Intrinsically Safe Pressure Transmitters

Type IS-10 Industrial
Type IS-11 Flush Diaphragm

Tronic

(Replacement for previous Models:
892.13.500, 892.23.510, 892.13.520, 892.23.520)

- FM approved for Class I Division 1 and Class I Zone 0 locations when used with an approved barrier
- 4-20 mA 2-wire output signal
- Highly resistant to pressure spikes and vibration
- Can be assembled to diaphragm seals

FM APPROVED

C SP US

Intrinsically safe
Class I, II, III, Division 1, Groups A,B,C,D,E,F,G
Non incendive
Class I, Division 2, Groups A,B,C,D

The IS-10 industrial and IS-11non-clogging flush diaphragm pressure transmitters are designed for industrial pressure measurement applications where intrinsically safe ratings are required. Each transmitter undergoes extensive testing and calibration to achieve an accuracy of 0.25% full scale. State-of-the-art surface mount technology ensures that the unit is protected against vibration, shock and humidity. Each unit is temperature compensated to assure accuracy and long term stability under severe ambient temperature variations.

The compact design features all stainless steel wetted parts and is available with a variety of electrical and process connections to meet specific installation requirements. The intrinsically safe rating applies to all hazardous enviromnents and media including gases, vapors and dusts.

STANDARD RANGES

RANGE	MAXIMUM*	BURST**	RANGE	MAXIMUM*	BURST**
30"-0 HgVac	70 PSI	70 PSI	0-160 PSI	500 PSI	500 PSI
30"-0-30 PSI	250 PSI	250 PSI	0-200 PSI	500 PSI	500 PSI
30"-0-60 PSI	500 PSI	500 PSI	0-250 PSI(A)	1100 PSI	1100 PSI
30"-0-100 PSI	500 PSI	500 PSI	0-300 PSI	1100 PSI	1100 PSI
30"-0-160 PSI	500 PSI	500 PSI	0-400 PSI	1100 PSI	3600 PSI
30"-0-200 PSI	1100 PSI	1100 PSI	0-500 PSI	1100 PSI	5800 PSI
0-50 INWC	30 PSI	30 PSI	0-600 PSI	1100 PSI	5800 PSI
0-100 INWC	30 PSI	30 PSI	0-750 PSI	1100 PSI	5800 PSI
0-5 PSI	30 PSI	30 PSI	0-1000 PSI	1750 PSI	8000 PSI
0-10 PSI	60 PSI	60 PSI	0-1500 PSI	2900 PSI	11,600 PSI
0-15 PSI(A)	70 PSI	70 PSI	0-2000 PSI	4600 PSI	14,500 PSI
0-25 PSI(A)	145 PSI	145 PSI	0-3000 PSI	4600 PSI	14,500 PSI
0-30 PSI	145 PSI	145 PSI	0-5000 PSI	11,600 PSI	25,000 PSI
0-50 PSI(A)	250 PSI	250 PSI	0-8000 PSI	17,400 PSI	35,000 PSI
0-60 PSI	250 PSI	250 PSI	0-10,000 PSI	17,400 PSI	35,000 PSI
0-100 PSI(A)	500 PSI	500 PSI	0-15,000 PSI	21,750 PSI	43,500 PSI

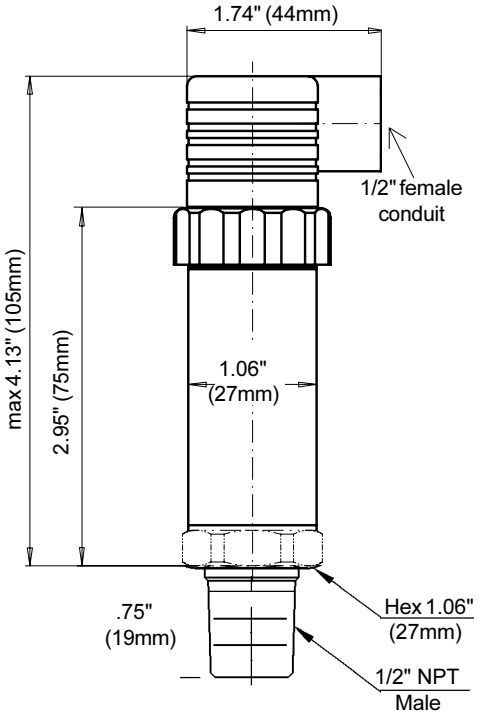
Notes:
* Pressure applied up to the maximum rating will cause no permanent changes in specifications.
** Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media.
(A) Standard ranges available with absolute pressure reference.
Type IS-11 flush diaphragm available up to 8000 PSI.

Specifications		Type IS-10 and IS-11
Sensing principle Pressure ranges Pressure reference	PSI	piezoresistive up to 300 PSI, thin film > 400 PSI standard ranges as listed {custom ranges available} relative pressure {absolute reference to 300 PSIA}
Pressure connection Type IS-10 Type IS-11 **Material:** -wetted parts Type IS-10 above 300 PSI Type IS-11 -case -internal transmitting liquid		 1/2" NPT male; (1/4"NPT male, G1/2B, G1/4B) {other connections available} {SAE #4 (7/16-20 UNF J514) male O-ring boss for ranges > 400 PSI} for ranges 50 INWC to 15 PSI: G1B flush diaphragm for ranges 25 PSI to 8000 PSI: G1/2B fush diaphragm 1.4571 stainless steel (316 ss) {other materials see WIKA diaphragm seals} 1.4571 and 1.4542 stainless steel (316 ss and PH17-4 ss) 1.4571 stainless steel (316 ss) {Hastelloy C-4}, Buna-N O-ring {Viton} 1.4571 stainless steel (316 ss) synthetic oil for piezoresistive sensors to 300 PSI and all IS-11 flush diaphragm transmitters, {halocarbon oil for oxygen service}, no liquid fill used for Type IS-10 thin film sensors above 300 PSI
Supply voltage U_B **Output and load limitations:** Output signal and maximum load Response time (10...90%) zero and span adjustment	DC Volts milliseconds %	10 - 30 (11 - 30 with Snap Cap electrical connector option) 4-20 mA 2-wire system $R_A[Ohm] \leq (U_B[V] - 10V) / 0.02\ A$ ≤ 1 ± 10
Accuracy (linearity, including hysteresis and repeatability) Repeatability Hysteresis 1 year stability	% of span % of span	$\leq$0.25% (B.F.S.L.) {0.125%} [1] (Calibrated in vertical mounting position with process connection down) ≤ 0.05 ≤ 0.1 ≤ 0.2 (under reference conditions)
Temperature Media Ambient Storage Compensated range Temperature error (reference 70°F) on zero point on span	 % of span	 -22°F to +212°F (-30°C to +100°C) { -58°F to +221°F (-50°C to +105°C)} -22°F to +212°F (-30°C to +100°C) { -58°F to +221°F (-50°C to +105°C)} -76°F to +221°F (-60°C to +105°C) +32°F to +176°F (0°C to +80°C) $\leq$ 0.2 per 18°F (10°C) change ($\leq$ 0.4 per 18°F for ranges $\leq$ 100 INWC) $\leq$ 0.2 per 18°F (10°C) change
Ratings		see table on page 3
EMI specifications		Interference emission and immunity per EN 61326
HF-immunity Burst Shock resistance Vibration resistance	V/m kV g g	10 {30} 4 1000 per IEC 770 for mechanical shock 20 per IEC 770 for vibration under resonance conditions
Electrical connection Weight Dimensions Electrical protection Environmental protection	 lb	4- pin L-plug per DIN 43 650 with 1/2" female conduit opening {4-pin L-plug per DIN 43 650 with PG 9 compression fitting} {5 foot vented cable} {Snap Cap} {6 pin MIL plug} {other electrical connections available} approximately 0.4 (0.2 Kg) see drawings protected against reverse polarity IP 65 (NEMA 5) with 4 pin L-plugs, 6 pin MIL plug {IP 67 (NEMA 4) with 5 foot cable, Snap Cap}

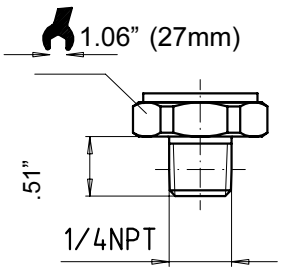
Notes: Items in curved brackets { } are available as special order options

[1] improved accuracy available with pressure ranges $\geq$ 100 INWC

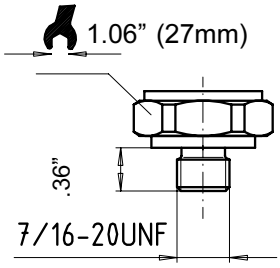
Dimensions



Optional process connections



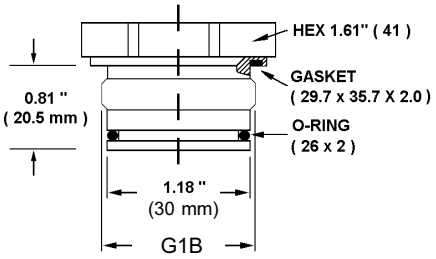
1/4 NPT male



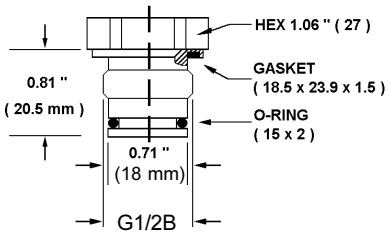
SAE # 4 male

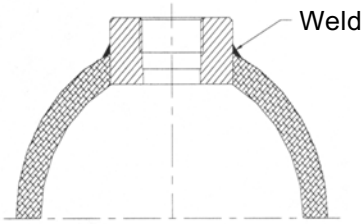
IS-11 flush process connections

for ranges < 25 PSI



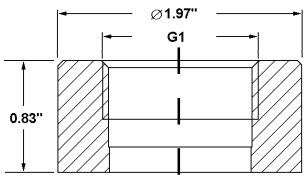
for ranges
25 PSI to 8000 PSI



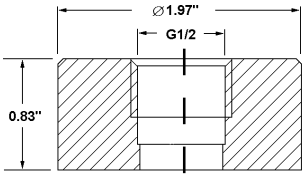


Cross section view of P-1 adapter installed in pipe.

Matching P-1 weld insert adapters



P-1 G1 weld insert adapter
Part # 1206974



P-1 G1/2 weld insert adapter
Part # 1097008

Electrical connections

				
Type	DIN 43 650 plug	Vented cable with free ends	Snap Cap™ with terminal block	6 pin MIL plug
Protection	IP 65 / NEMA 5	IP 67 / NEMA 4	IP 67 / NEMA 4	IP 65 / NEMA 5
Description and part numbers	1/2" NPT female conduit opening (standard) Part # 1632159 PG9 cable gland Part # 1006711	5 foot - #9744479 10 foot - #9838915 20 foot - #4239904 30 foot - #4239921 50 foot - #4293348	1/2 NPT female conduit, 4-20 mA Part # 4260261 PG 11 cable gland, 4-20 mA Part # 2130017	PT02E-10-6P Part # 9744460

Intrinsically Safe Approvals

Approval authority

FACTORY MUTUAL intrinsically safe with entity approval for:

Class I, Zone 0, A Ex ia IIC
Class I, II, III, Division 1, Groups A,B,C,D,E,F,G
Dust ignition proof Class II, III, Division 1, Groups E,F,G
Non incendive Class I, Division 2, Groups A,B,C,D

V max = 30 VCi = 22 nF
I max = 100 mA Li = 0.1 uH
Pi =1 Watt

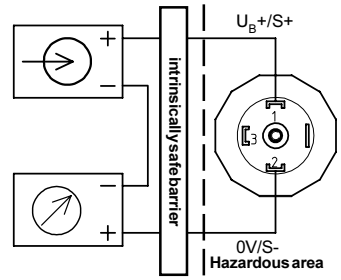
T6 at 60°C, T5 at 70°C, T4 at 85°C

Codes compliance
FM-3610, 3611, 3615 intrinsic standard

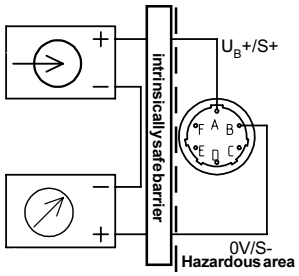
Wiring

Note: intrinsically safe transmitters require the use of an approved zener barrier or power supply to provide full protection when installed in Class I Division 1 hazardous areas. Be sure to follow all safety procedures when installing, operating, or servicing these transmitters.

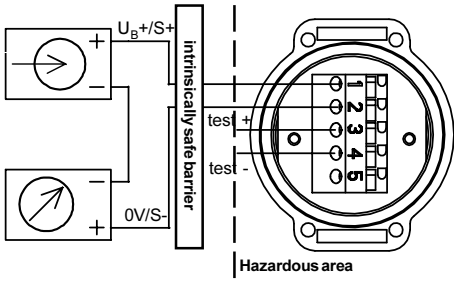
DIN 43 650 plug



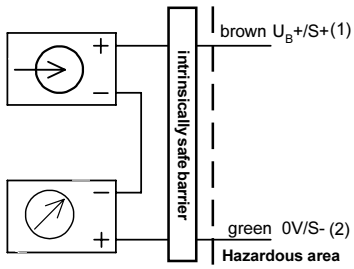
MIL-plug PT 02 E-10-6P



Snap Cap



Cable with free ends



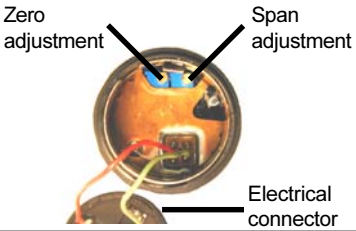
2-wire system

Wire	Coding	DIN Plug	Wire Color
Supply +	U_B+ / S+	pin 1	brown
Signal -	0V / S-	pin 2	green

Calibration

Note: observe all NEC and local codes when servicing equipment installed in hazardous locations

Remove the electrical connector and retaining ring. Carefully pull the connector plate from the transmitter body. Attach a meter and power supply to the electrical connector. For gauge ranges the zero potentiometer can be adjusted to produce a null output when no pressure is applied. Span adjustment requires the use of a reference pressure source. Compound and absolute ranges require a vacuum and pressure source. When calibrated, reassemble connector, taking care not to pinch the wires between the case and connector plate. Some transmitters may be equipped with non-removable electrical connectors and cannot be calibrated.



Ordering Information:
State computer part number (if available) / type number / range / output / process connection / electrical connection / other required options.

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