissible temperatures | | | |
|--|---|---|---------------------|
| Filling fluid | silicone oil | | food compatible oil |
| Medium ⁴ | -40 ... 125 °C | | -10 ... 125 °C |
| Medium with cooling element ⁵ | overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C ⁶ | overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C ⁶ | |
| Electronics / environment | -40 ... 85 °C | | |
| Storage | -40 ... 100 °C | | |

⁴ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

⁵ max. temperature depends on the used sealing material, type of seal and installation

⁶ also for $p_{abs} \leq 1$ bar

| Electrical protection | |
|---|--|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |
| Mechanical stability | |
| Vibration according to DIN EN 60068-2-6 | G 1/2": 20 g RMS (25 ... 2000 Hz) others: 10 g RMS (25 ... 2000 Hz) |
| Shock according to DIN EN 60068-2-27 | G 1/2": 500 g / 1 msec others: 100 g / 1 msec |
| Filling fluids | |
| Standard | silicone oil |
| Option | food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request |

| Materials | |
|--|---|
| Pressure port | stainless steel 1.4435 (316 L) others on request |
| Housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) others on request Clamp, dairy pipe, Varivent®: without |
| Diaphragm | standard: stainless steel 1.4435 (316 L) option: Hastelloy® C-276 (2.4819) Tantalum on request |
| Media wetted parts | pressure port, seal, diaphragm |
| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
| Approvals DX19-DMP 331P | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |
| Miscellaneous | |
| EHDG certificate Type EL Class I | EHDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH |
| Option SIL2 version ⁷ | according to IEC 61508 / IEC 61511 |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Surface roughness | pressure port $R_a < 0.8 \text{ }\mu\text{m}$ (media wetted parts) diaphragm $R_a < 0.15 \text{ }\mu\text{m}$ weld seam $R_a < 0.8 \text{ }\mu\text{m}$ |
| Weight | min. 200 g (depending on process connection) |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 2 \text{ bar}$ have to be specified in the order) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

⁷ only for 4 ... 20 mA / 2-wire

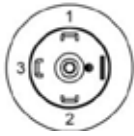
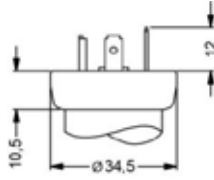
Wiring diagrams



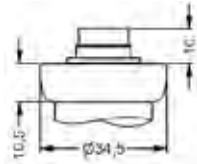
Pin configuration

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| Supply + | 1 | 3 | 1 | IN + | WH (white) |
| Supply - | 2 | 4 | 2 | IN - | BN (brown) |
| Signal + (only 3-wire) | 3 | 1 | 3 | OUT+ | GN (green) |
| Shield | ground pin | 5 | 4 | | GYNE (green-yellow) |

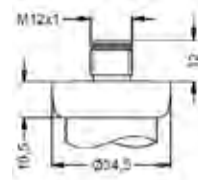
Electrical connections (dimensions in mm)



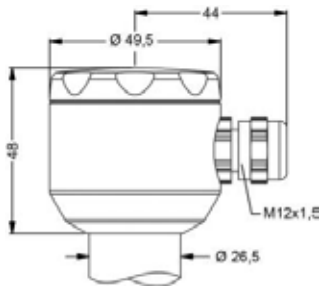
ISO 4400
(IP 65)



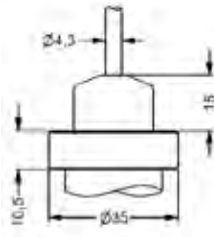
Binder series 723, 5-pin
(IP 67)



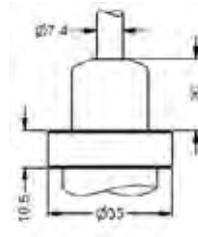
M12x1, 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with PVC cable
(IP 67)⁸



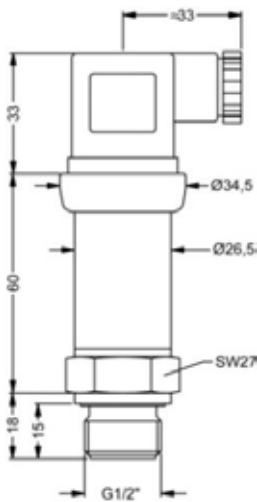
cable outlet, cable with
ventilation tube (IP 68)⁹

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

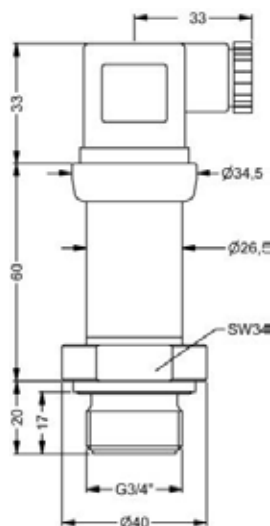
⁸ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

⁹ different cable types and lengths available, permissible temperature depends on kind of cable

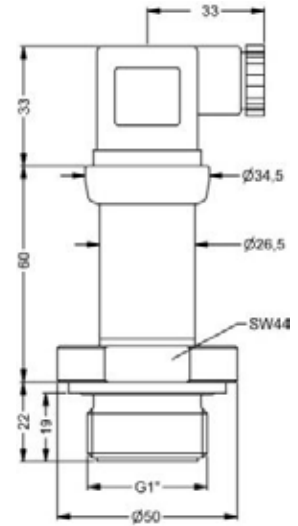
Mechanical connection (dimension in mm)



G1/2" flush DIN 3852¹⁰

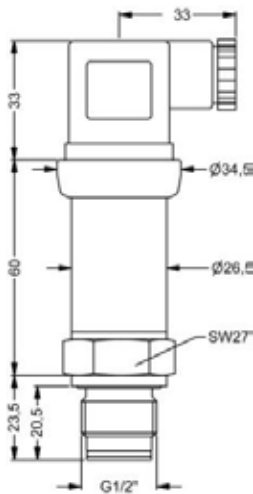


G3/4" flush DIN 3852

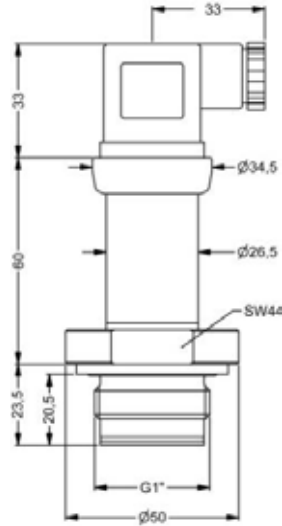


G1" flush DIN 3852

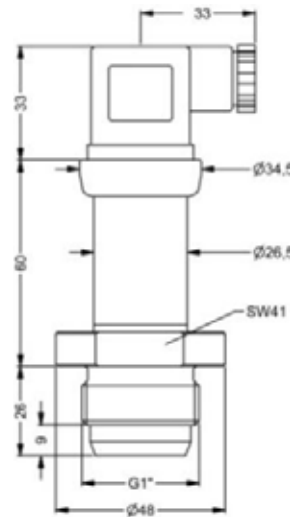
Mechanical connection (dimension in mm)



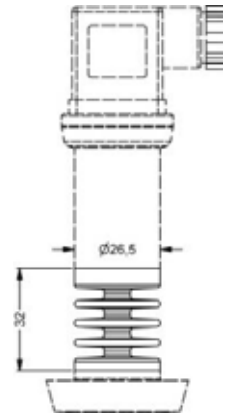
G1/2" flush
with radial o-ring ¹⁰



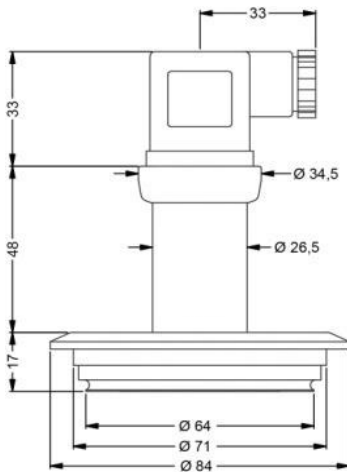
G1" flush
with radial o-ring (p_N ≤ 2 bar)



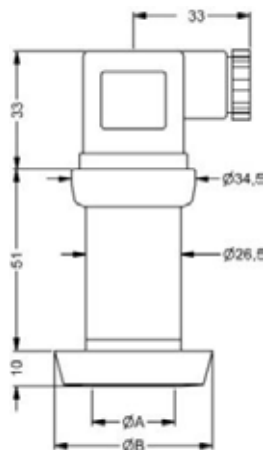
G1" cone



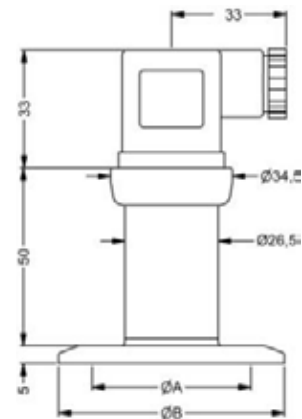
cooling element
up to 300 °C ⁵



Varivent®
p_N ≤ 25 bar



dairy pipe (DIN 11851)



Clamp (DIN 32676)

| dimension in mm | | | |
|----------------------|----------------|----------------|----------------|
| size | DN 25 | DN 40 | DN 50 |
| A | 23 | 32 | 45 |
| B | 44 | 56 | 68.5 |
| p _N [bar] | ≥ 0.25 ≤ 40 | ≥ 0.25 ≤ 40 | ≥ 0.25 ≤ 25 |

| dimension in mm | | | | |
|----------------------|------------|----------------|-------|-------|
| size | 3/4" | DN 25 | DN 32 | DN 50 |
| A | 14 | 23 | 32 | 45 |
| B | 25 | 50.5 | 50.5 | 64 |
| p _N [bar] | ≥ 4 ≤ 8 | ≥ 0.25 ≤ 16 | ≤ 16 | ≤ 16 |

* higher pressure ranges on request

- ⇒ SIL- and SIL-Ex version: total length increases by 26.5 mm!
- ⇒ metric threads and other versions on request

⁵ max. temperature depends on the used sealing material, type of seal and installation

¹⁰ only possible for p_N ≥ 1 bar

Ordering code DMP 331P

| DMP 331P | | [][] - [][][] - [] - [] - [][][] - [][][] - [] - [] - [][][] | | | | | | | | | | | | | |
|------------------------------|---|--|---|---|---|--|--|--|--|--|--|---------|---------|---|---------|
| Pressure | | | | | | | | | | | | | | | |
| | gauge | 5 | 0 | 0 | | | | | | | | | | | |
| | absolute | 5 | 0 | 1 | | | | | | | | | | | |
| Input | | | | | | | | | | | | | | | |
| | [bar] | | | | | | | | | | | | | | |
| | 0.10 ¹ | 1 | 0 | 0 | 0 | | | | | | | | | | |
| | 0.16 ¹ | 1 | 6 | 0 | 0 | | | | | | | | | | |
| | 0.25 ¹ | 2 | 5 | 0 | 0 | | | | | | | | | | |
| | 0.40 | 4 | 0 | 0 | 0 | | | | | | | | | | |
| | 0.60 | 6 | 0 | 0 | 0 | | | | | | | | | | |
| | 1.0 | 1 | 0 | 0 | 1 | | | | | | | | | | |
| | 1.6 | 1 | 6 | 0 | 1 | | | | | | | | | | |
| | 2.5 | 2 | 5 | 0 | 1 | | | | | | | | | | |
| | 4.0 | 4 | 0 | 0 | 1 | | | | | | | | | | |
| | 6.0 | 6 | 0 | 0 | 1 | | | | | | | | | | |
| | 10 | 1 | 0 | 0 | 2 | | | | | | | | | | |
| | 16 | 1 | 6 | 0 | 2 | | | | | | | | | | |
| | 25 | 2 | 5 | 0 | 2 | | | | | | | | | | |
| | 40 | 4 | 0 | 0 | 2 | | | | | | | | | | |
| | -1 ... 0 | X | 1 | 0 | 2 | | | | | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | | consult | | | |
| Output | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | 1 | | | |
| | 0 ... 20 mA / 3-wire | | | | | | | | | | | 2 | | | |
| | 0 ... 10 V / 3-wire | | | | | | | | | | | 3 | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | | | E | | | |
| | SIL2 4 ... 20 mA / 2-wire | | | | | | | | | | | 1S | | | |
| | SIL2 with intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | | | | | ES | | | |
| | customer | | | | | | | | | | | 9 | | | |
| | | | | | | | | | | | | | consult | | |
| Accuracy | | | | | | | | | | | | | | | |
| | standard for $p_N \geq 0.4$ bar: | 0.35 % FSO | | | | | | | | | | 3 | | | |
| | standard for $p_N < 0.4$ bar: | 0.50 % FSO | | | | | | | | | | 5 | | | |
| | option for $p_N \geq 0.4$ bar: | 0.25 % FSO | | | | | | | | | | 2 | | | |
| | customer | | | | | | | | | | | 9 | | | |
| | | | | | | | | | | | | | consult | | |
| Electrical connection | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | | | | | | | 1 | 0 | 0 | |
| | male plug Binder series 723 (5-pin) | | | | | | | | | | | 2 | 0 | 0 | |
| | cable outlet with PVC cable (IP67) ² | | | | | | | | | | | T | A | 0 | |
| | cable outlet, | | | | | | | | | | | | | | |
| | cable with ventilation tube (IP68) ³ | | | | | | | | | | | T | R | 0 | |
| | male plug M12x1 (4-pin) / metal | | | | | | | | | | | M | 1 | 0 | |
| | compact field housing | | | | | | | | | | | | | | |
| | stainless steel 1.4301 (304) ⁴ | | | | | | | | | | | 8 | 5 | 0 | |
| | customer | | | | | | | | | | | 9 | 9 | 9 | |
| | | | | | | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | |
| | G1/2" with flush | | | | | | | | | | | Z | 0 | 0 | |
| | welded diaphragm (DIN 3852) ⁵ | | | | | | | | | | | | | | |
| | G3/4" with flush | | | | | | | | | | | Z | 3 | 0 | |
| | welded diaphragm (DIN 3852) | | | | | | | | | | | | | | |
| | G1" with flush | | | | | | | | | | | Z | 3 | 1 | |
| | welded diaphragm (DIN 3852) | | | | | | | | | | | | | | |
| | G1" DIN 3852 with rad. o-ring | | | | | | | | | | | Z | 5 | 7 | |
| | and flush diaphragm ⁶ | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 with rad. o-ring | | | | | | | | | | | Z | 6 | 1 | |
| | and flush diaphragm ⁵ | | | | | | | | | | | | | | |
| | G 1" cone | | | | | | | | | | | K | 3 | 1 | |
| | Clamp DN 25 / 1" (DIN 32676) / 3A | | | | | | | | | | | C | 6 | 1 | |
| | Clamp DN 32 / 1 1/2" (DIN 32676) / 3A | | | | | | | | | | | C | 6 | 2 | |
| | Clamp DN 50 / 2" (DIN 32676) / 3A | | | | | | | | | | | C | 6 | 3 | |
| | Clamp 3/4" (DIN 32676) / 3A | | | | | | | | | | | C | 6 | 9 | |
| | dairy pipe DN 25 (DIN 11851) ⁴ | | | | | | | | | | | M | 7 | 3 | |
| | dairy pipe DN 40 (DIN 11851) ⁴ | | | | | | | | | | | M | 7 | 5 | |
| | dairy pipe DN 50 (DIN 11851) ⁴ | | | | | | | | | | | M | 7 | 6 | |
| | Varivent [®] DN 40/50 / 3A | | | | | | | | | | | P | 4 | 1 | |
| | customer | | | | | | | | | | | 9 | 9 | 9 | |
| | | | | | | | | | | | | | | | consult |
| Diaphragm | | | | | | | | | | | | | | | |
| | stainless steel 1.4435 (316L) | | | | | | | | | | | | 1 | | |
| | tantalum | | | | | | | | | | | | T | | |
| | Hastelloy [®] C-276 (2.4819) | | | | | | | | | | | | H | | |
| | customer | | | | | | | | | | | | 9 | | |
| | | | | | | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | |
| | for clamp, dairy pipe, Varivent [®] : | without | | | | | | | | | | | 0 | | |
| | for inch thread - standard: | FKM | | | | | | | | | | | 1 | | |
| | for inch thread - option: | FFKM | | | | | | | | | | | 7 | | |
| | customer | | | | | | | | | | | | 9 | | |
| | | | | | | | | | | | | | | | consult |
| Filling fluids | | | | | | | | | | | | | | | |
| | silicone oil | | | | | | | | | | | | 1 | | |
| | food compatible oil (FDA) / 3A | | | | | | | | | | | | 2 | | |
| | customer | | | | | | | | | | | | 9 | | |
| | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | 0 | 0 | 0 |
| | with cooling element up to 300°C / 3A | | | | | | | | | | | | 2 | 0 | 0 |
| | customer | | | | | | | | | | | | 9 | 9 | 9 |
| | | | | | | | | | | | | | | | consult |

¹ absolute pressure possible from 0.4 bar² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C), others on request³ code TR0 = PVC cable, cable with ventilation tube available in different types and lengths⁴ The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe.
The cup nut has to be ordered as separate position.⁵ possible only for $p_N \geq 1$ bar⁶ possible only for $p_N \leq 2$ barVarivent[®] is a brand name of GEA Tuchemhagen GmbH, Hastelloy[®] is a brand name of Haynes International Inc.



DMP 339P

Industrial Pressure Transmitter

Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 25 bar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V

Special characteristics

- ▶ mechanical connection:
G 1/4" flush welded
- ▶ suitable for viscous
and pasty media

Optional versions

- ▶ several electrical
connections
- ▶ customer
specific versions

The DMP 339P industrial pressure transmitter features a G 1/4" flush welded pressure port and was designed for the use in a range of machinery including metering systems. It is ideal for measuring the pressure of viscous and pasty media. No dead spaces arise from the flush welded stainless steel diaphragm.

Material accumulation, dripping and stringing in machinery is eliminated. This increases the efficiency and reliability of your machines.

The DMP 339P is available with various electrical connections, ensuring an excellent adaption to the application conditions.

Preferred areas of use are



Plant and Machine Engineering
- especially conveyor plants and
dosing systems



Hydraulics



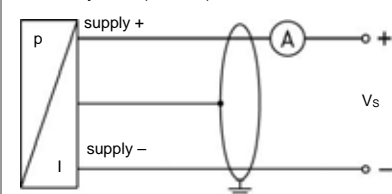
| Input pressure range | | | | | | | | | |
|------------------------|-------|-----|-----|-----|-----|-----|------|------|------|
| Nominal pressure gauge | [bar] | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 |
| Overpressure (static) | [bar] | 50 | 80 | 120 | 200 | 320 | 500 | 800 | 1200 |
| Burst pressure \geq | [bar] | 125 | 200 | 300 | 500 | 800 | 1250 | 2000 | 2000 |

| Output signal / Supply | |
|--|---|
| 2-wire | 4 ... 20 mA / $V_S = 9 \dots 36 V_{DC}$ |
| 3-wire | 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |
| Performance | |
| Accuracy ¹ | $\leq \pm 0.5 \% \text{ FSO}$ |
| Permissible load | 2 wire: $R_{\max} = [(V_S - V_{S \text{ min}}) / 0.02 \text{ A}] \Omega$ 3 wire: $R_{\min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $\text{k}\Omega$ |
| Response time | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ |
| Long term stability | $\leq \pm 0.15 \% \text{ FSO} / \text{year}$ at reference conditions |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | |
| Thermal effects (offset and span) | |
| Thermal error | $\leq \pm 0.15 \% \text{ FSO} / 10 \text{ K}$ |
| in compensated range | -10 ... 80 °C |
| Permissible temperatures | |
| Medium | -10 ... 125 °C |
| Electronics / environment | -40 ... 85 °C |
| Storage | -40 ... 85 °C |
| Electrical protection | |
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic protection | emission and immunity according to EN 61326 |
| Mechanical stability | |
| Vibration | 10 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 100 g / 1 msec according to DIN EN 60068-2-27 |
| Materials | |
| Pressure port / housing | stainless steel 1.4404 (316L) |
| O-ring pressure port | FKM others on request |
| Diaphragm | stainless steel 1.4435 |
| Filling fluid | silicone oil |
| Media wetted parts | pressure port, seal, diaphragm |
| Miscellaneous | |
| Weight | approx. 170 g |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Operational life | 100 million load cycles |
| CE-conformity | 2014/30/EU (EMC) Pressure Equipment Directive: 2014/68/EU (module A) ² |

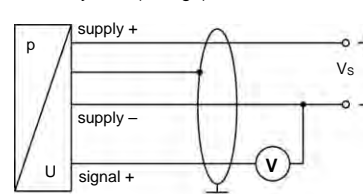
² This directive is only valid for devices with maximum permissible overpressure > 200 bar

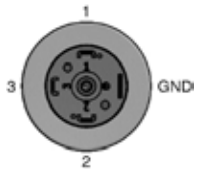


Wiring diagrams


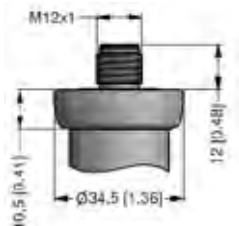
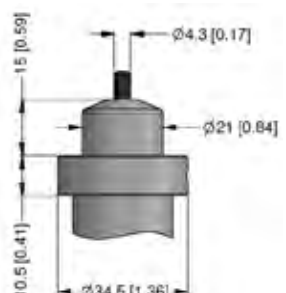
2-wire-system (current)



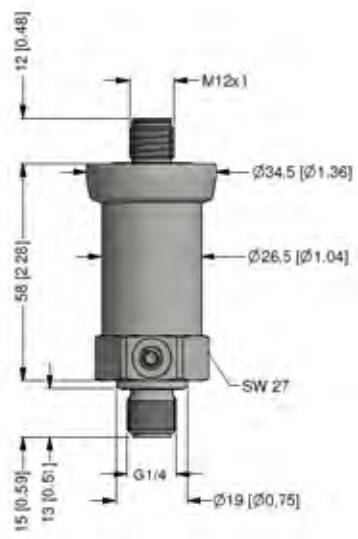
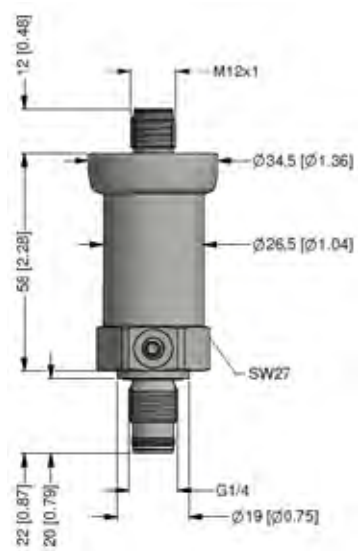
3-wire-system (voltage)



| Pin configuration | | | |
|-----------------------|--|--|---------------------------|
| Electrical connection | ISO 4400 | M12x1 / metal 4-pin | cable colours (IEC 60757) |
| |  |  | |
| Supply + | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | BN (brown) |
| Signal (only 3-wire) | 3 | 3 | GN (green) |
| Shield | ground pin  | 4 | GYNE (green-yellow) |

| Electrical connections (dimensions mm / in) | | |
|--|--|--|
|  |  |  |
| ISO 4400 (IP 65) | M12x1, 4 pin (IP 67) | cable outlet with PVC cable (IP 67) ³ |

³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); different cable types and lengths available, permissible temperature depends on kind of cable

| Dimensions (mm / in) | |
|---|--|
|  |  |
| G 1/4" DIN 3852 flush | G 1/4" DIN 3852 flush with 2 O-rings |



DMK 331P

Industrial Pressure Transmitter

Pressure Ports with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 60 bar up to 0 ... 400 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- ▶ suited for viscous and pasty media

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2
according to IEC 61508 / IEC 61511
- ▶ food compatible filling fluid with FDA approval
- ▶ cooling element for media temperatures up to 300 °C
- ▶ customer specific versions

The pressure transmitter DMK 331P is suitable for measuring the pressure of viscous and pasty media, where a totally flush pressure port is required.

As on all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331P.

Preferred areas of use are



Plant and machine engineering



Food industry

Preferred used for



Viscous and pasty media



| Input pressure range | | | | | |
|-----------------------------------|-----|-----|-----|-----|------|
| Nominal pressure gauge/abs. [bar] | 60 | 100 | 160 | 250 | 400 |
| Overpressure [bar] | 100 | 200 | 400 | 400 | 600 |
| Burst pressure \geq [bar] | 180 | 300 | 500 | 750 | 1000 |

| Output signal / Supply | | |
|------------------------|---|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Option IS-protection | 2-wire: 4 ... 20 mA / $V_S = 10 \dots 28 V_{DC}$ | SIL-version: $V_S = 14 \dots 28 V_{DC}$ |
| Options 3-wire | 3-wire: 0 ... 20 mA / $V_S = 14 \dots 30 V_{DC}$ 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ | |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | $\leq \pm 0.5 \% \text{ FSO}$ |
| Permissible load | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{\max} = 500 \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Long term stability | $\leq \pm 0.3 \% \text{ FSO} / \text{year}$ at reference conditions |
| Response time | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) ² | |
|--|--|
| Thermal error | $\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ |
| In compensated range | 0 ... 85°C |

² an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

| Permissible temperatures | | |
|--|--|--|
| Filling fluid | silicone oil | food compatible oil |
| Medium ³ | -40 ... 125 °C | -10 ... 125 °C |
| Medium with cooling element ⁴ | overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C | overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C |
| Electronics / environment | | -40 ... 85 °C |
| Storage | | -40 ... 100 °C |

³ max. temperature of the medium for overpressure > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

⁴ max. temperature depends on the used sealing material, type of seal and installation

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | | |
|----------------------|---------------------------|--------------------------------|
| Vibration | 20 g RMS (25 ... 2000 Hz) | according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec | according to DIN EN 60068-2-27 |

| Filling fluids | |
|----------------|---|
| Standard | silicone oil |
| Options | food compatible oil (with FDA approval) (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request |

| Materials | |
|------------------------------|--|
| Pressure port / housing | stainless steel 1.4404 (316 L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seals | standard: FKM (recommended for medium temperatures $\leq 200 \text{ }^\circ\text{C}$) option: FFKM ⁵ (recommended for medium temperatures < 260 °C) others on request |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |

⁵ for pressure ranges $p_N \leq 100 \text{ bar}$

| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|--|
| Approvals DX19-DMK 331P | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$, the supply connections have an inner capacity of max. 27 nF to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ |

| Miscellaneous | |
|-----------------------------------|---|
| Option SIL 2 version ⁶ | according to IEC 61508 / IEC 61511 |
| Current consumption | signal output current: max. 25 mA signal output voltage: max. 7 mA |
| Weight | min. 200 g (depending on process connection) |
| Installation position | any (standard calibration in a vertical position with the pressure port connection down) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁷ |
| ATEX Directive | 2014/34/EU |

⁶ only for 4 ... 20 mA / 2-wire

⁷ this directive is only valid for devices with maximum permissible overpressure > 200 bar

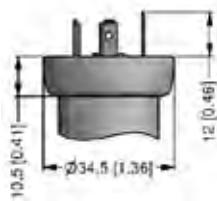
Wiring diagrams



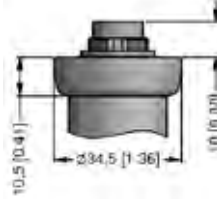
Pin configuration

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 / metal (4-pin) | compact field housing | cable colours (IEC 60757) |
|------------------------|------------|--------------------|-----------------------|-----------------------|---------------------------|
| | | | | | |
| supply + | 1 | 3 | 1 | V _{S+} | WH (white) |
| supply - | 2 | 4 | 2 | V _{S-} | BN (brown) |
| signal + (only 3-wire) | 3 | 1 | 3 | S+ | GN (green) |
| Shield | ground pin | 5 | 4 | GND | GNYE (green-yellow) |

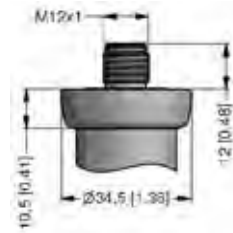
Electrical connections (dimensions mm / in)



ISO 4400 (IP 65)



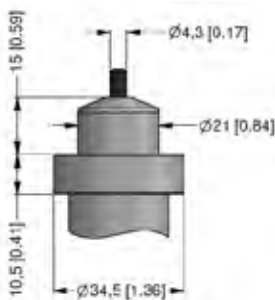
Binder series 723, 5-pin (IP 67)



M12x1, 4-pin (IP 67)



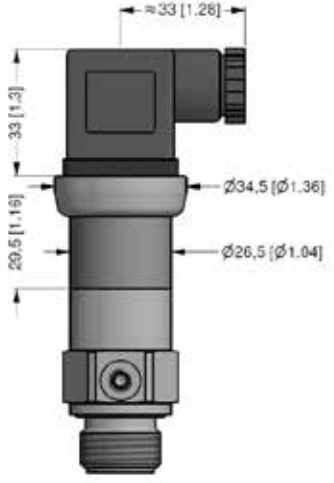

compact field housing (IP 67)



cable outlet with PVC-cable (IP 67) ⁸

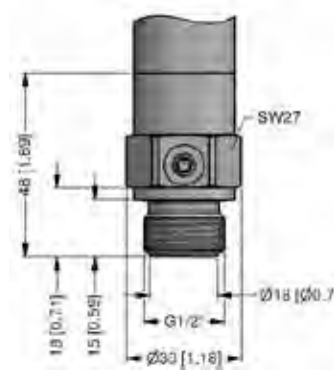
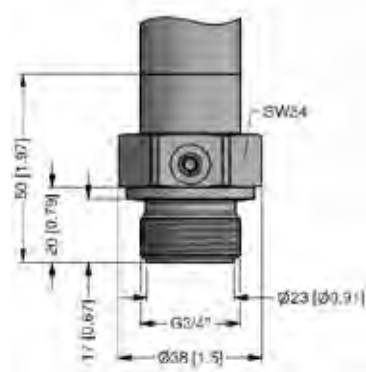
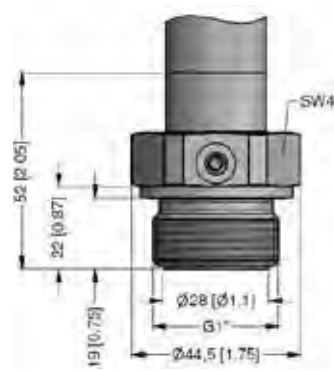
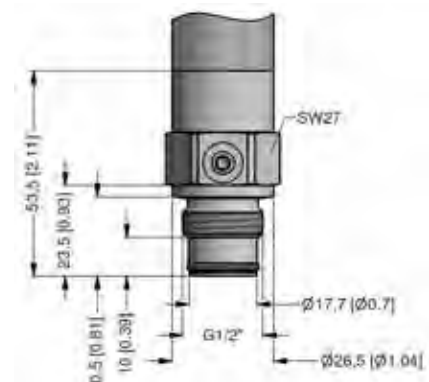
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁸ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

| Dimensions (mm / in) | cooling element up to 300 °C ⁴ (optionally) |
|---|--|
|  |  <p data-bbox="1021 851 1244 884">possible for $p_N \leq 160$ bar</p> |

⁴ max. temperature depends on the used sealing material, type of seal and installation

Mechanical connections (dimensions mm / in)

| | |
|--|--|
|  <p data-bbox="367 1444 558 1478">G1/2" flush DIN 3852</p> |  <p data-bbox="1021 1444 1228 1478">G3/4" flush DIN 3852</p> |
|  <p data-bbox="367 1960 558 1993">G1" flush DIN 3852</p> |  <p data-bbox="1053 1960 1212 2016">G1/2" flush with radial o-ring</p> |
| <p data-bbox="446 2060 1021 2116">⇒ SIL- and SIL-Ex version: total length increases by 26.5 mm! ⇒ metric threads and other versions on request</p> | |

Ordering code DMK 331P

DMK 331P

□□□□ - □□□□ - □ - □ - □□□□ - □□□□ - □ - □ - □□□□

| Pressure | | 5 | 0 | 5 | | | | | | | | | | | | | | | | |
|-----------------------|--|---|---|---|---|----|---|---|---|--|--|--|--|--|--|--|--|--|--|---------|
| | gauge | 5 | 0 | 5 | | | | | | | | | | | | | | | | |
| | absolute | 5 | 0 | 6 | | | | | | | | | | | | | | | | |
| Input [bar] | | | | | | | | | | | | | | | | | | | | |
| | 60 | | 6 | 0 | 0 | 2 | | | | | | | | | | | | | | |
| | 100 | | 1 | 0 | 0 | 3 | | | | | | | | | | | | | | |
| | 160 | | 1 | 6 | 0 | 3 | | | | | | | | | | | | | | |
| | 250 | | 2 | 5 | 0 | 3 | | | | | | | | | | | | | | |
| | 400 | | 4 | 0 | 0 | 3 | | | | | | | | | | | | | | |
| | customer | | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | 1 | | | | | | | | | | | | | | |
| | 0 ... 20 mA / 3-wire | | | | | 2 | | | | | | | | | | | | | | |
| | 0 ... 10 V / 3-wire | | | | | 3 | | | | | | | | | | | | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | E | | | | | | | | | | | | | | |
| | SIL2 4 ... 20 mA / 2-wire | | | | | 1S | | | | | | | | | | | | | | |
| | SIL2 with intrinsic safety 4 ... 20 mA / 2-wire | | | | | ES | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | | | |
| | 0.5 % FSO | | | | | 5 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | 1 | 0 | 0 | | | | | | | | | | | | |
| | male plug Binder series 723 (5-pin) | | | | | 2 | 0 | 0 | | | | | | | | | | | | |
| | cable outlet with PVC-cable (IP67) ¹ | | | | | T | A | 0 | | | | | | | | | | | | |
| | male plug M12x1 (4-pin) / metal | | | | | M | 1 | 0 | | | | | | | | | | | | |
| | compact field housing | | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4301 (304) | | | | | 8 | 5 | 0 | | | | | | | | | | | | |
| | customer | | | | | 9 | 9 | 9 | | | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 with flush diaphragm | | | | | | Z | 0 | 0 | | | | | | | | | | | |
| | G3/4" DIN 3852 with flush diaphragm | | | | | | Z | S | 0 | | | | | | | | | | | |
| | G1" DIN 3852 with flush diaphragm | | | | | | Z | S | 1 | | | | | | | | | | | |
| | G 1/2" DIN 3852 with rad. o-ring and flush diaphragm | | | | | | Z | 6 | 1 | | | | | | | | | | | |
| | customer | | | | | | 9 | 9 | 9 | | | | | | | | | | | consult |
| Diaphragm | | | | | | | | | | | | | | | | | | | | |
| | stainless steel 1.4435 (316L) | | | | | | | | 1 | | | | | | | | | | | |
| | customer | | | | | | | | 9 | | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | | | 1 |
| | FFKM ² | | | | | | | | | | | | | | | | | | | 7 |
| | customer | | | | | | | | | | | | | | | | | | | 9 |
| Filling fluids | | | | | | | | | | | | | | | | | | | | |
| | silicone oil | | | | | | | | | | | | | | | | | | | 1 |
| | food compatible oil | | | | | | | | | | | | | | | | | | | 2 |
| | customer | | | | | | | | | | | | | | | | | | | 9 |
| Special version | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | | | 0 0 0 |
| | with cooling element up to 300°C ³ | | | | | | | | | | | | | | | | | | | 2 0 0 |
| | customer | | | | | | | | | | | | | | | | | | | 9 9 9 |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

² only for p_N ≤ 100 bar possible

³ only for p_N ≤ 160 bar possible



DMK 351P

Pressure Transmitter for the Process Industry

Ceramic Sensor

accuracy according to IEC 60770:
Standard: 0.35 % FSO
Option: 0.25 % FSO

Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signal

2-wire: 4 ... 20 mA
3-wire: 0 ... 10 V
others on request

Special characteristics

- ▶ hygienic version
- ▶ different process connections
(G1 1/2", diary pipe, Clamp, etc.)
- ▶ high overpressure capability



Optional versions

- ▶ IS-version
Ex ia = intrinsically safe
for gases and dusts
- ▶ diaphragm 99.9 % Al₂O₃
- ▶ customer specific versions
e.g. special pressure ranges



The pressure transmitter DMK 351P has been designed for measuring small system pressure in the food industry and chemical industry.

The DMK 351P is based on an own-developed capacitive ceramic sensor element. It features high overpressure resistance and high resistance against most of aggressive media. A variety of different process and electrical connections and an intrinsically safe version complete the range of possibilities.

Preferred areas of use are

-  Food industry
-  Chemical and petrochemical industry

Preferred used for

-  Paint and varnish
-  Viscous and pasty media



| Pressure ranges | | | | | | | | | | | | | | | | | | |
|---------------------------------|------------|------|------|------|------|------|-----|---|-----|-----|----|-----|-----|----|----|----|----|----|
| Nominal pressure gauge [bar] | 0.04 | 0.06 | 0.1 | 0.16 | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 20 | | | |
| Nominal pressure absolute [bar] | on request | | | | | | | | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 20 |
| Overpressure [bar] | 2 | 2 | 4 | 4 | 6 | 6 | 8 | 8 | 15 | 25 | 25 | 35 | 35 | 45 | 45 | | | |
| Permissible vacuum [bar] | -0.2 | | -0.3 | | | -0.5 | | | -1 | | | | | | | | | |

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 9 \dots 32 V_{DC}$ |
| Option IS-protection | 2-wire: 4 ... 20 mA / $V_S = 14 \dots 28 V_{DC}$ |
| Option 3-wire | 3-wire: 0 ... 10 V / $V_S = 12.5 \dots 32 V_{DC}$ |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | standard: $\leq \pm 0.35 \% \text{ FSO}$ option for $p_N \geq 0.6 \text{ bar}$: $\leq \pm 0.25 \% \text{ FSO}$ |
| Long term stability | $\leq \pm 0.1 \% \text{ FSO} / \text{year}$ at reference conditions |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω |
| Permissible load | current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$ |
| Turn-on time | 700 msec |
| Mean measuring rate | 5 / sec |
| Response time | mean response time: $\leq 200 \text{ msec}$ max. response time: 380 msec |

¹ accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effect (offset and span) | |
|----------------------------------|-----------------------------|
| Tolerance band | $\leq \pm 1 \% \text{ FSO}$ |
| in compensated range | -20 ... 80 °C |

| Permissible temperatures | |
|--------------------------|---|
| Permissible temperatures | medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|---|
| Vibration | 10 g RMS (20 ... 2000 Hz) according to DIN EN 60068-2-6 |
| Shock | 100 g / 1 msec according to DIN EN 60068-2-27 |

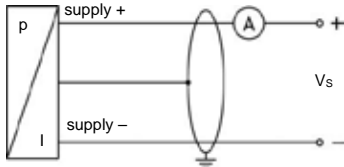
| Materials | |
|------------------------------|--|
| Pressure port | stainless steel 1.4404 (316L) |
| Housing | stainless steel 1.4404 (316L) |
| Option compact field housing | stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm) |
| Seal (media wetted) | FKM EPDM others on request |
| Diaphragm | standard: ceramic Al ₂ O ₃ 96 % option: ceramic Al ₂ O ₃ 99.9 % |
| Media wetted parts | pressure port, seals, diaphragm |

| Explosion protection (only for 4 ... 20 mA / 2-wire) | |
|--|--|
| Approval DX 14-DMK 351 P | IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T110 °C Da |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C_i = 14 \text{ nF}$, $L_i \approx 0 \mu\text{H}$, $C_{\text{gnd}} = 27 \text{ nF}$ |
| Max. permissible temperature for environment | zone 0: -20 ... 60 °C for $p_{\text{atm}} 0.8 \text{ bar}$ up to 1.1 bar zone 1 and higher: -25 ... 70 °C |
| Connecting cables (by factory) | cable capacity: signal line / shield also signal line / signal line: 220 pF/m cable inductance: signal line / shield also signal line / signal line: 1.5 $\mu\text{H}/\text{m}$ |

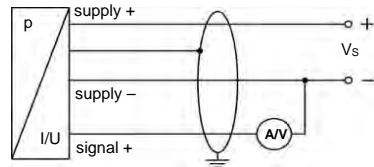
| Miscellaneous | |
|-----------------------|---------------------------|
| Current consumption | max. 21 mA |
| Weight | min. 200 g |
| Installation position | any |
| Operational life | 100 million load cycles |
| CE-conformity | EMC-directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

Wiring diagram

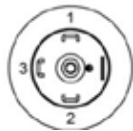
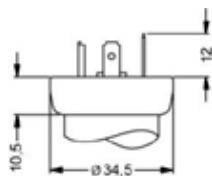
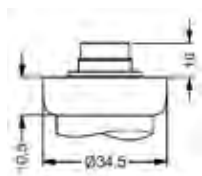
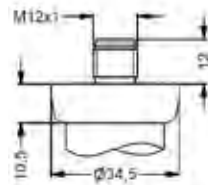
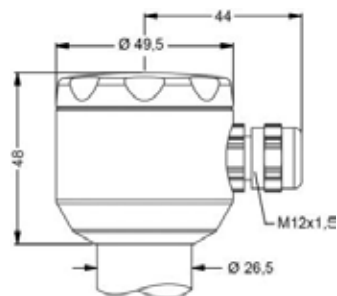
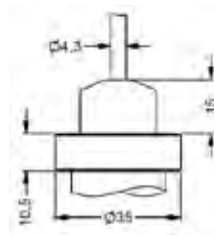
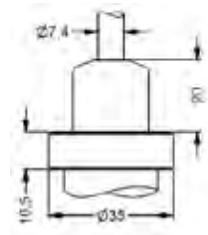
2-wire-system (current)



3-wire-system (current / voltage)

**Pin configuration**

| Electrical connection | ISO 4400 | Binder 723 (5-pin) | M12x1 (4-pin) | compact field housing | cable colours (IEC 60757) |
|------------------------|------------|--------------------|---------------|-----------------------|---------------------------|
| Supply + | 1 | 3 | 1 | IN + | WH (white) |
| Supply - | 2 | 4 | 2 | IN - | BN (brown) |
| Signal + (only 3-wire) | 3 | 1 | 3 | OUT + | GN (green) |
| Shield | ground pin | 5 | 4 | | GNYE (green-yellow) |

Electrical connections (dimensions in mm)**standard**ISO 4400
(IP 65)**options**Binder series 723 5-pin
(IP 67)M12x1 4-pin
(IP 67)compact field housing
(IP 67)cable outlet with
PVC-cable (IP 67)²cable outlet, cable with
ventilation tube (IP 68)³

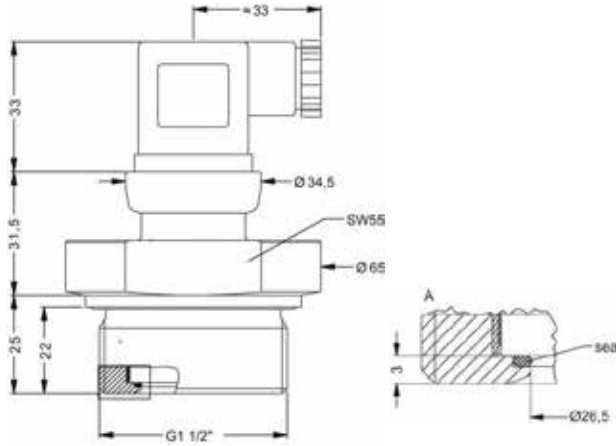
⇒ universal stainless steel field housing 1.4404 with cable gland M20x1.5 (ordering code 880) and other versions on request

² standard: 2 m PVC-cable without ventilation tube (permissible temperature: -5 ... 70 °C)

³ different cable types and lengths available, permissible temperature depends on kind of cable

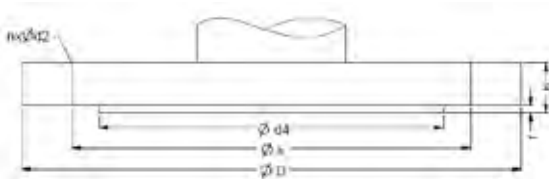
Mechanical connections (dimensions in mm)

standard



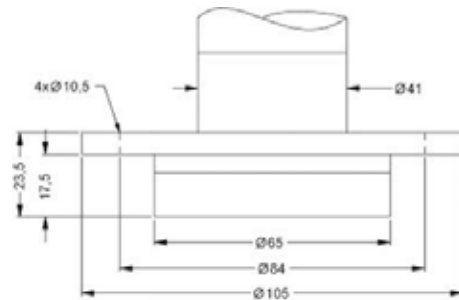
G1 1/2" DIN 3852

options

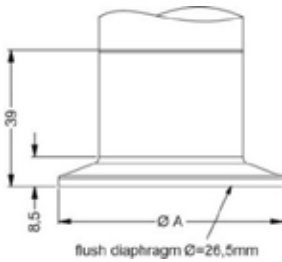


flange (DIN 2501)

| dimensions in mm | | | |
|------------------|-------|-------|-------|
| size | DN 25 | DN 50 | DN 80 |
| D | 115 | 165 | 200 |
| k | 85 | 125 | 160 |
| d4 | 68 | 102 | 138 |
| b | 18 | 20 | 20 |
| f | 2 | 3 | 3 |
| n | 4 | 4 | 8 |
| d2 | 14 | 18 | 18 |
| pN [bar] | ≤ 40 | ≤ 40 | ≤ 16 |

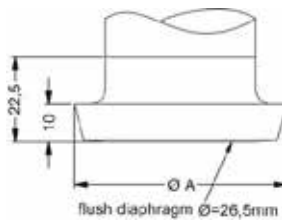


flange DRD⁴



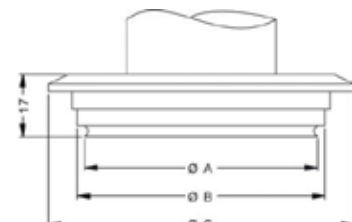
Clamp (DIN 32676)

| dimensions in mm | | |
|------------------|-------|-------|
| size | DN 32 | DN 50 |
| A | 50.5 | 64 |
| pN [bar] | ≤ 16 | ≤ 16 |



dairy pipe (DIN 11851)

| dimensions in mm | | |
|------------------|-------|-------|
| size | DN 40 | DN 50 |
| A | 56 | 68.5 |



Varivent®

| dimensions in mm | |
|------------------|----------|
| size | DN 40/50 |
| A | 64 |
| B | 68 |
| C | 84 |

⁴ mounting flange is included in the delivery (already pre-assembled)



DMP 457

Pressure Transmitter for Shipbuilding and Offshore

Stainless Steel Sensor

accuracy according to IEC 60770:
 standard: 0.35 % FSO
 option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
 others on request

Special characteristics

- ▶ LR-certificate (Lloyd's Register)
- ▶ DNV•GL Type Approval (Det Norske Veritas • Germanischer Lloyd)
- ▶ ABS-certificate (American Bureau of Shipping)
- ▶ CCS-certificate (China Classification Society)
- ▶ flush pressure port G 1/2" from 100 mbar
- ▶ excellent thermal behaviour






Optional versions

- ▶ IS-version
 Ex ia = intrinsically safe for gases and dusts
- ▶ welded pressure port

The pressure transmitter DMP 457 has been especially designed for rough conditions occurring especially in shipbuilding and offshore applications. All gaseous and liquid media, which are compatible with stainless steel 1.4404 (316L) respectively can be used.

Sensor element is a piezoresistive stainless steel sensor with high accuracy and excellent long-term stability. In order to meet the special requirements for shipbuilding and offshore applications extensive tests had to be passed to get the Lloyd's Register (LR), Det Norske Veritas • Germanischer Lloyd (DNV•GL) and China Classification Society (CCS) approvals.

Preferred areas of use are

-  Diesel engines, drives
-  Compressors, pumps
-  Boiler
-  Hydraulic and pneumatic control systems
-  Fuel and oil



| Input pressure range ¹ | | | | | | | | | | | | |
|--|----------|------|------|------|------|------|-----|-----|-----|----|----|--|
| Nominal pressure gauge [bar] | -1 ... 0 | 0.10 | 0.16 | 0.25 | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 | |
| Nominal pressure abs. [bar] | - | - | - | - | 0.40 | 0.60 | 1 | 1.6 | 2.5 | 4 | 6 | |
| Level gauge / abs. [mH ₂ O] | - | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | |
| Overpressure [bar] | 5 | 0.5 | 1 | 1 | 2 | 5 | 5 | 10 | 10 | 20 | 40 | |
| Burst pressure ≥ [bar] | 7.5 | 1.5 | 1.5 | 1.5 | 3 | 7.5 | 7.5 | 15 | 15 | 25 | 50 | |

| | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|------------------------------------|------|------|------|------|--|--|
| Nominal pressure gauge [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | | |
| Nominal pressure abs. [bar] | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | | |
| Level gauge / abs. [mH ₂ O] | 100 | 160 | 250 | 400 | - | - | - | - | - | - | | |
| Overpressure [bar] | 40 | 80 | 80 | 105 | 210 | 600 | 600 | 1000 | 1000 | 1000 | | |
| Burst pressure ≥ [bar] | 50 | 120 | 120 | 210 | 420 | 1000 | 1000 | 1250 | - | - | | |
| Vacuum resistance | p _N ≥ 1 bar: unlimited vacuum resistance | | | | | p _N < 1 bar: on request | | | | | | |
| ¹ from 60 bar: measurement starts with ambient pressure | | | | | | | | | | | | |

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / V _S = 8 ... 32 V _{DC} |
| Option IS-version | 2-wire: 4 ... 20 mA / V _S = 10 ... 28 V _{DC} |

| Performance | |
|-----------------------|---|
| Accuracy ² | standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO |
| Permissible load | R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Long term stability | ≤ ± 0.1 % FSO / year by reference conditions |
| Response time | < 10 msec |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (Offset and Span) / Permissible temperatures | | | |
|--|--|----------|------------|
| Nominal pressure p _N [bar] | -1 ... 0 | < 0.4 | ≥ 0.40 |
| Tolerance band [% FSO] | ≤ ± 0.75 | ≤ ± 1 | ≤ ± 0.75 |
| in compensated range [°C] | -20 ... 85 | 0 ... 70 | -20 ... 85 |
| Permissible temperatures | medium: -40 ... 125°C electronics / environment: -40 ... 85°C storage: -40 ... 100°C | | |

| Electrical protection | |
|-------------------------------|--|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to - EN 61326 - DNV•GL (Det Norske Veritas • Germanischer Lloyd) |

| Mechanical stability | |
|----------------------|--|
| Vibration | 4 g (according to DNV•GL: class B, curve 2 / basis: IEC 60068-2-6) |

| Materials | |
|----------------------|---|
| Pressure port | stainless steel 1.4404 (316L) |
| Housing | standard: stainless steel 1.4404 (316L) option field housing: stainless steel 1.4404 (316L), with cable gland |
| Cable sheath | TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil) |
| Seals (media wetted) | standard: FKM option: welded version ³ others on request |
| Diaphragm | stainless steel 1.4435 (316L) |
| Media wetted parts | pressure port, seals, diaphragm |

³ welded version only with pressure ports according to EN 837; possible for nominal pressure ranges p_N ≤ 40 bar

| Category of the environment | | |
|--|---|-----------------------------------|
| Lloyd's Register (LR) | EMV1, EMV2, EMV3, EMV4 | number of certificate: 13/20055 |
| Det Norske Veritas • Germanischer Lloyd (DNV•GL) | temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D | number of certificate: TAA00001GR |

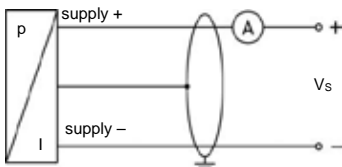
| Explosion protection | |
|--|--|
| Approvals DX19-DMP 457 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da |
| Safety technical maximum values | U _i = 28 V, I _i = 93 mA, P _i = 660 mW, L _i ≈ 0 μH with field housing: C _i = 105 nF with cable outlet: C _i = 84.7 nF with ISO 4400: C _i = 62.2 nF the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 μH/m |
| Miscellaneous | |
| Current consumption | max. 25 mA |
| Weight | approx. 140 g (with ISO 4400) |
| Installation position | any ⁴ |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁵ |
| ATEX Directive | 2014/34/EU |

⁴ Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.

⁵ This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagram

2-wire-system (current)



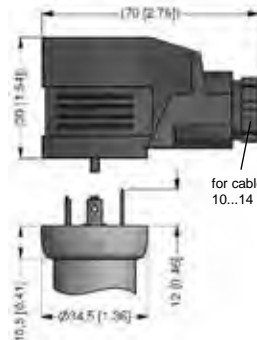
Pin configuration

| Electrical connection | ISO 4400 | field housing (clamp section: 2.5 mm ²) | cable colours (IEC 60757) |
|-----------------------|------------|---|---------------------------|
| Supply + | 1 | VS+ | WH (white) |
| Supply - | 2 | VS- | BN (brown) |
| Shield | ground pin | GND | GYNE (green-yellow) |

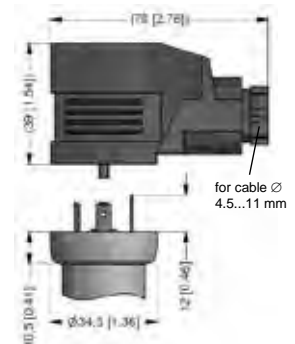
Electrical connections ⁶ (dimensions mm / in)



ISO 4400 - Code G10 (IP 65)



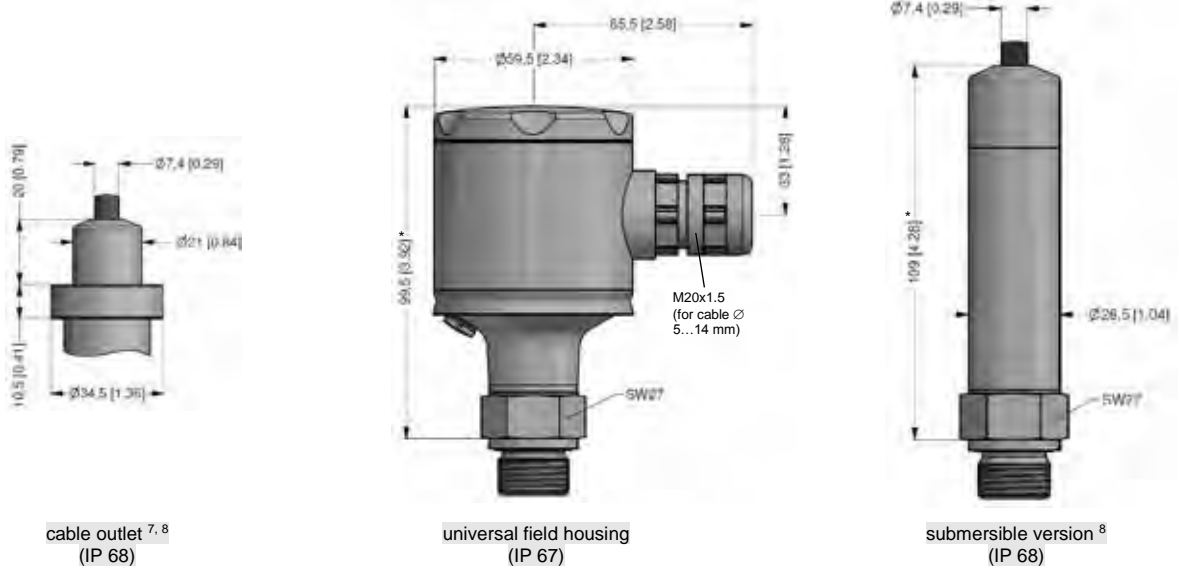
ISO 4400 - Code G00 (IP 65)



ISO 4400 - Code G01 (IP 65)

⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

Electrical connections ⁶ (dimensions mm / in)



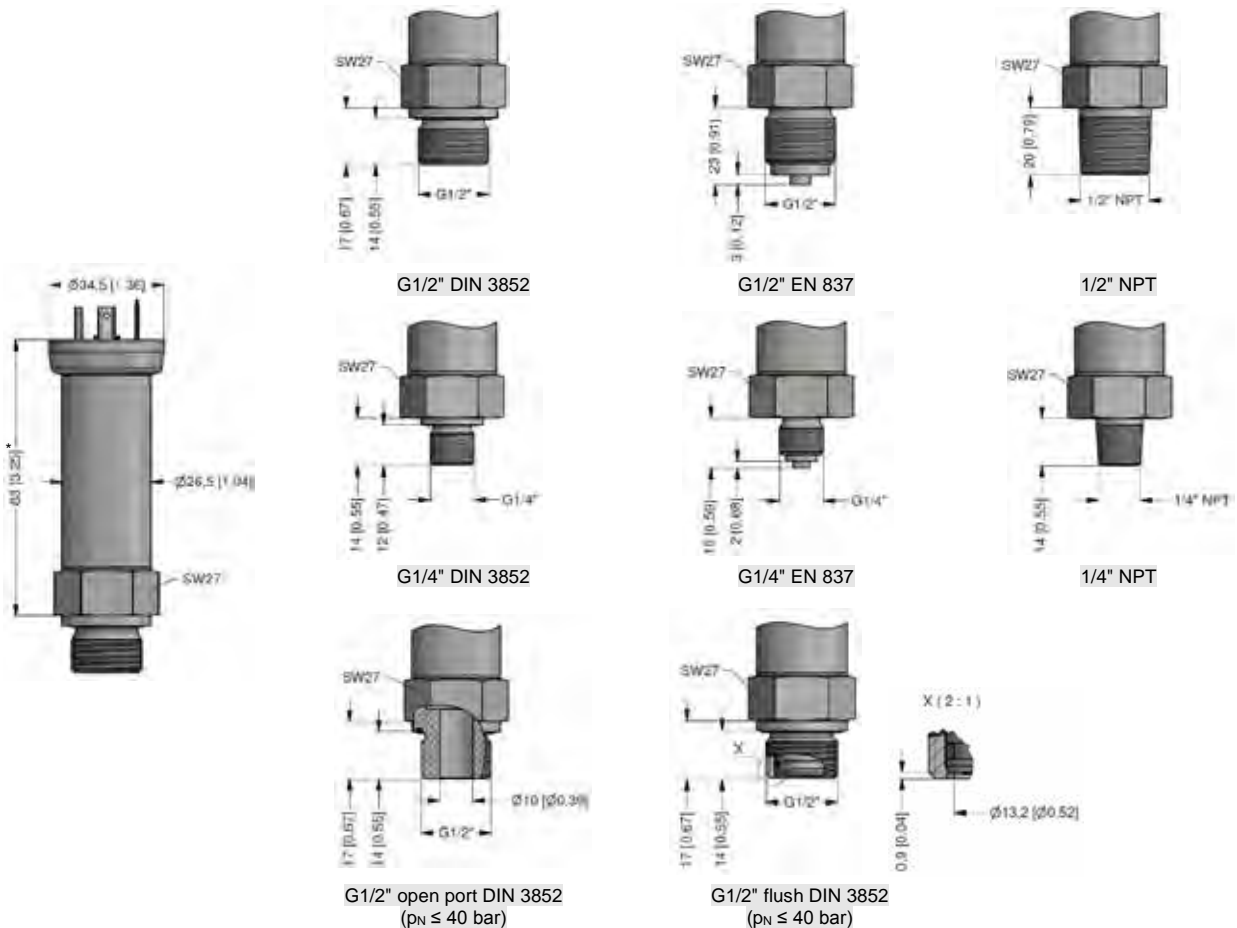
⁶ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

⁷ tested at 4 bar or 40 mH₂O for 24 hours

⁸ shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available

* total lengths increase by 9 mm for p_N ≥ 100 bar with the optional accuracy ≤ ± 0.25 % FSO

Mechanical connections (dimensions mm / in)



* total lengths increase by 9 mm for p_N ≥ 100 bar with the optional accuracy ≤ ± 0.25 % FSO

Ordering code DMP 457

DMP 457



| Pressure | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|---------------------|--------------|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|---------|---------|
| | in bar, gauge ¹ | 6 | 0 | 0 | | | | | | | | | | | | | | | | | |
| | in bar, absolute ² | 6 | 0 | 1 | | | | | | | | | | | | | | | | | |
| | in mH ₂ O, gauge ¹ | 6 | 0 | 2 | | | | | | | | | | | | | | | | | |
| | in mH ₂ O, absolute ² | 6 | 0 | 3 | | | | | | | | | | | | | | | | | |
| Input | | [mH ₂ O] | [bar] | | | | | | | | | | | | | | | | | | |
| | 1.0 | 0.10 | ² | 1 | 0 | 0 | 0 | | | | | | | | | | | | | | |
| | 1.6 | 0.16 | ² | 1 | 6 | 0 | 0 | | | | | | | | | | | | | | |
| | 2.5 | 0.25 | ² | 2 | 5 | 0 | 0 | | | | | | | | | | | | | | |
| | 4.0 | 0.40 | | 4 | 0 | 0 | 0 | | | | | | | | | | | | | | |
| | 6.0 | 0.60 | | 6 | 0 | 0 | 0 | | | | | | | | | | | | | | |
| | 10 | 1.0 | | 1 | 0 | 0 | 1 | | | | | | | | | | | | | | |
| | 16 | 1.6 | | 1 | 6 | 0 | 1 | | | | | | | | | | | | | | |
| | 25 | 2.5 | | 2 | 5 | 0 | 1 | | | | | | | | | | | | | | |
| | 40 | 4.0 | | 4 | 0 | 0 | 1 | | | | | | | | | | | | | | |
| | 60 | 6.0 | | 6 | 0 | 0 | 1 | | | | | | | | | | | | | | |
| | 100 | 10 | | 1 | 0 | 0 | 2 | | | | | | | | | | | | | | |
| | 160 | 16 | | 1 | 6 | 0 | 2 | | | | | | | | | | | | | | |
| | 250 | 25 | | 2 | 5 | 0 | 2 | | | | | | | | | | | | | | |
| | 400 | 40 | | 4 | 0 | 0 | 2 | | | | | | | | | | | | | | |
| | | 60 | | 6 | 0 | 0 | 2 | | | | | | | | | | | | | | |
| | | 100 | | 1 | 0 | 0 | 3 | | | | | | | | | | | | | | |
| | | 160 | | 1 | 6 | 0 | 3 | | | | | | | | | | | | | | |
| | | 250 | | 2 | 5 | 0 | 3 | | | | | | | | | | | | | | |
| | | 400 | | 4 | 0 | 0 | 3 | | | | | | | | | | | | | | |
| | | 600 | | 6 | 0 | 0 | 3 | | | | | | | | | | | | | | |
| | -1 ... 0 | | | X | 1 | 0 | 2 | | | | | | | | | | | | | | |
| | customer | | | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | |
| Output | | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | 1 | | | | | | | | | | | | | |
| | intrinsic safety 4 ... 20 mA / 2-wire | | | | | | | E | | | | | | | | | | | | | |
| | customer | | | | | | | 9 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | consult | |
| Accuracy | | | | | | | | | | | | | | | | | | | | | |
| | standard for p _N ≥ 0,4 bar: | 0.35 % FSO | | | | | | | | | | | | | | | | | | 3 | |
| | standard for p _N < 0,4 bar: | 0.50 % FSO | | | | | | | | | | | | | | | | | | 5 | |
| | option for p _N ≥ 0,4 bar: | 0.25 % FSO | | | | | | | | | | | | | | | | | | 2 | |
| | customer | | | | | | | | | | | | | | | | | | | 9 | |
| | | | | | | | | | | | | | | | | | | | | consult | |
| Electrical connection | | | | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 (for cable Ø 4...6 mm) | | | | | | | | | | | | | | | | | | | G 1 0 | |
| | male and female plug ISO 4400 GL ³ (for cable Ø 10...14 mm) | | | | | | | | | | | | | | | | | | | G 0 0 | |
| | male and female plug ISO 4400 GL ³ (for cable Ø 4,5...11 mm) | | | | | | | | | | | | | | | | | | | G 0 1 | |
| | cable outlet (TPE-U-cable) ⁴ | | | | | | | | | | | | | | | | | | | T R 3 | |
| | field housing stainless steel (316L) | | | | | | | | | | | | | | | | | | | 8 8 0 | |
| | submersible version (1.4404 / 316L) with TPE-U-cable ⁴ | | | | | | | | | | | | | | | | | | | T T 3 | |
| | customer | | | | | | | | | | | | | | | | | | | 9 9 9 | |
| | | | | | | | | | | | | | | | | | | | | consult | |
| Mechanical connection | | | | | | | | | | | | | | | | | | | | | |
| | G1/2" DIN 3852 | | | | | | | | | | | | | | | | | | | 1 0 0 | |
| | G1/2" EN 837 | | | | | | | | | | | | | | | | | | | 2 0 0 | |
| | G1/4" DIN 3852 | | | | | | | | | | | | | | | | | | | 3 0 0 | |
| | G1/4" EN 837 | | | | | | | | | | | | | | | | | | | 4 0 0 | |
| | G 1/2" DIN 3852 with flush sensor ⁵ | | | | | | | | | | | | | | | | | | | F 0 0 | |
| | G1/2" DIN 3852 open pressure port ⁵ | | | | | | | | | | | | | | | | | | | H 0 0 | |
| | 1/2" NPT | | | | | | | | | | | | | | | | | | | N 0 0 | |
| | 1/4" NPT | | | | | | | | | | | | | | | | | | | N 4 0 | |
| | customer | | | | | | | | | | | | | | | | | | | 9 9 9 | |
| | | | | | | | | | | | | | | | | | | | | consult | |
| Seals | | | | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | | | | 1 |
| | without (welded version) ⁶ | | | | | | | | | | | | | | | | | | | | 2 |
| | customer | | | | | | | | | | | | | | | | | | | | 9 |
| | | | | | | | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | | | | 0 0 0 |
| | customer | | | | | | | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | | | | | | | consult |

¹ from 60 bar: measurement starts with ambient pressure
² absolute pressure possible from 0.4 bar
³ cable socket is GL-approved
⁴ shielded TPE-U-cable with ventilation tube available in different lengths
⁵ only for p_N ≤ 40 bar possible
⁶ welded version only with pressure ports according to EN 837; possible with pressure ranges p_N ≤ 40 bar



DMK 457

Pressure Transmitter for Shipbuilding and Offshore

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ LR-certificate (Lloyd's Register)
- ▶ DNV•GL Approval (Det Norske Veritas • Germanischer Lloyd)
- ▶ ABS-certificate (American Bureau of Shipping)
- ▶ CCS-certificate (China Classification Society)
- ▶ pressure port in CuNiFe (sea water resistant)
- ▶ oxygen application




Optional versions

- ▶ IS-version
Ex ia = intrinsically safe
for gases and dusts

The pressure transmitter DMK 457 with ceramic sensor has been designed for typical applications in shipbuilding and offshore constructions as alternative to our pressure transmitter DMP 457 with piezoresistive stainless steel sensor.

In combination with the copper-nickel-alloy the DMK 457 is suitable for seawater, e.g. level measurement in ballast tanks, etc.

Preferred areas of use are

-  Drives
Compressors
Boiler
Pneumatic control systems
Oxygen applications
-  Fuel and oil
-  Water and sea water



| Input pressure range | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Nominal pressure gauge [bar] | -1 ... 0 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 600 |
| Nominal pressure abs. [bar] | - | - | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 600 |
| Level gauge / abs. [mH ₂ O] | - | - | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | - | - | - | - | - | - |
| Overpressure [bar] | 4 | 1 | 2 | 2 | 4 | 4 | 10 | 10 | 20 | 40 | 40 | 100 | 100 | 200 | 400 | 400 | 600 | 600 | 800 |
| Burst pressure ≥ [bar] | 7 | 2 | 4 | 4 | 5 | 5 | 12 | 12 | 25 | 50 | 50 | 120 | 120 | 250 | 500 | 500 | 650 | 650 | 880 |
| Vacuum resistance | p _N ≥ 1 bar: unlimited vacuum resistance p _N < 1 bar: on request | | | | | | | | | | | | | | | | | | |

| Output signal / Supply | |
|------------------------|--|
| Standard | 2-wire: 4 ... 20 mA / V _S = 8 ... 32 V _{DC} |
| Option IS-version | 2-wire: 4 ... 20 mA / V _S = 10 ... 28 V _{DC} |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | IEC 60770: ≤ ± 0.5 % FSO |
| Permissible load | R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Long term stability | ≤ ± 0.3% FSO / year at reference conditions |
| Response time | < 10 msec |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (Offset and Span) / Permissible temperatures | |
|--|---|
| Thermal error | ≤ ± 0.2 % FSO / 10 K in compensated range 0 ... 85 °C |
| Permissible temperatures | medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C |

| Electrical protection | |
|-------------------------------|--|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to - EN 61326 - DNV•GL (Det Norske Veritas • Germanischer Lloyd) |

| Mechanical stability | |
|----------------------|--|
| Vibration | 4 g (according to DNV•GL: class B, curve 2 / basis: IEC 60068-2-6) |

| Materials | |
|----------------------|---|
| Pressure port | Standard: stainless steel 1.4404 (316L) option ² : CuNi10Fe1Mn (sea water resistant) - for p _N ≤ 400 bar with mechanical connection G1/2" DIN 3852, G1/2" EN 837, G1/2" open port, G1/4" DIN 3852, G1/4" EN 837 - in combination with housing in CuNi10Fe1Mn (not with field housing) - |
| Housing | standard: stainless steel 1.4404 (316L) option ² : CuNi10Fe1Mn (sea water resistant) - in combination with pressure port in CuNi10Fe1Mn - option field housing: stainless steel 1.4404 (316L); with cable gland (CuNi10Fe1Mn not possible) |
| Cable sheath | TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil) |
| Seals (media wetted) | standard: FKM option: FFKM (only for p _N ≤ 100 bar) others on request |
| Diaphragm | ceramic Al ₂ O ₃ 96 % |
| Media wetted parts | pressure port, seals, diaphragm |

² IS-version on request

| Category of the environment | | |
|--|---|-----------------------------------|
| Lloyd's Register (LR) ³ | EMV1, EMV2, EMV3, EMV4 | number of certificate: 13/20055 |
| Det Norske Veritas • Germanischer Lloyd (DNV•GL) | temperature: D humidity: B vibration: B electromagnetic compatibility: B enclosure: D | number of certificate: TAA00001GR |

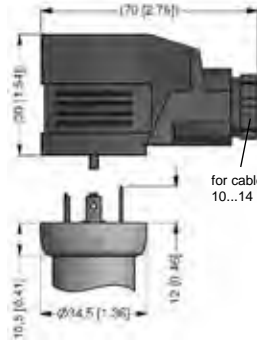
³ for p_N ≤ 160 bar

| Explosion protection | | | |
|---|---|--|------------------------------|
| Approvals DX19-DMK 457 | IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIB T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da | | |
| Safety technical maximum values | $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $L_i \approx 0 \text{ }\mu\text{H}$ with field housing: $C_i = 105 \text{ nF}$ with cable outlet: $C_i = 84.7 \text{ nF}$ with ISO 4400: $C_i = 62.2 \text{ nF}$ the supply connections have an inner capacity of max. 90 nF (140 nF with field housing) to the housing | | |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C | | |
| Connecting cables (by factory) | cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$ | | |
| Miscellaneous | | | |
| Option oxygen application | for $p_N \leq 25 \text{ bar}$: O-ring in FKM Vi 567 (with BAM-approval) permissible maximum values are 25 bar/150° C | | |
| Current consumption | max. 25 mA | | |
| Weight | approx. 140 g (with ISO 4400) | | |
| Installation position | any | | |
| Operational life | 100 million load cycles | | |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁴ | | |
| ATEX-directive | 2014/34/EU | | |
| ⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar | | | |
| Wiring diagram | | | |
| 2-wire-system (current) | | | |
| | | | |
| Pin configuration | | | |
| Electrical connection | ISO 4400 | field housing (clamp section: 2.5 mm ²) | cable colours (IEC 60757) |
| Supply + | 1 | VS+ | WH (white) |
| Supply - | 2 | VS- | BN (brown) |
| Shield | ground pin | GND | GNYE (green-yellow) |

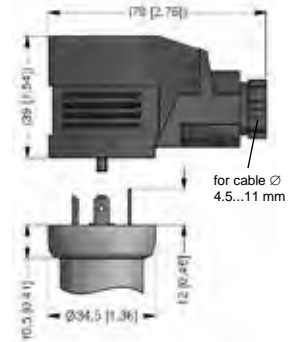
Electrical connections ⁵ (dimensions mm / in)



ISO 4400 - Code G10 (IP 65)



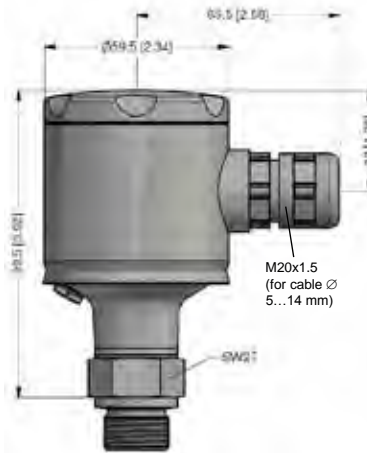
ISO 4400 - Code G00 (IP 65)



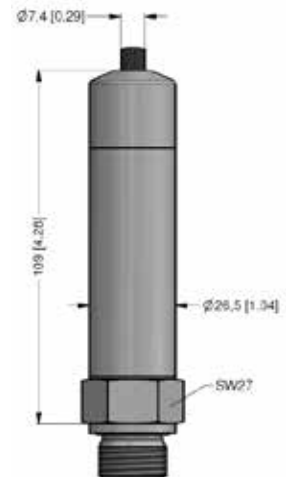
ISO 4400 - Code G01 (IP 65)



cable outlet ^{6,7} (IP 68)



universal field housing (IP 67)



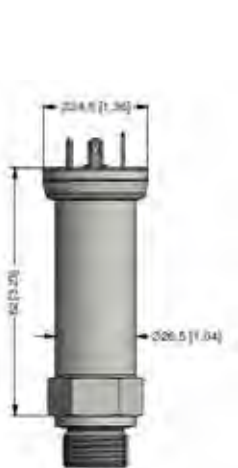
submersible version ⁷ (IP 68)

⁵ Generally shielded cable has to be used! Cable versions are delivered with shielded cable. For ISO 4400 the use of shielded cable is compulsory.

⁶ tested at 4 bar or 40 mH₂O for 24 hours

⁷ shielded cable with integrated air tube for atmospheric reference (for nominal pressure ranges absolute, the air tube is closed); different lengths available

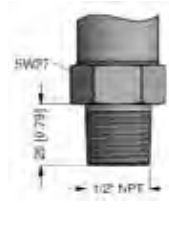
Mechanical connection (dimensions mm / in)



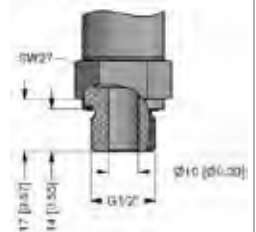
G1/2" DIN 3852



G1/2" EN 837



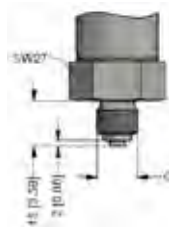
1/2" NPT



G1/2" open port DIN 3852 (≤ 40 bar)



G1/4" DIN 3852



G1/4" EN 837



1/4" NPT



DMK 458

Pressure Transmitter for Marine and Offshore

Ceramic Sensor

accuracy according to IEC 60770:
 standard: 0.25 % FSO
 option: 0.1 % FSO

Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

Output signals

2-wire: 4 ... 20 mA
 others on request

Product characteristics

- ▶ LR-certificate (Lloyd's Register)
- ▶ DNV•GL Approval (Det Norske Veritas
 ▪ Germanischer Lloyd)
- ▶ ABS-certificate (American Bureau of Shipping)
- ▶ CCS-certificate (China Classification Society)
- ▶ high overpressure resistance
- ▶ excellent long term stability




Optional versions

- ▶ IS-version
 Ex ia= intrinsically safe for gases
- ▶ diaphragm Al₂O₃ 99.9 %
- ▶ pressure port in CuNiFe (sea water resistant)

The pressure transmitter DMK 458 has been developed for marine and offshore applications. In addition to thread connections, different flush versions are available, which are especially suitable for pasty, viscous, and polluted media.

Due to the capacitive ceramic sensor developed by BD|SENSORS, which is optionally available in Al₂O₃ 99.9 %, the DMK 458 shows an outstanding accuracy as well as a high overload and temperature resistance.

Preferred areas of use are

-  Monitoring of pressure during loading and unloading processes
-  Monitoring of a ship's position and draught
 Use in anti-heeling systems
 Water and sea water
-  Level measurement in ballast and storage tanks



| Pressure ranges | | | | | | | | | | | | | | | | |
|-------------------------------|---------------------|------|------|------|------|------|-----|-----|----|-----|-----|----|----|-----|-----|-----|
| Nominal pressure ¹ | [bar] | 0.04 | 0.06 | 0.1 | 0.16 | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 20 |
| Level | [mH ₂ O] | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 200 |
| Overpressure | [bar] | 2 | 2 | 4 | 4 | 6 | 6 | 8 | 8 | 15 | 25 | 25 | 35 | 35 | 45 | 45 |
| Permissible vacuum | [bar] | -0.2 | | -0.3 | | -0.5 | | | | -1 | | | | | | |

¹ available in gauge and absolute; nominal pressure ranges absolute from 1 bar

Output signal / Supply

| | | |
|-------------------|--|---|
| Standard | 2-wire: 4 ... 20 mA / V _S = 9 ... 32 V _{DC} | V _{S rated} = 24 V _{DC} |
| Option IS-version | 2-wire: 4 ... 20 mA / V _S = 14 ... 28 V _{DC} | V _{S rated} = 24 V _{DC} |

Performance

| | | |
|-----------------------|--|--|
| Accuracy ² | standard: $\leq \pm 0.25$ % FSO | option for p _N ≥ 0.6 bar ³ : $\leq \pm 0.1$ % FSO |
| Permissible load | R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω | |
| Long term stability | $\leq \pm 0.1$ % FSO / year at reference conditions | |
| Influence effects | supply: 0.05 % FSO / 10 V | load: 0.05 % FSO / kΩ |
| Turn-on time | 700 msec | |
| Mean response time | < 200 msec | mean measuring rate 5/sec |
| Max. response time | 380 msec | |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

³ under the influence of disturbance burst according to EN 61000-4-4 (2004) +2 kV accuracy decreases on $\leq \pm 0.25$ % FSO

Thermal effects (offset and span)

| | |
|----------------------|--------------------|
| Tolerance band | $\leq \pm 1$ % FSO |
| in compensated range | -20 ... 80 °C |

Permissible temperatures

| | |
|---------------------------|----------------|
| Medium | -40 ... 125 °C |
| Electronics / environment | -25 ... 85 °C |
| Storage | -40 ... 100 °C |

Electrical protection

| | |
|-------------------------------|---|
| Short-circuit protection | permanent |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to - EN 61326 - DNV•GL (Det Norske Veritas • Germanischer Lloyd) |

Mechanical stability

| | |
|-----------|--|
| Vibration | 4 g (according to DNV•GL: Class B, curve 2 / basis: IEC 60068-2-6) |
|-----------|--|

Materials

| | |
|--|--|
| Pressure port | standard: stainless steel 1.4404 (316 L) option: CuNi10Fe1Mn (sea water resistant) - only for G1/2" open pressure port and in combination with housing in CuNi10Fe1Mn (not possible with field housing) - |
| Housing | standard: stainless steel 1.4404 (316 L) option: CuNi10Fe1Mn (sea water resistant) - only in combination with pressure port in CuNi10Fe1Mn - |
| Option field housing (not possible with CuNi10Fe1Mn) | stainless steel 1.4404 (316L) cable gland: absolute, sealed gauge: brass, nickel plated gauge: polyamide (with integrated pressure reference) |
| Cable sheath for option cable outlet | TPE -U (flame-resistant, halogen free, increased resistance against oil and gasoline, resistant against salt, sea water, heavy oil) |
| Seals (media wetted) | FKM others on request |
| Diaphragm | standard: ceramics Al ₂ O ₃ 96 % option: ceramics Al ₂ O ₃ 99.9 % |
| Media wetted parts | pressure port, seals, diaphragm |

Category of the environment

| | | |
|--|---|-----------------------------------|
| Lloyd's Register (LR) | EMV1, EMV2, EMV3 ⁴ , EMV4 | number of certificate: 13/20055 |
| Det Norske Veritas • Germanischer Lloyd (DNV•GL) | temperature: D vibration: B humidity: B enclosure: D electromagnetic compatibility: B | number of certificate: TAA00001GR |

⁴ not valid for IS-version (DX14A-DMK 458)

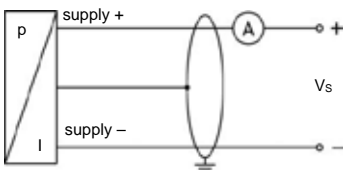
Explosion protection

| | |
|--|---|
| Approval DX14A-DMK 458 | IBExU 07 ATEX 1180 X field housing: zone 0: II 1G Ex ia IIC T4 Ga ISO 4400, M12x1, cable outlet: zone 0: II 1G Ex ia IIB T4 Ga |
| Safety technical maximum values | U _i = 28 V; I _i = 93 mA; P _i = 660 mW; L _i = 0 μH field housing: C _i = 52.3 nF; 90.2 nF opposite GND ISO 4400, M12x1, cable outlet: C _i = 105 nF; 140 nF opposite GND |
| Permissible temperatures for environment | in zone 0: -20 ... 60 °C with p _{atm} 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C |
| Permissible temperatures for medium | -40 ... 85 °C |

| Miscellaneous | |
|-----------------------|---|
| Ingress protection | IP 65, IP 67, IP 68 |
| Installation position | any |
| Current consumption | max. 21 mA |
| Weight | min. 400 g (depending on housing and mechanical connection) |
| Operational life | 100 million load cycles |
| CE conformity | EMC Directive: 2014/30/EU |
| ATEX Directive | 2014/34/EU |

Wiring diagram

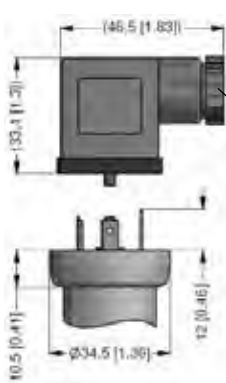
2-wire-system (current)



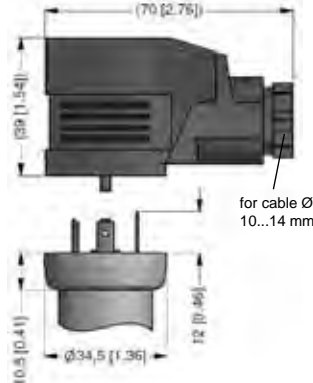
Pin configuration

| Electrical connection | ISO 4400 | field housing (clamp section: 2.5 mm ²) | M12x1 (4-pin), metal | cable colours (IEC 60757) |
|-----------------------|------------|---|----------------------|---------------------------|
| Supply + | 1 | V _{S+} | 1 | WH (white) |
| Supply - | 2 | V _{S-} | 2 | BN (brown) |
| Shield | ground pin | GND | 4 | GNYE (green-yellow) |

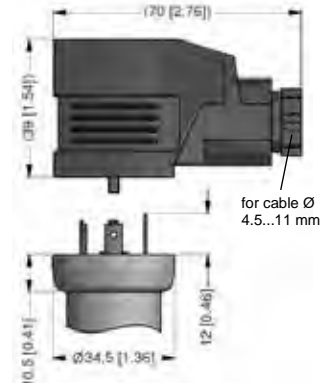
Electrical connections (dimensions mm / in)



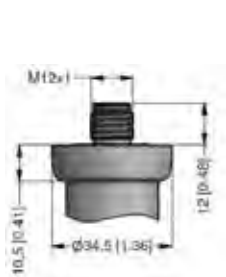
ISO 4400 - code G10 (IP 65)



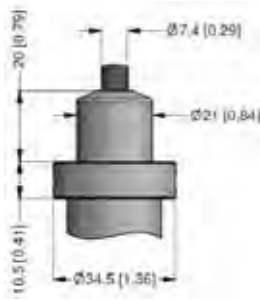
ISO 4400 - code G00 (IP 65)



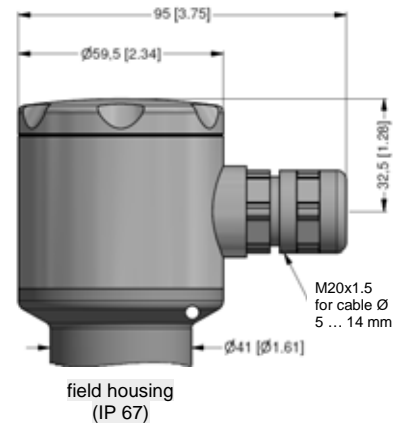
ISO 4400 - code G01 (IP 65)



M12x1 4-pin (IP 67)



cable outlet⁵ (IP 68)

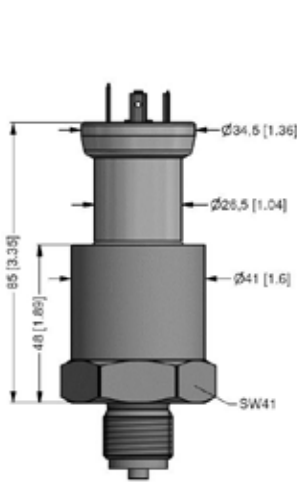


field housing (IP 67)

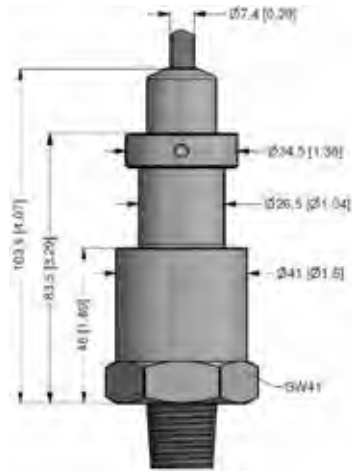
⁵ cable versions are delivered with shielded cable (different lengths available); for gauge pressure cable with ventilation tube required; tested at 4 bar or 40 mH₂O for 24 hours

Dimensions (mm / in)

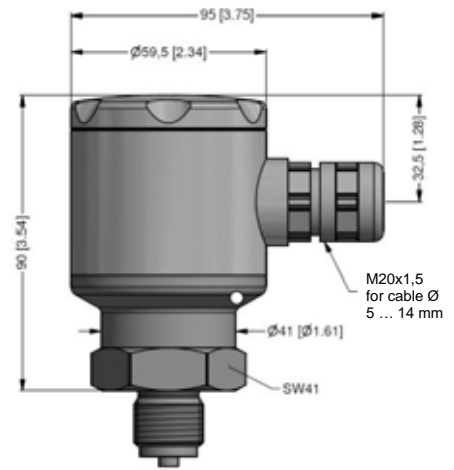
plug versions



cable outlet

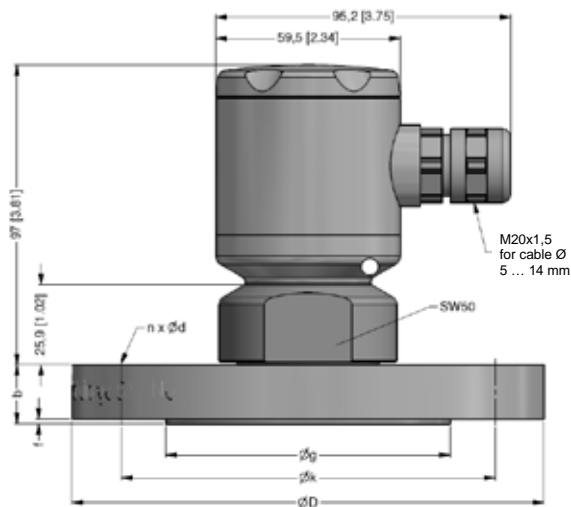


field housing

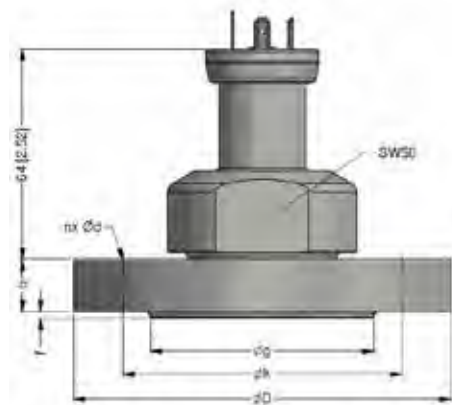


Mechanical connections (dimensions mm / in)

flanges



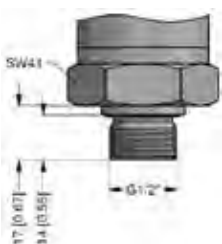
flange with field housing



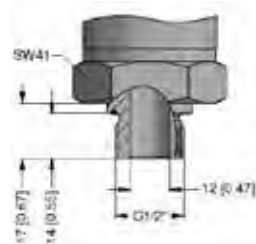
flange with plug version and cable outlet

| size | dimensions in mm | | | | | |
|----------|------------------|-----------|-----------|-----------|------------|------------|
| | DIN 2501 | | | | ANSI | |
| | DN25/PN40 | DN40/PN40 | DN50/PN40 | DN80/PN16 | 2"/150 lbs | 3"/150 lbs |
| b | 18 | 18 | 20 | 20 | 19.1 | 23.9 |
| d | 14 | 18 | 18 | 18 | 19.1 | 19.1 |
| D | 115 | 150 | 165 | 200 | 152.4 | 190.5 |
| f | 2 | 3 | 3 | 3 | 2 | 2 |
| g | 68 | 88 | 102 | 138 | 91.9 | 127 |
| k | 85 | 110 | 125 | 160 | 120.7 | 152.4 |
| n | 4 | 4 | 4 | 8 | 4 | 4 |
| pN [bar] | ≤ 40 | ≤ 40 | ≤ 40 | ≤ 16 | ≤ 10 | ≤ 10 |

inch threads



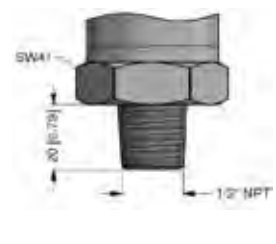
G1/2" 3852



G1/2" DIN 3852
open port



G1/2" EN 837



1/2" NPT

| | | | |
|--|---|-------|---------|
| Diaphragm | | | |
| ceramics Al ₂ O ₃ 96 % | 2 | | |
| ceramics Al ₂ O ₃ 99.9 % | C | | |
| customer | 9 | | consult |
| Special version | | | |
| standard | | 0 0 0 | |
| customer | | 9 9 9 | consult |

¹ nominal pressure ranges absolute from 1 bar

² female plug is GL-approved

³ shielded TPE-U-cable with ventilation tube available in different lengths

⁴ DN80/PN16 possible for nominal pressure ranges $p_N \leq 16$ bar; 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges $p_N \leq 10$ bar

⁵ CuNi10Fe1Mn only in combination with G 1/2" open pressure port (code H00); not possible with field housing (code 880)

17.609 G

OEM Pressure Transmitter

Application

- ▶ refrigeration

Characteristics

- ▶ stainless steel sensor, welded
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 6 bar up to 0 ... 60 bar
-1 ... 6 bar up to -1 ... 60 bar



Technical Data



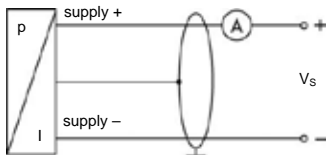
| Pressure ranges | | | | | | | |
|------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|
| Nominal pressure gauge | [bar] | 6 | 10 | 16 | 25 | 40 | 60 |
| Overpressure | [bar] | 12 | 20 | 32 | 50 | 80 | 120 |
| Burst pressure \geq | [bar] | 30 | 50 | 80 | 125 | 200 | 300 |
| Vacuum resistance | | unlimited | | | | | |
| Vacuum ranges | | | | | | | |
| Nominal pressure gauge | [bar] | -1 ... 6 | -1 ... 10 | -1 ... 16 | -1 ... 25 | -1 ... 40 | -1 ... 60 |
| Overpressure | [bar] | 12 | 20 | 32 | 50 | 80 | 120 |
| Burst pressure | [bar] | 30 | 50 | 80 | 125 | 200 | 300 |

| Output signal / Supply | | | |
|--|--|---|----------------------------------|
| Standard | 2-wire: | 4 ... 20 mA | / $V_S = 8 \dots 32 V_{DC}$ |
| Options | 3-wire: | 0 ... 10 V | / $V_S = 14 \dots 30 V_{DC}$ |
| | 3-wire ratiometric: | 10 ... 90 % of V_S | / $V_S = 2.7 \dots 5 V_{DC}$ |
| Performance | | | |
| Accuracy ¹ | $\leq \pm 0.5 \%$ FSO | | |
| Permissible load | 2-wire: | $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ | 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: | 0.05 % FSO / 10 V | load: 0.05 % FSO / k Ω |
| Response time | 2-wire: | ≤ 10 msec | 3-wire: ≤ 3 msec |
| Long term stability | $\leq \pm 0.3 \%$ FSO / year at reference conditions | | |
| Measuring rate | 1 kHz | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | |
| Thermal effects (offset and span) / Permissible temperatures | | | |
| Thermal error | $\leq \pm 0.3 \%$ FSO / 10 K | | in compensated range 0 ... 70 °C |
| Permissible temperatures | medium: -40 ... 125 °C | electronics / environment: -40 ... 85 °C | storage: -40 ... 85 °C |
| Electrical protection | | | |
| Short-circuit protection | permanent | 3-wire ratiometric: none | |
| Reverse polarity protection | no damage, but also no function | | |
| Electromagnetic protection | emission and immunity according to EN 61326 | | |

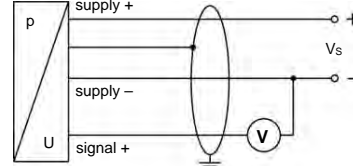
| | | |
|-----------------------------|---|--------------------------------|
| Mechanical stability | | |
| Vibration | 20 g, 25 Hz ... 2 kHz | according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec | according to DIN EN 60068-2-27 |
| Materials | | |
| Pressure port | stainless steel 1.4571 (316Ti) | |
| Housing | stainless steel 1.4301 (304) | |
| Seal of sensor | none (welded) | |
| Diaphragm | stainless steel 1.4542 (630) | |
| Media wetted parts | pressure port, diaphragm | |
| Miscellaneous | | |
| Mechanical connection | 7/16"-20 UNF | |
| Weight | approx. 120 g | |
| Current consumption | 2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) | 3-wire ratiometric: typ. 3 mA |
| Operational life | 100 million load cycles | |
| CE-conformity | EMC Directive: 2014/30/EU | |

Wiring diagrams

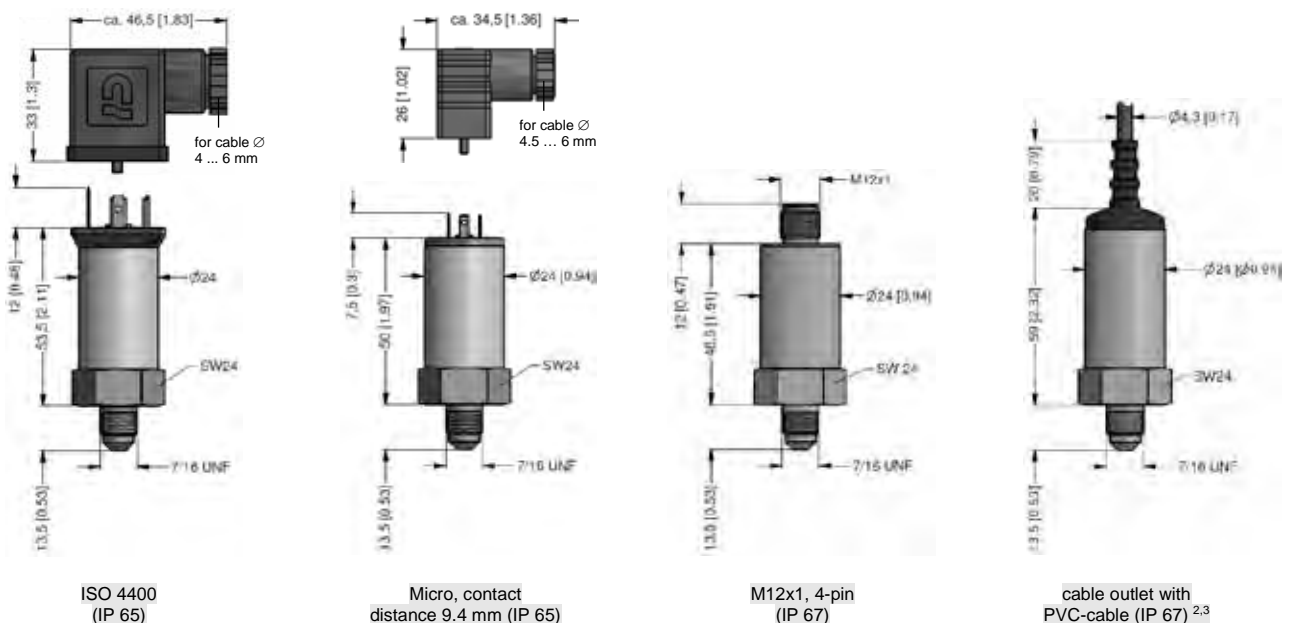
2-wire-system (current)



3-wire-system (voltage)

**Pin configuration**

| | | | | |
|-----------------------|-------------------------|--|--|---------------------------|
| Electrical connection | ISO 4400 2 3 1 | Micro (contact distance 9.4 mm) 1 3 2 | M12x1 (4-pin), metal 2 1 3 4 | cable colours (IEC 60757) |
| Supply + | 1 | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | 3 | GN (green) |
| Shield | ground pin | ground pin | 4 | GNYE (green-yellow) |

Dimensions (mm / in)² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)³ different cable types and lengths available, permissible temperature depends on kind of cable



17.600 G

OEM Pressure Transmitter Heavy Duty

Applications:

- ▶ mobile hydraulic
- ▶ presses
- ▶ general mechanical engineering
- ▶ oxygen application

Characteristics:

- ▶ stainless steel sensor, welded
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 6 bar up to 0 ... 600 bar

Technical Data



| Input pressure range | | | | | | | | | | | | |
|------------------------------|-----------|----|----|-----|-----|-----|-----|-----|-------|-------|-------|--|
| Nominal pressure gauge [bar] | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | |
| Overpressure (static) [bar] | 12 | 20 | 32 | 50 | 80 | 120 | 200 | 320 | 500 | 800 | 1 200 | |
| Burst pressure ≥ [bar] | 30 | 50 | 80 | 125 | 200 | 300 | 500 | 800 | 1 400 | 2 000 | 3 000 | |
| Vacuum resistance | unlimited | | | | | | | | | | | |

| Output signal / Supply | | | |
|------------------------|---------------------|----------------------|----------------------------|
| Standard | 2-wire: | 4 ... 20 mA | $V_S = 8 \dots 32 V_{DC}$ |
| Options | 3-wire: | 0 ... 10 V | $V_S = 14 \dots 30 V_{DC}$ |
| | 3-wire ratiometric: | 10 ... 90 % of V_S | $V_S = 2.7 \dots 5 V_{DC}$ |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | ≤ ± 0.5 % FSO |
| Permissible load | 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ 3-wire: $R_{min} = 10 k\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Response time | 2-wire: ≤ 10 msec 3-wire: ≤ 3 msec |
| Long term stability | ≤ ± 0.3 % FSO / year at reference conditions |
| Measuring rate | 1 kHz |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | | | |
|--|------------------------|----------------------------|---|
| Thermal error | ≤ ± 0.3 % FSO / 10 K | in compensated range | 0 ... 70 °C |
| Permissible temperatures | medium: -40 ... 125 °C | electronics / environment: | -40 ... 85 °C storage: -40 ... 85 °C |

| Electrical protection | |
|-----------------------------|---|
| Short-circuit protection | permanent 3-wire ratiometric: none |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic protection | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|--|
| Vibration | 20 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

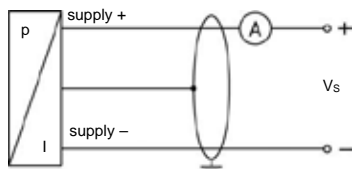
| | |
|-----------------------|---|
| Materials | |
| Pressure port | stainless steel 1.4571 (316Ti) |
| Housing | stainless steel 1.4301 (304) |
| Seal of pressure port | FKM for G 1/4" DIN 3852 others on request |
| Seal of sensor | none (welded) |
| Diaphragm | stainless steel 1.4542 (630) |
| Media wetted parts | pressure port, seal of pressure port, diaphragm |

| | |
|----------------------|--|
| Miscellaneous | |
| Weight | approx. 120 g |
| Current consumption | 2-wire: max. 25 mA 3-wire ratiometric: typ. 3 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ² |

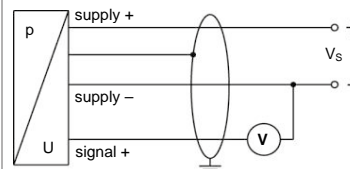
² This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



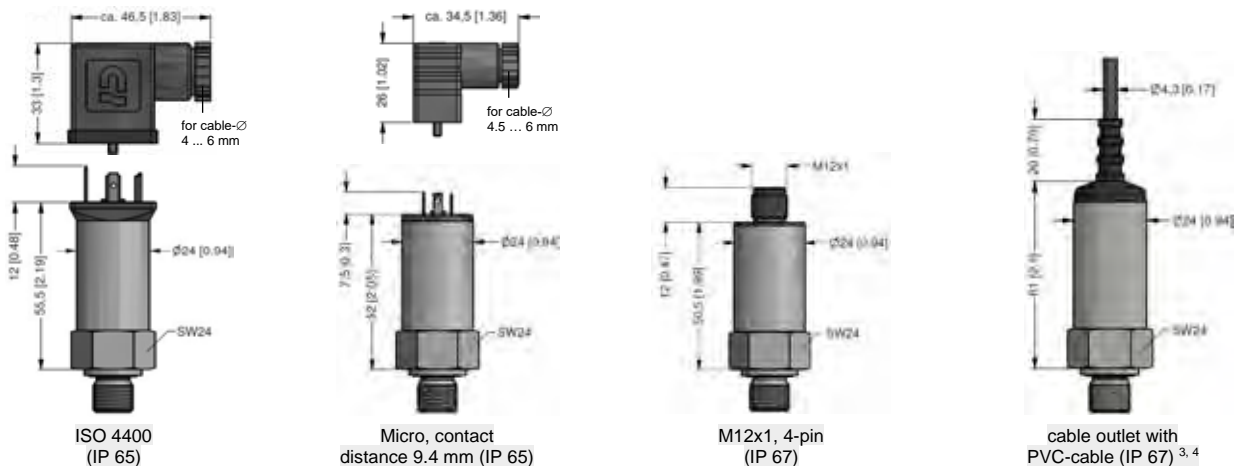
3-wire-system (voltage)



Pin configuration

| Electrical connection | ISO 4400 | Micro (contact distance 9.4 mm) | M12x1 (4-pin), metal | |
|-----------------------|------------|---------------------------------|----------------------|---------------------------|
| | | | | cable colours (IEC 60757) |
| Supply + | 1 | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | 3 | GN (green) |
| Shield | ground pin | ground pin | 4 | GNYE (green-yellow) |

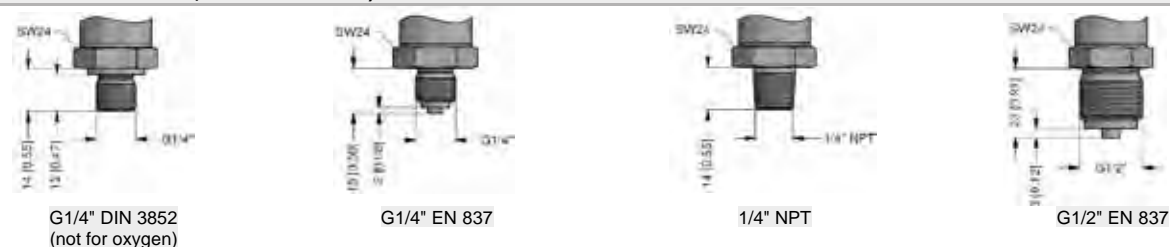
Electrical connections (dimensions mm / in)



³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁴ different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimensions mm / in)



17.620 G

Compact OEM Pressure Transmitter Heavy Duty

Applications:

- ▶ mobile hydraulic, presses
- ▶ general mechanical engineering

Characteristics:

- ▶ stainless steel sensor, welded
- ▶ nominal pressure ranges from 0 ... 16 bar up to 0 ... 1000 bar
- ▶ accuracy according to IEC 60770: 0.5 % FSO



Technical Data

| Input pressure range | | | | | | | | | | | |
|------------------------|-------|-----|-----|-----|-----|-----|-----|------|------|------|-------------------|
| Nominal pressure gauge | [bar] | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | 600 | 1000 ¹ |
| Overpressure (static) | [bar] | 50 | 50 | 80 | 120 | 200 | 320 | 500 | 800 | 1200 | 1500 |
| Burst pressure ≥ | [bar] | 125 | 125 | 200 | 300 | 500 | 800 | 1250 | 2000 | 2000 | 3000 ² |

¹ only for static pressures
² UL confirmed max. burst pressure 2420 bar

| Output signal / Supply | | |
|------------------------|------------------------------|--|
| 2-wire | 4 ... 20 mA | V _S = 10 ... 30 V _{DC} |
| 3-wire ratiometric | 10 ... 90% of V _S | V _S = 2.7 ... 5 V _{DC} |

| Performance | |
|-----------------------|---|
| Accuracy ³ | ± 0.5 % FSO |
| Permissible load | 2 wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω 3 wire: R _{min} = 10 kΩ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Response time | typ. 2 msec |
| Long term stability | ≤ ± 0.2 % FSO / year at reference conditions |
| Measuring rate | 1 kHz |

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | |
|--|--|
| Thermal error | ± 0.2 % FSO / 10 K in compensated range -20 ... 80 °C |
| Permissible temperatures | medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 85 °C |

| Electrical protection | |
|-----------------------------|---|
| Short-circuit protection | 2-wire: permanent 3-wire ratiometric: none |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic protection | emission and immunity according to EN 61326 |

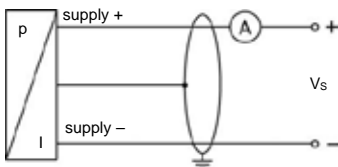
| Mechanical stability | |
|----------------------|--|
| Vibration | 20 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

| Materials | | |
|-----------------------|---|---|
| Pressure port | $p_N \leq 600$ bar: stainless steel 316L (1.4404) | $p_N > 600$ bar: stainless steel 17-4 PH (1.4542) |
| Housing | stainless steel 304 (1.4301) | |
| Seal of pressure port | G 1/4" DIN 3852: FKM | others on request |
| Seal of sensor | none (welded) | |
| Sensor | stainless steel 17-4PH (1.4548) | |
| Media wetted parts | pressure port, seal, sensor | |
| Miscellaneous | | |
| Weight | approx. 54 g | |
| Current consumption | 2-wire: max. 25 mA | 3-wire ratiometric: typ. 2.5 mA |
| Operational life | $p_N \leq 600$ bar: 100 million load cycles | $p_N > 600$ bar: 10 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU | Pressure Equipment Directive: 2014/68/EU (module A) |

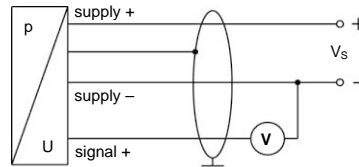
⁴ This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



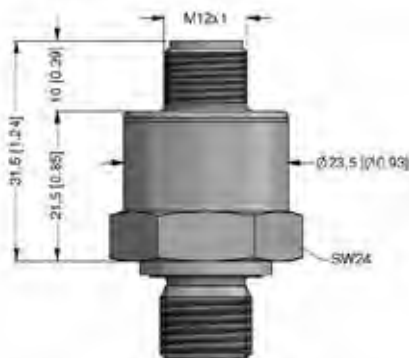
3-wire-system (voltage)



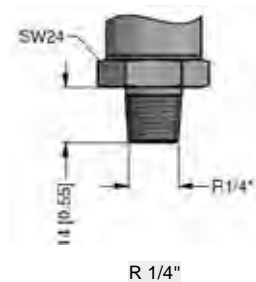
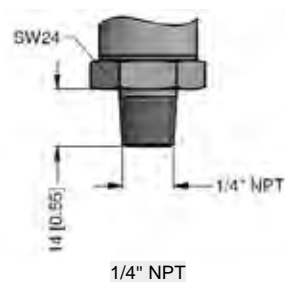
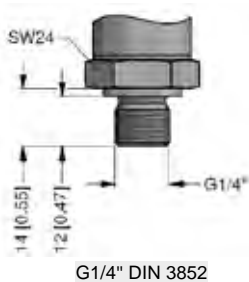
Pin configuration

| Electrical connection | male plug M12x1 (4-pin), metal | male plug Micro (contact distance 9.4 mm) on request |
|-----------------------|--------------------------------|--|
| | | |
| Supply + | 1 | 1 |
| Supply - | 3 | 3 |
| Signal + (for 3-wire) | 2 | 2 |
| Shield | plug housing | ground pin |

Dimensions (mm / in)



Mechanical connections (mm / in)



Ordering code 17.620 G

17.620 G - - - - - - - -

| | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|---|---|--|--|--|--|--|---------|
| Input | [bar] | | | | | | | | | | | | | | | | | | | |
| | 16 | 1 | 6 | 0 | 2 | | | | | | | | | | | | | | | |
| | 25 | 2 | 5 | 0 | 2 | | | | | | | | | | | | | | | |
| | 40 | 4 | 0 | 0 | 2 | | | | | | | | | | | | | | | |
| | 60 | 6 | 0 | 0 | 2 | | | | | | | | | | | | | | | |
| | 100 | 1 | 0 | 0 | 3 | | | | | | | | | | | | | | | |
| | 160 | 1 | 6 | 0 | 3 | | | | | | | | | | | | | | | |
| | 250 | 2 | 5 | 0 | 3 | | | | | | | | | | | | | | | |
| | 400 | 4 | 0 | 0 | 3 | | | | | | | | | | | | | | | |
| | 600 | 6 | 0 | 0 | 3 | | | | | | | | | | | | | | | |
| | 1000 | 1 | 0 | 0 | 4 | | | | | | | | | | | | | | | |
| | customer | 9 | 9 | 9 | 9 | | | | | | | | | | | | | | | consult |
| Pressure | | | | | | | | | | | | | | | | | | | | |
| | gauge | | | | | R | | | | | | | | | | | | | | |
| Output | | | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | 1 | | | | | | | | | | | | | | |
| | 10 ... 90% of Vs / 3-wire ratiometric | | | | | R | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | | | |
| | 0.5 % FSO | | | | | 5 | | | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | | | |
| | male plug M12x1 (4-pin), metal | | | | | | | M | 1 | 3 | | | | | | | | | | |
| | male plug Micro (contact distance 9.4 mm) | | | | | | | C | B | 0 | | | | | | | | | | consult |
| | customer | | | | | | | 9 | 9 | 9 | | | | | | | | | | consult |
| Mechanical connection / Seal | | | | | | | | | | | | | | | | | | | | |
| | G1/4" DIN 3852 / on pressure port: FKM | | | | | | | | | | 3 | 0 | 0 | P | | | | | | |
| | 1/4" NPT / without | | | | | | | | | | N | 4 | 0 | 2 | | | | | | |
| | R1/4" / without | | | | | | | | | | R | 4 | 0 | 2 | | | | | | |
| | customer | | | | | | | | | | 9 | 9 | 9 | 9 | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | | | 0 0 0 |
| | customer | | | | | | | | | | | | | | | | | | | 9 9 9 |
| | | | | | | | | | | | | | | | | | | | | consult |



18.600 G

OEM Pressure Transmitter Pneumatics

Applications

- ▶ compressed air network
- ▶ general mechanical engineering

Characteristics

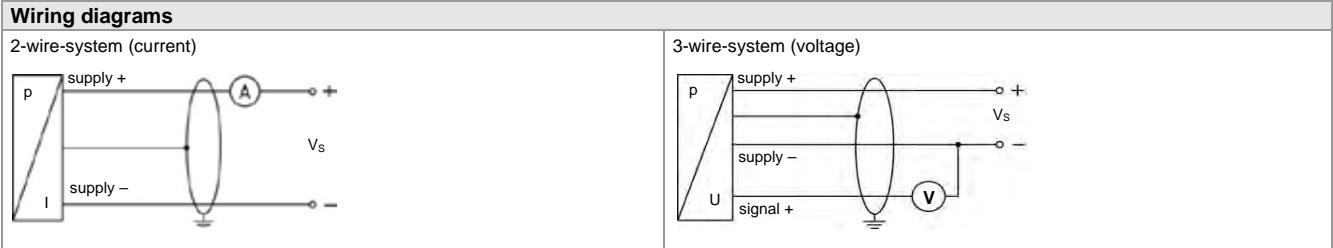
- ▶ silicon sensor without media isolation
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 100 mbar up to 0 ... 6 bar



Technical Data

| Input pressure range | | | | | | | | | | | | | |
|--|---------------------|---|-----|------|-----|--|-----|-----|-----|------------------------|----|--|--|
| Nominal pressure gauge | [bar] | -1 ... 0 | 0,1 | 0,25 | 0,4 | 0,6 | 1 | 1,6 | 2,5 | 4 | 6 | | |
| Overpressure | [bar] | 3 | 0,5 | 1 | 1 | 3 | 3 | 6 | 10 | 10 | 20 | | |
| Burst pressure | [bar] | 5 | 1,5 | 3 | 3 | 3 | 7,5 | 7,5 | 15 | 25 | 25 | | |
| Output signal / Supply | | | | | | | | | | | | | |
| Standard | 2-wire: | 4 ... 20 mA | | | | / V _S = 8 ... 32 V _{DC} | | | | | | | |
| Options | 3-wire: | 0 ... 10 V | | | | / V _S = 14 ... 30 V _{DC} | | | | | | | |
| | 3-wire ratiometric: | 10 ... 90 % of V _S | | | | / V _S = 2.7 ... 5 V _{DC} | | | | | | | |
| Performance | | | | | | | | | | | | | |
| Accuracy ¹ | | ≤ ± 0.5 % FSO | | | | | | | | | | | |
| Permissible load | 2-wire: | R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω | | | | 3-wire: R _{min} = 10 kΩ | | | | | | | |
| Influence effects | supply: | 0.05 % FSO / 10 V | | | | load: 0.05 % FSO / kΩ | | | | | | | |
| Response time | 2-wire: | ≤ 10 msec | | | | 3-wire: ≤ 3 msec | | | | | | | |
| Long term stability | | ≤ ± 0,2 % FSO / year at reference conditions | | | | | | | | | | | |
| Measuring rate | | 1 kHz | | | | | | | | | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | |
| Thermal effects (offset and span) | | | | | | | | | | | | | |
| Nominal pressure p _N | [bar] | -1 ... 0 | | | | ≤ 0.4 | | | | > 0.4 | | | |
| Tolerance band | [% FSO] | ≤ ± 1 | | | | ≤ ± 1 | | | | ≤ ± 0.75 | | | |
| in compensated range | [°C] | 0 ... 70 | | | | | | | | -20 ... 85 | | | |
| Permissible temperatures | | | | | | | | | | | | | |
| Permissible temperatures | | medium: -25 ... 125 °C | | | | electronics / environment: -25 ... 85 °C | | | | storage: -40 ... 85 °C | | | |
| Electrical protection | | | | | | | | | | | | | |
| Short-circuit protection | | permanent | | | | | | | | | | | |
| Reverse polarity protection | | no damage, but also no function | | | | | | | | | | | |
| Electromagnetic compatibility | | emission and immunity according to EN 61326 | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | |
| Vibration | | 10 g, 25 Hz ... 2 kHz | | | | according to DIN EN 60068-2-6 | | | | | | | |
| Shock | | 100 g / 11 msec | | | | according to DIN EN 60068-2-27 | | | | | | | |

| Materials | |
|-------------------------|---|
| Pressure port / housing | stainless steel 1.4301 (304) |
| Seals | FKM |
| Sensor | stainless steel 1.4404 (316L), silicon, glass, epoxy or RTV |
| Media wetted parts | pressure port, seals, sensor |
| Miscellaneous | |
| Weight | approx. 120 g |
| Permissible media | pressurized air, non-aggressive gases |
| Current consumption | 2-wire: max. 25 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |



Pin configuration

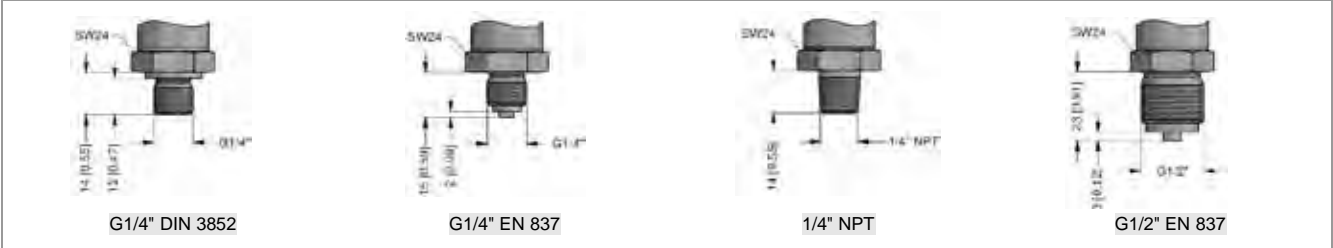
| Electrical connections | ISO 4400 | M12x1 (4-pin), metal | cable colours (IEC 60757) |
|------------------------|------------|----------------------|---------------------------|
| | | | |
| Supply + | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | GN (green) |
| Shield | ground pin | 4 | GYNE (green-yellow) |

Electrical connections (dimensions mm / in)



² standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)
³ different cable types and lengths available, permissible temperatur depends on kind of cable

Mechanical connection (dimensions mm / in)



other mechanical connections on request



18.601 G

OEM Pressure Transmitter Low Pressure

Applications

- ▶ general industrial applications

Characteristics

- ▶ piezoresistive stainless steel sensor
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 100 mbar up to 0 ... 6 bar



Technical Data

| Input pressure range | | | | | | | | | | | |
|------------------------|-------|-----------|------|------|-----|-----|---|-----|------|------|----|
| Nominal pressure gauge | [bar] | 0.1 | 0.16 | 0.25 | 0.4 | 0.6 | 1 | 1.6 | 2.5 | 4 | 6 |
| Overpressure | [bar] | 1 | 1 | 1 | 1 | 3 | 3 | 6 | 10 | 10 | 21 |
| Burst pressure ≥ | [bar] | 1.5 | 1.5 | 1.5 | 1.5 | 5 | 5 | 10 | 17.5 | 17.5 | 35 |
| Vacuum resistance | | unlimited | | | | | | | | | |

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / $V_S = 8 \dots 32 V_{DC}$ |
| Options 3-wire | 3-wire: 0 ... 10 V / $V_S = 14 \dots 30 V_{DC}$ |
| | 3-wire ratiometric: 10 ... 90 % of V_S / $V_S = 2.7 \dots 5 V_{DC}$ |

| Performance | |
|-----------------------|---|
| Accuracy ¹ | $p_N > 160 \text{ mbar: } \leq \pm 0.5 \% \text{ FSO}$ $p_N \leq 160 \text{ mbar: } \leq \pm 1 \% \text{ FSO}$ |
| Permissible load | 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$ 3-wire: $R_{min} = 10 \text{ k}\Omega$ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $k\Omega$ |
| Response time | 2-wire: $\leq 10 \text{ msec}$ 3-wire: $\leq 3 \text{ msec}$ |
| Long term stability | $\leq \pm 0.2 \% \text{ FSO / year}$ at reference conditions |
| Measuring rate | 1 kHz |

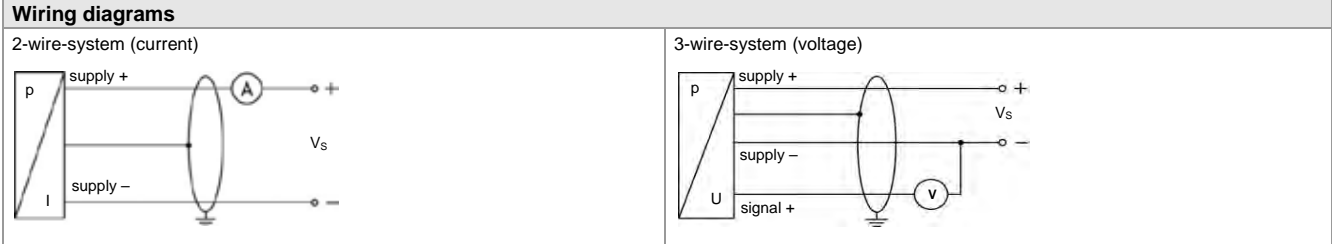
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | |
|--|--|
| Thermal error | $\leq \pm 0.3 \% \text{ FSO / } 10 \text{ K}$ in compensated range 0 ... 70 °C |
| Permissible temperatures | medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C |

| Electrical protection | |
|-------------------------------|---|
| Short-circuit protection | permanent 3-wire ratiometric: none |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| Mechanical stability | |
|----------------------|--|
| Vibration | 10 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 100 g / 1 msec according to DIN EN 60068-2-27 |

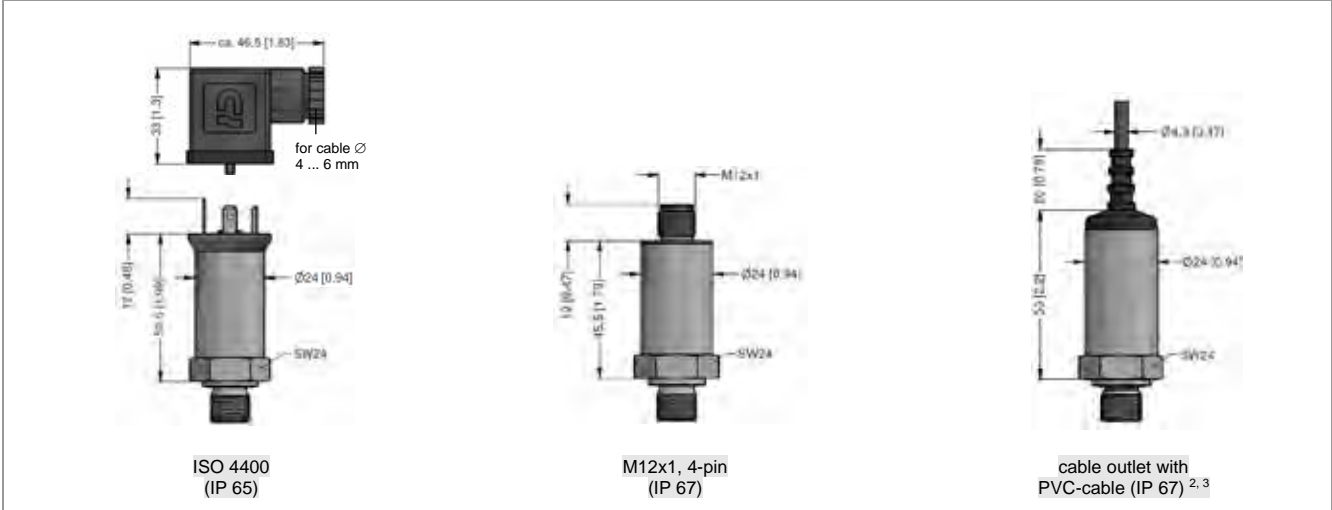
| Materials | |
|-------------------------|--|
| Pressure port / housing | stainless steel 1.4301 (304) |
| Seals | FKM |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Media wetted parts | pressure port, seals, diaphragm |
| Miscellaneous | |
| Weight | approx. 120 g |
| Current consumption | 2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU |



Pin configuration

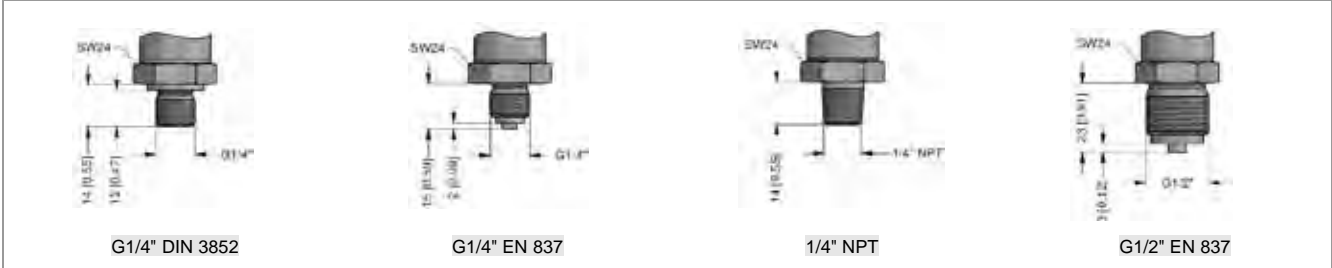
| Electrical connections | ISO 4400 | M12x1 (4-pin), metal | cable colours (IEC 60757) |
|------------------------|------------|----------------------|---------------------------|
| | | | |
| Supply + | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | GN (green) |
| Shield | ground pin | 4 | GYNE (green-yellow) |

Electrical connections (dimensions mm / in)



² standard: 2 m PVC cable without ventilation tube (permissible temperatur: -5 ... 70 °C)
³ different cable types and lengths available, permissible temperatur depends on kind of cable

Mechanical connection (dimensions mm / in)





18.605 G

Submersible OEM-Pressure Transmitter

Applications

- ▶ level measurement in water and fuel oil tanks

Characteristics

- ▶ piezoresistive stainless steel sensor
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 1 mH₂O up to 0 ... 10 mH₂O



Technical Data

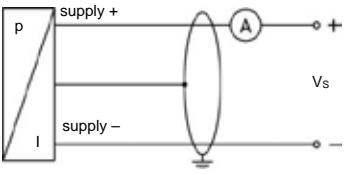
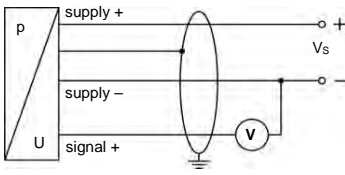
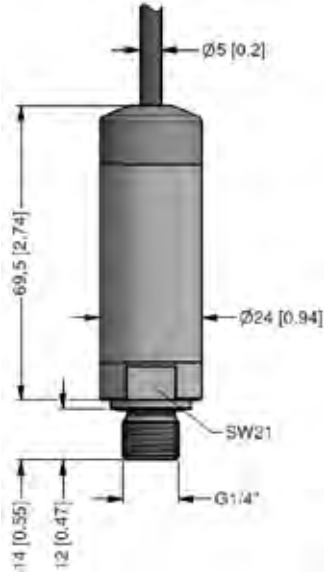
| Input pressure range | | | | | | |
|------------------------|---------------------|-----------|------|-----|-----|----|
| Nominal pressure gauge | [bar] | 0.1 | 0.25 | 0.4 | 0.6 | 1 |
| Level | [mH ₂ O] | 1 | 2.5 | 4 | 6 | 10 |
| Overpressure | [bar] | 1 | 1 | 1 | 3 | 3 |
| Burst pressure ≥ | [bar] | 1.5 | 1.5 | 1.5 | 5 | 5 |
| Vacuum resistance | | unlimited | | | | |

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / V _S = 8 ... 32 V _{DC} |
| Option 3-wire | 3-wire: 0 ... 10 V / V _S = 14 ... 30 V _{DC} 3-wire ratiometric: 10 ... 90 % of V _S / V _S = 2.7 ... 5 V _{DC} |

| Performance | |
|-----------------------|--|
| Accuracy ¹ | p _N > 160 mbar: ≤ ± 0.5 % FSO p _N ≤ 160 mbar: ≤ ± 1 % FSO |
| Permissible load | 2-wire: R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω 3-wire: R _{min} = 10 kΩ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Response time | 2-wire: ≤ 10 msec 3-wire: ≤ 3 msec |
| Long term stability | ≤ ± 0.2 % FSO / year at reference conditions |
| Measuring range | 1 kHz |

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | |
|--|---|
| Thermal error | ≤ ± 0.3 % FSO / 10 K in compensated range 0 ... 70 °C |
| Permissible temperatures | medium / electronics / environment / storage: -10 ... 70 °C |
| Electrical protection | |
| Short circuit protection | permanent 3-wire ratiometric: none |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic compatibility | emission and immunity according to EN 61326 |

| | |
|--|---|
| Mechanical stability | |
| Vibration | 10 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 100 g / 1 msec according to DIN EN 60068-2-27 |
| Materials (media wetted) | |
| Housing | stainless steel 1.4301 (304) |
| Seals | FKM |
| Diaphragm | stainless steel 1.4435 (316 L) |
| Cable sheath | PVC (oil resistant) |
| Miscellaneous | |
| Weight | approx. 120 g (without cable) cable: 25 g / m |
| Cable length | 3 m, 6 m, 9 m or 12 m; others on request |
| Suitable for following media | water, fuel oil |
| Current consumption | 2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: typ. 5 mA (short circuit current: max. 20 mA) |
| Ingress protection | IP 68 |
| CE-conformity | EMC Directive: 2014/30/EU |
| Wiring diagrams | |
| <p>2-wire-system (current)</p>  | <p>3-wire-system (voltage)</p>  |
| Pin configuration | |
| Electrical connections | cable colours (IEC 60757) |
| Supply + | WH (white) |
| Supply - | BN (brown) |
| Signal + (only for 3-wire) | GN (green) |
| Shield | GNYE (green-yellow) |
| Dimensions (mm / in) | |
|  <p>G1/4" DIN 3852 with PVC cable (with ventilation tube)</p> | |

Ordering code 18.605 G

18.605 G - [] [] [] [] - [] - [] - [] - [] - [] [] [] [] - [] [] [] [] - [] - [] [] []

| Input | [mH ₂ O] | [bar] | | | | | | | | | | | | | | | | |
|------------------------------|---|-------------------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|---------|
| | 1.0 | 0.1 | 1 | 0 | 0 | 0 | | | | | | | | | | | | |
| | 2.5 | 0.25 | 2 | 5 | 0 | 0 | | | | | | | | | | | | |
| | 4 | 0.4 | 4 | 0 | 0 | 0 | | | | | | | | | | | | |
| | 6 | 0.6 | 6 | 0 | 0 | 0 | | | | | | | | | | | | |
| | 10 | 1.0 | 1 | 0 | 0 | 1 | | | | | | | | | | | | |
| | customer | | 9 | 9 | 9 | 9 | | | | | | | | | | | | consult |
| Pressure | | | | | | | | | | | | | | | | | | |
| | | bar | | | | | | | | | | | | | | | | |
| | | mH ₂ O | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Output | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | | | | | | | | | | | | | |
| | 0 ... 10 V / 3-wire | | | | | | | | | | | | | | | | | |
| | 10 ... 90% of V _S / 3-wire ratiometric | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | |
| P _N > 160 mbar: | ≤ ± 0.5 % FSO | | | | | | | | | | | | | | | | | |
| P _N ≤ 160 mbar: | ≤ ± 1 % FSO | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | |
| | PVC-cable | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Cable length | | | | | | | | | | | | | | | | | | |
| | 3 m | | | | | | | | | | | | | | | | | |
| | 6 m | | | | | | | | | | | | | | | | | |
| | 9 m | | | | | | | | | | | | | | | | | |
| | 12 m | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | |
| Mechanical connection | | | | | | | | | | | | | | | | | | |
| | G1/4" DIN 3852 | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Seals | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |



26.600 G

OEM Pressure Transmitter Standard

Applications

- ▶ mechanical and plant engineering
- ▶ general industrial applications

Characteristics

- ▶ ceramic sensor
- ▶ accuracy 0.5 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 1 bar up to 0 ... 400 bar
- ▶ option: oil and grease free version

Technical Data



| Input pressure range | | | | | | | | | | | | | | | | |
|------------------------------|---------------------|---|-----|-----|----|----|----|----|----|-----|-----|-----|-----|-----|------|--|
| Nominal pressure gauge [bar] | -1...0 ¹ | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | |
| Nominal pressure abs. [bar] | - | 1 | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 400 | |
| Overpressure [bar] | 3 | 3 | 5 | 5 | 12 | 12 | 20 | 50 | 50 | 120 | 120 | 200 | 400 | 400 | 650 | |
| Burst pressure ≥ [bar] | 4 | 4 | 7 | 7.5 | 15 | 18 | 30 | 70 | 75 | 150 | 180 | 300 | 500 | 750 | 1000 | |
| Vacuum resistance | unlimited | | | | | | | | | | | | | | | |

¹ for this pressure range accuracy is ≤ 1 % FSO IEC 60770

| Output signal / Supply | |
|------------------------|---|
| Standard | 2-wire: 4 ... 20 mA / V _S = 8 ... 32 V _{DC} |
| Options | 3-wire: 0 ... 10 V / V _S = 14 ... 30 V _{DC} 3-wire ratiometric: 10 ... 90 % of V _S / V _S = 2.7 ... 5 V _{DC} |

| Performance | |
|-----------------------|---|
| Accuracy ² | ≤ ± 0.5 % FSO for p _N -1...0 bar: ≤ 1 % FSO |
| Permissible load | 2-wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω 3-wire: R _{min} = 10 kΩ |
| Influence effects | supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ |
| Response time | 2-wire: ≤ 10 msec 3-wire: ≤ 3 msec |
| Long term stability | ≤ ± 0.3 % FSO / year at reference conditions |
| Measuring rate | 1 kHz |

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

| Thermal effects (offset and span) / Permissible temperatures | |
|--|--|
| Thermal error | ≤ ± 0.3 % FSO / 10 K in compensated range: 0 ... 85 °C |
| Permissible temperatures | medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C |

| Electrical protection | |
|-----------------------------|---|
| Short-circuit protection | permanent 3-wire ratiometric: none |
| Reverse polarity protection | no damage, but also no function |
| Electromagnetic protection | emission and immunity according to EN 61326 |

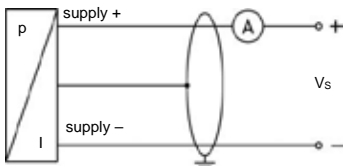
| Mechanical stability | |
|----------------------|---|
| Vibration | 10 g, 25 Hz ... 2 kHz according to DIN EN 60068-2-6 |
| Shock | 500 g / 1 msec according to DIN EN 60068-2-27 |

| Materials | |
|---------------------------|---|
| Pressure port / housing | stainless steel 1.4301 (304) |
| Seals (media wetted) | FKM others on request |
| Diaphragm | ceramics Al ₂ O ₃ 96 % |
| Media wetted parts | pressure port, seals, diaphragm |
| Miscellaneous | |
| Option oxygen application | for $p_N \leq 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C |
| Weight | approx. 120 g |
| Current consumption | 2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³ |

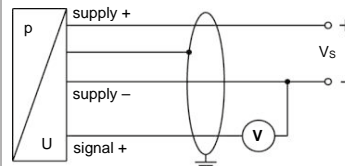
³ this directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



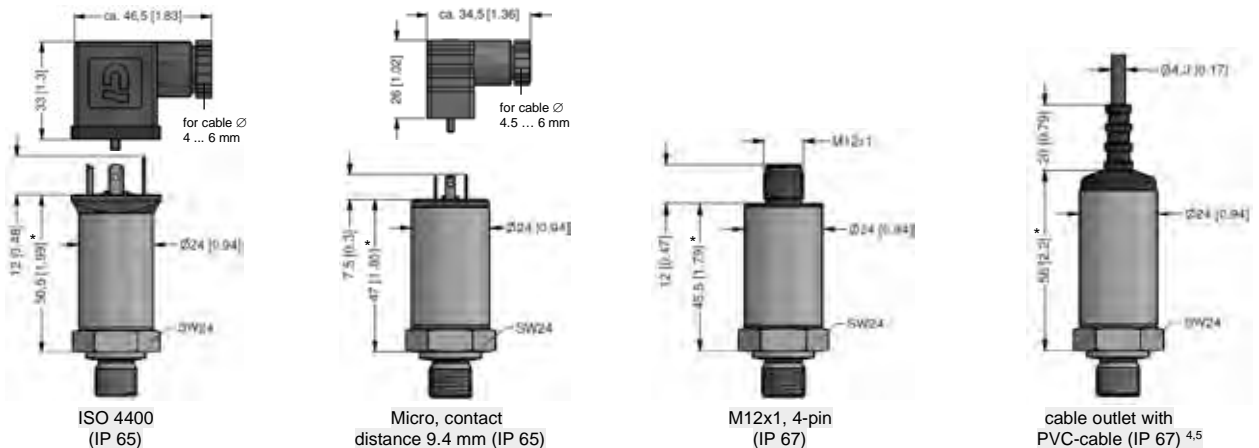
3-wire-system (voltage)



Pin configuration

| Electrical connection | ISO 4400 | Micro (contact distance 9.4 mm) | M12x1 (4-pin), metal | cable colours (IEC 60757) |
|-----------------------|------------|---------------------------------|----------------------|---------------------------|
| Supply + | 1 | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | 3 | GN (green) |
| Shield | ground pin | ground pin | 4 | GNYE (green-yellow) |

Electrical connections (dimensions mm / in)

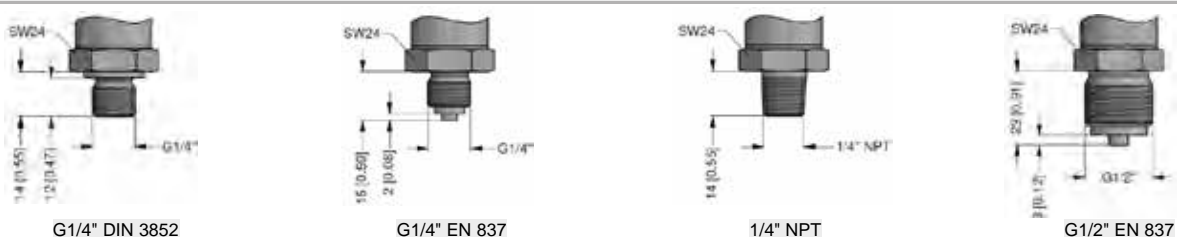


* pressure range $p_N = 400$ bar: total length increases by 12 mm

⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁵ different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimensions mm / in)



30.600 G**OEM Pressure Transmitter
Low Cost**

Applications

- ▶ mechanical and plant engineering
- ▶ general industrial applications

Characteristics

- ▶ ceramic sensor
- ▶ accuracy 1 % FSO according to IEC 60770
- ▶ nominal pressure ranges from 0 ... 1.6 bar up to 0 ... 250 bar



Technical Data

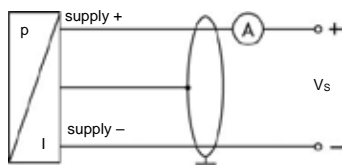
| Input pressure range | | | | | | | | | | | | | | |
|--|---------------------|--|-----|----|----------------------------|----------------------------|--------------------------------|------------------------|------------------------|-----|-----|-----|-----|--|
| Nominal pressure gauge | [bar] | 1.6 | 2.5 | 4 | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | |
| Overpressure | [bar] | 5 | 5 | 12 | 12 | 20 | 50 | 50 | 120 | 120 | 200 | 400 | 400 | |
| Burst pressure \geq | [bar] | 7 | 7.5 | 15 | 18 | 30 | 70 | 75 | 150 | 180 | 300 | 500 | 750 | |
| Vacuum resistance | | unlimited | | | | | | | | | | | | |
| Output signal / Supply | | | | | | | | | | | | | | |
| Standard | 2-wire: | 4 ... 20 mA | | | / | $V_S = 8 \dots 32 V_{DC}$ | | | | | | | | |
| Options | 3-wire: | 0 ... 10 V | | | / | $V_S = 14 \dots 30 V_{DC}$ | | | | | | | | |
| | 3-wire ratiometric: | 10 ... 90 % of V_S | | | / | $V_S = 2.7 \dots 5 V_{DC}$ | | | | | | | | |
| Performance | | | | | | | | | | | | | | |
| Accuracy ¹ | | $\leq \pm 1 \%$ FSO | | | | | | | | | | | | |
| Permissible load | 2-wire: | $R_{max} = [(V_S - V_{Smin}) / 0.02 A] \Omega$ | | | | | 3-wire: | $R_{min} = 10 k\Omega$ | | | | | | |
| Influence effects | supply: | 0.05 % FSO / 10 V | | | | | load: | 0.05 % FSO / $k\Omega$ | | | | | | |
| Response time | 2-wire: | ≤ 10 msec | | | | | 3-wire: | ≤ 3 msec | | | | | | |
| Long term stability | | $\leq \pm 0.3 \%$ FSO / year at reference conditions | | | | | | | | | | | | |
| Measuring rate | | 1 kHz | | | | | | | | | | | | |
| ¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) | | | | | | | | | | | | | | |
| Thermal effects (offset and span) / Permissible temperatures | | | | | | | | | | | | | | |
| Thermal error | | $\leq \pm 0.5 \%$ FSO / 10 K (typ.) | | | in compensated range | 0 ... 85 °C | | | | | | | | |
| Permissible temperatures | | medium: -25 ... 125 °C | | | electronics / environment: | -25 ... 85 °C | | | storage: -40 ... 85 °C | | | | | |
| Electrical protection | | | | | | | | | | | | | | |
| Short-circuit protection | | permanent | | | | | 3-wire ratiometric: none | | | | | | | |
| Reverse polarity protection | | no damage, but also no function | | | | | | | | | | | | |
| Electromagnetic protection | | emission and immunity according to EN 61326 | | | | | | | | | | | | |
| Mechanical stability | | | | | | | | | | | | | | |
| Vibration | | 10 g, 25 Hz ... 2 kHz | | | | | according to DIN EN 60068-2-6 | | | | | | | |
| Shock | | 500 g / 1 msec | | | | | according to DIN EN 60068-2-27 | | | | | | | |

| Materials | |
|-------------------------|--|
| Pressure port / housing | stainless steel 1.4301 (304) |
| Seals (media wetted) | FKM others on request |
| Diaphragm | ceramics Al ₂ O ₃ 96 % |
| Media wetted parts | pressure port, seals, diaphragm |
| Miscellaneous | |
| Weight | approx. 120 g |
| Current consumption | 2-wire: max. 25 mA 3-wire ratiometric: typ. 1.5 mA 3-wire voltage: max. 7 mA (short circuit current: max. 20 mA) |
| Operational life | 100 million load cycles |
| CE-conformity | EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ² |

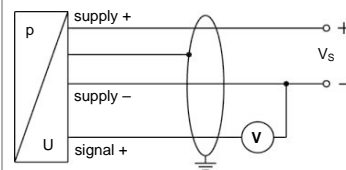
² This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)



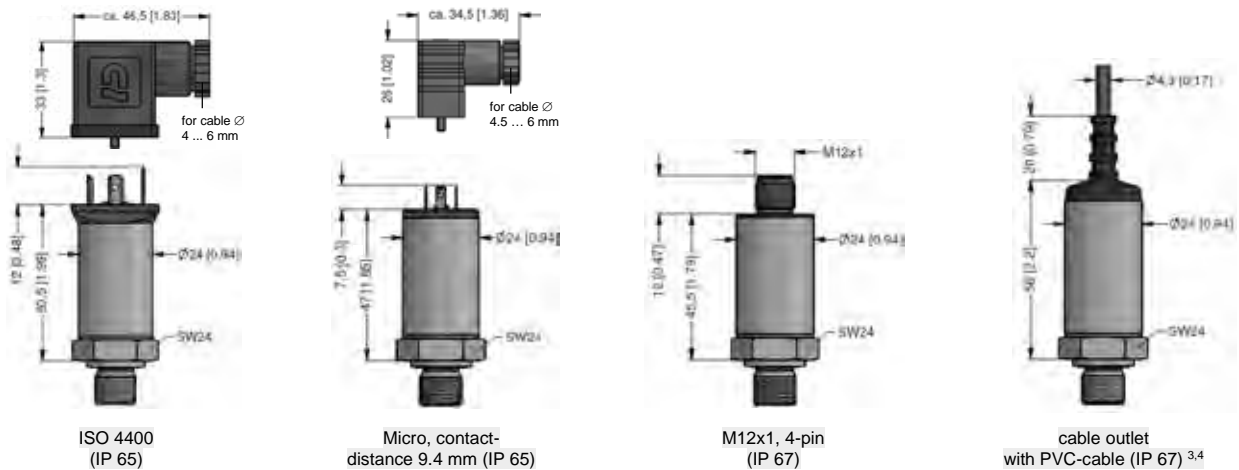
3-wire-system (voltage)



Pin configuration

| Electrical connection | ISO 4400 | Micro (contact distance 9.4 mm) | M12x1 (4-pin), metal | |
|-----------------------|------------|---------------------------------|----------------------|---------------------------|
| | | | | cable colours (IEC 60757) |
| Supply + | 1 | 1 | 1 | WH (white) |
| Supply - | 2 | 2 | 2 | BN (brown) |
| Signal + (for 3-wire) | 3 | 3 | 3 | GN (green) |
| Shield | ground pin | ground pin | 4 | GNYE (green-yellow) |

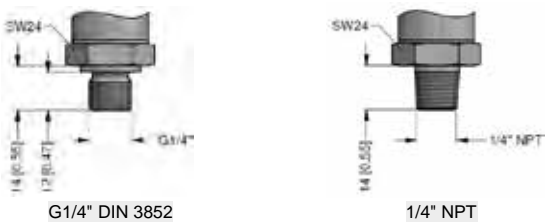
Electrical connections (dimensions mm / in)



³ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

⁴ different cable types and lengths available, permissible temperature depends on kind of cable

Mechanical connection (dimensions mm / in)



Ordering code 30.600 G

30.600 G - [] [] [] [] - [] - [] - [] [] [] [] - [] [] [] [] - 2 - [] - [] [] []

| Input | | [bar] | | | | | | | | | | | | | | | | |
|-----------------------|--|-------|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|---------|
| | 1.6 | | 1 | 6 | 0 | 1 | | | | | | | | | | | | |
| | 2.5 | | 2 | 5 | 0 | 1 | | | | | | | | | | | | |
| | 4.0 | | 4 | 0 | 0 | 1 | | | | | | | | | | | | |
| | 6.0 | | 6 | 0 | 0 | 1 | | | | | | | | | | | | |
| | 10 | | 1 | 0 | 0 | 2 | | | | | | | | | | | | |
| | 16 | | 1 | 6 | 0 | 2 | | | | | | | | | | | | |
| | 25 | | 2 | 5 | 0 | 2 | | | | | | | | | | | | |
| | 40 | | 4 | 0 | 0 | 2 | | | | | | | | | | | | |
| | 60 | | 6 | 0 | 0 | 2 | | | | | | | | | | | | |
| | 100 | | 1 | 0 | 0 | 3 | | | | | | | | | | | | |
| | 160 | | 1 | 6 | 0 | 3 | | | | | | | | | | | | |
| | 250 | | 2 | 5 | 0 | 3 | | | | | | | | | | | | |
| | customer | | 9 | 9 | 9 | 9 | | | | | | | | | | | | consult |
| Pressure | | | | | | | | | | | | | | | | | | |
| | gauge | | | | | R | | | | | | | | | | | | |
| Output | | | | | | | | | | | | | | | | | | |
| | 4 ... 20 mA / 2-wire | | | | | 1 | | | | | | | | | | | | |
| | 0 ... 10 V / 3-wire | | | | | 3 | | | | | | | | | | | | |
| | 10 ... 90% of V_S / 3-wire ratiometric | | | | | R | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | consult |
| Accuracy | | | | | | | | | | | | | | | | | | |
| | 1.0 % FSO | | | | | 8 | | | | | | | | | | | | |
| | customer | | | | | 9 | | | | | | | | | | | | consult |
| Electrical connection | | | | | | | | | | | | | | | | | | |
| | male and female plug ISO 4400 | | | | | 1 | 0 | 0 | | | | | | | | | | |
| | male and female plug Micro | | | | | C | 1 | 0 | | | | | | | | | | |
| | male plug M12x1 (4-pin), metal | | | | | M | 2 | 0 | | | | | | | | | | |
| | cable outlet with PVC cable ¹ | | | | | T | M | 0 | | | | | | | | | | |
| | customer | | | | | 9 | 9 | 9 | | | | | | | | | | consult |
| Mechanical connection | | | | | | | | | | | | | | | | | | |
| | G1/4" DIN 3852 | | | | | | 3 | 0 | 0 | | | | | | | | | |
| | 1/4" NPT | | | | | | N | 4 | 0 | | | | | | | | | |
| | customer | | | | | | 9 | 9 | 9 | | | | | | | | | consult |
| Seal | | | | | | | | | | | | | | | | | | |
| | FKM | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |
| Special version | | | | | | | | | | | | | | | | | | |
| | standard | | | | | | | | | | | | | | | | | |
| | customer | | | | | | | | | | | | | | | | | consult |

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

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