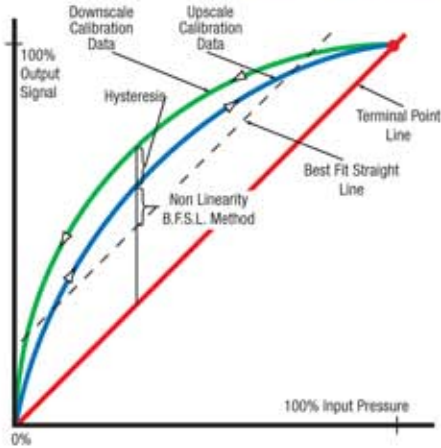


Best Fit Straight Line (B.F.S.L.) Accuracy Illustration



The diagram illustrates the components of the Best Fit Straight Line (B.F.S.L.) accuracy specification used on NOSHOK pressure transducers and transmitters. The shape of the curve is "single lobed" and is exaggerated for explanation purposes. The individual terms are defined as follows:

Upscale and downscale calibration data are the results of plotting the output of the transducer when a known variable input source is applied. A minimum of 6 pressure points of increasing pressure and 5 pressure points of decreasing pressure are used. In practice a second calibration cycle would be performed to provide the means to calculate the repeatability which is described below.

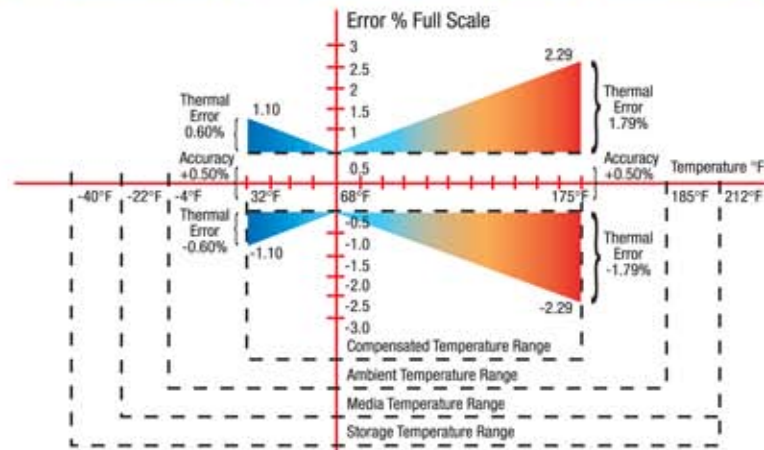
Linearity is the closeness of the calibration to a specified straight line. It is usually measured as non-linearity and expressed as linearity. It is the maximum non-linearity measuring from the upscale data of the calibration curve relative to the Best Fit Straight Line.

Hysteresis is the maximum difference in output when a pressure value is first approached with increasing pressure (upscale) and then with decreasing pressure (downscale). It is obtained from one calibration cycle and is usually expressed as percent full scale output.

Repeatability is usually measured as non-repeatability and expressed as repeatability in percent of full scale output, and is given by the maximum difference between output readings from two calibration cycles always approaching from the same direction. The above diagram shows a single calibration cycle for clarity.

Best Fit Straight Line (BFSL) is a method of expressing linearity based upon a straight line positioned as to minimize the maximum deviation. The calculations are performed using a Least Squares curve fit method.

Thermal Performance of NOSHOK Pressure Transducers



Temperature Performance 100 Series Pressure Transmitter

The above diagram illustrates transducer performance related to the temperature of the environment and media being measured. The graph shows the worst case performance of the series 100 pressure transmitter as an example (other series follow the same pattern). The thermal specification as indicated in the 100 series specifications is given in a worst case coefficient for the combined effects on zero and span. The definitions are as follows.

The **Compensated Temperature Range** is the thermal band over which the effect specification is guaranteed. For the 100 series, the coefficient is $\pm 0.0167\%$ Full Scale per degree F. This means that over the compensated temperature range the thermal boundaries are straight lines as shown. This is sometimes called a "bow-tie effect" or "butterfly effect".

The **Ambient Temperature Range** is the maximum and minimum ratings over which the transducer will output a correct signal.

The **Media Temperature Range** is the maximum and minimum ratings of the media at the process connection.

The **Storage Temperature Range** is the maximum and minimum ratings for no damage on the shelf.