

Pressure Transmitters

with digital output RS 232

Standard Series • Model 891.X3.4X0

Flush Diaphragm Series • Model 891.X3.420

Flush Diaphragm Series with Cooling Element • Model 891.X3.422

Low Pressure • Model 891.13.401

For Hygienic Industry • Model 891.13.425/427

TRONIC LINE

- Pressure ranges from 0...0.025 bar to 0...4000 bar
- Case and wetted parts of stainless steel
- Various pressure connections
- Digital output RS 232
- Communication software
- Plug connection (9-pin, SUB-D plug)
- Degree of protection IP 67
- Special version available for oxygen service
- Assembly with chemical seals feasible
- CE - conformity

General features:

This series of pressure transmitters has been carefully designed to cover the majority of industrial applications with direct communication to a PC. For easy handling a communication software is included in each delivery. The pressure transmitter power supply is taken directly from the RS 232 PC interface.

The use of modern technologies in the production of sensors has made it possible to achieve excellent accuracy and long-term signal stability. Through computer-controlled adjustment processes these pressure transmitters are compensated over wide temperature ranges with linearized characteristic curves. Compact design and robust construction make these instruments universally suitable for all applications in machine construction, process control laboratory or quality and materials testing equipment.

For technical reasons piezoresistive sensor elements are used for the pressure ranges between 0...0.025 bar to 0...16 bar and thin film sensor elements for pressure ranges from 0...25 bar to 0...4000 bar.

All wetted parts are made of stainless steel and completely welded to exclude possible conflict between soft sealing material and pressure medium. The compact case is also made of stainless steel and normally provides IP 67 degree of protection (without SUB-D plug).

A vented cable lead provides atmospheric pressure compensation and as a result relative pressure measurement. The pressure transmitter is provided with 9-pin SUB-D plug at the factory.

The pressure transmitters, Models 891.13.425 and 427, meet the stringent hygienic requirements demanded in food applications and in the production of pharmaceuticals and cosmetics. The flush pressure connection with metallic sealing cone permits fitting without any dead space. The necessary pressure connections required: union nuts to DIN 11851 or clamp connection with appropriate connection adapters.

The Model 891.13.401 extends the standard program in low pressure measuring ranges from 0...0.25 mbar to 0...60 mbar. Due to direct contact with the pressure medium by the employed silicon sensors these pressure transmitters are only suitable for measuring dry, non-aggressive gases.



For pressure ranges up to 0 ... 1600 bar the pressure transmitters can be provided with BAM design type approval certificate for oxygen applications. (BAM - technical safety approval of the Federal German Institute for Material Testing and Research).

Supplementary data sheet:

Pressure transmitters for	
• General applications (see data sheet PE 81.01)	Model 89X.X3.5XX
• Low pressure from 0 ... 25 to 0 ... 60 mbar	Model 89X.13.501
• Hygienic industry	Model 891.13.52X
• Homogenisers (see data sheet PE 81.03)	Model 891.23.560
• Submersible pressure transmitter (see data sheet PE 81.09)	Model 891.13.535
• Field casing transmitters (see data sheet PE 81.11)	Model 89X.X3.9X0
• Precision transmitters (see data sheet PE 81.10)	Model 891.X0.XX1

Specifications		Model 891.13.400/420/422/425/427	Model 891.23.410
Sensing principle		piezoresistive	Model 891.23.420/422 thin-film strain gauge
Pressure range	bar	0.1 0.16 0.25 0.4 0.6 1 1.6 2.5 4 6 10 16	25 40 60 100 160 250 400 600 1000 1600 2500 4000
Overpressure safety	bar	2 2 2 2 4 5 10 10 17 35 35 80	50 80 120 200 320 500 800 1200 1500 2000 3000 4400
Burst pressure of sensor element	bar	2 2 2 2 4 5 10 10 17 35 35 80	250 400 550 800 1000 1200 1700 2400 3000 4000 5000 7000
Pressure reference		relative pressure {absolute pressure from 0 ... 0.25 bar}	relative pressure
		Model 891.13.401	
Sensing principle		piezoresistive	
Pressure range	bar	0.025 0.04 0.06	
Overpressure safety	bar	0.25 0.25 0.25	
Burst pressure of sensor element	bar	0.25 0.25 0.25	
Pressure reference		relative pressure	
Pressure connection		G ½ A per DIN 16 288 (½ NPT) G ½ A per DIN 16 288 (G ¼ A, ½ NPT, ¾ NPT) {other connections on request} (M 16 x 1.5 female for pressure range 0 ... 2500 bar or higher) G 1 A flush diaphragm with o-ring (pressure ranges: 0 ... 0.1 to 0 ... 1.6 bar) G ½ A flush diaphragm with o-ring (pressure ranges: 0 ... 2.5 to 0 ... 600 bar) {weld-on socket for flush diaphragm units with connection G ½ A, G 1 A} G 1 A flush diaphragm with metal sealing cone ¹⁾ {via connection adapter: union nut DIN 11 851 DN 40 PN 40 or DN 50 PN 25; resp. clamp-connection DN 2" PN 25 or DN 1½" PN 25}	
Model 891.X3.401			
Model 891.X3.400/410			
Model 891.X3.420/422			
Model 891.13.425/427			
Material		stainless steel 1.4571 stainless steel 1.4571 stainless steel 1.4571, aluminium, silicium, gold stainless steel 1.4571 and 1.4542 stainless steel 1.4301 Silicon oil (only for pressure ranges 0.1 ... 16 bar or flush diaphragm units) {halocarbonoil for oxygen service; vegetable oil for food industry}	
wetted parts			
Model 891.13.400/420/422			
Model 891.13.425/427			
Model 891.13.401			
Model 891.23.410			
Case		via RS 232 interface RS 232 (8N1 / 9600 baud, 12-bit A/D-converter); inclusive communication software	
internal transmitting fluid			
Power supply			
Signal output			
Response time	ms		
Accuracy	% of F.S.D.	ε 0.5 {0.25 ²⁾ } (limit point calibration) (calibrated in vertical mounting position) ε 0.25 {0.15 ²⁾ } (BFSL) (pressure connection bottom)	
Hysteresis	% of F.S.D.		
Repeatability	% of F.S.D.		
1-year stability	% of F.S.D.		
Permissible temperature of medium	°C (°F)		
ambient	°C (°F)	-30 ... +100 {-40 ... +125} (-22 ... +212) {(-40 ... +282)} (-20 ... +80) (-4 ... +176) (-40 ... +100) (-40 ... +212) 0 ... +80 (+32 ... +176)	
storage	°C (°F)		
Nominal temperature	°C (°F)		
Temperature coefficient in the nominal temperature range:		ε 0.2 (< 0.4 with pressure ranges 0 ... 0.1 and 0 ... 0.16 bar) ε 0,2	
mean TC of zero	% of F.S.D./10 K		
mean TC of span	% of F.S.D./10 K		
Electrical connection		Cable gland 1,5 m cable with 9-pin. SUB-D plug	
Wiring protection		Protected against overvoltage	
CE - conformity		Interference emission per EN 50081-1 (march 93) and EN 50081-2 (march 94) Interference immunity per EN 50082-2 (march 95) declaration of conformity on request	
Degree of protection per EN 60 529 / IEC 529		IP 67 (without SUB-D plug)	
Weight	kg	approx. 0.2	
Dimensions		see drawings	

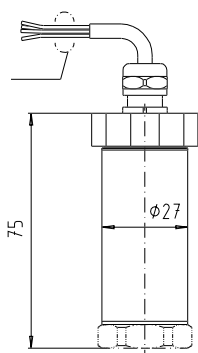
Items in curved brackets { } are optional extras for additional price.

¹⁾ permissible tightening torque ε 50 Nm zero deviation of max 1% can occur however this can be adjusted by using the software.

²⁾ with pressure ranges ³⁾ 0 ... 0.25 bar only.

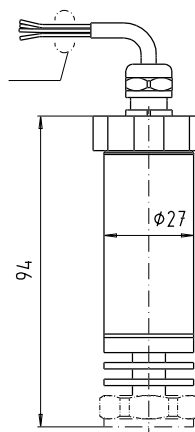
Case

Model 891.13.400
Model 891.13.401
Model 891.13.420
Model 891.13.425
Model 891.23.410
Model 891.23.420



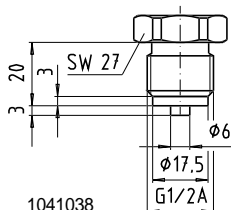
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Model 891.13.422
Model 891.23.422
Model 891.13.427



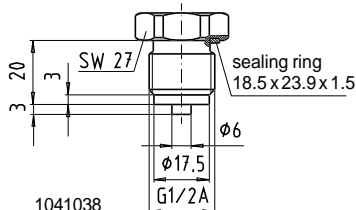
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Pressure connections



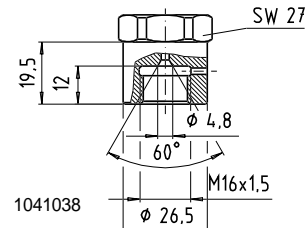
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G 1/2 A (Model 891.23.410)



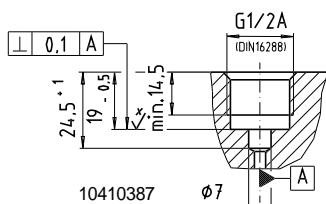
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M 16 x 1,5 female



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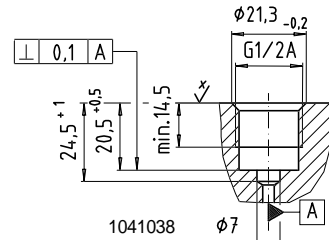
Sockets for pressure connection



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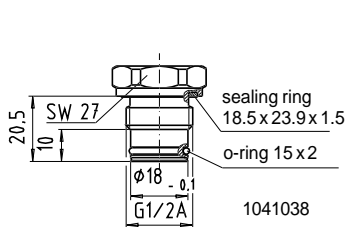
Model 89X.23.510 is screwable to choose in a socket per DIN 16 288 or, if sealing should be done via the sealing ring, in a special G 1/2 A socket (specification: see drawing).

G 1/2 A with sealing ring

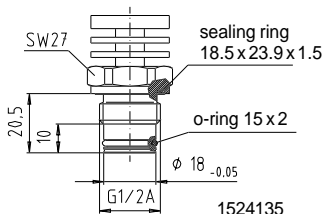


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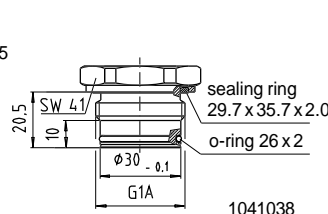
Pressure connections for flush diaphragm with o-ring



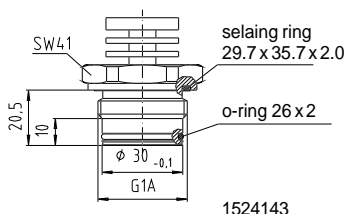
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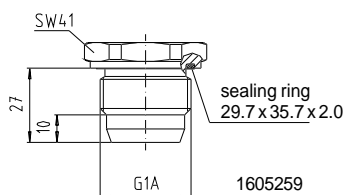


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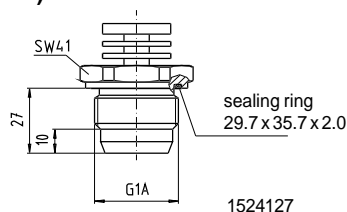


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Pressure connection G 1 A with metal sealing cone (Model 891.13.425/427)

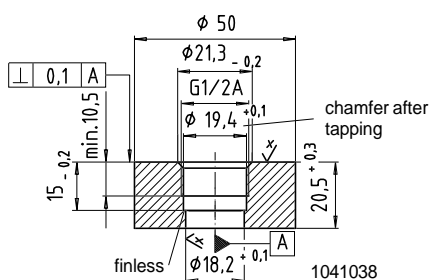


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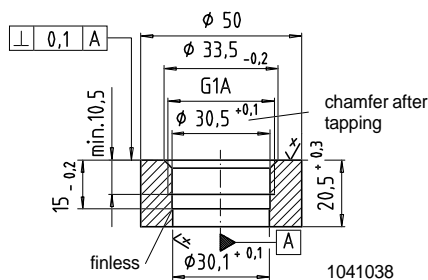


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Weld-on adaptors resp. sockets for pressure connection for flush diaphragm with o-ring

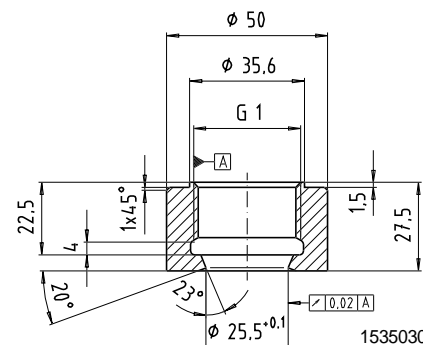


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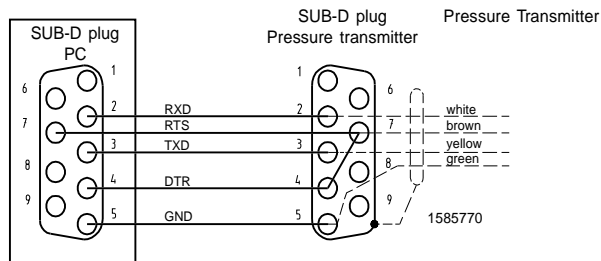
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G 1 A with metal sealing cone



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Wiring details



RxD and TxD with pressure transmitter

The maximum cable length between pressure transmitter and PC is 3 m possible.

Ordering information

Model / Pressure range / Signal output / Pressure connection / Optional extras

Ordering examples:

891.13.401 / 0 ... 25 mbar / G 1/2 A
 891.23.421 / 0 ... 160 bar / G 1/2 A / "oil and grease free"
 891.13.425 / 0 ... 4 bar / G 1 A / connection adapter for union nut DN 40 PN 40
 891.23.410 / 0 ... 600 bar / G 1/4 A / oxygen version inclusive "oil and grease free"

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.



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