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Submersible Level and Temperature Transmitters

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

CE

CUSTOMER BENEFITS

- High measurement accuracy is ensured by sophisticated digital temperature compensation algorithms
- Exellent long term stability allow accurate measurements over a long period
- Titanium version with FEP cable available for use in aggressive media
- Multiparameter probe with pressure & temperature

Technical Specifications

PRESSURE MEASURING RANGE (MH2O)

	1 ... 5, (1)	> 5 ... 20	> 20 ... 250
Overpressure	3 bar	3 x FS (≥ 3 bar)	3 x FS
Burst pressure, (2)	> 200 bar	> 200 bar	> 200 bar
Accuracy, (3) (± % FS)	≤ 0.1 / ≤ 0.25	≤ 0.1 / ≤ 0.25	≤ 0.1 / ≤ 0.25
Total Error, (4) (± % FS)			
-5 ... 50°C, (typ. / max.)	≤ 0.8 / 1.0	≤ 0.3 / 0.5	≤ 0.3 / 0.5
-5 ... 80°C, (typ. / max.)	≤ 1.3 / 1.5	≤ 0.75 / 1.0	≤ 0.75 / 1.0
Response time, (typ.)	< 1ms / 10 ... 90% FS	< 1ms / 10 ... 90% FS	< 1ms / 10 ... 90% FS
Long term stability, (5)	< 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) Total error including accuracy and temperature influences at maximum signal span (16 mA)
(5) 1 year (typ. / max.), the long term stability can be improved by ageing (burn-in) the sensor

TEMPERATURE MEASURING RANGE

Standard, (1)	-5 ... 50°C
Lower end of range	-5 °C
Upper end of range	80 °C
Temperature span, (2)	> 30 °C
Accuracy, (3)	<± 0.3°C
Response time, (4)	
T 0,90	160 s
T 0.50	60 s
T 0.63	75 s
Self heating, (5)	
Air, 0 m/s	1.5 °C
Water, 0 m/s	0.05 °C

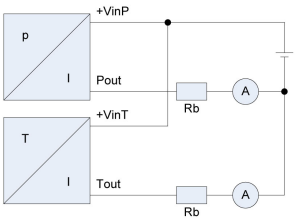
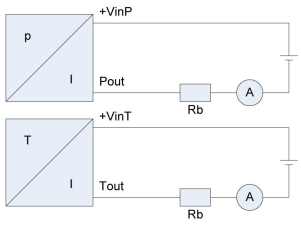
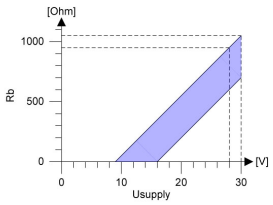
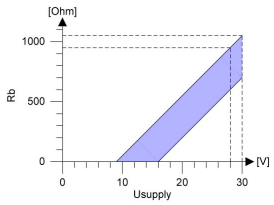
(1) Other temperature measuring ranges on request
(2) Measuring range 15 ... 30°C must be contained
(3) Probe, electronics, calibration
(4) Time in seconds that the sensor needs to carry out eg. 50% / 63% / 90% of a temperature change
(5) At minimum recommended load resistance

TEMPERATURE RANGE

Operating temperature	-5 ... 80°C (1)
Process temperature	-5 ... 80°C (1)
Storage temperature	-40 ... 125°C

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

ELECTRICAL SPECIFICATIONS

	4 ... 20 mA / 3-wires	4 ... 20 mA / 4-wires
Power supply	9 ... 30 VDC	9 ... 30 VDC
Supply influence	< 0.05% FS	< 0.05% FS
Circuit diagram		
Load resistance		
Minimum load resistance	RL = (Usupply - 15V) / 0.02A	RL = (Usupply - 15V) / 0.02A
Maximum load resistance	RL = (Usupply - 9V) / 0.02A	RL = (Usupply - 9V) / 0.02A
Load influence	< 0.05% FS	< 0.05% FS

QUALIFICATIONS

	Description	Level	Typical interferences
EN 60068-2-6	Vibration	10 G (4 ... 2000 Hz / ± 10 mmpp)	
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
EN 61000-4-6	Conducted RF	3 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 (standard), EPDM, Kalrez, NBR
Cable	PUR, FEP, PE, PVC
Weight (2)	180 g

(1) Hastelloy (C-276) on request
(2) Specification for a ATM.1ST/N, closed, without cable

Equipment

OVERVIEW

10.00.0091	Accessories overview

Additional documents

OPERATING AND SAFETY INSTRUCTIONS

	Article number
10.88.0092	DMM029

Ordering information

		X.	XXXX.	XXXX.	XX.	XXX
Type						
	ATM.1ST/N/T					
Pressure type						
	Gauge	1				
	Absolute (vacuum)	2				
Pressure measuring range						
	100 mbar ... 25 bar		XX			
Process connection						
	Closed, (Fig. 1)		55			
	Open (Fig. 2)		56			
	Closed (1.4435) for ACS (Fig. 1)		59			
	Customized		99			
Electrical connection						
	PE cable, IP 68, black (4) (5)			13		
	PUR cable, IP 68, black (4) (6)			15		
	FEP cable, IP 68, black (4)			21		
	FEP cable, (high temperature), black, IP 68, (4) (9)			12		
	PVC cable, blue, IP 68, (ACS certified) (4) (5)			14		
	Connectable version, IP 68, M12 (Lumberg RSF4), (Fig. 4) (3)			07		
	Customized			99		
Output signal						
	4 ... 20 mA (3 wires)			03		
	4 ... 20 mA (4 wires)			05		
Accuracy						
	≤ ± 0.25 % FS				1	
	≤ ± 0.1 % FS				2	
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
	Cutting ring connection G 1/2 M					
	Strain relief					
Option 2						
	Electronics packed in gel: Gauge pressure					C
	Electronics packed in gel: Absolute pressure					D
Option 3						
	Ballast weight 1.4435					B
	Version titanium (without ballast weight)					K
	Seals: Viton (standard)					U
	Seals: EPDM					S
	Seals: Kalrez (Level)					T
	Seals: NBR (ACS)					H

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

(4) Please specify the required cable length and medium

(5) Suitable for drinking water (food approved)

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

(9) max. 130°C @ 10 mH2O, max. 110°C @ 50 mH2O

Technical drawings

Dimensions

Fig. 1: Closed version

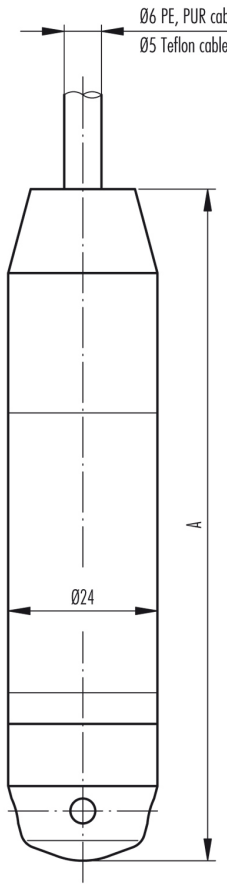


Fig. 2: Open version

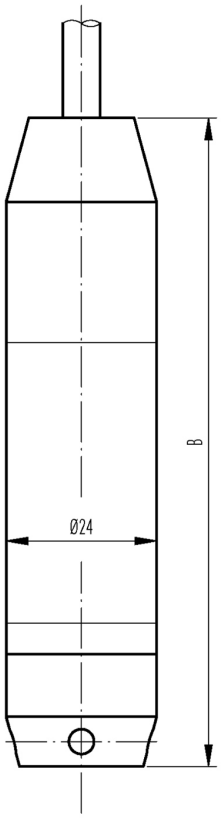
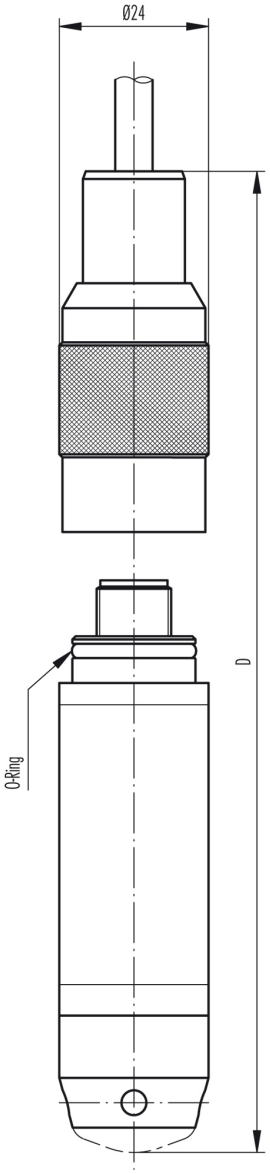


Fig. 4: Electrical connection, connectable



Standard

	A [mm]	B [mm]	C [mm]	D [mm]	Weight [g]
without ballast weight	137	133	on request*	on request*	approx. 180
with ballast weight	224	220	on request*	on request*	approx. 440

*C: depending on process connection

*D: depending on process connection or version

Colour	3-wire	4-wire
white	+Vin	+VinP
yellow		+VinT
brown	Pout	Pout
green	Tout	Tout

Specifications may change without notice.

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