

## Pressure and Temperature Transmitters

### ATM/T - Analog Transmitter



#### CUSTOMER BENEFITS

- Multiparameter probe with pressure & temperature
- Demountable electrical connector option allow adjustment of zero and span setting in the field
- Fast customization thanks to modular product design
- Short response time suitable for dynamic pressure measurements

# Technical Specifications

## PRESSURE MEASURING RANGE (BAR)

|  | 0.1 ... 0.5, (1)       | > 0.5 ... 2                       | > 2 ... 25                        |
|--|------------------------|-----------------------------------|-----------------------------------|
| Overpressure                               | 3 bar                  | 3 x FS ( $\geq 3$ bar)            | 3 x FS                            |
| Burst pressure, (5)                        | $\geq 30$ bar          | $\geq 30$ bar                     | 3 x FS ( $\geq 25$ bar)           |
| Accuracy, (6), ( $\pm$ % FS)               | $\leq 0.5 / \leq 0.25$ | $\leq 0.5 / \leq 0.25 / \leq 0.1$ | $\leq 0.5 / \leq 0.25 / \leq 0.1$ |
| Thermal shift, ( $\pm$ % FS/ $^{\circ}$ C) |                        |                                   |                                   |
| Zero point 0 ... 70 $^{\circ}$ C           | $\leq 0.06$            | $\leq 0.03$                       | $\leq 0.015$                      |
| Zero point -25 ... 85 $^{\circ}$ C         | $\leq 0.08$            | $\leq 0.04$                       | $\leq 0.02$                       |
| Span 0 ... 70 $^{\circ}$ C                 | $\leq 0.015$           | $\leq 0.015$                      | $\leq 0.015$                      |
| Span -25 ... 85 $^{\circ}$ C               | $\leq 0.02$            | $\leq 0.02$                       | $\leq 0.02$                       |
| Response time, (typ.)                      | < 1ms / 10 ... 90% FS  | < 1ms / 10 ... 90% FS             | < 1ms / 10 ... 90% FS             |
| Long term stability, (7)                   | < 0.5% FS / < 4 mbar   | < 0.2% FS / < 4 mbar              | < 0.1% FS / < 0.2% FS             |

|  | > 25 ... 600, (2), (4)               | > 600 ... 1000, (2), (3)        |
|--|--------------------------------------|---------------------------------|
| Overpressure                               | 3 x FS ( $\leq 850 / \leq 1500$ bar) | 1500 bar                        |
| Burst pressure, (5)                        | > 850 / $\leq 1500$ bar              | > 1500 bar                      |
| Accuracy, (6), ( $\pm$ % FS)               | $\leq 0.5 / \leq 0.25 / \leq 0.1$    | $\leq 1 / \leq 0.5 / \leq 0.25$ |
| Thermal shift, ( $\pm$ % FS/ $^{\circ}$ C) |                                      |                                 |
| Zero point 0 ... 70 $^{\circ}$ C           | $\leq 0.015$                         | $\leq 0.015$                    |
| Zero point -25 ... 85 $^{\circ}$ C         | $\leq 0.02$                          | $\leq 0.02$                     |
| Span 0 ... 70 $^{\circ}$ C                 | $\leq 0.015$                         | $\leq 0.015$                    |
| Span -25 ... 85 $^{\circ}$ C               | $\leq 0.02$                          | $\leq 0.02$                     |
| Response time, (typ.)                      | < 1ms / 10 ... 90% FS                | < 1ms / 10 ... 90% FS           |
| Long term stability, (7)                   | < 0.1% FS / < 0.2% FS                | < 0.1% FS / < 0.2% FS           |

(1) 50 mbar on request

(2) Titanium available  $\leq 400$  bar (burst pressure > 550 bar)

(3) Process connection frontal and flush diaphragm available  $\leq 600$  bar

(4) Overpressure and burst pressure 1500 bar (stainless steel) optional

(5) Transducer

(6) Zero based accuracy according to DIN-16086, incl. hysteresis and repeatability at ambient temperature

(7) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

## TEMPERATURE MEASURING RANGE

|                                     |                              |
|-------------------------------------|------------------------------|
| Standard, (1)                       | -25 ... 100 $^{\circ}$ C     |
| Lower end of range                  | -40 $^{\circ}$ C             |
| Upper end of range                  | 150 $^{\circ}$ C             |
| Temperature span, (2)               | > 30 $^{\circ}$ C            |
| Accuracy, (3)                       |                              |
| 0...70 $^{\circ}$ C, (typ./max.)    | $\pm 0.5 / 1.0$ $^{\circ}$ C |
| -25...85 $^{\circ}$ C, (typ./max.)  | $\pm 1.0 / 1.5$ $^{\circ}$ C |
| -25...100 $^{\circ}$ C, (typ./max.) | $\pm 2.0$ $^{\circ}$ C       |

(1) Other temperature measuring ranges on request

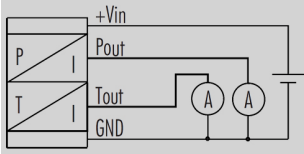
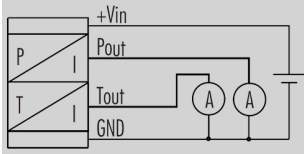
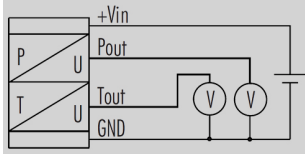
(2) Measuring range 15 ... 30 $^{\circ}$ C must be contained

(3) Probe, electronics, calibration

## TEMPERATURE RANGE

|                       |               |
|-----------------------|---------------|
| Operating temperature | -25 ... 85°C  |
| Process temperature   | -40 ... 150°C |
| Storage temperature   | -25 ... 85°C  |

## ELECTRICAL SPECIFICATIONS

|                     | 4 ... 20 mA   | 0 ... 20 mA  | 0 ... 5 V / 0 ... 10 V  |
|---------------------|---|--|---|
| Power supply        | 15 ... 30 VDC   | 15 ... 30 VDC  | 15 ... 30 VDC   |
| Supply influence    | < 0.1% FS   | < 0.1% FS  | < 0.1% FS   |
| Current consumption | 3 mA  |  |   |
| Circuit diagram     |  |  |  |
| Load resistance     | $(U_{\text{supply}} - 5V) / 0.02A$  | $(U_{\text{supply}} - 5V) / 0.02A$   | $R_L > 10 \text{ k}\Omega$  |
| Load influence      | < 0.1% FS   | < 0.1% FS  | < 0.1% FS   |

## QUALIFICATIONS

|              | Description             | Level                       | Typical interferences       |
|--------------|-------------------------|-----------------------------|-----------------------------|
| EN 61000-4-2 | Electrostatic discharge | 4 kV contact / 8 kV air     |                             |
| EN 61000-4-3 | Irradiated RF           | 10V/m (0.08 ... 1 GHz, 3s)  | Radio sets, wireless phones |
| EN 61000-4-4 | Transients (burst)      | 2 kV                        | Motors, valves              |
| EN 61000-4-6 | Conducted RF            | 10 V (0.15 ... 80 MHz, 3 s) | Frequency converters        |

## PHYSICAL SPECIFICATIONS

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

(1) Hastelloy (C-276) on request

## Equipment

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### OVERVIEW

| 10.00.0091 | Accessories overview               |
|------------|------------------------------------|
| HART001    | Cable Socket Connector<br>DIN43650 |

## Additional documents

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### OPERATING AND SAFETY INSTRUCTIONS

| Article number |        |
|----------------|--------|
| 10.88.0092     | DMM029 |

# Ordering information

|  | X | XXX | XXX | XX        | XXX |
|--|---|-----|-----|-----------|-----|
| <b>Type</b>  |   |     |     |           |     |
| ATM/T  |   |     |     |           | 26  |
| <b>Pressure type</b>   |   |     |     |           |     |
| Gauge  |   |     |     |           | 1   |
| Absolute (vacuum)  |   |     |     |           | 2   |
| Sealed gauge   |   |     |     |           | 3   |
| <b>Pressure measuring range</b>  |   |     |     |           |     |
| 50 mbar ... < 100 mbar   |   |     | XX  |           |     |
| 100 mbar ... 600 bar   |   |     | XX  |           |     |
| > 600 bar  |   |     | XX  |           |     |
| Negative ranges, offset, special adjustment  |   |     |     |           | 99  |
| <b>Process connection</b>  |   |     |     |           |     |
| G 1/2 M, frontal diaphragm, (Fig. 5), (4)  |   |     |     |           | 14  |
| G 1/2 M, with flush diaphragm, (Fig. 6), (4)   |   |     |     |           | 15  |
| Customized   |   |     |     |           | 99  |
| <b>Electrical connection</b>   |   |     |     |           |     |
| DIN 43650 with metal threaded part, demountable, IP 65 (Fig. 10), (5)                          |   |     |     |           | 01  |
| M16 (Binder 723), 5-pin, IP 67 (Fig. 11), (5)  |   |     |     |           | 03  |
| M16 (Binder 723), 5-pin, demountable, IP 67 (Fig. 12), (5)                                     |   |     |     |           | 43  |
| MIL C26482, 10-6, IP 40 (Fig. 13), (5)   |   |     |     |           | 06  |
| PE cable, IP 67, black (Fig. 14), (6), (7)   |   |     |     |           | 13  |
| PUR cable, IP 67, black (Fig. 14), (6), (8)  |   |     |     |           | 15  |
| FEP cable, IP 67, black (Fig. 14), (6)   |   |     |     |           | 21  |
| Customized connection available  |   |     |     |           | 99  |
| <b>Output signal</b>   |   |     |     |           |     |
| 0 ... 5 V DC   |   |     |     |           | 46  |
| 0 ... 10 V DC  |   |     |     |           | 47  |
| 0 ... 20 mA  |   |     |     |           | 00  |
| 4 ... 20 mA  |   |     |     |           | 05  |
| Customized   |   |     |     |           | 99  |
| <b>Accuracy</b>  |   |     |     |           |     |
| $\leq \pm 0.5$ % FS  |   |     |     |           | 0   |
| $\leq \pm 0.25$ % FS   |   |     |     |           | 1   |
| $\leq \pm 0.1$ % FS  |   |     |     |           | 2   |
| <b>Temperature range</b>   |   |     |     |           |     |
| 0 ... 70°C compensated<br>process temperature: -25 ... 100°C                                   |   |     |     | (allowed) | 0   |
| -25 ... 100°C compensated<br>(allowed process temperature: -25 ... 100°C)                      |   |     |     |           | 7   |
| -25 ... 85°C compensated<br>(allowed process temperature: -25 ... 100°C)                       |   |     |     |           | 1   |
| -25 ... 85°C compensated<br>(allowed process temperature: -25 ... 150°C)<br>with cooling fins  |   |     |     |           | 2   |
| -25 ... 100°C compensated<br>(allowed process temperature: -25 ... 150°C)<br>with cooling fins |   |     |     |           | 6   |

| Customized      |  | 9 |
|-----------------|--|---|
| <b>Option 1</b> |  |   |
|                 | Special oil filling: Anderol Food (for food applications)                  | G |
|                 | Special oil filling: AS100 (suitable for process temperatures -55...150°C) | J |
|                 | Special oil filling: PAO4 (silicone free)                                  | Q |
| <b>Option 2</b> |  |   |
|                 | Electronics packed in gel: Gauge pressure                                  | D |
|                 | Titanium   | K |
|                 | Seals: Viton (standard)  | U |
| <b>Option 3</b> |  |   |

- (4) Process connection available  $\leq 600$  bar
- (5) Cable socket connector not included
- (6) Please specify the required cable length and medium
- (7) Suitable for drinking water (food approved)
- (8) For operating temperature  $> 50^{\circ}\text{C}$ , PE or FEP cable must be used

# Technical drawings

## Pressure Connections

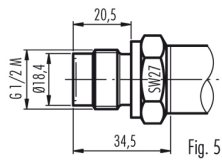


Fig. 5

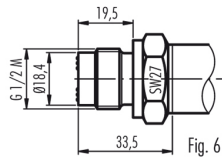
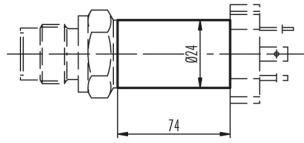


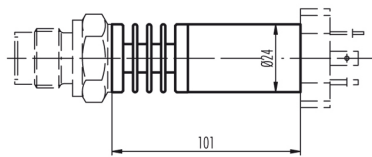
Fig. 6

## Dimensions

Version for media temperature up to 100°C



Version for media temperature up to 150°C



## Electrical Connections

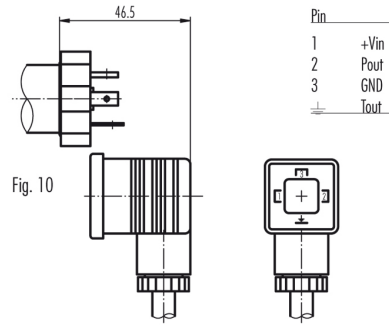


Fig. 10

| Pin |      |
|-----|------|
| 1   | +Vin |
| 2   | Pout |
| 3   | GND  |
| 4   | Tout |

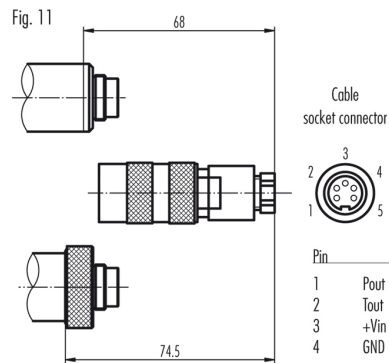


Fig. 11

Cable socket connector

| Pin |      |
|-----|------|
| 1   | Pout |
| 2   | Tout |
| 3   | +Vin |
| 4   | GND  |

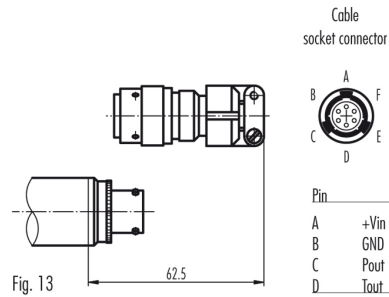


Fig. 12

Cable socket connector

| Pin |      |
|-----|------|
| A   | +Vin |
| B   | GND  |
| C   | Pout |
| D   | Tout |

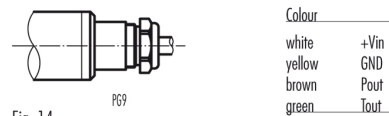


Fig. 13

| Colour |      |
|--------|------|
| white  | +Vin |
| yellow | GND  |
| brown  | Pout |
| green  | Tout |



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