

Heavy Duty Pressure Transducers

PX3 Series, 1 bar to 50 bar | 15 psi to 700 psi

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Issue B

Datasheet



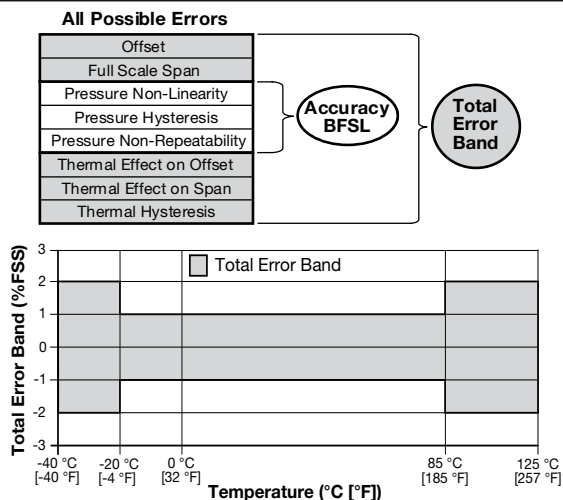
DESCRIPTION

Honeywell's PX3 Series Heavy Duty Pressure Transducers use piezoresistive sensing technology with ASIC (Application Specific Integrated Circuit) signal conditioning in a brass housing and Metri-Pack 150 or cable harness electrical connections. The PX3 Series are fully calibrated and temperature compensated from -40 °C to 125 °C [-40 °F to 257 °F].

VALUE TO CUSTOMERS

- Total Error Band (TEB) ± 1.0 %FSS from -20 °C to 85 °C: Provides the most comprehensive, clear and meaningful indication of the sensor's true measurement performance over a specified temperature range; small error promotes system uptime and efficiency. (See Figure 1.)

Figure 1. TEB Definition and Temperature Performance



- High insulation resistance and dielectric strength: Protect the user and sensor in high over-voltage situations, and ensures that the device is compliant with industry standards.
- High EMC performance: Operates reliably in the presence of electro-magnetic fields, such as near wireless signals, RF communication, and electrical devices.
- High external freeze/thaw resistance: Survives exposure to frost, commonly found in refrigeration systems. (See Figure 2.)

Figure 2. PX3 Series External Freeze/Thaw Resistance



- Reduced current consumption: Helps to reduce energy costs, and enhances product life if used in battery driven systems.
- Media compatibility: Common HFC (hydrofluorocarbon) refrigerants such as R410A and R134A, next generation low global warming potential (GWP) refrigerants such as R448A (Solstice® N40), R32 and R1234ZE, petroleum oils, lubricants, hydraulic fluids, brake fluids, air and water. For ammonia and other corrosive media, see Honeywell's SPT Series.

DIFFERENTIATION

- Optional diagnostics mode: Beneficial in applications where the sensor functionality and the need to know internal or external failure modes is critical.
- Great customer value: Multiple configuration possibilities provide flexibility of use in the application with no upfront NRE or tooling charges.
- Durable: Provides the tough environmental specs needed, including insulation resistance and dielectric strength, freeze-thaw resistance (see Figure 2), and EMC performance.

FEATURES

- Pressure range: 1 bar to 50 bar | 15 psi to 700 psi (absolute and sealed gage)
- Ratiometric output: 0.5 Vdc to 4.5 Vdc or 0.33 Vdc to 2.97 Vdc
- Fully calibrated and temperature compensated
- Total Error Band: ± 1.0 %FSS from -20 °C to 85 °C [-4 °F to 185 °F]
- External freeze/thaw resistance: 6 cycles from -30 °C to 50 °C [-22 °F to 122 °F]
- Insulation resistance: >100 MOhm, 1500 Vdc
- Dielectric strength: AC1500V, 1 min. or AC1800V, 1 s
- Current consumption: 3.5 mA max.
- EMC (radiated immunity): 200 V/m per ISO 11452-2
- Ingress protection IP67 (Metri-Pack 150), IP69K (cable harness)
- Response time: <2 ms
- RoHS, REACH, and CE compliant
- Six industry-standard pressure port types, including a tube port which provides for hermetically-sealed process connection

POTENTIAL APPLICATIONS

- Industrial: Refrigerant pressure monitoring in HVAC/R systems; air compressor system pressure
- Transportation: Air system monitoring; hydraulic oil pressure monitoring

PORTFOLIO

Honeywell's PX3 Series joins the PX2 Series, MLH Series, and SPT Series heavy duty pressure transducers.

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Table 1. Electrical Specifications

Characteristic	Parameter
Supply voltage: 5 Vdc 3.3 Vdc	±0.25 Vdc ±0.25 Vdc
Over voltage and reverse voltage	±16 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	0.5 Vdc to 4.5 Vdc (ratiometric to supply) 0.33 Vdc to 2.97 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] <-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 _____	±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 dB (30 MHz to 230 MHz), 47 dB (230 MHz to 1000 MHz) per CISPR 11 200 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 external and internal seal and cable jacket materials. See Table 5 and Figure 5 for temperature range details.

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.

⁵ Tested using 1.5 m [59.1 in] cable.

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 3.)

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