## Passive pressure transmitters

# TM


**Version: 28.03.2012**

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# Technical Specifications

## Pressure measuring range (bar)

| | 0.1 ... 0.5, (1) | > 0.5 ... 2 | > 2 ... 25 |
|---|---|---|---|
| **Overpressure** | 3 bar | 3 x FS (≥ 3 bar) | 3 x FS |
| **Burst pressure** | > 200 bar | > 200 bar | > 200 bar |
| **Accuracy, (4),** (± % FS) | ≤ 0.5 | ≤ 0.5 / ≤ 0.25 | ≤ 0.5 / ≤ 0.25 |
| **Thermal shift,** (± % FS/°C) | | | |
| Zero point 0...70°C | ≤ 0.06 | ≤ 0.03 | ≤ 0.015 |
| Zero point -25...85°C | ≤ 0.08 | ≤ 0.04 | ≤ 0.02 |
| Span 0…70°C | ≤ 0.015 | ≤ 0.015 | ≤ 0.015 |
| Span -25…85°C | ≤ 0.02 | ≤ 0.02 | ≤ 0.02 |
| **Response time,** (typ.) | < 0.1ms / 10...90% FS | < 0.1ms / 10...90% FS | < 0.1ms / 10...90% FS |
| **Long term stability, (5)** | < 0.5% FS/< 4 mbar | < 0.2% FS/< 4 mbar | < 0.1% FS/< 0.2% FS |

| | > 25 … 600, (2), (3) | > 600 … 1000, (2) |
|---|---|---|
| **Overpressure** | 3 x FS (≤ 850 / ≤ 1500 bar) | 1500 bar |
| **Burst pressure** | > 850 / ≤ 1500 bar | > 1500 bar |
| **Accuracy, (4),** (± % FS) | ≤ 0.5 / ≤ 0.25 | ≤ 1 / ≤ 0.5 |
| **Thermal shift,** (± % FS/°C) | | |
| Zero point 0...70°C | ≤ 0.015 | ≤ 0.015 |
| Zero point -25...85°C | ≤ 0.02 | ≤ 0.02 |
| Span 0…70°C | ≤ 0.015 | ≤ 0.015 |
| Span -25…85°C | ≤ 0.02 | ≤ 0.02 |
| **Response time,** (typ.) | < 0.1ms / 10...90% FS | < 0.1ms / 10...90% FS |
| **Long term stability, (5)** | < 0.1% FS/< 0.2% FS | < 0.1% FS/< 0.2% FS |

(1) 50 mbar on request
(2) Titanium available ≤ 400 bar (burst pressure > 550 bar)
(3) Overpressure and burst pressure 1500 bar (stainless steel) optional
(4) Zero based accuracy according to DIN16086, incl. hysteresis and repeatability at ambient temperature
(5) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

## Temperature range

| | |
|---|---|
| **Operating temperature** | -40...125 °C |
| **Process temperatur** | -40...150 °C |
| **Storage temperatur** | -40...125 °C |

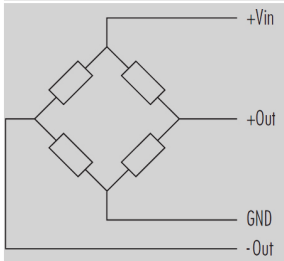
## Typical output signal (bar)

| | ≤ 0.25 | > 0.25 ... 0.6 | > 0.6 ... 1 |
|---|---|---|---|
| **Output signal, (1),** (mV) | 15 | 25 | 35 |

| | > 1 ... 2.5 | > 2.5 |
|---|---|---|
| **Output signal, (1),** (mV) | 50 | 100 |

(1) At nominal pressure, 10 V DC

### Electrical specifications

| | |
|---|---|
| **Circuit diagram** |  |
| **Input impedance** | > 10 kOhm |
| **Bridge resistance,** (typ.) | 3 kOhm |
| **Supply voltage,** (typ. / max.) | 10 / 15 V DC |

### Physical specifications

| | |
|---|---|
| **Materials** | |
| Transducer | Stainless steel (316L / 1.4435), titanium (Gr. 2), (1) |
| Housing | Stainless steel (316L / 1.4404), titanium (Gr. 2) |
| Seals | Viton (Standard), EPDM, Kalrez |
| Cable | PUR, PTFE, PE |

(1) Hastelloy (C-276) on request

## Accessories

### Overview

| | |
|---|---|
| **10.00.0091** | Accessories overview |

## Additional documents

### Operating and safety instructions

| | Article number |
|---|---|
| **10.88.0369** | DMM030 |

## Ordering information

| | | X. XXXX. XXXX. XX. XXX |
|---|---|---|
| **Type** | | |
| | TM 21 | |
| **Pressure type** | | |
| | Gauge | 1 |
| | Absolute (vacuum) | 2 |
| | Sealed gauge | 3 |
| **Pressure measuring range** | | |
| | Any pressure measuring ranges between 0...100 mbar and 0...1000 bar available, (1), (2), (3) | XX |
| **Process connection** | | |
| | G 1/4 F, (Fig. 1) | 00 |
| | G 1/4 M, (Fig. 2) | 11 |
| | G 1/4 M, manometer DIN 16288, (Fig. 3) | 12 |
| | G 1/2 M, (Fig. 4) | 13 |
| | G 1/2 M, frontal diaphragm, (Fig. 5) | 14 |
| | G 1/2 M, flush diaphragm, (Fig. 6) | 15 |
| | G 1/2 M, manometer DIN 16288, (Fig. 7) | 16 |
| | 1/2 NPT M, (Fig. 8) | 19 |
| | 1/4 NPT M, (Fig. 9) | 10 |
| | Customized connection available | XX |
| **Electrical connection** | | |
| | DIN 43650, demountable, IP 65, (Fig. 10), (4) | 01 |
| | Binder 723, 5-pin, IP 67, (Fig. 11), (4) | 03 |
| | Binder 723, 5-pin, demountable, IP 67, (Fig. 12), (4) | 43 |
| | MIL C26482, 10-6, IP 40, (Fig. 13), (4) | 06 |
| | PE cable, IP 67, (Fig. 14), (5), (6) | 13 |
| | PUR cable, IP 67, (Fig. 14), (5), (7) | 15 |
| | PTFE cable, (high temperature), black, IP 67, (11) | 11 |
| | PTFE cable, blue, IP 67, (Fig. 14), (5) | 21 |
| | Customized connection available | XX |
| **Output signal** | | |
| | 0...mV (specified by the customer) | XX |
| **Accuracy** | | |
| | ≤ ± 0.5 % FS | 0 |
| | ≤ ± 0.25 % FS (on request) | 1 |
| **Temperature range** | | |
| | 0...70 °C compensated (allowed process temperature: -25…85 °C) | 0 |
| | -25...85 °C compensated (allowed process temperature: -25...100 °C) | 7 |
| | -25...85 °C compensated (allowed process temperature: -25...150 °C) | 1 |
| | -25...85 °C compensated (allowed process temperature: -40...150 °C) | 5 |
| **Option 1** | | |
| | Throttle, (8) | A |
| | Special oil filling: ASEOL Food (for food applications) | G |
| | Special oil filling: Halocarbon (for oxygen applications), (9), (10) | H |
| | Pressure connection elastomerfree | N |
| | Pressure connection welded | v |
| **Option 2** | | |
| | Electronics packed in gel: Gauge pressure | C |

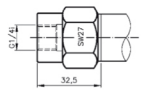
| | | | | | | |
|---|---|---|---|---|---|---|
| | Electronics packed in gel: Absolute pressure | | | | | D |
| **Option 3** | | | | | | |
| | Version titanium | | | | | K |
| | Seals: Viton (standard) | | | | | U |
| | Seals: EPDM | | | | | S |
| | Seals: Kalrez | | | | | T |
| | Aging | | | | | Z |

(1) 50 mbar on request
(2) Titanium available ≤ 400 bar (burst pressure > 550 bar)
(3) mbar, PSI, kPa etc. disponible
(4) Cable socket connector not included
(5) Please specify the required cable length and medium
(6) Suitable for drinking water (food approved)
(7) For operating temperature > 50°C, PE or PTFE cable must be used
(8) Only with pressure connection Fig. 2, Fig. 4, Fig. 7, Fig. 8 and Fig. 9
(9) Maximum pressure measuring range ≤ 270 bar (Berstdruck > 400 bar)
(10) min. Medium temperature -25 ° C
(11) max. 130°C @ 10 mH2O, max. 110°C @ 50 mH2O

# Technical drawings

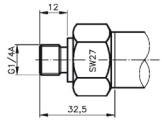
## Pressure Connections

Fig. 1



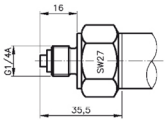

L = 27.5 (ND)
L = 32.5 (HD)

Fig. 2




L = 27.5 (ND)
L = 32.5 (HD)

Fig. 3




L = 30.5 (ND)
L = 35.5 (HD)

Fig. 4

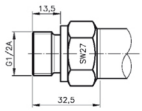
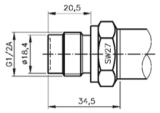
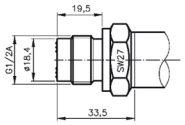



Fig. 5



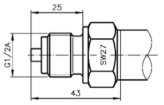

L = 27.5 (ND)
L = 32.5 (HD)

Fig. 6



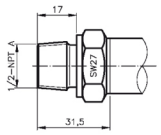

L = 34.5 (ND+HD)

Fig. 7



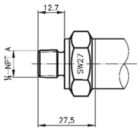

L = 33.5 (ND+HD)

Fig. 8




L = 38 (ND)
L = 43 (HD)

Fig. 9



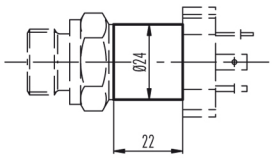

L = 27.5 (ND)
L = 32.5 (HD)

L = 31.5 (ND)
L = 36.5 (HD)

ND = low pressure ≤ 30 bar
HD = high pressure > 30 bar

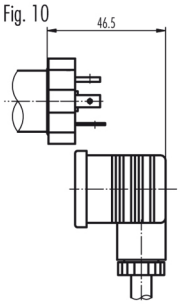
## Dimensions

Version for media temperature up to 150°C




## Electrical Connections

Fig. 10




| Pin | TM |
|---|---|
| 1 | +Vin |
| 2 | +Out |
| 3 | GND |
| Earth | - Out |

Fig. 11

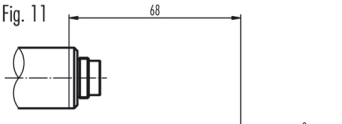
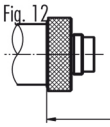
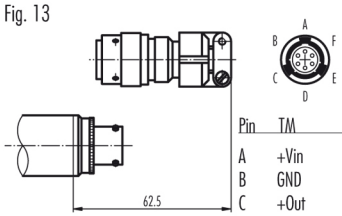



Fig. 12



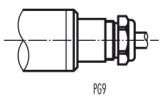

| Pin | TM | TM/Ex |
|---|---|---|
| 1 | +Out | +Out |
| 2 | - Out | - Out |
| 3 | +Vin | +Vin |
| 4 | GND | GND |
| 5 | | EP |

Fig. 13




| Pin | TM | TM/Ex |
|---|---|---|
| A | +Vin | +Vin |
| B | GND | GND |
| C | +Out | +Out |
| D | - Out | - Out |
| E | | EP |

Fig. 14




| Colour | TM | TM/Ex |
|---|---|---|
| white | +Vin | +Vin |
| yellow | GND | GND |
| brown | +Out | +Out |
| green | - Out | - Out |
| gray | | EP |

Specifications may change without notice.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