Honeywell

THE POWER OF **CONNECTED**

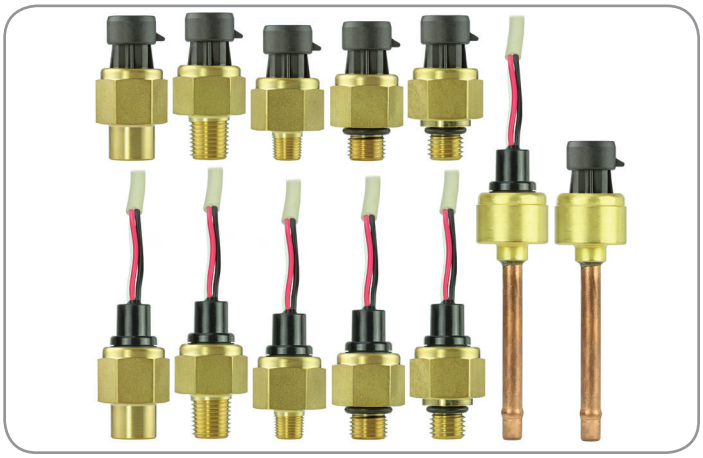
Heavy Duty Pressure Transducers

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

32313757

Issue D

Datasheet



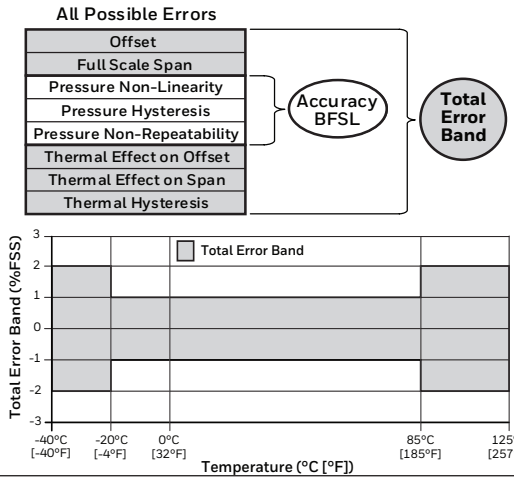
DESCRIPTION

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.)

(Shown with mating connector. See Figure 5.)

- 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, engine oil, petroleum-based hydraulic fluids, DOT 3 brake fluid, and dry air. 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 specifications needed, including insulation resistance and dielectric strength, external 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 (in dry, non-ionized air)
- Dielectric strength: AC1500V, 1 min. or AC1800V, 1 s (in dry, non-ionized air)
- 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

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

PORTFOLIO

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

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 (in dry, non-ionized air)
Dielectric strength	AC1500V, 1 min. or AC1800V, 1 s (in dry, non-ionized air)
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.