

Pressure Transmitters with NEMA 4X integral junction box Type F-10 Standard Industrial Type IF-10 Intrinsically Safe

Type F-11 Flush Diaphragm Type IF-11 Flush Diaphragm Intrinsically Safe

#### **Tronic**

(Previous model numbers 891.X3.900, 891.X3.920, 892.X3.900, 892.X3.920)

- NEMA 4X for washdown and corrosion resistance
- Designed for extremely harsh industrial environments
- 4-20 mA 2-wire output signal, others available
- IF-10 and IF-11 are FM and Ex approved for Class 1 Division 1 locations when used with an approved barrier
- Can be assembled to diaphragm seals

The 900 Series NEMA 4X pressure transmitters are designed for extremely harsh industrial pressure measurement applications. Each unit 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 an integral NEMA 4X junction box for washdown, corrosion resistance, and protection against electromagnetic interference. The Type F-10 features a 1/2" NPT male process connection suitable for many industrial pressure measurement applications. The flush diaphragm Type F-11 is designed to measure highly viscous fluids, sludge, or media containing solids. The Types IF-10 and IF-11 intrinsically safe transmitters are engineered for applications requiring Class 1, Division 1 protection in hazardous environments. All models may be equipped with either direct or remote mount diaphragm seals for corrosive or high temperature applications.









### STANDARD RANGES

RAN	GE	MAXII	MUM*	BURS	ST**	RANG	SE .	MAXIMU	JM*	BURS	T**
30"-0	HgVac	70	PSI	70	PSI	0-250	PSI(A)	1100	PSI	1100	PSI
30"-0-30	PSI	250	PSI	250	PSI	0-300	PSI	1100	PSI	1100	PSI
30"-0-60	PSI	500	PSI	500	PSI	0-400	PSI	1100	PSI	3600	PSI
30"-0-100	PSI	500	PSI	500	PSI	0-500	PSI(A)	1100	PSI	5800	PSI
30"-0-160	PSI	500	PSI	500	PSI	0-600	PSI	1100	PSI	5800	PSI
30"-0-200	PSI	1100	PSI	1100	PSI	0-750	PSI	1100	PSI	5800	PSI
0-50	INWC	30	PSI	30	PSI	0-1000	PSI	1750	PSI	8000	PSI
0-100	INWC	30	PSI	30	PSI	0-1500	PSI	2900	PSI	11,600	PSI
0-5	PSI	30	PSI	30	PSI	0-2000	PSI	4600	PSI	14,500	PSI
0-10	PSI	60	PSI	60	PSI	0-3000	PSI	4600	PSI	14,500	PSI
0-15	PSI(A)	70	PSI	70	PSI	0-5000	PSI	11,600	PSI	25,000	PSI
0-25	PSI(A)	145	PSI	145	PSI	0-8000	PSI	17,400	PSI	35,000	PSI
0-30	PSI	145	PSI	145	PSI	0-10,000	PSI	17,400	PSI	35,000	PSI
0-50	PSI(A)	250	PSI	250	PSI	0-15,000	PSI	21,750	PSI	43,500	PSI
0-60	PSI	250	PSI	250	PSI	0-25,000	PSI	29,400	PSI	58,800	PSI
0-100	PSI(A)	500	PSI	500	PSI	0-40,000	PSI	44,100	PSI	73,500	PSI
0-160	PSI	500	PSI	500	PSI	0-60,000	PSI	65,000	PSI	102,900	PSI
0-200	PSI	500	PSI	500	PSI						

Type F-11 and IF-11 flush diaphragm available up to 8000 PSI. Ranges > 25,000 PSI are equipped with a F-250-C 9/16-18 high pressure tube connection.

**APE F-10** (APE 81.11)

Maximum pressure, causing no permanent changes in specifications but may lead to adjustable zero and span shifts.

<sup>\*\*</sup> Burst pressure, leading to destruction of transmitter. (A) Standard ranges available with absolute pressure reference.

Type F-10 and F-11

Input 11-30 VDC

(14-30 VDC for 0-10V output signal)

Output & load limitations

4-20mA 2-wire R<sub>(max)</sub>  $= (V_s-11V)/0.02 A$ 

 $R_{\text{(min)}}^{^{\text{}}}$ ≥ 5 k Ohm 0-5 V 3-wire 0-10 V 3-wire > 10 k Ohm

Test signal

4-20mA 2-wire  $R_{(max)} = 15 o$  (Available with 4-20mA output only) = 15 ohms

Accuracy

Linearity (B.F.S.L.)  $\leq$  0.25% of span  $\{0.125\%\}$ 

Hysteresis ≤ 0.1% of span Repeatability ≤ 0.05% of span 1 yr. stability < 0.2% of span < 1 ms

Response time

( 10-90% full scale )

Zero & span adjustment Approximately ± 10.0% full scale

Temperature

Temperature compensated +32 °F to 176 °F

Media -22 °F to 212 °F Optionally {-40 °F to 282 °F} Ambient -4 °F to 176 °F -40 °F to 212 °F Storage

Temperature error (reference temperature 70 °F)

On zero (% of span/18 °F) ≤ 0.2 (≤ 0.4 for ranges < 100" WC)

On span (% of span/18 °F) < 0.2

Process connection

50 INWC to 15,000 PSI 1/2" NPT Male F - 10

{others available}

G1/2B Flush

> 25,000 PSI F-250-C Female F - 11 50 INWC to 30 PSI G1B Flush

50 PSI to 8.000 PSI

Electrical connection

1/2" NPT female conduit

(IP 67 / NEMA 4X washdown and corrosion resistant)

PG 13.5 mm Cord Grip

(IP 67 / NEMA 4X washdown and corrosion resistant)

Material

Wetted parts 316 stainless steel

Hastelloy C4 flush diaphragm Teflon PFA coated flush diaphragm

Body material 304 stainless steel Conduit housing

Epoxy coated aluminum

{ 304 stainless steel }

Transmitting liquid

Silicone oil for F-11 all ranges, and F-10 to 300 PSI

{Halocarbon oil for oxygen service} {Vegetable oil for food service}

Electrical protection

Protected against reverse polarity, short circuit output and suppressor diode for high-voltage protection. EMI

protected per IEC 801. Vibration protection

Internal electronics 100% potted in epoxy casting resin

Weight approx. 1.1 lbs

Notes: Items in curved brackets { } are available on special order.

Type IF-10 and IF-11 Intrinsically Safe

Input 11-28 VDC

Output & load limitations

4-20mA 2-wire R<sub>(max)</sub>  $= (V_s-11V)/0.02 A$ 

Test signal

 $R_{\text{\tiny (max)}}$ 4-20mA 2-wire = 15 ohms

Accuracy

Linearity (B.F.S.L.)  $\leq$  0.25% of span {0.125%}

Hysteresis ≤ 0.1% of span Repeatability ≤ 0.05% of span 1 yr. stability ≤ 0.2% of span Response time < 1 ms

(10-90% full scale)

Zero & span adjustment Approximately ± 10.0% full scale

**Temperature** 

Temperature compensated +32 °F to 175 °F Media -25 °F to 212 °F **Ambient** -5 °F to 175 °F

Storage -40 °F to 212 °F

Temperature error (reference temperature 70 °F)

< 0.2 (≤ 0.4 for ranges < 100 INWC) On zero (% of span/18 °F)

On span (% of span/18 °F) < 0.2

Process connection

50 INWC to 15,000 PSI IF - 10 1/2" NPT Male

{others available} F-250-C Female

> 25,000 PSI 50 INWC to 30 PSI IF - 11 G1B Flush

G1/2B Flush 50 PSI to 8.000 PSI

**Electrical connection** 

1/2" NPT female conduit

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Wetted parts 316 stainless steel

Hastelloy C4 flush diaphragm

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Conduit housing **Epoxy coated aluminum** 

Transmitting liquid

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{Halocarbon oil for oxygen service} {vegetable oil for food service}

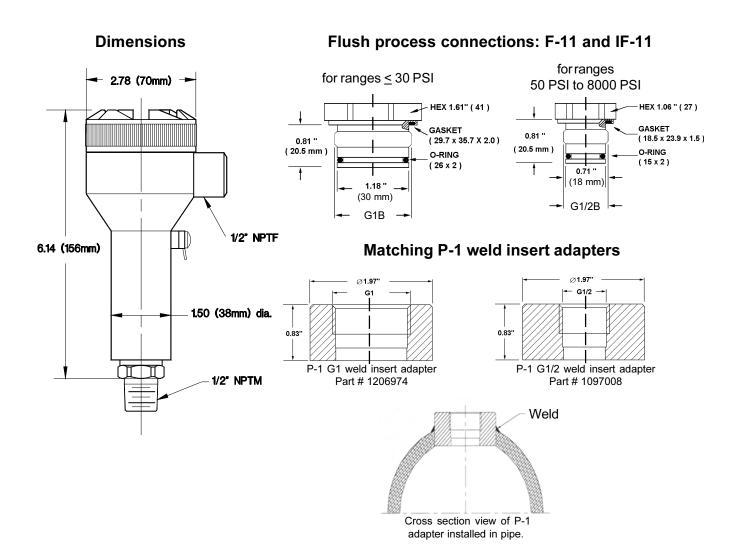
Electrical protection

Protected against reverse polarity, short circuit output and suppressor diode for high-voltage protection. EMI protected per IEC 801.

Vibration protection

Internal electronics 100% potted in epoxy casting resin

Weight approx. 1.3 lbs



Type IF-10 and IF-11 (892.X3.9X0) Intrinsically Safe

Approval Authority	CENELEC	Factory Mutual		
Codes of Compliance	EN 50014/50020 relating t	FM-3610 intrinsic standard		
Conformity Specifications	E Ex ia II C T5	E Ex ia II C T6	Intrinsically Safe per entity requirements for Class I, II, & III, Division 1, Groups A,B,C,D,E,F, & G. Nonincendive for Class I, Division 1, Groups A,B,C, & D. Hazardous indoor	
Power Supply	1128 VDC	1128 VDC	and outdoor NEMA 4 locations.	
Short Circuit Rating	660 mA	660 mA	V max = 28 V	
Power Rating	( 1.75 W )	( 1.75 W )	I max = 660 mA	
Operating Temperature	-5/+150°F (-5/+165°F)	-5/+150°F (-5/+140°F)	Ci = 20 nF, Li = 0 uH	

Note: Power supply may be by means of common zener barrier or equivalent certified devices if the transmitters are operated within above temperature limits. The temperatures in parentheses are applicable if the output of the power supply is limited to the power rating values given in parentheses.

#### Wiring

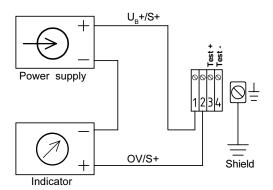
#### 2-wire system

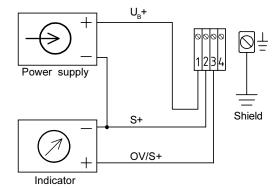
Wire	Coding	Terminal		
Supply +	U <sub>B</sub> +/S+	1		
Signal -	0V / S-	2		

Note: Type IF-10 and IF-11 must be used with an intrinsically safe barrier or intrinsically safe power supply when installed in hazardous locations.

#### 3-wire system

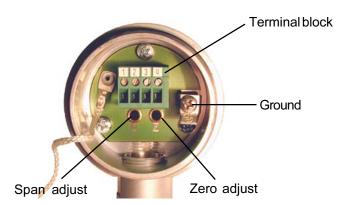
Wire	Coding	Terminal		
Supply +	U <sub>B</sub> +	1		
Supply - Signal -	0V / S-	3		
Signal +	S +	2		





#### Calibration

Remove the junction box cover. (Note: be sure to follow intrinsically safe requirements when calibrating intrinsically safe transmitters.) 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 calibration is complete, reinstall the junction box cover hand tight.



# Total Performance™

#### **Ordering Information:**

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

Specifications given in this data sheet represent the state of engineering at the time of printing. Modifications may take place and the specified materials may change without prior notice.



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