

Installation Instructions for the Heavy Duty Pressure Transducers PX3 Series, 1 bar to 50 bar | 15 psi to 700 psi

32313758
Issue F

General Information

Honeywell's PX3 Series Pressure Transducers use piezoresistive sensing technology with ASIC (Application Specific Integrated Circuit) signal conditioning. The PX3 Series is calibrated and temperature compensated from -40°C to 125°C [-40°F to 257°F].

The PX3 Series is not recommended for use with media involving water, saturated air such as steam and vapor, and ammonia.

Table 1. 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] <-20°C, >85°C [<-4°F, >185°F]	±1.0 %FSS ±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 ⁵ : surge immunity (all leads) electrostatic discharge radiated immunity fast transient burst immunity to conducted disturbances radiated emissions radiated immunity: ratiometric (voltage) output 4 mA to 20 mA (current) output	±1000 V line to ground per IEC 61000-4-5 ±4 kV contact, ±8 kV air per IEC 61000-4-2 10 V/m (80 MHz to 1000 MHz) per IEC 61000-4-3 ±1 kV per IEC 61000-4-4 3 V per IEC 61000-4-6 40 dBµV (30 MHz to 230 MHz), 47 dBµV (230 MHz to 1000 MHz) per CISPR 11 200 V/m per ISO 11452-2 140 V/m per ISO 11452-2
Insulation resistance ⁶ : ratiometric voltage output current output	>100 MOhm at 1500 Vdc >100 MOhm at 1000 Vdc
Dielectric strength	<1 mA at 1500 Vac (1 min) or 1800 Vac (1 s)
Load resistance ⁶ : ratiometric voltage output current output	>5 kOhm (V _{in} - 8) x 50 Ohm
Life	>10 million full scale pressure cycles over the calibrated pressure range

¹ Dependent on seal material.

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.

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.

⁴ Turn on time: Duration from power applied until first valid output for voltage output. Typical value for 4 mA to 20 mA output.

⁵ Tested using 1,5 m [59.1 in] long cable.

⁶ Tested in dry, non-ionized air.

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Table 2. Electrical Specifications

Characteristic	Parameter
Supply voltage: ratiometric voltage output: 5 Vdc 3.3 Vdc current output: -40°C to 100°C >100°C to 125°C	5 Vdc \pm 0.25 Vdc 3 Vdc \pm 0.25 Vdc 8 Vdc to 30 Vdc 8 Vdc to 25 Vdc
Over voltage and reverse voltage: ratiometric voltage output current output	\pm 16 Vdc \pm 35 Vdc
Current consumption: 5 Vdc supply 3.3 Vdc supply	3.0 mA max. 1.6 mA to 2.1 mA
Short circuit protection	yes
Nominal output transfer function: 5 Vdc supply 3.3 Vdc supply 8 Vdc to 30 Vdc supply	0.5 Vdc to 4.5 Vdc (ratiometric to supply) 0.33 Vdc to 2.97 Vdc (ratiometric to supply) 4 mA to 20 mA

Figure 1. TEB Definition and Temperature Performance

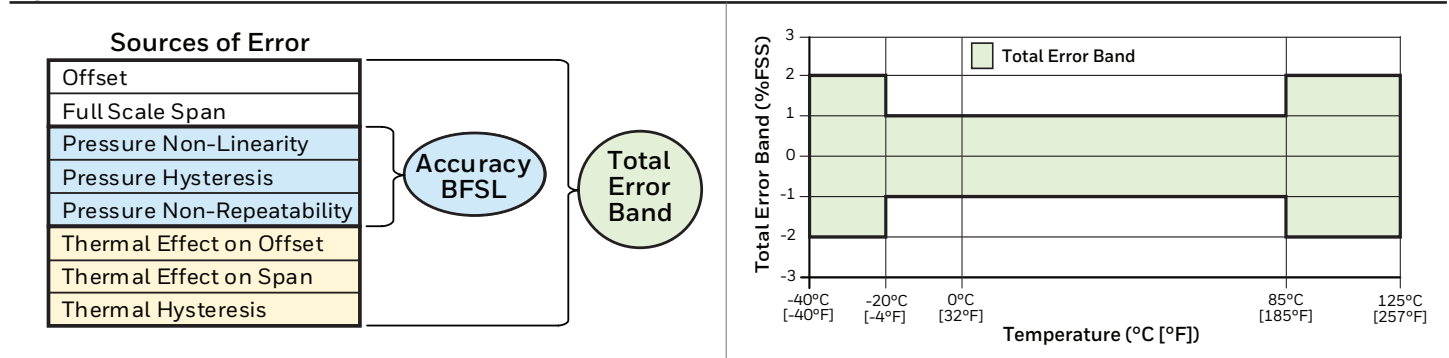


Table 3. Pressure Reference Definitions

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.

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Figure 2. Ratiometric Output Option AA for 100 psi, Absolute vs Sealed Gage

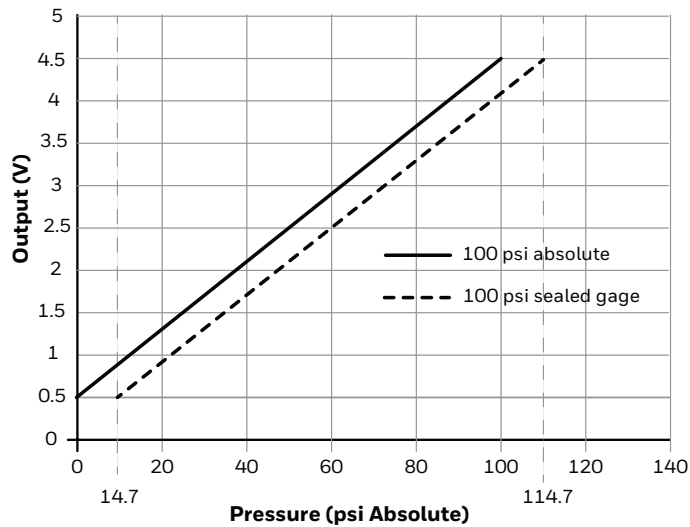


Table 4. Pressure Ratings

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	174	450	750
8	31	51	200	450	1150
10	31	51	250	450	1150
12	31	51	300	1000	1500
16	32	80	500	1000	1500
20	69	103	600	1000	1500
25	69	103	667	1000	1500
30	69	103	700	1000	1500
35	69	103	-	-	-
40	69	103	-	-	-
46	69	103	-	-	-
50	69	103	-	-	-

Diagnostics Mode (For Ratiometric Voltage Output Only)

The PX3 Series diagnostics mode allows the device to indicate when internal or external faults occur. If an internal fault occurs, the output will rail to the preset lower or upper limit values shown in Figure 3 and Table 5.

External faults will result in the sensor's output exceeding those preset limits (lower or upper). (For example, if the external sensor ground (signal) were lost, the sensor output would exceed the upper rail of 97.5%.)

Figure 3. Analog Output with Diagnostics

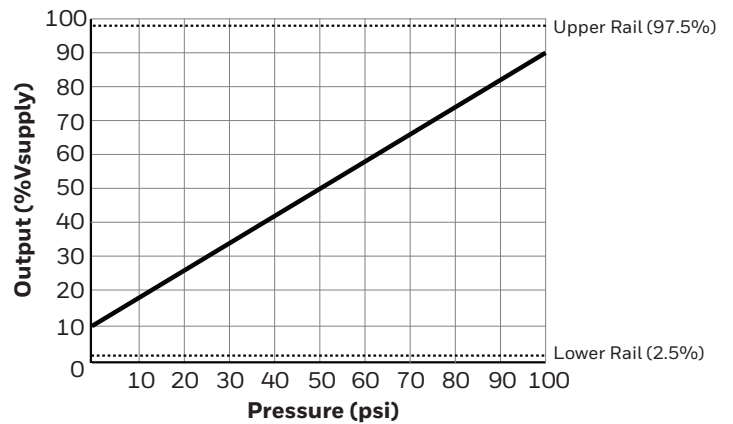


Table 5. Output Transfer Function Codes

Fault Condition	Analog Diagnostic Rail
EEPROM Corrupt	below lower rail
Sensor Bridge Open (any element)	above upper rail
Sensor Bridge Short (any element)	above upper rail
Low supply voltage	below lower rail
Loss of ground connection	above upper rail

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Table 6. Environmental and Mechanical Specifications

Characteristic	Parameter
Shock: threaded ports tube port	100 G per MIL-STD-202G, Method 213B, Cond. F (at 25°C [77°F]) 100 G per MIL-STD-202F, Method 213B, and Condition C
Vibration: threaded ports tube port	20 G sweep, 10 Hz to 2000 Hz (at 25°C [77°F]) 10 Hz to 55 Hz, 2 mm displacement, tested as per IEC 60068-2-6; Test FC. (at 25°C [77°F])
Ingress protection: Metri-Pack 150 electrical connector cable harness electrical connector DIN electrical connector	IP67 IP65, IP67, IP69K IP65
Ambient 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: threaded ports external seals for ports tube port braze filler internal O-ring media seal sensing element and substrate adhesives	brass C36000; lead (Pb) content: 3.7% max. nitrile copper UNS C12200; lead (Pb) free silver and copper alloy seal material based on application (see seal material media compatibility options below) alumina, glass, silicon epoxy
Internal O-ring material media compatibility ¹ : HNBR (option H) silicone (option S)	refrigerants, engine oil, petroleum-based hydraulic fluid dry air
Electrical connector material	PBT 30% GF

¹Honeywell can assist with selecting suitable O-ring 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 TO TUBE PRESSURE PORT TYPE DURING BRAZING

Ensure that the temperature of the brass port and plastic connector is maintained below 125°C during flame brazing. Exposure to temperatures higher than 125°C can cause permanent product damage and can compromise ingress protection leading to short circuits.

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

CAUTION

PRODUCT DAMAGE DUE TO MECHANICAL ISSUES

- 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.

CAUTION

PRODUCT DAMAGE DUE TO PARTICULATES AND SATURATED AIR

Ensure that filters and dehumidifiers are used upstream of the transducers to keep media flow free of large particulates and condensed moisture. PX3 Series transducers are dead-end devices. Particulate accumulation may clog the port or damage the diaphragm. Condensing moisture may affect sensor output and lower insulation resistance.

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

CAUTION

PRODUCT DAMAGE DUE TO CONDUCTIVE MEDIA

Ensure sensor is not used with conductive or ionic media. These media can affect sensor output and lower insulation resistance.

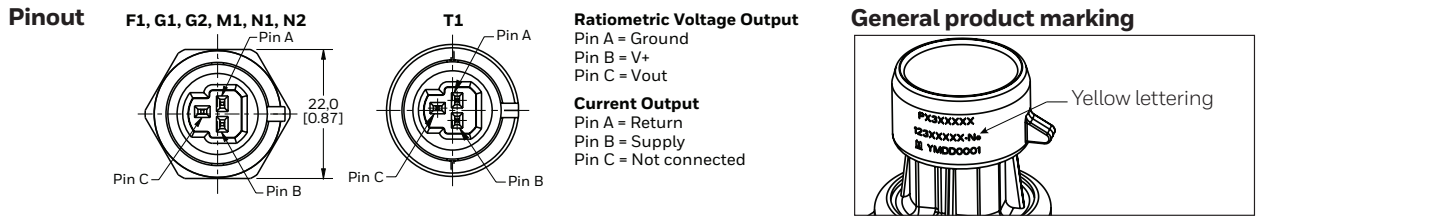
Failure to comply with these instructions may result in product damage.

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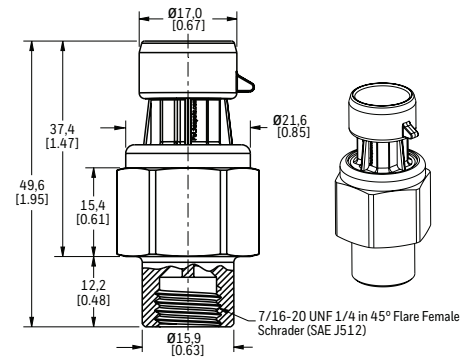
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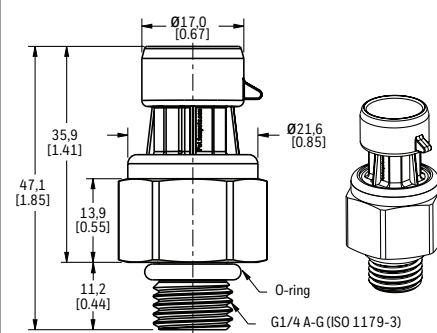
Figure 4. Metri-Pack Mounting Dimensions (For reference only. mm/[in.]



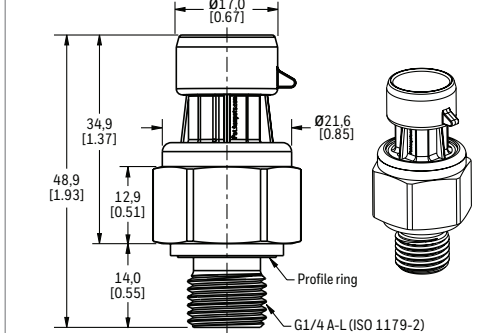
F1: 7/16-20 UNF 1/4 inch 45° Flare Female Schrader (SAE J512)
 Seal: 45° cone
 Mating geometry: SAE J512
 Installation torque: 17 N m [12.5 ft-lb] max.
 Weight: 41 g to 46 g [1.4 oz to 1.6 oz]



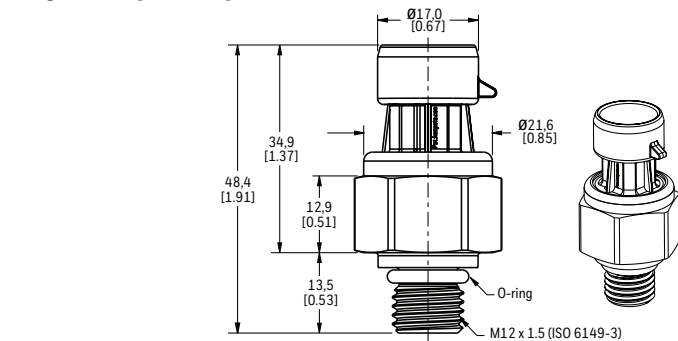
G1: G1/4 A-G (ISO 1179-3)
 Seal: O-ring (included)
 Mating geometry: ISO 1179-1
 Installation torque: 15 N m [11.1 ft-lb] max.
 Weight: 35.1 g to 40.1 g [1.2 oz to 1.4 oz]



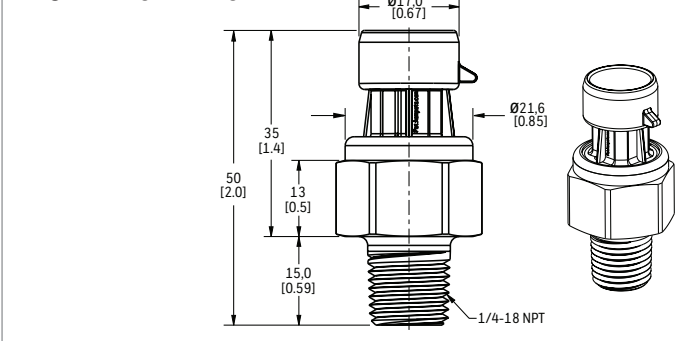
G2: G1/4 A-L (ISO 1179-2)
 Seal: ISO 9974-2/DIN 3869 profile ring (included)
 Mating geometry: ISO 1179-1
 Installation torque: 15 N m [11.1 ft-lb] max.
 Weight: 35.1 g to 40.1 g [1.2 oz to 1.4 oz]



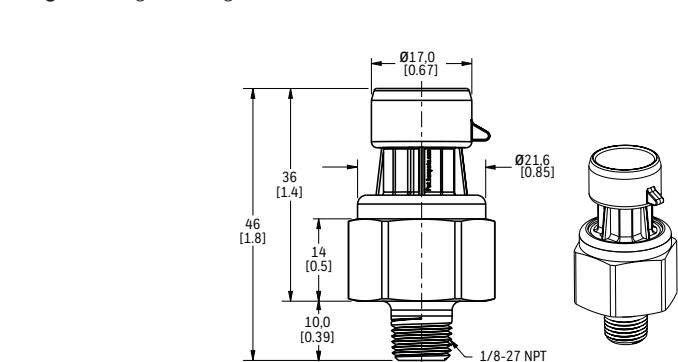
M1: M12 x 1.5 (ISO 6149-3)
 Seal: O-ring (included)
 Mating geometry: ISO 6149-1
 Installation torque: 12 N m [8.85 ft-lb] max.
 Weight: 33.9 g to 38.9 g [1.2 oz to 1.4 oz]



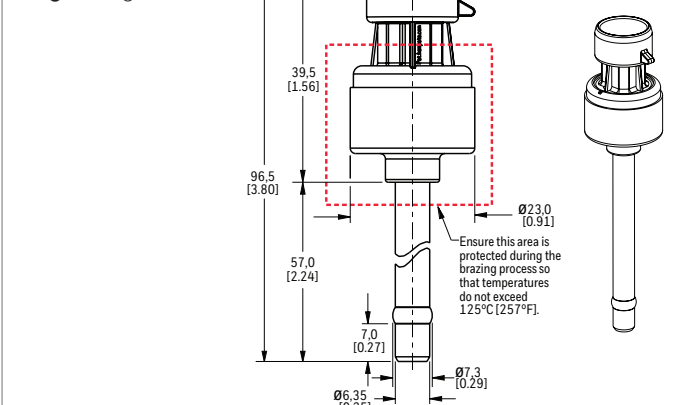
N1: 1/4-18 NPT
 Seal: Pipe thread
 Mating geometry: ANSI B1.20.1
 Installation torque: Two to three turns from finger tight
 Weight: 35.1 g to 40.1 g [1.2 oz to 1.4 oz]



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 to 36.2 g [1.1 oz to 1.3 oz]



T1: Tube
 Seal: Brazing
 Weight: 32 g [1.1 oz]



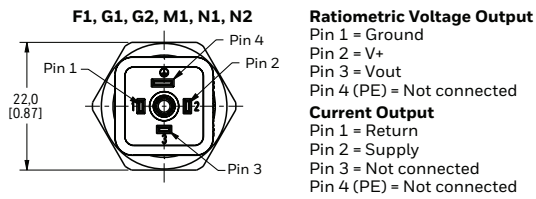
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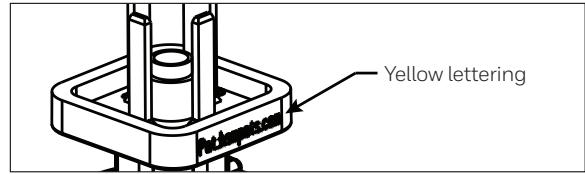
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Figure 5. DIN Mounting Dimensions (For reference only. mm/[in].)

Pinout

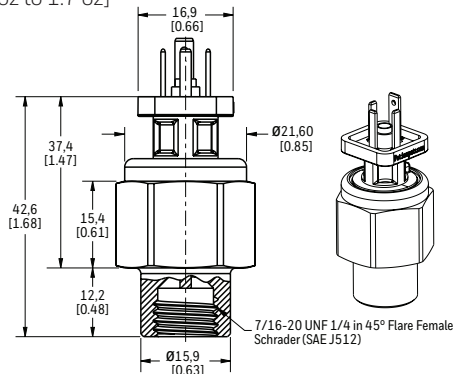


General product marking



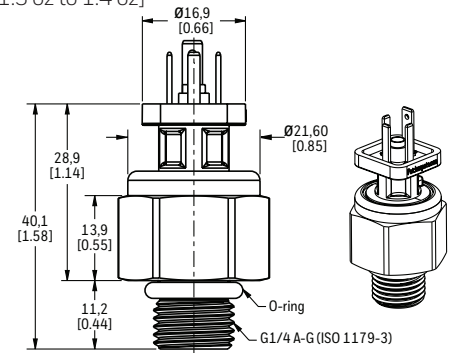
F1: 7/16-20 UNF 1/4 inch 45° Flare Female Schrader (SAE J512)

Seal: 45° cone
Mating geometry: SAE J512
Installation torque: 17 N m [12.5 ft-lb] max.
Weight: 42 g to 47 g [1.5 oz to 1.7 oz]



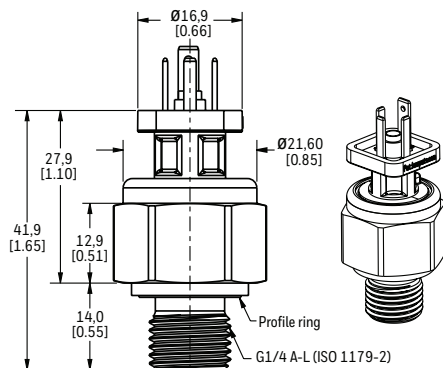
G1: G1/4 A-G (ISO 1179-3)

Seal: O-ring (included)
Mating geometry: ISO 1179-1
Installation torque: 15 N m [11.1 ft-lb] max.
Weight: 36.1 g to 41.1 g [1.3 oz to 1.4 oz]



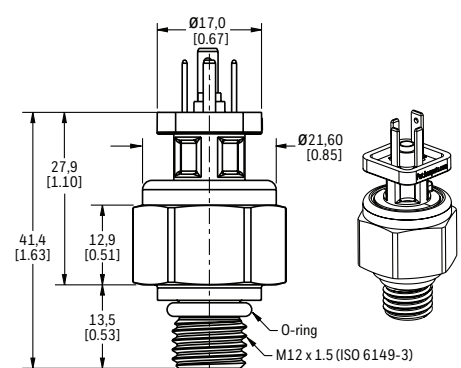
G2: G1/4 A-L (ISO 1179-2)

Seal: ISO 9974-2/DIN 3869 profile ring (included)
Mating geometry: ISO 1179-1
Installation torque: 15 N m [11.1 ft lb] max.
Weight: 36.1 g to 41.1 g [1.3 oz to 1.4 oz]



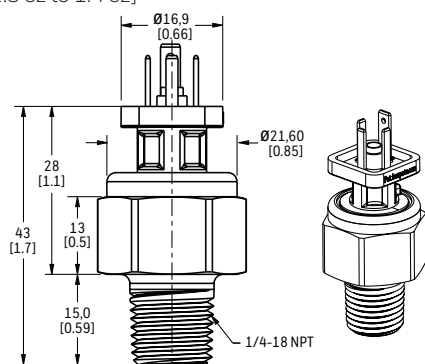
M1: M12 x 1.5 (ISO 6149-3)

Seal: O-ring (included)
Mating geometry: ISO 6149-1
Installation torque: 12 N m [8.85 ft-lb] max.
Weight: 34.9 g to 39.9 g [1.2 oz to 1.4 oz]



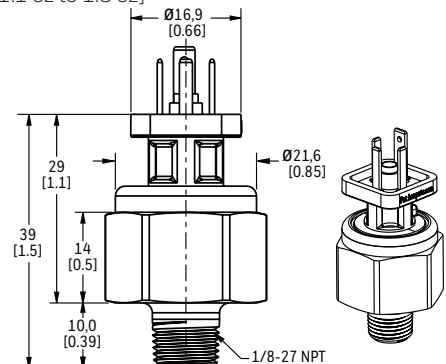
N1: 1/4-18 NPT

Seal: Pipe thread
Mating geometry: ANSI B1.20.1
Installation torque: Two to three turns from finger tight
Weight: 36.1 g to 41.1 g [1.3 oz to 1.4 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: 32.2 g to 37.2 g [1.1 oz to 1.3 oz]

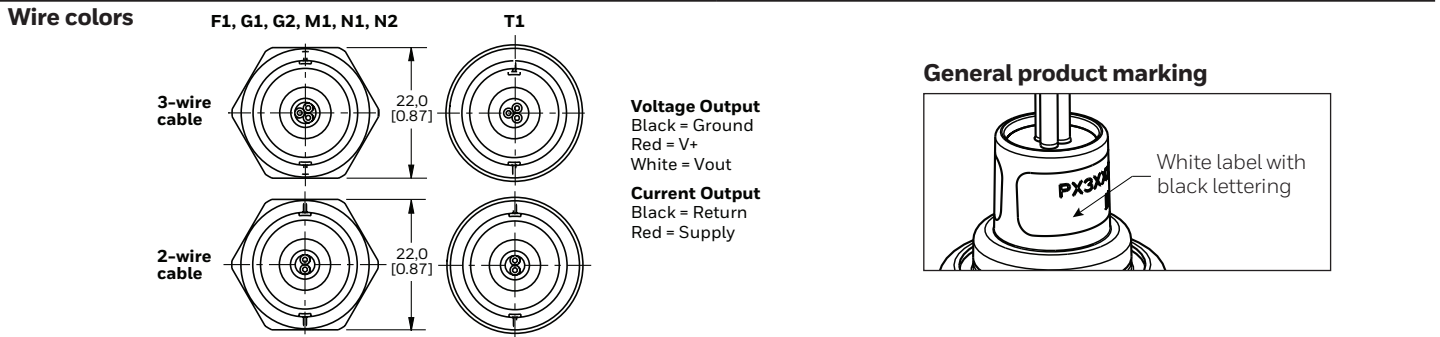


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Figure 6. Cable Harness Mounting Dimensions Shown by Pressure Port Type (For reference only. mm/[in.])



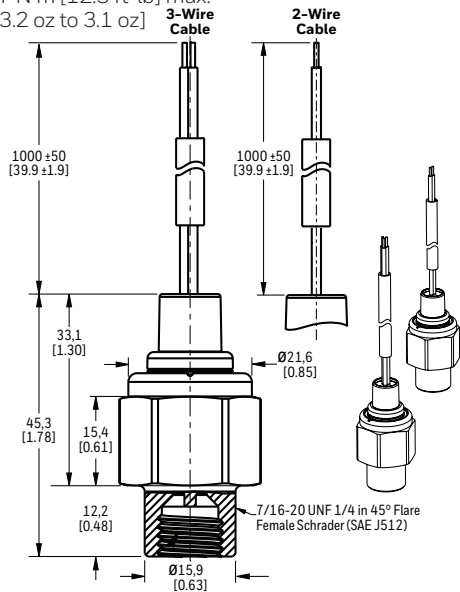
F1: 7/16-20 UNF 1/4 inch 45° Flare Female Schrader (SAE J512)

Seal: 45° cone

Mating geometry: SAE J512

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

Weight: 90 g to 88 g [3.2 oz to 3.1 oz]



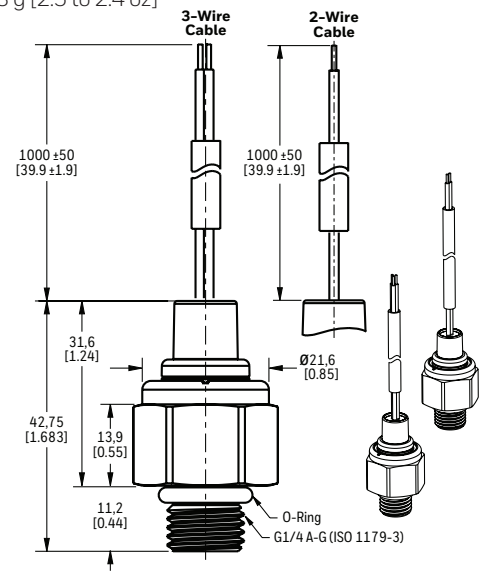
G1: G1/4 A-G (ISO 1179-3)

Seal: O-ring (included)

Mating geometry: ISO 1179-1

Installation torque: 15 N m [11.1 ft-lb] max.

Weight: 70 g to 68 g [2.5 to 2.4 oz]

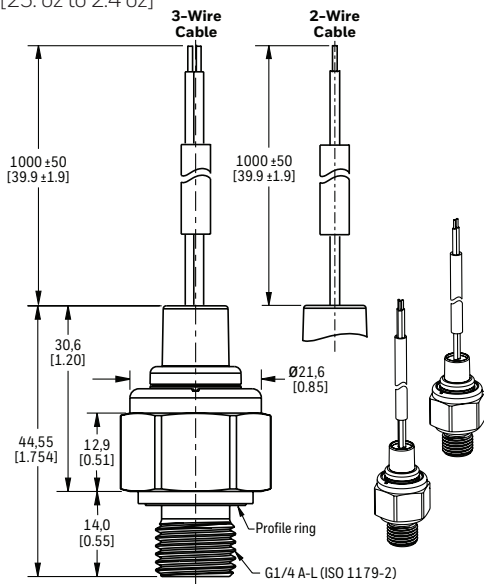


G2: G1/4 A-L (ISO 1179-2)

Seal: ISO 9974-2/DIN 3869 profile ring (included)

Installation torque: 15 N m [11.1 ft-lb] max.

Weight: 70 g to 68 g [2.5 oz to 2.4 oz]



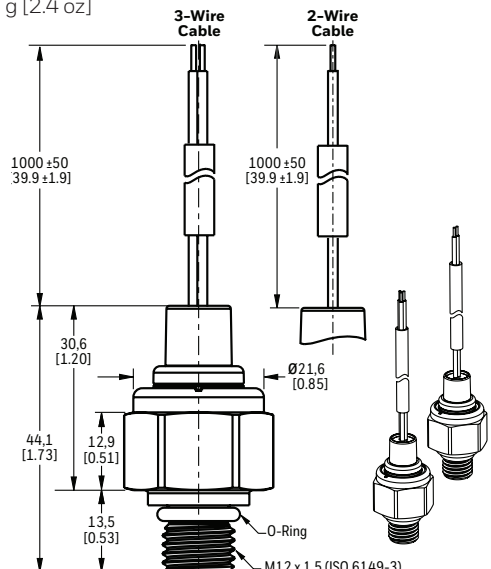
M1: M12 x 1.5 (ISO 6149-3)

Seal: O-ring (included)

Mating geometry: ISO 6149-1

Installation torque: 12 N m [8.85 ft-lb] max.

Weight: 69 g to 67 g [2.4 oz]



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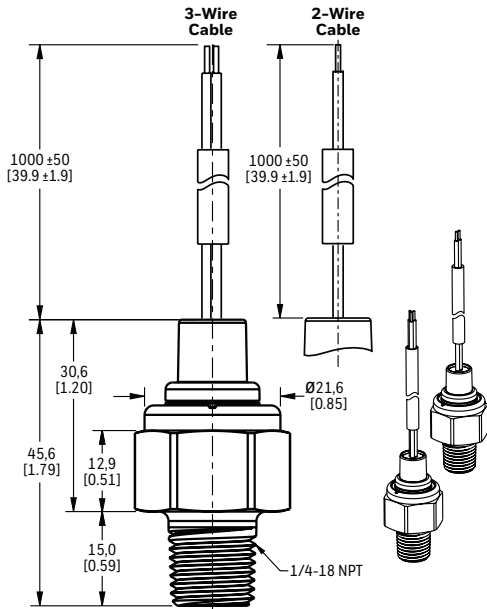
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Figure 6. Cable Harness Mounting Dimensions Shown by Pressure Port Type (For reference only. mm/[in.])

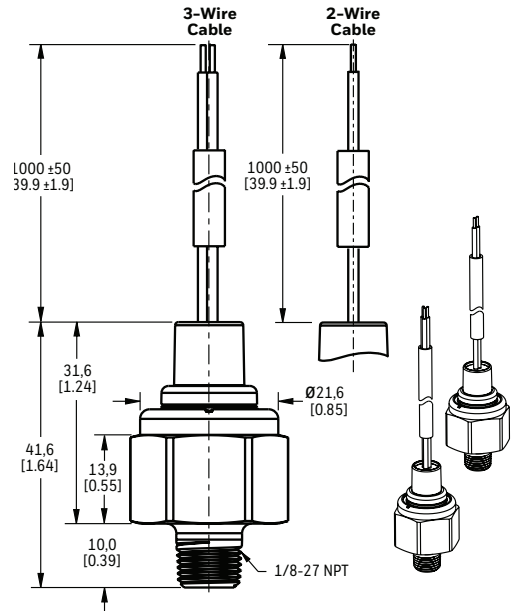
N1: 1/4-18 NPT

Seal: Pipe thread
 Mating geometry: ANSI B1.20.1
 Installation torque: Two to three turns from finger tight
 Weight: 70 g to 68 g [2.5 oz to 2.4 oz]



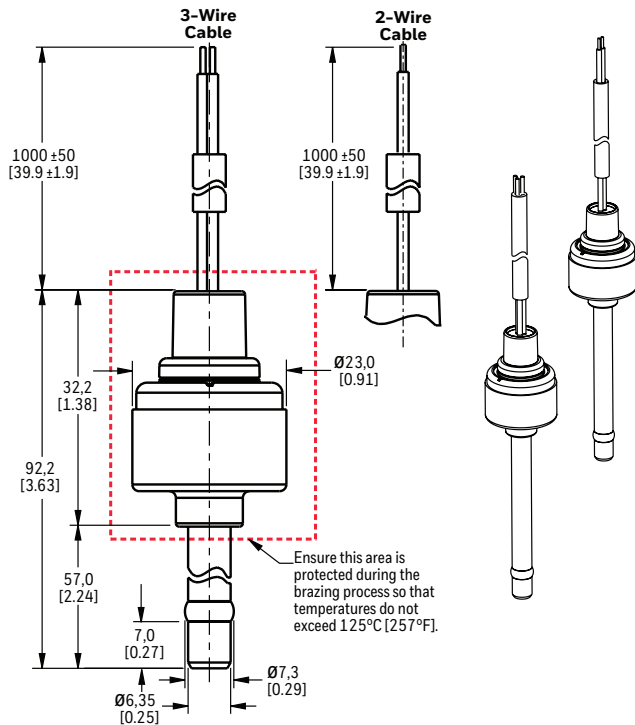
N2: 1/8-27 NPT

Seal: Pipe thread
 Mating geometry: ANSI B1.20.1
 Installation torque: Two to three turns from finger tight
 Weight: 66 g to 64 g [2.3 oz]



T1: Tube

Seal: Brazing
 Weight: 67 g [2.4 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

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective.

The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

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