

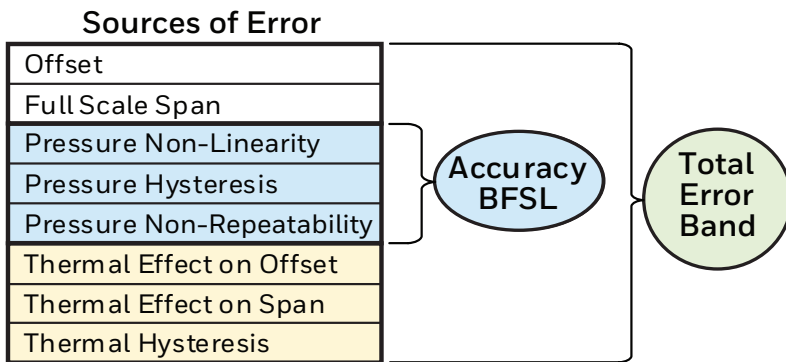
Total Error Band Specification for Honeywell Heavy Duty Pressure Transducers, PX2 Series and PX3 Series

A Technical Note

1.0 Background

The Total Error Band (TEB) specification on a heavy duty pressure transducer product datasheet can often be confusing. TEB is a single specification that includes all possible sources of error. TEB should not be confused with accuracy, which is actually a component of TEB. (See Figure 1.)

Figure 1. Components of Total Error Band



2.0 Total Error Band Datasheet Specifications

Honeywell uses the TEB specification in its product datasheets because it is the most comprehensive, clear and meaningful indication of the sensor's true measurement performance over a specified temperature range.

Many competitors do not use TEB. They simply specify the "accuracy" of their device. This specification, however, may exclude thermal hysteresis and temperature errors. Instead, the sub-component errors are listed individually. When added up, the total error (or what would be TEB) can be significant.

This specification may also be calculated over a very narrow condition, at only one point in the range, or at the absolute best accuracy level. It is then up to the customer to calibrate the device to make sure it has the accuracy needed over the temperature conditions of the application.

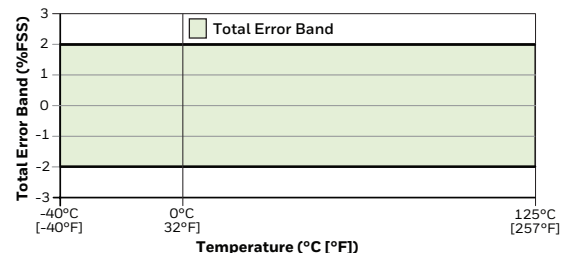
Figure 2 shows the TEB in graphical form for the PX2 and the PX3 Series. Figures 3 and 4 show excerpts from Honeywell and competitor datasheets, respectively.

Figure 2. PX2 Series and PX3 Series TEB

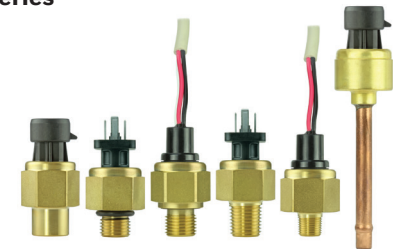
PX2 Series



• $\pm 2\%$ FSS: $-40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$ [$-40\text{ }^{\circ}\text{F}$ to $257\text{ }^{\circ}\text{F}$]



PX3 Series



• $\pm 1.0\%$ FSS: $-20\text{ }^{\circ}\text{C}$ to $85\text{ }^{\circ}\text{C}$ [$-4\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$]
 • $\pm 2.0\%$ FSS: $<-20\text{ }^{\circ}\text{C}$, $>85\text{ }^{\circ}\text{C}$ [$<-4\text{ }^{\circ}\text{F}$, $>185\text{ }^{\circ}\text{F}$]

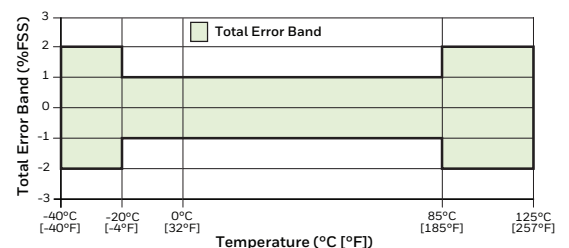


Figure 3. Honeywell Heavy Duty Pressure Transducer PX2 Series and PX3 Series Product Datasheets

PX2 Series

Table 2. Performance Specifications¹

Characteristic	Parameter
Operating temperature range ²	-40 °C to 125 °C [-40 °F to 257 °F]
Storage temperature range ³	-40 °C to 125 °C [-40 °F to 257 °F]
Compensated temperature range ⁴	-40 °C to 125 °C [-40 °F to 257 °F]
Accuracy ⁷	±0.25 %FSS ⁹ (See Figure 1.)
Offset error ⁸	±1 %FSS ⁹
Total Error Band ¹⁰	±2 %FSS ⁹ (-40 °C to 125 °C [-40°F to 257 °F]) (See Figure 1.)

Honeywell TEB includes all possible errors, including thermal errors and hysteresis. Honeywell TEB is given over the specified temperature ranges.

PX3 Series

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

Figure 4. Example of a Competitor Heavy Duty Pressure Transducer Product Datasheet

Characteristic	Specification
Operating Temperature Range	-30 °C to 100 °C [-40 °F to 212 °F]
Compensated Temperature Range	-30 °C to 100 °C [-40 °F to 212 °F]
Storage Temperature Range	-40 °C to 135 °C [-40 °F to 275 °F]
Offset Error	±2 %FSS
Accuracy	linearity error: ±0.5% of Full Span Max.
Total Error Band	2.0% of Span (-20 °C to 100 °C [-4 °F to 212 °F])

Competitor TEB is presented over a narrower temperature range than Honeywell and includes partial error.

3.0 Total Error Band Benefits

Honeywell’s industry-leading Total Error Band provides the following benefits to the customer:

- Eliminates individually testing and calibrating every transducer, helping to reduce manufacturing time and process.
- Supports system accuracy and warranty requirements.
- Helps to optimize system uptime.
- Provides excellent sensor interchangeability.

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.**

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