Moore Industries' smart temperature transmitter strives for new accuracy benchmark

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Instrument accuracy keeps on getting better and better. Why? For the simple reason that it's what many end users demand. Fierce competition keeps intense pressure on reliability, productivity, and quality in existing processes, and high-tech industries are faced with ever-tighter process windows. Three sigma becomes six sigma, reliability of five nines becomes six nines, and the beat goes on.

Moore Industries' new THZ Smart HART® Temperature Transmitter is designed to meet the demands of today's most critical applications. If ±0.1% of span is considered state-of-the-art for critical applications, the THZ blows past this, delivering as high as ±0.04°F accuracy when coupled and calibrated with the company's precision RTDs.

Total trimming

The THZ features "Total Trimming," a feature that describes Moore Industries' unique input/output trimming techniques. The company says that its trimming methods practically eliminate the measurement errors that are commonly introduced by sensors and readout systems.

To achieve maximum measurement accuracy, the company recommends specifying the transmitter and sensor as a unit. This is because sensors, even precision ones, can vary in measurement accuracy. The smart THZ is able to compensate for inherent sensor inaccuracies.

Moore Industries' THZ Smart HART Temperature Transmitter can meet the demands of critical applications by delivering an accuracy spec as good as ±0.04°F when used with the company's precision RTDs.

In their calibration lab, test technicians perform what is called sensor-to-transmitter matching. The temperature sensor is immersed in stabilized temperature baths. Up to three reference points derived from the sensor are captured by the THZ, and stored in non-volatile memory. These data points are used by the smart transmitter to compensate for deviations between a sensor's stated linearization curve and its actual measurements. Moore Industries claims this technique can yield even more precise readings than the Callendar Van Dusen equation method used by other transmitter manufacturers.

Total Trimming capabilities also extend to the THZ's analog output. Featuring 15 1/2-bit adjustment resolution, you can trim the THZ's 4-20 mA output to compensate for measurement errors introduced by DCS, PLC, PC-based, and similar receiving systems.

Handheld and PC configuration

The loop-powered (two-wire) THZ can be set up with either a regular smart HART handheld configurator or a PC configuration program that Moore Industries provides at no charge with each order. Either configuration method may be performed over the 4-20 mA wires from the control room or from any termination point along the loop.

In addition to the Total Trimming functions, programmable parameters include: input type (14 RTD types, 9 T/Cs, -50 to 1000 mV, and 0-4000 Ω) and input range; 4-20 mA output range, including reverse outputs; readout in °C, °F, mV, or ohms; damping times of 0-30 s to average out erratic sensor input fluctuations; and upscale or downscale on sensor failure. Once developed, a configuration set up can be downloaded to any number of transmitters, stored for record keeping or future use, or printed.

Additional advantages

Other notable THZ attributes include: a 100 ms update (rise) time; complete isolation between input, output, and case; up to five-year stability between calibrations; the ability to enter custom input linearization curves (up to 128 points); a loop test function (holds the 4-20 mA output at constant level); and a wide ambient operating range of between -40° to 185°F (-40° to 85°C).

The THZ is offered in a high-density DIN-style housing, and in a variety of field-mount enclosures designed for Div. 1, Div. 2, and intrinsically-safe locations. One version features a large display that shows temperature input, 4-20 mA output, or toggles between the two.—Moore Industries-International, Inc., 16650 Schoenborn St., Sepulveda, CA 91343-6196; 800-999-2900; e-mail: info@miinet.com; Web: www.miinet.com.

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