

Pressure and Temperature Transmitters

ATM.1ST/T - High Precision Transmitter



CUSTOMER BENEFITS

- High precision pressure and temperature sensor over the whole temperature range thanks to electronic compensation
- Selectable pressure and temperature measuring range
- Fast customization due to modular product design
- Short response time suitable for dynamic pressure measurements



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Technical Specifications

PRESSURE MEASURING RANGE (BAR)

	0.1 ... 0.5, (1)	> 0.5 ... 2	> 2 ... 25
Overpressure	3 bar	3 x FS (≥ 3 bar)	3 x FS
Burst pressure, (2)	> 200 bar	> 200 bar	> 200 bar
Accuracy, (3), ($\pm$ % FS)	$\leq 0.25 / \leq 0.1$	$\leq 0.25 / \leq 0.1$	$\leq 0.25 / \leq 0.1$
Total Error, (4), ($\pm$ % FS)			
0 ... 70°C, (typ./max.)	$\leq 0.8 / 1.0$	$\leq 0.3 / 0.5$	$\leq 0.3 / 0.5$
-25 ... 100°C, (typ. / max.)	$\leq 1.3 / 1.5$	$\leq 0.75 / 1.0$	$\leq 0.75 / 1.0$
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) 50 mbar 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 aging (burn-in) the sensor

TEMPERATURE MEASURING RANGE

Standard, (1)	-25 ... 100°C
Lower end of range	-50 °C
Upper end of range	150 °C
Temperature span, (2)	> 30 °C
Accuracy, (3)	< ± 0.5 °C
Response time, (4)	
T 0.50	2 s
T 0.63	3 s
T 0.90	5 s
Self heating, (5)	
Water, 0 m/s	0.05 °C
Air, 0 m/s	1.0 °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	-40 ... 125°C
Process temperature	-40 ... 150°C
Storage temperature	-40 ... 125°C

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	$RL = (U_{supply} - 15V) / 0.02A$	$RL = (U_{supply} - 15V) / 0.02A$
Maximum load resistance	$RL = (U_{supply} - 9V) / 0.02A$	$RL = (U_{supply} - 9V) / 0.02A$
Load influence	< 0.05% FS	< 0.05% FS

QUALIFICATIONS

	Description	Level	Typical interferences
EN 60068-2-6	Vibration	4 G (4 ... 100 Hz / ± 3.2 mmpp)	
EN 60068-2-27	Shock	100 G (impulse duration 6 ms)	
EN 55022	Emission, class B	< 30 dB μ V/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)
Housing	Stainless steel (316L / 1.4404)
Seals	Viton (standard)
Cable	PUR, FEP, PE

(1) Specification for a ATM.1ST/T, G1/2, DIN-Connector

Equipment

OVERVIEW

10.00.0091	Accessories overview
HART001	Cable Socket Connector

Additional documents

OPERATING AND SAFETY INSTRUCTIONS

Article number	
10.88.0092	DMM029

Ordering information

	X.	XXXX.	XXXX.	XX.	XXX
Type					
ATM.1ST/T					
Pressure type					
Gauge	1				
Absolute (vacuum)	2				
Sealed gauge	3				
Pressure measuring range					
100 mbar ... 25 bar (1)	XX				
Process connection					
G 1/2 M, probe Ø4 x 6.3mm, (Fig. 1)	72				
1/2 NPT M, probe Ø4 x 2.8mm, (Fig. 2)	73				
Customized	99				
Electrical connection					
DIN-43650, with metal threaded part, demountable, IP 65 (Fig. 3), (3)	01				
M16 (Binder 723), 5 pins, IP 67 (Fig. 4), (3)	03				
M16 (Binder 723), 5 pins, demountable, IP 67 (Fig. 5), (3)	43				
MIL C26482, 10-6, IP 40 (Fig. 6), (3)	06				
PE cable, black, IP 67 (Fig. 7), (4), (5)	13				
PUR cable, black, IP 67 (Fig. 7), (4), (6)	15				
FEP cable, black, IP 67 (Fig. 7), (4)	21				
FEP cable, (high temperature), black, IP 67 (Fig. 4), (4), (7)	11				
Customized connection	99				
Output signal					
4 ... 20 mA (3 wire)	03				
4 ... 20 mA (4 wire)	05				
Accuracy					
≤ ± 0.25 % FS	1				
≤ ± 0.1 % FS	2				
Temperature range					
0 ... 70°C compensated process temperature: -40 ... 125°C (allowed)	0				
-25 ... 100°C compensated (allowed process temperature: -40 ... 125°C)	1				
-40 ... 100°C compensated (allowed process temperature: -40 ... 125°C)	3				
40 ... 100°C compensated (allowed process temperature: -40 ... 150°C) with cooling fins	4				
Customized	9				
Option 1					
Special oil filling: Anderol Food (for food applications)	G				
Special oil filling: PAO4 (silicon free)	Q				
Option 2					
Option 3					
Seals: Viton (standard)	U				

- (1) 50 mbar on request
- (3) Cable socket connector not included
- (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, with connector
- (7) max. 130°C @ 10 mH₂O, max. 110°C @ 50 mH₂O

Pressure Connections

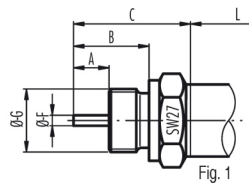


Fig. 1

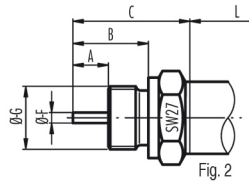
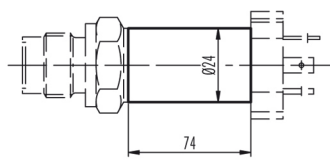
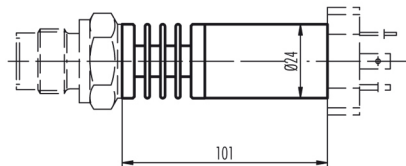


Fig. 2

Version for media temperature up to 125°C



Version for media temperature >125°C up to 150°C



Dimensions

Electrical Connections

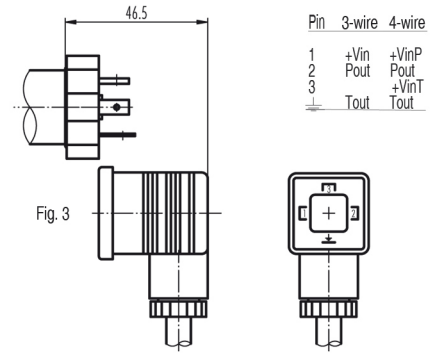


Fig. 3

Pin	3-wire	4-wire
1	+Vin	+VinP
2	Pout	Pout
3	Tout	+VinT
		Tout

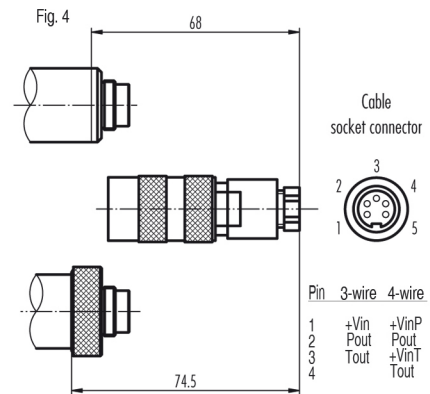
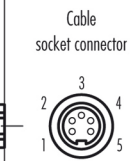


Fig. 4



Pin	3-wire	4-wire
1	+Vin	+VinP
2	Pout	Pout
3	Tout	+VinT
4		Tout

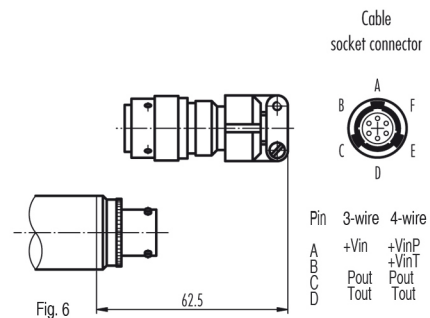
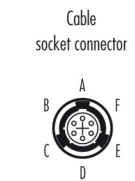


Fig. 5



Pin	3-wire	4-wire
A	+Vin	+VinP
B	Pout	+VinT
C	Tout	Pout
D		Tout

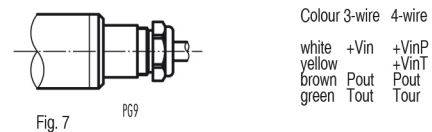


Fig. 6

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

Probe	A	B	C	Ø-F (Probe)	Ø-G (Thread)
Fig. 1	6.3	19.8	32.5	4	G 1/2 M
Fig. 2	2.8	19.8	32.5	4	1/2 NPT M

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