

Installation Instructions for the Heavy Duty Pressure Transducers PX3 Series, 1 bar to 46 bar | 15 psi to 667 psi

32313758

Issue A

General Information

Honeywell's PX3 Series Pressure Transducers use piezoresistive sensing technology with ASIC (Application Specific Integrated Circuit) signal conditioning in a brass housing and Metri-Pack

150 electrical connector. The PX3 Series are fully calibrated and temperature compensated from -40 °C to 125 °C [-40 °F to 257 °F].

Table 1. Electrical Specifications

Characteristic	Parameter
Supply voltage	5 Vdc ±0.25 Vdc
Over voltage and reverse voltage	±16 Vdc
Current consumption	3.5 mA max.
Nominal output transfer function	0.5 Vdc to 4.5 Vdc (ratiometric to supply)

Table 2. Performance Specifications (At 25 °C [77 °F] and under unless otherwise noted.)

Characteristic	Parameter
Operating temperature range ¹	-40 °C to 125 °C [-40 °F to 257 °F]
Storage temperature range ¹	-40 °C to 125 °C [-40 °F to 257 °F]
Compensated temperature range	-40 °C to 125 °C [-40 °F to 257 °F]
Total Error Band ² :	
-20 °C to 85 °C [-4 °F to 185 °F] ———	±1.0 %FSS
<-20 °C, >85 °C [<-4 °F, >185 °F] ———	±2.0 %FSS
Accuracy BFSL ³	±0.25 %FSS
Response time	<2 ms (10% to 90% step change in pressure)
Turn on time ⁴	<7 ms
EMC rating:	
electrostatic discharge —————	±4 kV contact, ±8 kV air per IEC 61000-4-2
radiated immunity —————	10 V/m (80 MHz to 1000 MHz) per IEC 61000-4-3
fast transient burst —————	±1 kV per IEC 61000-4-4
immunity to conducted disturbances	3 V per IEC 61000-4-6
radiated emissions —————	40 dB (30 MHz to 230 MHz), 47 dB (230 MHz to 1000 MHz) per CISPR 11
radiated immunity —————	200 V/m per ISO 11452-2
Insulation resistance	>100 MOhm, 1500 Vdc
Dielectric strength	AC1500V, 1 min. or AC1800V, 1 s
Load resistance	>5 kOhm
Life	greater than 10 million full scale pressure cycles over the calibrated pressure range

¹ Dependent on seal material. See Table 5.

² Total Error Band: The maximum deviation from the ideal transfer function over the entire compensated temperature and pressure range. Includes all errors due to offset, full scale span, pressure non-linearity, pressure hysteresis, pressure non-repeatability, thermal effect on offset, thermal effect on span, and thermal hysteresis. See Figure 1.

³ Accuracy: The maximum deviation in output from a Best Fit Straight Line (BFSL) fitted to the output measured over the pressure range at 25 °C [77 °F]. Includes all errors due to pressure non-linearity, pressure hysteresis, and pressure non-repeatability. See Figure 1.

⁴ Turn on Time: Duration from power applied until first valid output.

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Figure 1. TEB Definition and Temperature Performance

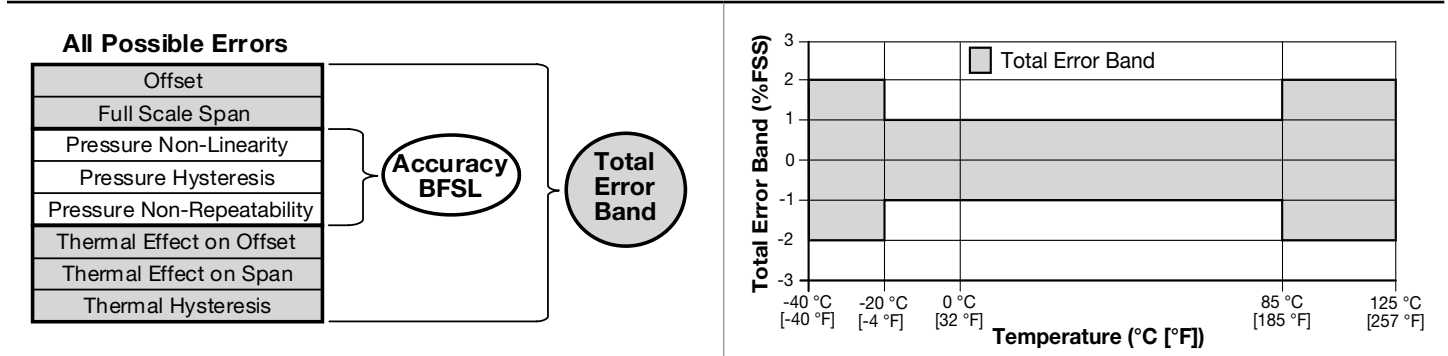


Table 3. Pressure Reference Definitions

Pressure Reference	Definition
Absolute	Output is calibrated to be proportional to the difference between applied pressure and a fixed reference to perfect vacuum (absolute zero pressure).
Sealed gage ¹	Sensor construction is identical to the absolute version with a built in reference at zero pressure in order to minimize measurement error over temperature. The output is calibrated to be proportional to the difference between applied pressure and a reference of 1 standard atmosphere (1.013 barA 14.7 psiA). Example: 100 psi sealed gage has a calibrated pressure range from 14.7 psi absolute to 114.7 psi absolute. (See Figure 2.)

¹ Sealed gage option only available in pressure ranges at or above 8 bar | 100 psi.

Figure 2. Absolute vs Sealed Gage Pressure vs Output

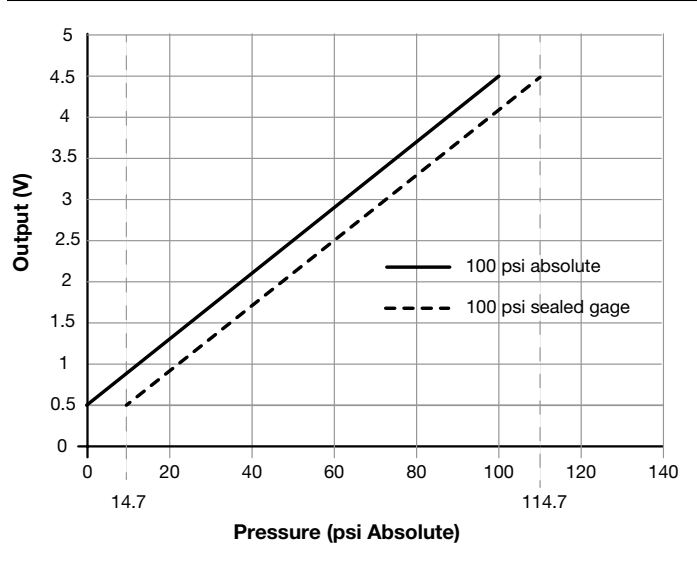


Table 4. Pressure Ratings

bar			psi		
Operating Pressure	Over-pressure	Burst Pressure	Operating Pressure	Over-pressure	Burst Pressure
1	5	8	15	70	115
1.6	5	8	30	150	250
2	10	17	50	250	400
2.5	10	17	100	450	750
4	17	27	150	450	750
6	31	51	200	450	1150
8	31	51	250	450	1150
10	31	51	300	1000	1500
16	32	80	500	1000	1500
20	69	103	600	1000	1500
25	69	103	667	1000	1500
35	69	103	-	-	-
40	69	103	-	-	-
46	69	103	-	-	-

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Table 5. Environmental and Mechanical Specifications

Characteristic	Parameter
Shock	100 G per MIL-STD-202G, Method 213B, Cond. F (at 25 °C [77 °F])
Vibration	20 G sweep, 10 Hz to 2000 Hz (at 25 °C [77 °F])
Ingress protection	IP67
Humidity	0 %RH to 95 %RH, non-condensing
External freeze/thaw resistance	>6 cycles from -30 °C to 50 °C [-22 °F to 122 °F]
Wetted materials: port _____ internal media seal _____ sensing element and substrate _____ adhesives _____	brass C36000 (Pb content: 3.7% max.) seal material as required by the application (see seal material media compatibility options below) alumina, glass, silicon epoxy
Seal material media compatibility ¹ : HNBR (option H) _____ silicone (option S) _____	refrigerants, petroleum oils, lubricants air, water, hydraulic fluids
Other materials: Metri-Pack 150 electrical connector _____ external O-ring seal on G1, M1 ports _____	PBT 30% GF nitrile

¹ Honeywell can assist with selecting suitable seal material for the media based on the seal manufacturer's recommendation. The customer should test the compatibility with the media to ensure that it is correct for the application.

CAUTION PRODUCT DAMAGE

- Ensure torque specifications are determined for the specific application. Values provided are for reference only. (Mating materials and thread sealants can result in significantly different torque values from one application to the next.)
- When using mating parts made of stainless steel, use a thread sealant with anti-seize properties to prevent thread galling. Ensure the sealant is rated for the application.
- Use appropriate tools (such as an open ended wrench or deep well socket) to install transducers.
- Always hand-start transducers into the hole to prevent cross threading and damage.
- Ensure that torque is not applied to the electrical connector.
- Ensure that the proper mating electrical connector with a seal is used to connect the transducer. Improper or damaged seals can compromise ingress protection leading to short circuits.

Failure to comply with these instructions may result in product damage.

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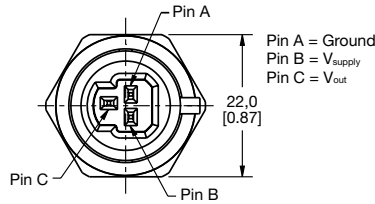
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Figure 3. Mounting Dimensions Shown by Pressure Port Type (For reference only. mm/[in].)

Pinout for all pressure port types



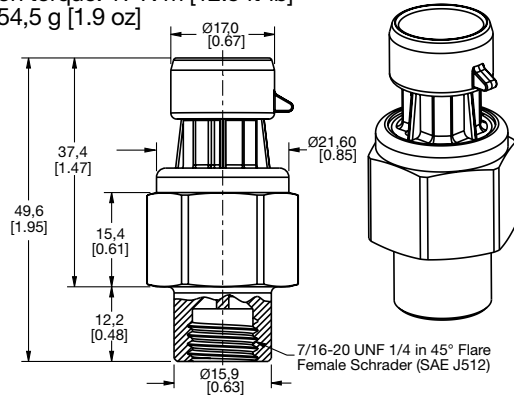
F1: 7/16-20 UNF 1/4 inch 45° Flare Female Schrader (SAE J512)

Seal: 45° cone

Mating geometry: SAE J512

Installation torque: 17 N m [12.5 ft-lb]

Weight: 54,5 g [1.9 oz]



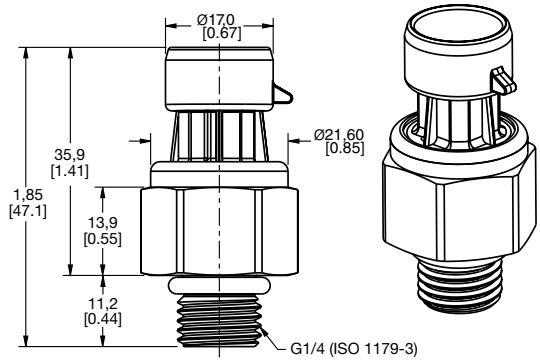
G1: G1/4 (ISO 1179-3)

Seal: O-ring

Mating geometry: ISO 1179-1

Installation torque: 50 N m [36.9 ft-lb]

Weight: 35,1 g [1.2 oz]



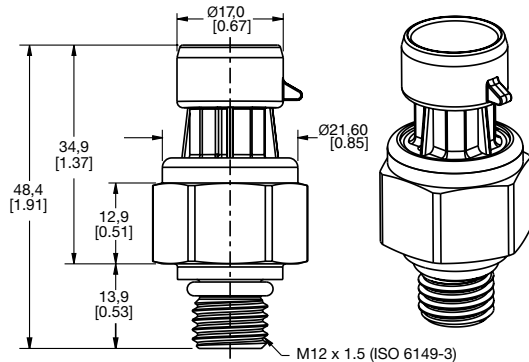
M1: M12 x 1.5 (ISO 6149-3)

Seal: O-ring

Mating geometry: ISO 6149-1

Installation torque: 25 N m [18.4 ft-lb]

Weight: 33,9 g [1.2 oz]



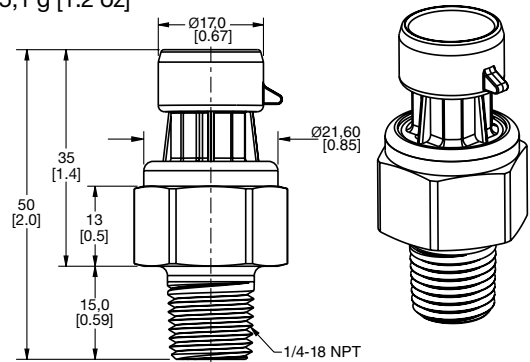
N1: 1/4-18 NPT

Seal: Pipe thread

Mating geometry: ANSI B1.20.1

Installation torque: Two to three turns from finger tight

Weight: 35,1 g [1.2 oz]



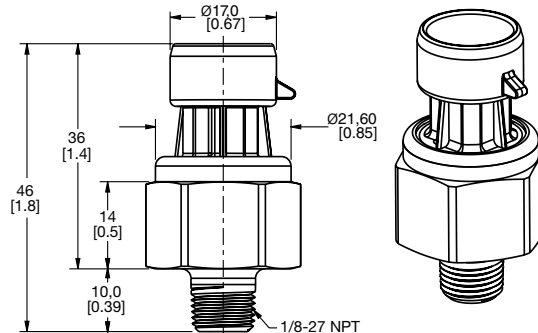
N2: 1/8-27 NPT

Seal: Pipe thread

Mating geometry: ANSI B1.20.1

Installation torque: Two to three turns from finger tight

Weight: 31,2 g [1.1 oz]



▲ WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

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