

ATM

Analog Pressure Transmitter

Datasheet



Low Noise, High Accuracy and long-term Stability

Benefits

- Modular design, customized adaptation of various parameters
- Field adjustable (given that the connector is removable)
- Ultra low output signal noise, optimal for precise measurements
- Minimal space requirements, due to compact design
- Suitable for dynamic pressure measurements, thanks to fast response times

Typical Applications

- Industrial applications
- Hydraulics and Fluids
- Transportation, Automotive and Railway
- Medical, Pharma, Chemical and Living Sciences

Pressure Range: 0 ...0.1 up to 0 ... 1000 bar

Media Temperature Range: -40 ... 125 °C

Accuracy: $\leq \pm 0.50 / 0.25 / 0.10$ % FS

ATM Technical Specifications

This section outlines the critical values and specifications, including accuracy, burst pressure, overpressure, and compensated temperature error, applicable within the specified pressure measurement range.

Specification		Measuring Range 1 ⁽¹⁾	Measuring Range 2	Measuring Range 3	Measuring Range 4	Measuring Range 5
Pressure Transmitter		0...0.05 to 0...< 0.1 bar 0...0.7 to 0...< 1.5 psi	0...0.1 to 0...< 0.5 bar 0...1.5 to 0...< 7 psi	0...0.05 to 0...< 4 bar 0...0.7 to 0...< 60 psi	0...4 bar to 0...25 bar 0...60 to 0...360 psi	0...> 25 to 0...600 bar 0...> 360 to 0...10000 psi
Overpressure		3 bar 43.5 psi	3 bar 43.5 psi	3bar 3xFS	3xFS	3xFS / < 850 bar ^{(4)/(6)}
Burst Pressure		> 10xFS	> 10xFS	> 10xFS	6xFS	5xFS / > 850 bar ^{(5)/(6)}
Accuracy ⁽²⁾ [± %FS]		≤ ± 0.5 %FS	≤ ± 0.5 / ± 0.25 %FS	≤ ± 0.5 / ± 0.25 ± 0.1 %FS	≤ ± 0.5 / ± 0.25 ± 0.1 %FS	≤ ± 0.5 / ± 0.25 ± 0.1 %FS
Long Term Stability ⁽³⁾		< 0.5%FS / 4mbar	< 0.2%FS / 4mbar	< 0.2%FS / < 4mbar	< ± 0.1 %FS / < ± 0.2%FS	< ± 0.1 %FS / < ± 0.2 %FS
Temperature Error Compensated Range [± %FS / °C]						
+10...+40°C +50...+104 °F	zero	± 0.050 %FS/°C ± 0.030 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.015 %FS/°C ± 0.010 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
	span	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
-10...+60°C +14...+140 °F	zero	± 0.080 %FS/°C ± 0.050 %FS/°F	± 0.080 %FS/°C ± 0.050 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
	span	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F
-25...+85°C -13...185 °F	zero	± 0.120 %FS/°C ± 0.070 %FS/°F	± 0.120 %FS/°C ± 0.070 %FS/°F	± 0.045 %FS/°C ± 0.030 %FS/°F	± 0.015 %FS/°C ± 0.010 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
	span	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F
-40...+85°C -40...+185 °F	zero	± 0.140 %FS/°C ± 0.080 %FS/°F	± 0.140 %FS/°C ± 0.080 %FS/°F	± 0.050 %FS/°C ± 0.030 %FS/°F	± 0.015 %FS/°C ± 0.010 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
	span	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F
Remarks on Specifications: ⁽¹⁾ Offset errors due to assembly not taken into account ⁽²⁾ Accuracy according to limit point setting ⁽³⁾ 1 year (typ. /max.), the long term stability can be improved by ageing (burn-in) the sensor ⁽⁴⁾ Version in titanium < 400 bar ⁽⁵⁾ Version in titanium > 550 bar ⁽⁶⁾ Version with higher overload pressure / burst pressure in stainless steel available on request						

ATM Technical Specifications

This section outlines the critical values and specifications, including accuracy, burst pressure, overpressure, and compensated temperature error, applicable within the specified pressure measurement range.

Specification		Measuring Range 6 ⁽¹⁾	Measuring Range 7	Measuring Range 8	Measuring Range 9	Measuring Range 10
Pressure Transmitter		0...> 600 to 0...1000 bar 0...>10000 to 0...14500 psi	0.8...1.2 bar a 11...17 psi a	-0.1...0.1 bar g -1.5...1.5 psi g	> -0.1...0.1 to -0.5...0.5 bar > -1.5...1.5 to -7...7 psi g	> -0.5...0.5 to -1...70 bar > -7...7 to -14.5...1000 psi
Overpressure		1500 bar 21756 psi	3xFS	3bar	3 bar	3xFS
Burst Pressure		> 1500 bar > 21756 psi	> 10xFS	> 10xFS	> 10xFS	6xFS
Accuracy ⁽²⁾ [± %FS]		≤ ± 0.5 / ± 0.25 %FS	≤ ± 0.5 / ± 0.25 %FS	≤ ± 0.5	≤ ± 0.5 / ± 0.25 %FS	≤ ± 0.5 / ± 0.25 ± 0.1 %FS
Long Term Stability ⁽³⁾		< ± 0.1 %FS / < ± 0.2 %FS	< 0.5%FS / 4mbar	< 0.2%FS / < 4mbar	< ± 0.5 %FS / < 4 mbar	< ± 0.1 %FS / < ± 0.2 %FS
Temperature Error Compensated Range [± %FS / °C]						
+10...+40°C +50...+104 °F	zero	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.050 %FS/°C ± 0.030 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.015 %FS/°C ± 0.010 %FS/°F
	span	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.010 %FS/°C ± 0.008 %FS/°F
-10...+60°C +14...+140 °F	zero	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.080 %FS/°C ± 0.050 %FS/°F	± 0.080 %FS/°C ± 0.050 %FS/°F	± 0.080 %FS/°C ± 0.050 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F
	span	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F	± 0.020 %FS/°C ± 0.015 %FS/°F
-25...+85°C -13...185 °F	zero	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.120 %FS/°C ± 0.070 %FS/°F	± 0.120 %FS/°C ± 0.070 %FS/°F	± 0.120 %FS/°C ± 0.070 %FS/°F	± 0.045 %FS/°C ± 0.030 %FS/°F
	span	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F	± 0.030 %FS/°C ± 0.020 %FS/°F
-40...+85°C -40...+185 °F	zero	± 0.010 %FS/°C ± 0.008 %FS/°F	± 0.140 %FS/°C ± 0.080 %FS/°F	± 0.140 %FS/°C ± 0.080 %FS/°F	± 0.140 %FS/°C ± 0.080 %FS/°F	± 0.050 %FS/°C ± 0.030 %FS/°F
	span	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F	± 0.035 %FS/°C ± 0.025 %FS/°F
Remarks on Specifications: ⁽¹⁾ Offset errors due to assembly not taken into account ⁽²⁾ Accuracy according to limit point setting ⁽³⁾ 1 year (typ. /max.), the long term stability can be improved by ageing (burn-in) the sensor						

Environmental	
Media temperature	-5 to +50 °C (PUR-Cable) +23 to +122°F (PUR-Cable) -5 to +80 °C (FEP-Cable) +23 to +176°F (PUR-Cable)
Operating temperature	-5 to +50 °C (PUR-Cable) +23 to +122°F (PUR-Cable) -5 to +80 °C (FEP-Cable) +23 to +176°F (PUR-Cable)
Storage temperature	-5 to +50 °C (PUR-Cable) +23 to +122°F (PUR-Cable) -5 to +80 °C (FEP-Cable) +23 to +176°F (PUR-Cable)
Protection class	IP67 Cable
Notes	Protection class applies with corresponding mating connectors
Vibration resistance	10 g, 10 to 2000 Hz, Random IEC 60068-2-6
Shock resistance	100 g, 6 ms, half sine, all axis IEC 60068-2-28
Load change	> 10 Mio. pressure cycles 0...100%FS

Material Specifications	
Transducer	Stainless Steel (316L / 1.4435)
Housing	Stainless Steel (316L / 1.4404)
Seals	Viton (Standard), EPDM, Kalrez, NBR
Cable ⁽¹⁾	PUR, FEP, PE, PVC ATM/N
Weight	125 g
Remarks: ⁽¹⁾ For intrinsically safe products only PUR and FEP cable available	

Electrical Specifications			
Output Signal	4...20 mA	0...20 mA	0...10 V
Supply voltage UB	10...30 VDC	10...30 VDC	15...30 VDC
Supply influence	< 0.1 %FS	< 0.1 %FS	0.1 %FS
Load resistance	$RL = (UB - 10V) / 0.02 A$	$RL = (UB - 6V) / 0.02 A$	> 10 kΩ
L. resist. influence	< 0.1 %FS	< 0.1 %FS	< 0.1 %FS
Load resistance			
Circuit diagram			
Start up time	2 ms	2 ms	2 ms
Step response (10-90 %)	1 ms	1 ms	1 ms
Noise on output BW 0.1 to 250 Hz	17 ppm RMS	unknown	26 ppm RMS
Noise on output BW 0.1 to 50 Hz	14 ppm RMS	unknown	14 ppm RMS
Noise on output BW 0.1 to 10 Hz	4 ppm RMS	unknown	9 ppm RMS

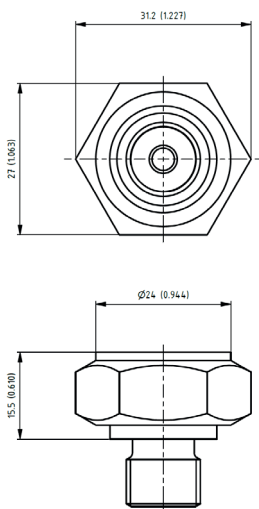
Ordering Information			x.	xxxx.	xxxx.	xx.	xxx.
Type	ATM	23					
Pressure Type	Gauge		1				
	Absolute (vacuum)		2				
	Sealed gauge		3				
Pressure measuring range	50 mbar ... < 100 mbar			xx			
	100 mbar ... 600 bar			xx			
	> 600 bar			xx			
	Negative ranges, offset, special adjustment			99			
Process connection	G 1/4 F (Fig. 1)			00			
	1/4 NPT M			10			
	1/2 NPT M, (Fig. 8)			19			
	G 1/4 M (Fig. 2)			11			
	G 1/4 M, flush diaphragm, (4)			21			
	G 1/4 M, Manometer DIN-16288 (Fig. 3)			12			
	G 1/2 M, (Fig. 4)			13			
	G 1/2 M, Hastelloy C-276			41			
	G 1/2 M, frontal diaphragm (Fig. 5), (4)			14			
	G 1/2 M, frontal diaphragm Hastelloy C-276, (4)			37			
	G 1/2 M, flush diaphragm (Fig. 6), (4)			15			
	G 1/2 M, Manometer DIN-16288, (Fig. 7)			16			
	G 1/2 M, with bore Ø 14 mm			17			
	Customized			99			
Electrical connection	DIN-43650 plastic PA, with metal threaded part, demountable IP 65 (Fig. 10) (5)				01		
	M16 (Binder 723), 5 pins, IP 67, (Fig. 11), (5)				03		
	M16 (Binder 723), 5 pins, demountable, IP 67, (Fig. 12), (5)				43		
	MIL C26482, 10-6, IP 40, (Fig. 13), (5)				06		
	M12x1, 4 pins (Fig. 15), (5)				07		
	PE cable, black, IP 67 (Fig. 14), (6)				13		
	PUR cable, black, IP 67 (Fig. 14), (6), (8)				15		
	PUR cable, black, with submersible back end IP 68, (6), (8)				24		
	FEP cable, black (Fig. 14), (6)				21		
	Customized				99		
Output signal	4 ... 20 mA				05		
	0 ... 20 mA				00		
	0 ... 5 VDC				46		
	0 ... 10 VDC				47		
	4 ... 20 mA with surge protection				08		
	0 ... 10 VDC with surge protection				49		
	0 ... 5 VDC with surge protection				50		
	Customized				99		

Ordering Information			x.	xxxx.	xxxx.	xx.	xxx.
Accuracy	$\leq 600 \text{ bar} \leq \pm 0.5 \% \text{ FS}$					0	
	$\leq 600 \text{ bar} \leq \pm 0.25 \% \text{ FS}$					1	
	$\leq 600 \text{ bar} \leq \pm 0.1 \% \text{ FS}$					2	
	$> 600 \text{ bar} \leq \pm 1 \% \text{ FS}$					5	
	$> 600 \text{ bar} \leq \pm 0.5 \% \text{ FS}$					0	
	$> 600 \text{ bar} \leq \pm 0.25 \% \text{ FS}$					1	
Temperature range	0 ... 70°C compensated (allowed process temperature: -25 ... 100°C)					0	
	25 ... 100°C compensated (allowed process temperature: -25 ... 100°C)					7	
	-25 ... 85°C compensated (allowed process temperature: -25 ... 100°C)					1	
	-25 ... 85°C compensated (allowed process temperature: -25 ... 150°C) with cooling fins					2	
	20 ... 100°C compensated (allowed process temperature: -25 ... 150°C) with cooling fins					6	
	-40 ... 100°C compensated (allowed process temperature: -40 ... 100°C)					3	
	-40 ... 100°C compensated (allowed process temperature: -40 ... 150°C) with cooling fins					4	
	Customized					9	
Option 1	Throttle (9)						A
	Special oil filling: Anderol Food (for food applications)						G
	Special oil filling: AS 100						J
	Special oil filling: PAO4 (silicone free)						Q
	Pressure connection elastomerfree						N
	Pressure connection welded						V
Option 2	Electronics packed in gel: Gauge pressure						C
	Electronics packed in gel: Absolute pressure						D
Option 3	Version titanium						K
	Seals: Viton (Standard)						U
	Seals: EPDM						S
	Seals: Kalrez (Industry)						T
	Seals: NBR (ACS)						H

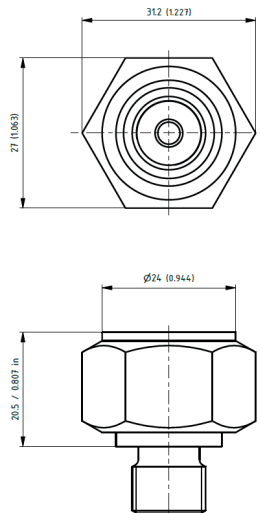
- (4) Process connection available $\leq 600 \text{ bar}$
- (5) Cable socket connector not included
- (6) Please specify the required cable length and medium
- (8) For operating temperature $> 50^\circ\text{C}$, PE or FEP cable must be used
- (9) Only with pressure connection Fig. 2, Fig. 3, Fig. 4, Fig. 7 and Fig. 8

Main Process Connection with Top View

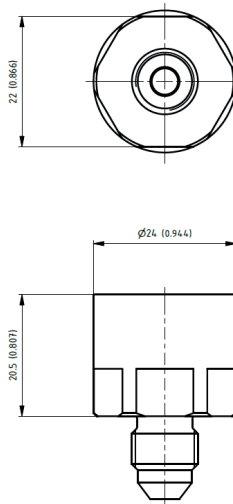
Housing ND G1/4 A, TD19
inner part



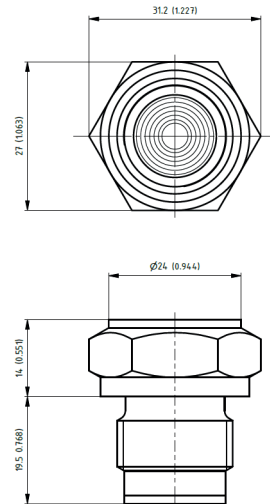
Housing HD G1/4, TD15
inner part



Housing HD 7/16-20 UNF-3A,
TD13H inner part

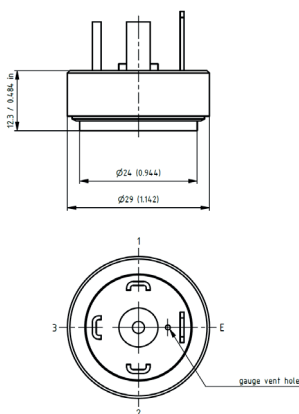


Housing G1/2A VF with TD 18P
flush front



Electrical Connection

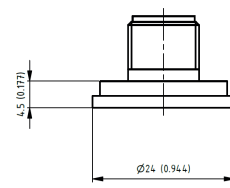
BG Connector, DIN 43650
Form A, DIN EN



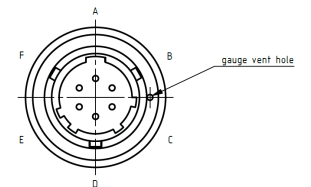
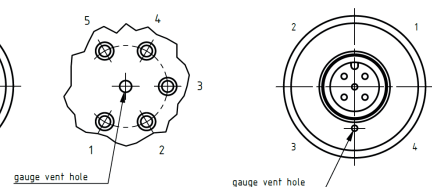
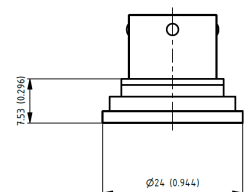
BG Connector Binder Serie 723,
5 pin



BG Connector M12x1, 5 pin

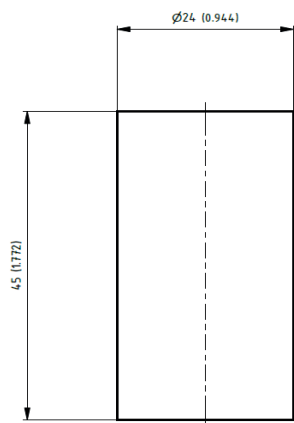


BG Connector, MIL-C-26482

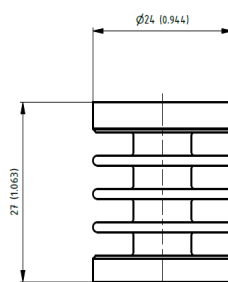


Housing & Accessories

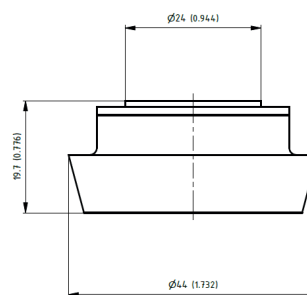
Housing, 45mm



Cooling element



MDM milk flange DN25



Qualifications	
EMC	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
IECEX	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
ATEX	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
FM/FM-C	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX
	XXXX

Documents

Document Type	Document Number
Operating and Safety Instructions	10.88.0628
Declaration of Confirmation	10.60.0629
Control Drawing	10.88.0627
Accessories Overview	10.88.0092

Connector Pin Assignments

(to be understood as a top view of the transmitter)

Type	Pin Number/ Color	4 to 20 mA 2-Wire	0 to 10 VDC 3-Wire	0 to 20 mA 3-Wire	mV 4-Wire
DIN EN 175301-803-A	1	+Vin	+Vin	+Vin	+Vin
	2	Pout	GND	GND	GND
	3		Pout	Pout	+OUT
	E	Case	Case	Case	-OUT
Binder 723	1		Pout	Pout	
	2				
	3	+Vin	+Vin	+Vin	+Vin
	4	Pout	GND	GND	GND
	5	Case	Case	Case	
M12	1	+Vin	+Vin	+Vin	+Vin
	2		Pout	Pout	+OUT
	3	Pout	GND	GND	GND
	4	Case	Case	Case	Case
	5				
MIL-C-26482	A	+Vin	+Vin	+Vin	+Vin
	B	Pout	GND	GND	GND
	C		Pout	Pout	+OUT
	D				-OUT
	E	Case	Case	Case	
	F				