

Submersible Level Transmitter

ATM.1ST/N - High Precision Submersible Level Transmitter



CUSTOMER BENEFITS

- Any measuring ranges between 0 ... 0.5 mH₂O and 0 ... 250 mH₂O available
- Static accuracies available to 0.05 %FS
- Hysteresis and repeatability better than 0.01 %
- Piezoresistive technology suitable for static and dynamic pressure measurements
- Modular design ideal for customization to the application
- Barometric pressure ranges available

Technical Specifications

PRESSURE MEASURING RANGE (MH2O)

	0 ... 0.5 bis 0 ... < 1	0 ... 1 bis 0 ... < 10	0 ... 10 bis 0 ... ≤ 250
Overpressure (Proof)	3 bar	3 bar / 3 x FS	3 x FS
Burst pressure	> 200 bar	> 200 bar	> 200 bar
Accuracy, (1) (± % FS)	≤ 0.25	≤ 0.2 / ≤ 0.1	≤ 0.2 / ≤ 0.1 / ≤ 0.05
Total Error, (2), (3) (± % FS ; typ. / max.)			
-5 ... 50°C compensated	≤ 0.4 / 0.6	≤ 0.2 / 0.4	≤ 0.15 / 0.3
-5 ... 80°C compensated	≤ 0.5 / 0.7	≤ 0.3 / 0.5	≤ 0.2 / 0.4
Response time, (typ.)	< 1ms / 10 ... 90 % FS	< 1ms / 10 ... 90 % FS	< 1ms / 10 ... 90 % FS
Long term stability, (typ./max. per year)	< 1 mbar / < 2 mbar	< 1 mbar / < 2 mbar	< 0.1% FS / < 0.2% FS

	0.8 ... 1.2, (4)
Overpressure (Proof)	3 x FS
Burst pressure	> 200 bar
Accuracy, (1) (± % FS)	≤ 0.2 / ≤ 0.1
Total Error, (2), (3) (± % FS ; typ. / max.)	
-5 ... 50°C compensated	≤ 0.2 / 0.4
-5 ... 80°C compensated	≤ 0.3 / 0.5
Response time, (typ.)	< 1ms / 10 ... 90 % FS
Long term stability, (typ./max. per year)	< 1 mbar / < 2 mbar

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

(2) Total error including accuracy and temperature influences at maximum signal span (16 mA / 10 V DC)

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

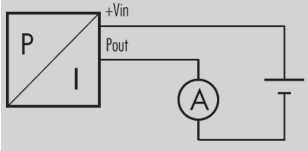
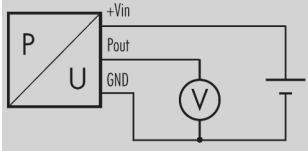
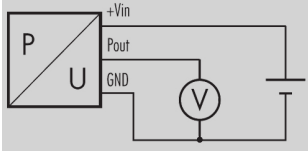
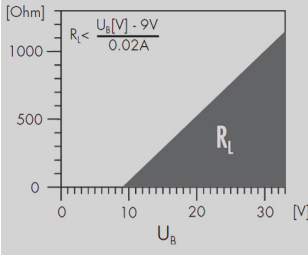
(4) Typical barometric pressure range, max. offset: 900 mbar, min. span: 400 mbar

TEMPERATURE RANGE

Operating temperature	-5 ... 80°C (1)
Process temperature	-5 ... 80°C (1)
Storage temperature	-40 ... 100°C

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

ELECTRICAL SPECIFICATIONS

	4 ... 20 mA	0 ... 5 V	0 ... 10 V
Power supply	9 ... 33 V DC	10 ... 30 V DC	12 ... 30 V DC
Supply influence	< 0.05% FS	< 0.05% FS	< 0.05% FS
Current consumption (typ.)	n.a.	3 mA	3 mA
Start up time	< 170 ms	< 170 ms	< 170 ms
Circuit diagram			
Load resistance		$R_L > 10k\Omega$	$R_L > 10k\Omega$
Load influence	< 0.05% FS	< 0.05% FS	< 0.05% FS
Reverse polarity protection	Yes	Yes	Yes
Short-circuit resistance	n.a.	Yes	Yes

QUALIFICATIONS

	Description	Level	Typical interferences
EN 60068-2-6	Vibration	10 G (4 ... 2000 Hz)	
EN 60068-2-27	Shock	100 G (impulse duration 6 ms)	
EN 55022	Emission, class B	< 30 dBμV/m (0.03...1 GHz)	
EN 61000-4-2	Electrostatic discharge	8 kV contact / 15 kV air	
EN 61000-4-3	Irradiated RF	10V/m (0.08...2.7 GHz, 3s)	Radio sets, wireless phones
EN 61000-4-4	Transients (burst)	4 kV	Motors, valves
EN 61000-4-5	Surge	Line-Line: 0.5 kV/42 Ω, Line-Earth: 1 kV/42 Ω	Overvoltage
---	Surge (1)	Line-Line: 2.0 kV/2 Ω, Line-Earth 5 kV/12 Ω	Overvoltage
EN 61000-4-6	Conducted RF	3 V (0.15 ... 80 MHz, 3 s)	Frequency converters

(1) Only with surge (lightning) protection

PHYSICAL SPECIFICATIONS

Oil filling	Standard: Silicone oil AS100; 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

Additional documents

OPERATING AND SAFETY INSTRUCTIONS

	Article number
10.88.0092	DMM029

Ordering information

	X.	XXXX.	XXXX.	XX.	XXX
Type					
ATM.1ST/N					
Pressure type					
Gauge	1				
Absolute	2				
Pressure measuring range					
Any measuring ranges between 0 ... 0.5 mH2O and 0 ... 250 mH2O available	XX				
Barometric pressure ranges available	XX				
Process connection					
Closed, nose cone POM, (Fig. 8)	55				
Closed, nose cone 1.4435, (Fig. 8), (1)	59				
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 pressure connections on request	99				
Electrical connection					
PE cable, black, IP 68, (1), (2)	13				
PUR cable, black, IP 68, (2), (3)	15				
FEP cable, black, IP 68, (2)	21				
FEP cable, (high temperature), black, IP 68, (2), (4)	12				
PVC cable, blue, IP 68, (1), (2)	14				
PUR cable, black, IP 68, with G 1/2 M conduit fitting (Fig. 11), (2), (3)	19				
PUR cable, black, IP 68, with strain relief (Fig. 12), (2), (3)	25				
Connectable version, IP 68 (Fig. 13), (5)	07				
Other electrical connections on request	99				
Output signal					
0 ... 5 VDC	46				
0 ... 10 VDC	47				
4 ... 20 mA	05				
4 ... 20 mA surge protection	08				
Accuracy					
$\leq \pm 0.25$ % FS (0.5 mH2O ... 0.99 mH2O)	1				
$\leq \pm 0.2$ % FS (1 mH2O ... 250 mH2O)	4				
$\leq \pm 0.1$ % FS (1 mH2O ... 250 mH2O)	2				
$\leq \pm 0.05$ % FS (10 mH2O ... 250 mH2O)	6				
Temperature range					
-5 ... 50°C compensated (allowed process temperature: - 5 ... 50°C)				4	

	-5 ... 80°C compensated (allowed process temperature: - 5 ... 80°C)			5	
Option 1					
	Special oil filling: Anderol Food (for food applications)				G
Option 2					
	Electronics packed in gel: Gauge sensors				C
	Electronics packed in gel: Absolute sensors				D
Option 3					
	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 (6)				T
	Seals: NBR (5)				H
	Humidity filter element for gauge versions (for PUR and PE cable only)				Z

- (1) Suitable for drinking water
- (2) Please specify the required cable length and medium
- (3) For operating temperature > 50°C, PE or FEP cable must be used
- (4) max. 130°C @ 10 mH₂O, max. 110°C @ 50 mH₂O
- (5) Connector with required cable has to be ordered separately (KART100)
- (6) Profile seal not included

Process connections

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

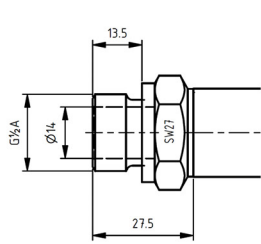


Fig. 2 - G 1/2 M

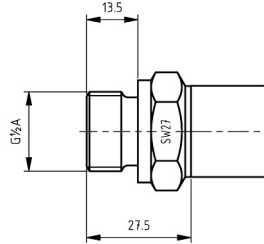


Fig. 3 - G 1/2 M, frontal diaphragm

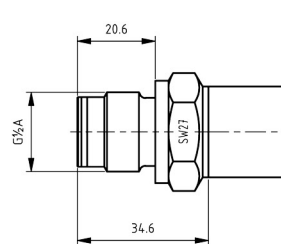


Fig. 4 - G 1/2 M, flush diaphragm

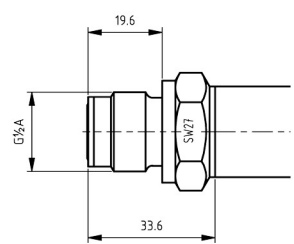


Fig. 5 - G 1/4 M

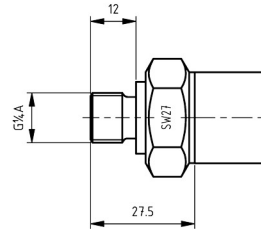


Fig. 6 - 1/4 NPT M

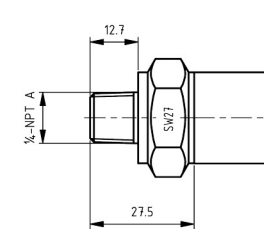
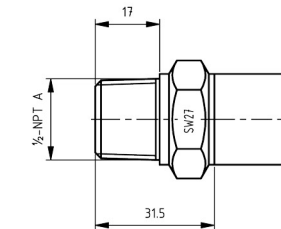


Fig. 7 - 1/2 NPT M



Dimensions

Fig. 8
Closed version

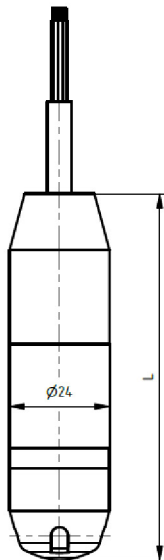


Fig. 9
Open version

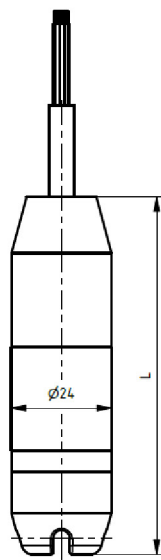


Fig. 10
With process
connection

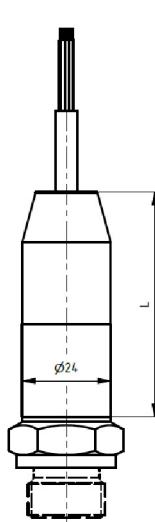


Fig. 11
With G 1/2 M
conduit fitting

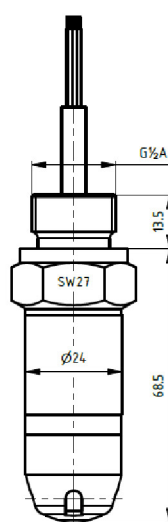


Fig. 12
With strain
relief

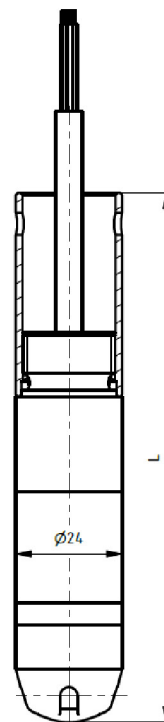
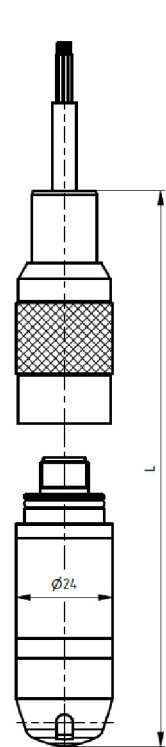


Fig. 13
Connectable
version



Version

L [mm]

Weight [g]
(without cable)

Figure 8 - closed
Figure 9 - open
Figure 10 - with process connection
Figure 11 - with G 1/2 M conduit fitting
Figure 12 - with strain relief
Figure 13 - connectable version
Additional length with ballast weight
Additional weight with ballast weight

ca. 90
ca. 85
ca. 60
ca. 82
ca. 120
ca. 120
ca. 140
ca. 150
ca. 150
ca. 180
ca. 150
ca. 180
ca. 200
ca. 330

Colour	2-wire	3-wire
white	+Vin	+Vin
yellow	Pout	GND
brown		Pout

Specifications may change without notice

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