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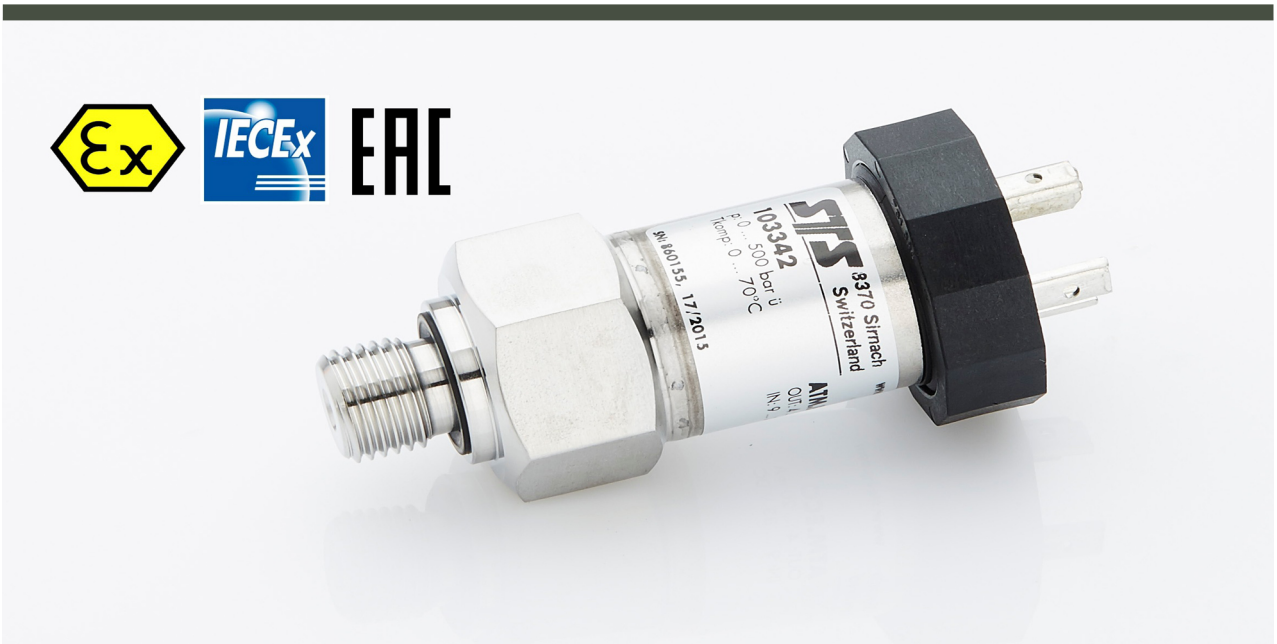
Pressure Transmitter - ATEX / IECEx certified

ATM.ECO/Ex - Analog Pressure Transmitter



CUSTOMER BENEFITS

- Certificates: ATEX, IECEx, EAC, GL/DNV, ABS, Lloyds
- Any measuring ranges between 0 ... 100 mbar und 0 ... 1000 bar available
- Static accuracy available of 0.2 % FS
- Hysteresis and repeatability better than 0.01 % FS
- Piezoresistive technology suitable for static and dynamic pressure measurements
- Modular design ideal for customization to the application
- Barometric or negative pressure ranges available

Technical Specifications

PRESSURE MEASURING RANGE (BAR)

	0 ... 0.1 to 0 ... < 1	0 ... 1 to 0 ... ≤ 100	0 ... > 100 to 0 ... ≤ 600, (2)
Overpressure	3 bar	3 x FS	3 x FS (≤ 850 / ≤ 1500 bar)
Burst pressure	> 200 bar	> 200 bar	> 850 / > 1500 bar
Accuracy, (3) (± % FS)	≤ 0.2	≤ 0.2	≤ 0.2
Total Error, (4) (± % FS ; typ. / max.)			
0 ... 70°C compensated	≤ 0.4 / 0.8	≤ 0.3 / 0.6	≤ 0.7 / 1.0
-25 ... 100°C compensated	≤ 0.6 / 1.0	≤ 0.4 / 0.8	≤ 1.0 / 1.2
-40 ... 125°C compensated	≤ 0.8 / 1.4	≤ 0.6 / 1.2	≤ 1.0 / 1.5
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	< 0.1% FS / < 0.2% FS	< 0.1% FS / < 0.2% FS

	0 ... > 600 to 0 ... 1000	0.8 ... 1.2, (1)	-0.05...0.05 to -0.1...0.1
Overpressure	≤ 850 / ≤ 1500 bar	3 x FS	3 bar
Burst pressure	> 850 / > 1500 bar	> 200 bar	> 200 bar
Accuracy, (3) (± % FS)	≤ 0.2	≤ 0.2	≤ 0.2
Total Error, (4) (± % FS ; typ. / max.)			
0 ... 70°C compensated	≤ 0.7 / 1.0	≤ 0.4 / 0.8	≤ 0.4 / 0.8
-25 ... 100°C compensated	≤ 1.0 / 1.2	≤ 0.6 / 1.0	≤ 0.6 / 1.0
-40 ... 125°C compensated	≤ 1.0 / 1.5	≤ 0.8 / 1.4	≤ 0.8 / 1.4
Response time, (typ.)	< 1ms / 10 ... 90 % FS	< 1ms / 10 ... 90 % FS	< 1ms / 10 ... 90 % FS
Long term stability (typ./max. per year)	< 0.1% FS / < 0.2% FS	< 1 mbar / < 2 mbar	< 1 mbar / < 2 mbar

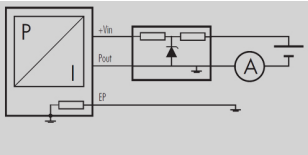
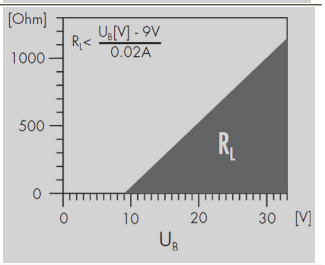
	>-0.1... >0.1 to -0.5...0.5	>-0.5... >0.5 to -1...100
Overpressure	3 bar	3 bar / 3 x FS
Burst pressure	> 200 bar	> 200 bar
Accuracy, (3) (± % FS)	≤ 0.2	≤ 0.2
Total Error, (4) (± % FS ; typ. / max.)		
0 ... 70°C compensated	≤ 0.4 / 0.8	≤ 0.3 / 0.6
-25 ... 100°C compensated	≤ 0.6 / 1.0	≤ 0.4 / 0.8
-40 ... 125°C compensated	≤ 0.8 / 1.4	≤ 0.6 / 1.2
Response time, (typ.)	< 1ms / 10 ... 90 % FS	< 1ms / 10 ... 90 % FS
Long term stability (typ./max. per year)	< 1 mbar / < 2 mbar	< 0.1% FS / < 0.2% FS

(1) Typical barometricpressure range, max. offset: 900 mbar, min. span: 400 mbar
(2) Overpressure (proof) and burst pressure 1500 bar (stainless steel) optional
(3) Zero based accuracy according to EN-61298, incl. hysteresis and repeatability at ambient temperature
(4) Total error including accuracy and temperature influences at maximum signal span (16 mA / 10 V DC)

TEMPERATURE RANGE

Operating temperature	-40 ... 125°C
Process temperature	Standard: -40 ... 125°C; Optional: -40 ... 150°C (with cooling fins)
Storage temperature	-40 ... 125°C

ELECTRICAL SPECIFICATIONS

	4 ... 20 mA
Power supply	9 ... 28 V DC
Supply influence	< 0.05% FS
Start up time	< 170 ms
Circuit diagram	
Load resistance	
Load influence	< 0.05% FS
Reverse polarity protection	Yes

ATEX, IECEX APPROVAL

Certificates, (1)			
ATEX	SEV 09 ATEX 0108 X		
IECEx	IECEx MSC 14.0002 X		
IECEx	IECEx SEV 10.0003 X		
Standards			
EN 60079-0:2012 (A11:2013)			
EN 60079-11:2012			
EN 60079-26:2015			
EN 50303:2000			
Gas			
Zone 0	II 1G Ex ia IIC T3 ... T6 Ga		
Zone 1	II 2G Ex ia IIB T3 ... T6 Gb		
Dust			
Zone 20	II 1D Ex ia IIIC T145°C Da		
Mining			
I M1 Ex ia I Ma			
I M2 Ex ia I Mb			
Maximum values of the intrinsically safe circuit	28V / 93 mA / 0.65W		
Temperature class, (2)	T6	T4	T3
Ambient temperature (Ta)	-40 ... 50°C	-40 ... 85°C	-40 ... 125°C
Process temperature	-40 ... 50°C	-40 ... 110°C	-40 ... 150°C

(1) For detailed Ex specifications see certificate and operating and safety instructions
(2) Without any information about temperature class the transmitter will be delivered for T4

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
EN 61000-4-6	Conducted RF	3 V (0.15 ... 80 MHz, 3 s)	Frequency converters

PHYSICAL SPECIFICATIONS

Oil filling	Standard: Silicone oil AS100; Optional: Anderol Food or PAO4
Transducer	Standard: Stainless steel (316L/1.4435); Optional: Hastelloy C-276
Housing	Standard: Stainless steel (316L/1.4435); Optional: Hastelloy C-276
Weight	typ. 145 gram, depending on the configuration

Accessories

CABLE SOCKET CONNECTOR

HART001	Cable socket connector DIN43650 (EN 175301-803A)
HART002	Cable socket connector Binder 723, 5 pins
HART012	Cable socket connector MIL C26482, 10-6
HART018	Cable socket connector M12x1, 5 pins

Additional documents

OPERATING AND SAFETY INSTRUCTIONS

	Article number
10.88.0435	DMM041

Ordering information

		X.	XXXX.	XXXX.	XX.	XXX
Type						
	ATM.ECO/Ex					
Pressure type						
	Gauge	1				
	Absolute	2				
	Sealed gauge	3				
Pressure measuring range						
	Any measuring ranges between 0 ... 100 mbar and 0 ... 1000 bar available		XX			
	Barometric pressure ranges available		XX			
	Negative pressure ranges available		XX			
Process connection						
	G 1/2 M, bore 14 mm (Fig. 1)		17			
	G 1/4 F (Fig. 2)		00			
	G 1/4 M (Fig. 3)		11			
	G 1/4 M, manometer EN 837 (Fig. 4)		12			
	G 1/2 M (Fig. 5)		13			
	G 1/2 M, manometer EN 837 (Fig. 6)		16			
	1/4 NPT M (Fig. 7)		10			
	1/2 NPT M (Fig. 8)		19			
	G 1/2 M, frontal diaphragm (Fig. 9), (1)		14			
	G 1/2 M, frontal diaphragm Hastelloy C-276 (Fig. 9), (1)		37			
	G 1/2 M, with flush diaphragm membrane (Fig. 10), (1)		15			
	G 1/4, with flush diaphragm (Fig. 11), (1)		21			
	Other pressure connections on request		99			
Electrical connection						
	DIN 43650 (EN 175301-803A), demountable, IP 65, (Fig. 12), (2), (3)			01		
	Binder 723, 5 pins, IP 67 (Fig. 13), (2)			03		
	MIL C26482, 10-6, 316L, IP 67 (Fig. 14), (2)			80		
	M12x1, 4 pins, (Fig. 15), (2)			07		
	PUR cable, blue, IP 67, (Fig. 16), (4), (6)			17		
	FEP cable, blue, IP 67, (Fig. 16), (4)			22		
	PUR cable, blue, IP 68, (Fig. 17), (4), (6)			36		
	Other electrical connections on request			99		
Output signal						
	4 ... 20 mA			05		
Accuracy						
	≤ ± 0.2 % FS				4	
Temperature range						
	T6 (Ta: -40 ... 50°C), 0 ... 70°C compensated, (without cooling fins)				0	
	T4 (Ta: -40 ... 85°C), -25 ... 100°C compensated, (without cooling fins)				1	
	T3 (Ta: -40 ... 125°C), -25 ... 100°C compensated, (with cooling fins)				2	
Option 1						
	Throttle, (7)					A

	Special oil filling: Anderol Food (for food applications)				G
	Special oil filling: PAO4 (siliconfree)				Q
	Pressure connection elastomerfree				N
	Pressure connection welded				V
Option 2					
	Seals: FKM (standard)				U
	Seals: EPDM				S
	Seals: Kalrez (5)				T
	Seals: NBR (8)				H
Option 3					

(1) Process connection available ≤ 600 bar
(2) Cable socket connector not included
(3) IP67 if the cable socket connector HART001 is installed correctly
(4) Please specify the required cable length and medium
(5) Profile seal not included
(6) For operating temperature > 50°C, PE or FEP cable must be used
(7) Only with pressure connection Fig. 3, Fig. 5, Fig. 6, Fig. 7 and Fig. 8
(8) Suitable for drinking water

Process connections

P_N ≥ 100 mbar ... 25 bar (1)

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

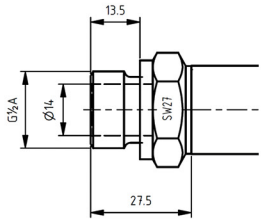


Fig. 2 - G 1/4 F

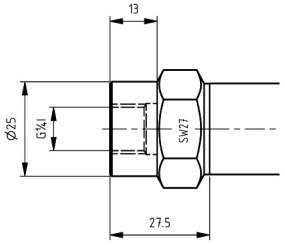


Fig. 3 - G 1/4 M

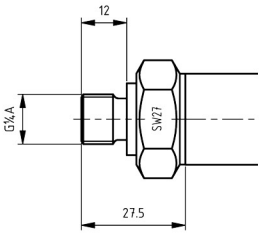


Fig. 4 - G 1/4 M, Manometer EN837

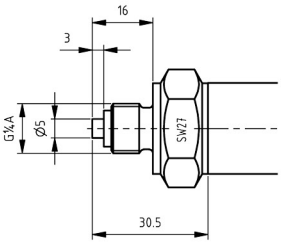


Fig. 5 - G 1/2 M

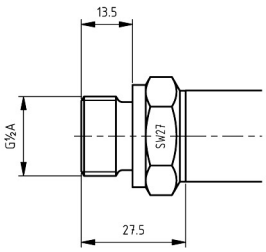


Fig. 6 - G 1/2 M, Manometer EN837

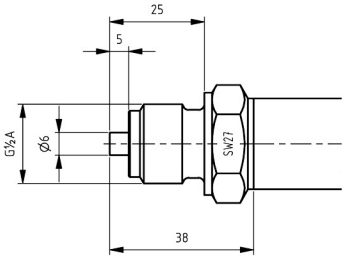


Fig. 7 - 1/4 NPT M

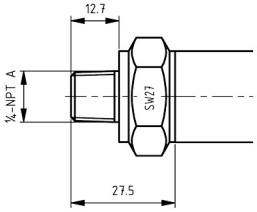
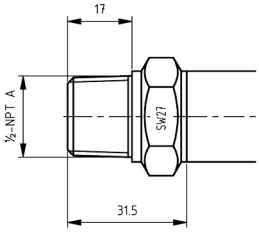


Fig. 8 - 1/2 NPT M



P_N > 25 bar ... 1000 bar (1) (2)

Fig. 2 - G 1/4 F

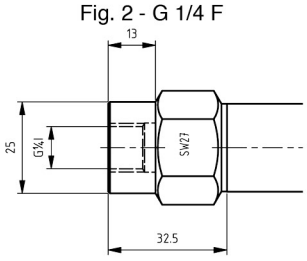


Fig. 3 - G 1/4 M

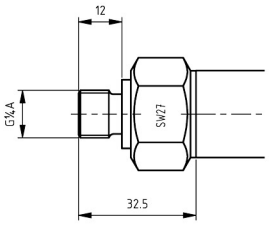


Fig. 4 - G 1/4 M, Manometer EN837

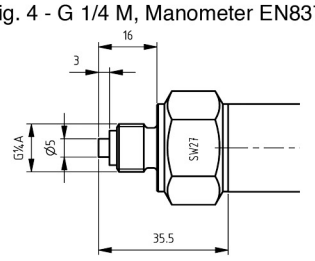


Fig. 5 - G 1/2 M

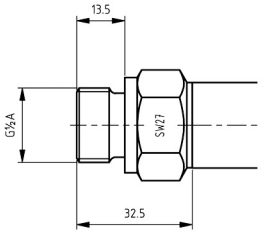


Fig. 6 - G 1/2 M, Manometer EN837

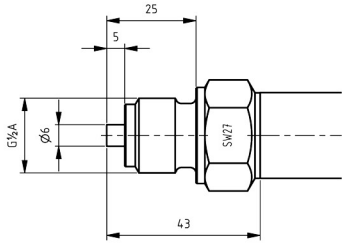


Fig. 7 - 1/4 NPT M

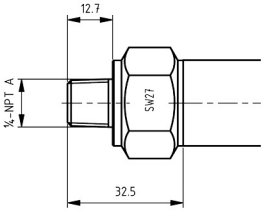
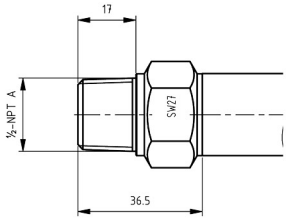
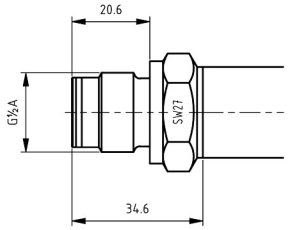


Fig. 8 - 1/2 NPT M



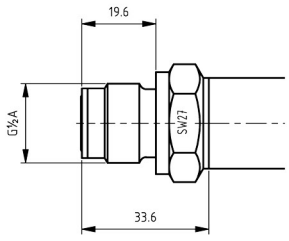
P_N ≥ 100 mbar ... 600 bar

Fig. 9 - G 1/2 M, frontal diaphragm



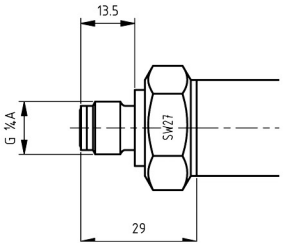
P_N ≥ 100 mbar ... 1000 bar (3)

Fig. 10 - G 1/2 M, flush diaphragm



P_N ≥ 10 bar ... 600 bar

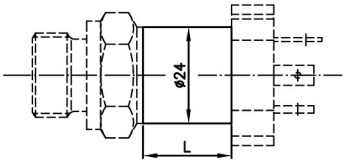
Fig. 11 - G 1/4 M, flush diaphragm



(1) Dimensions for welded or elastomerfree versions may be different
(2) Not all process connections available for pressure ranges > 600 bar
(3) Dimensions for pressure ranges > 600 bar differ

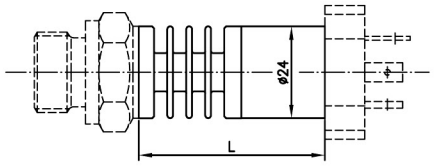
Dimensions

Version for medium temperature up to 125°C



L = 25 mm for connector DIN 43650 (EN 175301-803A)

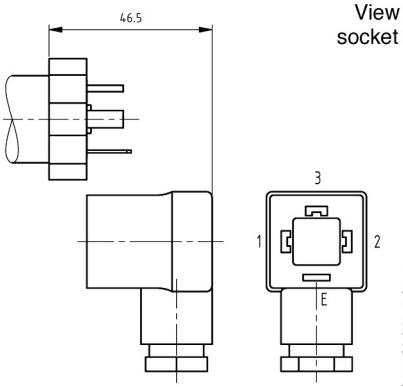
Version for medium temperature >125°C up to max. 150°C



L = 52 mm for connector DIN 43650 (EN 175301-803A)

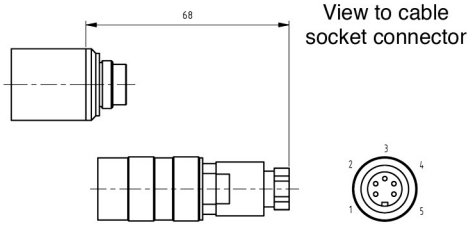
Electrical connections

Fig. 12 - DIN43650 (EN 175301-803A)



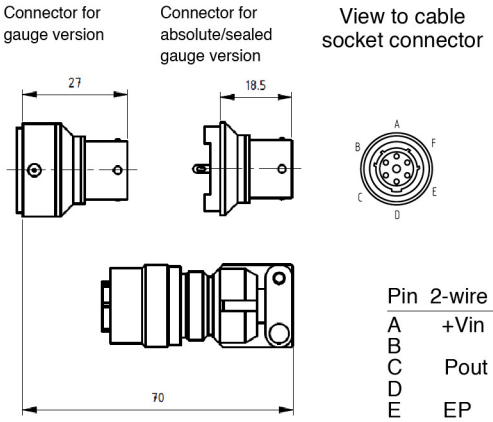
Pin	2-wire
1	+Vin
2	Pout
3	
E	EP

Fig. 13 - Binder 723, 5 pins



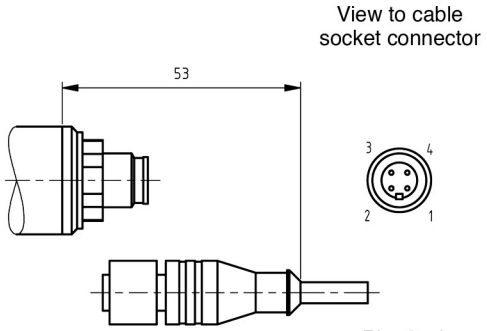
Pin	2-wire
1	Pout
2	
3	+Vin
4	
5	EP

Fig. 14 - MIL C26482, 10-6, 316L



Pin	2-wire
A	+Vin
B	
C	Pout
D	
E	EP
F	

Fig. 15 - M12 x 1, 4 pins (Lumberg RSF4)



Pin	2-wire
1	EP
2	
3	Pout
4	+Vin

Fig. 16 - Cable connection IP67

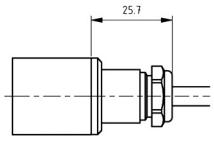
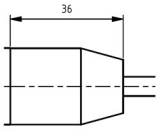


Fig. 17 - Cable connection IP68



Colour	2-wire
white	+Vin
yellow	Pout
grey	EP

Specifications may change without notice