Smart Temperature Transmitter Accents Accuracy

A new smart, universal temperature transmitter, introduced by Moore Industries-International, Sepulveda, Calif., is said to deliver better than twice the stated accuracy of comparable instruments on the market today. Called the TDZ Indicating Smart HART Temperature Transmitter, all operating and display parameters can be set up using a standard Model 275 handheld or with a PC-based configuration program that incorporates a setup guide called the HelpMap Navigation System.

"We had a lot of trouble finding test equipment accurate enough to provide the 3:1 ratio required to calibrate our new transmitter," says Joe Hage, Moore Industries' vice-president of engineering. "We also had to design and construct a special climate-controlled test center in which to operate the new equipment." Hage states proudly that the TDZ is so accurate (up to ±0.04° F), you could actually use it as a precision current source to calibrate other process instruments.

While exceptional measurements can be achieved using normal calibration methods, the company says the way to get the best results is to match the TDZ with a high-accuracy RTD, then calibrate the union as a temperature system. This is because the accuracy of each individual sensor can vary, so the transmitter compensates for slight departures from a sensor's established linearization curve. Rather than assuming that the sensor is operating to exact specifications, the TDZ captures two actual measurements produced by the sensor. The captured reference points are stored within the transmitter's non-volatile memory, and continuously used to calculate the process measurement reading.

Some may question the need for such extreme accuracy. "Accuracy of ±0.1% of span used to be good enough for most of our customers," explains Jim McKenna, the company's vice-president of sales. "This is no longer true. Engineers are counting on highly accurate instruments to do their share to improve efficiencies in today's highly competitive process industries. High-tech industries such as semiconductor, microelectronics, pharmaceuticals, and biotech—where production and environmental tolerances are especially critical—stand to benefit even more. Realizing this, their process and facility engineers are demanding accuracy ratings that were unthinkable even a couple of years ago."

The TDZ also provides 15 ½-bit output adjustment resolution. This attribute allows you to fine-tune the 4-20 mA output to correct for measurement errors that may initiate at the receiving system. To complete the picture, it can go up to five years between scheduled calibrations, with stability of 0.09% of span maximum error over one year.

To facilitate specification of the high-accuracy transmitter and sensor union, and to accomplish the temperature system calibration, Moore Industries offers transmitters combined with precision sensors in ready-to-install temperature packages. There is a complete calibration lab in Sepulveda where sensor-to-transmitter matching to customer specifications is accomplished for a nominal price. Upon its arrival, you tap the system into your process, connect the loop wires, and you're in business.

As with all smart HART instruments, the traditional method for configuring the TDZ is with a standard Model 275 HART communicator. An alternative is using the company's intelligent PC configuration software, which is provided free with each order (a HART interface cable/modem is required and available from Moore Industries).

The TDZ's programming options include input type (RTD, thermocouple, mV, or ohms) and range; zero and full-scal values; 4-20 mA output range, including reverse outputs; display in degrees C, degrees F, mV, or ohms; damping times of 0-30 seconds; and sensor failure upscale or downscale drive.

Like the company's previous PC-programmable instruments, the very simple software allows selection of operating parameters in approximately one minute, from one window. However, if you do have a question, the company has provided a quick and complete answer in the form of what they call the HelpMap Navigation System.

Modeled after an interactive Web site, yet completely resident within the configuration software, the HelpMap is a searchable digital user manual designed to answer any questions you may have from hookup to startup. Just point and click on the area of the software window where information is required, and an explanation pops up along with illustrations, tables, and related links that provide further assistance. Help topics include instrument and HART protocol specifications, operation, configuration, installation, maintenance, and troubleshooting.

The loop-powered, fully isolated, RFI-protected TDZ is offered in field-mount enclosures designed for Div. 1 (explosion-proof), Div. 2 (non-incendive), and intrinsically safe locations. Its large process indicator can be set to display the input, the 4-20 mA output, or toggle between the two. Agency approvals have been applied for.

For more information, call 800/999-2900, visit www.miinet.com, or Circle 623