

Submersible Level Transmitter - ATEX / IECEx certified

PTM/N/Ex - Programmable Level Transmitter



CUSTOMER BENEFITS

- Certificates: ATEX, IECEx, EAC, GOST, ABS, DNV, Lloyds
- Any measuring ranges between 0 ... 1 mH₂O and 0 ... 250 mH₂O available
- Static accuracies available to 0.1 %FS
- High flexibility due to scalable pressure range
- Hysteresis and repeatability better than 0.025 %
- Piezoresistive technology suitable for static and dynamic pressure measurements
- Adjustment of zero and span setting via PC software in the field
- Barometric pressure ranges available

Technical Specifications

PRESSURE MEASURING RANGE (MH2O)

Pressure range	0 ... 1 to 0 ... 5	0 ... > 5 to 0 ... 20	0 ... > 20 to 0 ... 250
Overpressure (Proof)	3 bar	3 bar / 3 x FS	3 x FS
Burst pressure	> 200 bar	> 200 bar	> 200 bar
Accuracy, (2), \pm % FS	≤ 0.25	≤ 0.1	≤ 0.1
Thermal error, (3) (\pm % FS/ $^{\circ}$ C)			
Zero point: -5 ... 50 $^{\circ}$ C	≤ 0.06	≤ 0.03	≤ 0.015
Zero point: -5 ... 80 $^{\circ}$ C	≤ 0.08	≤ 0.04	≤ 0.02
Span: -5 ... 50 $^{\circ}$ C	≤ 0.015	≤ 0.015	≤ 0.015
Span: -5 ... 80 $^{\circ}$ C	≤ 0.02	≤ 0.02	≤ 0.02
Total Error, (4), (5), (6) (\pm % FS ; typ. / max.)			
-10 ... 50 $^{\circ}$ C	$\leq 0.15 / 0.3$ (≤ 200 mbar: 0.3 / 0.6)	$\leq 0.15 / 0.3$	$\leq 0.15 / 0.3$
-25 ... 85 $^{\circ}$ C	$\leq 0.65 / 0.7$ (≤ 200 mbar: 0.65 / 0.8)	$\leq 0.65 / 0.7$	$\leq 0.55 / 0.7$
Response time, (typ.)	16 ms	16 ms	16 ms
Long term stability (typ./max. per year)	< 1 mbar / < 2 mbar	< 1 mbar / < 2 mbar	< 0.1% FS / < 0.2% FS

Pressure range	0.8 ... 1.2 bar, (1)
Overpressure (Proof)	3 x FS
Burst pressure	> 200 bar
Accuracy, (2), \pm % FS	≤ 0.25
Thermal error, (3) (\pm % FS/ $^{\circ}$ C)	
Zero point: -5 ... 50 $^{\circ}$ C	≤ 0.06
Zero point: -5 ... 80 $^{\circ}$ C	≤ 0.08
Span: -5 ... 50 $^{\circ}$ C	≤ 0.015
Span: -5 ... 80 $^{\circ}$ C	≤ 0.02
Total Error, (4), (5), (6) (\pm % FS ; typ. / max.)	
-10 ... 50 $^{\circ}$ C	$\leq 0.15 / 0.3$
-25 ... 85 $^{\circ}$ C	$\leq 0.65 / 0.7$
Response time, (typ.)	16 ms
Long term stability (typ./max. per year)	< 1 mbar / < 2 mbar

(1) Typical barometric pressure range, max. offset: 900 mbar, min. span: 400 mbar

(2) Zero based accuracy according to EN-61298, incl. hysteresis and repeatability at ambient temperature

(3) Standard compensation

(4) Total error including accuracy and temperature influences at maximum signal span (16 mA)

(5) With option active compensation only (≥ 100 mbar, ≤ 25 bar)

(6) Does not apply to titanium solution ≤ 1 bar

TEMPERATURE RANGE

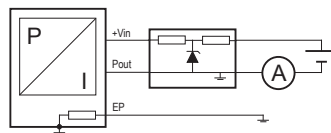
Operating temperature	-5 ... 80°C, (1)
Process temperature	-5 ... 80°C, (1)
Storage temperature	-10 ... 80°C

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

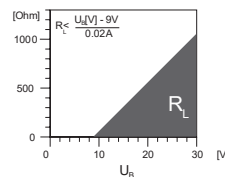
ELECTRICAL SPECIFICATIONS

Output signal	4 ... 20 mA
Resolution	0.025 %FS
Output adjustable	
4 mA	-5 %FS ... 105 %FS
20 mA	-5 %FS ... 105 %FS
Span	25 %FS ... 110 %FS
Low pass filter	0.1 / 1 / 10 / 30 Hz (standard: 30 Hz)
Power supply	9 ... 30 VDC
Supply influence	< 0.1 %FS

Circuit diagram



Load resistance



Load influence	< 0.1 %FS
Reverse polarity protection	Yes

CERTIFICATES / APPROVALS

Certificates, (1)		
ATEX	SEV 08 ATEX 0142	
IECEX	IECEX SEV 19.0024X	
ABS	09-HG436727/1-PDA	
DNV	TAA00002FN	
Gas, (2)	Zone 0	II 1G Ex ia IIC T4 ... T6 Ga
Gas, (3)	Zone 1+2	II 2G Ex ia IIB T4 ... T6 Gb
Dust		II 1D Ex ia IIIC T ₂₀₀ 125°C Da
Maximum values of the intrinsically safe circuit	30 V / 140 mA / 0.9 W	
Temperature class, (4)	T6	T4
Ambient temperature (Ta)	-5 ... 50 °C	-5 ... 80 °C
Process temperature	-5 ... 50 °C	-5 ... 80 °C

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

(2) Max. permitted cable length: ≤ 150 m

(3) Max. permitted cable length: ≤ 450 m

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

QUALIFICATIONS

	Description	Level
EN 60068-2-6	Vibration	4G (4 ... 100 Hz)
EN 60068-2-27	Shock	100 G (impulse duration 6 ms)
EN 61326-2-3	EMC	
EN 61000-6-2	EMC	
EN 61000-6-3	EMC	

PHYSICAL SPECIFICATIONS

Oil filling	Standard: Silicone Oil Optional: Anderol Food
Transducer	Standard: Stainless steel (316L / 1.4435) Optional: Titanium (Gr. 2) or Hastelloy C-276
Housing	Standard: Stainless steel (316L / 1.4435) Optional: Titanium (Gr. 2) or Hastelloy C-276

Accessories

INTERFACE / SOFTWARE

Article number	Description
102442	PTM/N/Ex - Interface
101224	PC Software

MANUALS

Article number	Description	
DEB003	Configuration software	10.00.0079
DEB005	User manual sensor	10.00.0089
DMM023	Operating and safety instructions	10.88.0271

Ordering information

Type	x	xxxx	xxxx	xx	xxx
PTM/N/Ex	48				
Pressure type					
Gauge	1				
Absolute	2				
Pressure measuring range					
Any measuring ranges between 0 ... 1 mH2O and 0 ... 250 mH2O available		xx			
Barometric pressure ranges available		xx			
Process connection					
Closed, nose cone POM, (Fig. 8)			55		
Open, nose cone POM, (Fig. 9)			56		
G 1/2 M, bore 14 mm (Fig. 1), (Fig. 10)			17		
G 1/2 M (Fig. 2), (Fig. 10)			13		
G 1/2 M, frontal diaphragm (Fig. 3), (Fig. 10)			14		
G 1/2 M, frontal diaphragm Hastelloy C-276 (Fig. 3), (Fig. 10)			37		
G 1/2 M, with flush diaphragm membrane (Fig. 4), (Fig. 10)			15		
G 1/4 M (Fig. 5), (Fig. 10)			11		
1/4 NPT M (Fig. 6), (Fig. 10)			10		
1/2 NPT M (Fig. 7), (Fig. 10)			19		
Other process connections on request			99		
Electrical connection					
PUR cable, blue, IP 68, (1), (2)				17	
FEP cable, blue, IP 68, (1)				22	
PUR cable, blue, IP 68, with G 1/2 M conduit fitting (Fig. 11), (1), (2)				20	
PUR cable, blue, IP 68, with strain relief (Fig. 12), (1), (2)				28	
Connectable version, IP 68 (Fig. 13), (3)				07	
Other electrical connections on request				99	
Output signal					
4 ... 20 mA				05	
4 ... 20 mA with overvoltage protection				08	
Accuracy					
$\leq \pm 0.25\%$ FS (< 5 mH2O)					1
$\leq \pm 0.1\%$ FS (≥ 5 mH2O)					2
Temperaturbereich					
T6 (Ta: -5 ... 50°C) -5 ... 50°C compensated (allowed process temperature: - 5 ... 50°C)					3
T4 (Ta: -5 ... 80°C) -5 ... 80°C compensated (allowed process temperature: - 5 ... 80°C), (2)					5

Options			
Special oil filling: Anderol Food (for food applications)			G
Ballast weight 1.4435 (with figure 8, 9 and 10 only)			B
Version titanium (without ballast weight)			K
Seals: FKM (standard)			U
Seals: EPDM			S
Seals: Kalrez (4)			T
Humidity filter element for gauge versions			Z
Active compensated (≥ 100 mbar ≤ 25 bar)			E

- (1) Please specify the required cable length and medium
- (2) For operating temperature $> 50^{\circ}\text{C}$, FEP cable must be used
- (3) Connector with required cable has to be ordered separately (KART100)
- (4) Profile seal not included

Process connections

Fig. 1 - G 1/2 M, bore 14 mm

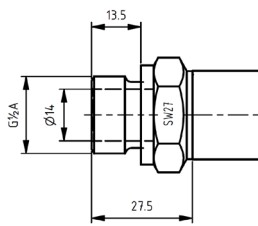


Fig. 2 - G 1/2 M

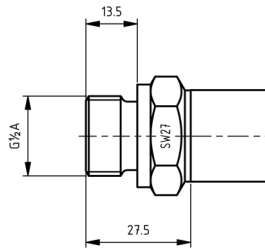


Fig. 3 - G 1/2 M, frontal diaphragm

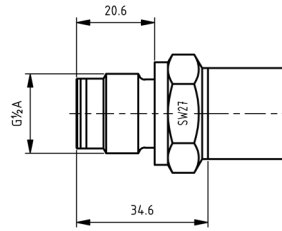


Fig. 4 - G 1/2 M, flush diaphragm

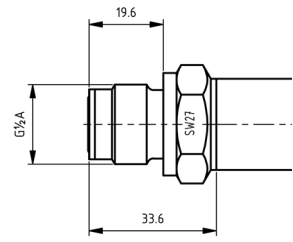


Fig. 5 - G 1/4 M

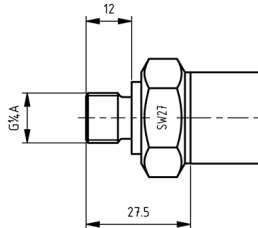


Fig. 6 - 1/4 NPT M

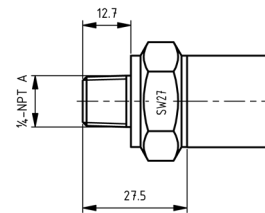
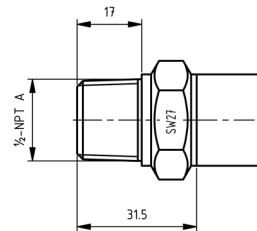


Fig. 7 - 1/2 NPT M



Dimensions

Fig. 8
Closed version

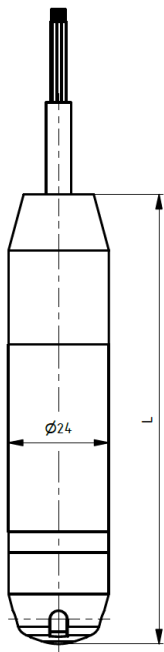


Fig. 9
Open version

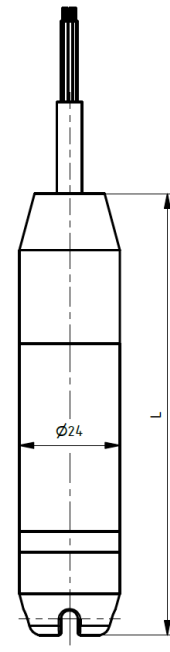


Fig. 10
With process
connection

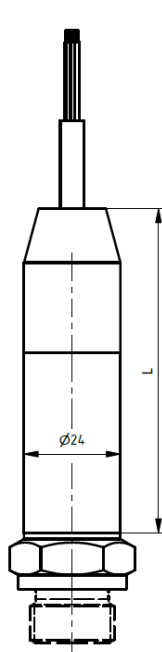


Fig. 11
With G 1/2 M
conduit fitting

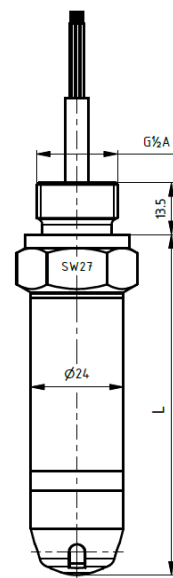


Fig. 12
With strain relief

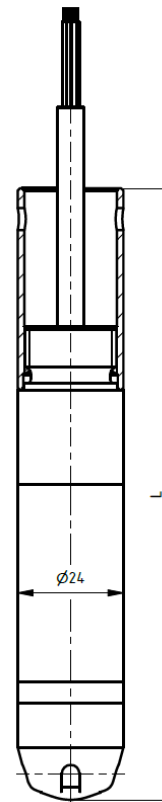
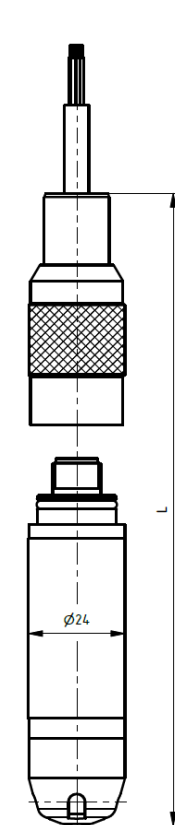


Fig. 13
Connectable
version



Version	L [mm]	Weight [g] (without cable)
Figure 8 - closed	ca. 157	ca. 200
Figure 9 - open	ca. 155	ca. 200
Figure 10 - with process connection	ca. 130	ca. 230
Figure 11 - with G 1/2 M conduit fitting	ca. 138	ca. 230
Figure 12 - with strain relief	ca. 190	ca. 250
Figure 13 - connectable version	ca. 178	ca. 250
Additional length and additional weight with option ballast weight (1.4435 only)	ca. 210	ca. 330

Colour	2-wire
white	+Vin
yellow	Pout
grey	EP

Specifications may change without notice

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