

## Intrinsically Safe Submersible Transmitters

# ATM/N/Ex - Analog Level Transmitter



### CUSTOMER BENEFITS

- Certificate: ATEX
- Fast customization thanks to configurable product design
- Compact design requires minimal space
- Short response times suitable for dynamic pressure measurements

# Technical Specifications

## PRESSURE MEASURING RANGE (MH2O)

|  | 1 ... 5 (1)            | > 5 ... 20                        | > 20 ... 250                      |
|--|------------------------|-----------------------------------|-----------------------------------|
| Overpressure                                 | 3 bar                  | 3 x FS ( $\geq 3$ bar)            | 3 x FS                            |
| Burst pressure, (2)                          | > 200 bar              | > 200 bar                         | > 200 bar                         |
| Accuracy, (3) ( $\pm$ % 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<br>( $\pm$ % 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, (4)                     | < 0.5% FS / < 4 mbar   | < 0.2% FS / < 4 mbar              | < 0.1% FS / < 0.2% FS             |

(1) 0.5 mH2O on request

(2) Transducer

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

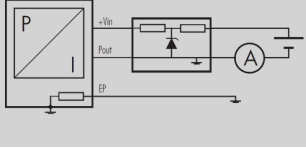
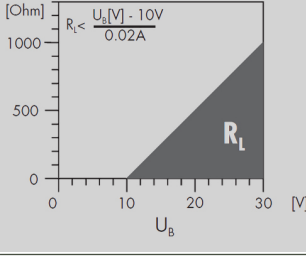
(4) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

## TEMPERATURE RANGE

|                       |                            |
|-----------------------|----------------------------|
| Operating temperature | -5 ... 80 $^{\circ}$ C (1) |
| Process temperature   | -5 ... 80 $^{\circ}$ C (1) |
| Storage temperature   | -10 ... 80 $^{\circ}$ C    |

(1) For operating temperature > 50 $^{\circ}$ C, PE or FEP cable must be used

## ELECTRICAL SPECIFICATIONS

|                  |   |
|------------------|---|
|                  | 4 ... 20 mA   |
| Power supply     | 10 ... 30 VDC   |
| Supply influence | < 0.1% FS   |
| Circuit diagram  |  |
| Load resistance  |  |
| Load influence   | < 0.1% FS   |

## ATEX APPROVAL

|  |  |                        |
|--|--|------------------------|
| Certificate, (1)                                 | SEV 11 ATEX 0142                         |                        |
| Gas  | II 1G Ex ia IIC T3 ... T6                | EN 60079-0 / -11 / -26 |
| Dust   | II 1D Ex iaD 20 IP6x<br>T125°C ... T80°C |                        |
| Mining   | I M1 Ex ia I                             | EN 50303               |
| Temperature class, (2)                           | T6                                       | T4                     |
| Ambient temperature                              | -5 ... 50°C                              | -5 ... 80°C            |
| Process temperature                              | -5 ... 50°C                              | -5 ... 80°C            |
| Maximum values of the intrinsically safe circuit | 30 V / 100 mA / 1 W                      |                        |

(1) For detailed Ex specifications see certificate and operating an safety instructions

(2) Without any information about temperature class the transmitter will be delivered for T4

## GL APPROVAL

|                      |             |
|----------------------|-------------|
| Certificate          | 40869-01 HH |
| Field of application | C, EMC1     |

## 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 61000-4-5, (1) | Surge                   | 10 kA (8 / 20 µs)           | Overvoltage                 |
| EN 61000-4-6      | Conducted RF            | 10 V (0.15 ... 80 MHz, 3 s) | Frequency converters        |

(1) Only with optional overvoltage protection

## 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, FEP   |
| Weight (2) | 108 g  |

(1) Hastelloy (C-276) on request

(2) Specification for a ATM/N/Ex, closed, without cable

# Equipment

## OVERVIEW

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

# Additional documents

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## OPERATING AND SAFETY INSTRUCTIONS

|            | Article number |
|------------|----------------|
| 10.88.0437 | DMM042         |

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# Ordering information

|                                 | X.  | XXXX. | XXXX. | XX. | XXX |
|---------------------------------|---|-------|-------|-----|-----|
| <b>Type</b>                     |   |       |       |     |     |
|                                 | ATM/N/Ex  | 34    |       |     |     |
| <b>Pressure type</b>            |   |       |       |     |     |
|                                 | Gauge   | 1     |       |     |     |
|                                 | Absolute (vacuum)   | 2     |       |     |     |
| <b>Pressure measuring range</b> |   |       |       |     |     |
|                                 | 50 mbar ... < 100 mbar  |       | XX    |     |     |
|                                 | 100 mbar ... 25 bar   |       | XX    |     |     |
|                                 | Offset, special adjustment  | 99    |       |     |     |
| <b>Process connection</b>       |   |       |       |     |     |
|                                 | Closed (Fig. 1)   |       | 55    |     |     |
|                                 | Open (Fig. 2)   |       | 56    |     |     |
|                                 | G 1/4 M (Fig. 3)  |       | 11    |     |     |
|                                 | G 1/2 M (Fig. 3)  |       | 13    |     |     |
|                                 | Customized  | 99    |       |     |     |
| <b>Electrical connection</b>    |   |       |       |     |     |
|                                 | Connectable version, IP 68 (Fig. 4), (3)  |       | 07    |     |     |
|                                 | PUR cable, blue, IP 68 (4), (5)   |       | 17    |     |     |
|                                 | FEP cable, blue, IP 68 (4)  |       | 22    |     |     |
|                                 | Customized  | 99    |       |     |     |
| <b>Output signal</b>            |   |       |       |     |     |
|                                 | 4 ... 20 mA   |       | 05    |     |     |
|                                 | 4 ... 20 mA with surge protection   |       | 08    |     |     |
| <b>Accuracy</b>                 |   |       |       |     |     |
|                                 | ≤ ± 0.5 % FS  |       |       | 0   |     |
|                                 | ≤ ± 0.25 % FS   |       |       | 1   |     |
|                                 | ≤ ± 0.1 % FS  |       |       | 2   |     |
| <b>Temperature range</b>        |   |       |       |     |     |
|                                 | T6 (Ta: -5 ... 50°C) -5 ... 50°C compensated<br>(allowed process temperature: -5 ... 50°C)  |       |       | 3   |     |
|                                 | T4 (Ta: -5 ... 80 °C) -5 ... 80°C compensated<br>(allowed process temperature: -5 ... 80°C) |       |       | 5   |     |
| <b>Option 1</b>                 |   |       |       |     |     |
| <b>Option 2</b>                 |   |       |       |     |     |
| <b>Option 3</b>                 |   |       |       |     |     |
|                                 | Ballast weight 1.4435   |       |       |     | B   |
|                                 | Seals: Viton (standard)   |       |       |     | U   |
|                                 | Seals: EPDM   |       |       |     | S   |
|                                 | Seals: Kalrez (Level)   |       |       |     | T   |
|                                 | Version titanium (without ballast weight)   |       |       |     | K   |
|                                 | Humidity filter element for gauge versions<br>(only for PUR cable)                          |       |       |     | Z   |

(3) Connector with required cable has to be ordered separately (KART100)

(4) Please specify the required cable length and medium

(5) For operating temperature > 50°C, FEP cable must be used

## Dimensions

Fig. 1: Closed version

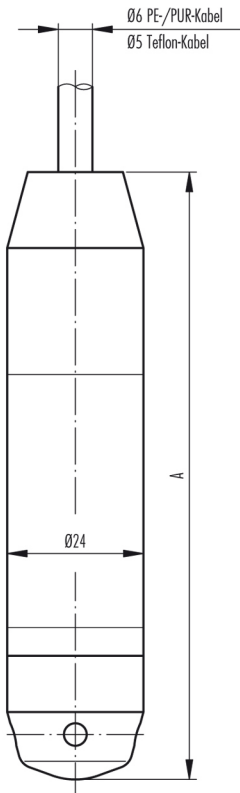


Fig. 2: Open version

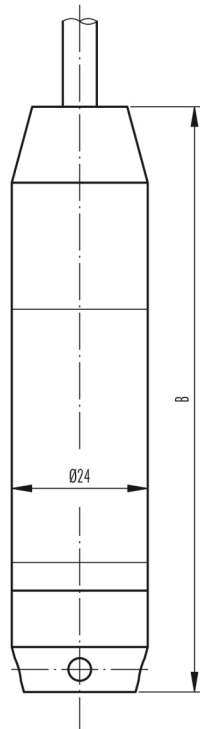


Fig. 3: with process connection

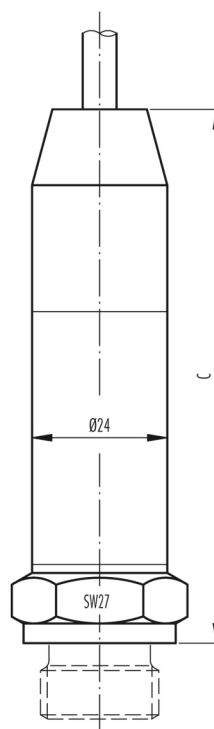
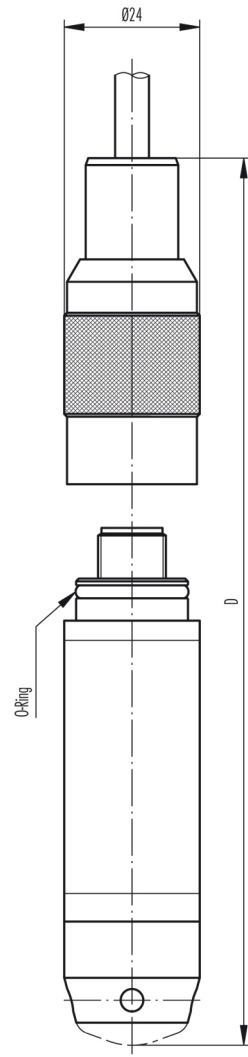


Fig. 4: Electrical connection, connectable



| Standard               | A [mm] | B [mm] | C [mm]      | D [mm]      | Weight [g]  |
|------------------------|--------|--------|-------------|-------------|-------------|
| without ballast weight | 108    | 104    | on request* | on request* | approx. 160 |
| with ballast weight    | 195    | 191    | on request* | on request* | approx. 420 |

\*C: Depending on process connection

\*D: Depending on process connection or version

| Version with surge (lightning) protection | A [mm] | B [mm] | C [mm]     | D [mm]     | Weight [g]  |
|---|--------|--------|------------|------------|-------------|
| without ballast weight                    | 157    | 153    | on request | on request | approx. 200 |
| with ballast weight                       | 244    | 240    | on request | on request | approx. 460 |

Colour 2-Wire

white +Vin  
yellow Pout  
gray EP