

Технические характеристики на беспроводные передатчики температуры Moore Industries THZ DH & WL

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THZ DH & WL

Smart HART® and WirelessHART
Temperature Solutions

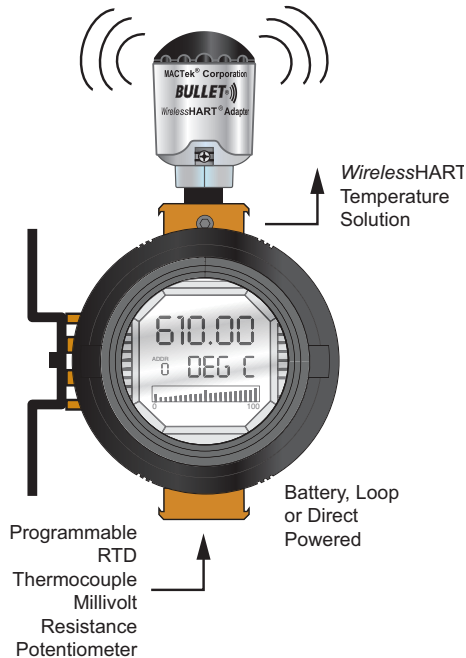
Description

Moore Industries' Smart HART® Temperature Transmitters configure in minutes to accept a direct signal input from nearly every available RTD and thermocouple, as well as from ohm and mV sources. Universal and microprocessor-based, they provide an isolated and linear 4-20mA output proportional to the input. This signal is ready for direct interface with HART or non-HART based DCS, PLC and other computer-based SCADA systems. When the BULLET WirelessHART adapter is added to the THZ, it provides a cost effective method for adding temperature measurements to WirelessHART networks.

Easy-to-Order Temperature Assemblies

One simple model number is all it takes to order our complete temperature assemblies. They come configured, calibrated, wired and ready to install in your process. **See our RTI1 and RTI2 Ready-to-Install Temperature Transmitter Assemblies data sheets for details.**

Figure 1. WirelessHART temperature solution with universal input and HART programmable transmitter with large, easy to read display.



Certifications



*High-accuracy measurements are achieved by using a 4-wire, 1000 ohm platinum RTD with a span of 100°F (50°F minimum) calibrated in our sensor-matching calibration bath.

**the MACTek BULLET P/N 110100-20M0 needs to be ordered as a separate line item when creating a WirelessHART temperature solution.



Mounting choices include dual-compartment head (above), and dual-compartment head with WirelessHART and a battery case (right) for wireless applications.

Features

- **Cost effective Battery Powered WirelessHART Temperature Solution** by coupling THZ WL to the BULLET WirelessHART adapter**.
- **Input-to-output analog accuracy of up to $\pm 0.014^{\circ}\text{C}$ ($\pm 0.025^{\circ}\text{F}$)*** is the absolute best in the industry.
- **20-bit input resolution delivers exceptional digital accuracy** of $\pm 0.1^{\circ}\text{C}$ ($\pm 0.18^{\circ}\text{F}$) with all Pt RTDs, or up to $\pm 0.05^{\circ}\text{C}$ ($\pm 0.09^{\circ}\text{F}$)* for Pt1000 RTD.
- **Set up with HART Communicator, HART-based system, or PC** allows you to check the status, or perform parameter changes on the BULLET or THZ.
- **Long-term stability** provides up to 5 years between scheduled calibrations.
- **Standard integral displays show real-time process status** and valuable loop diagnostic information.
- **Advanced EMI/RFI protection and ambient temperature compensation** guard against environmental factors that can quickly degrade measurement accuracy.
- **Install it almost anywhere or just save money on wiring** - the THZ WirelessHART Temperature solution comes in the weatherproof Type 4X WL housing and installs completely wirelessly, equipped with the BULLET WirelessHART adapter and battery case. Lithium batteries can last up to 4-5 years.

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Set Up with HART Communicator, DCS, Asset Management System (AMS) or PC

Our Smart HART Transmitters can be programmed in minutes and interrogated at any time, from anywhere on the 4-20mA loop (see Figure 2). You can use a standard hand-held HART Communicator (such as a Model 275), a HART-based control system, an Asset Management System (AMS) or Moore Industries' Intelligent PC Configuration Software to:

- **Program Input Type and Range**—Span, zero and input type values are all programmable.
- **Adjust Sensor Trim Offset**—Set an offset to compensate for measurement errors that are caused when a temperature sensor is not performing to its rated curve specifications.
- **Set Damping Time**—Eliminate imprecise readings caused by noise and other insignificant process fluctuations by setting a damping time between 1-30 seconds.
- **View Real-Time Process Values**—View the existing process value (in the appropriate engineering unit), lower and upper range values, actual output current and output current as a percentage of output span.

- **Choose Sensor Failure Mode**—If the input is lost, you have the choice of the output going upscale (to 23.6mA) or downscale (to 3.6mA).
- **Select Device Identification and Data**—Tag number (8 characters), configuration date, unit location code (16 characters), a message (32 characters), and polling address (0-15) are selectable.
- **Fix Output Current (Loop Test)**—To assist in calibrating your system, the THZ's current output can be fixed to a known value so you can check it against the value being read by your receiving device.

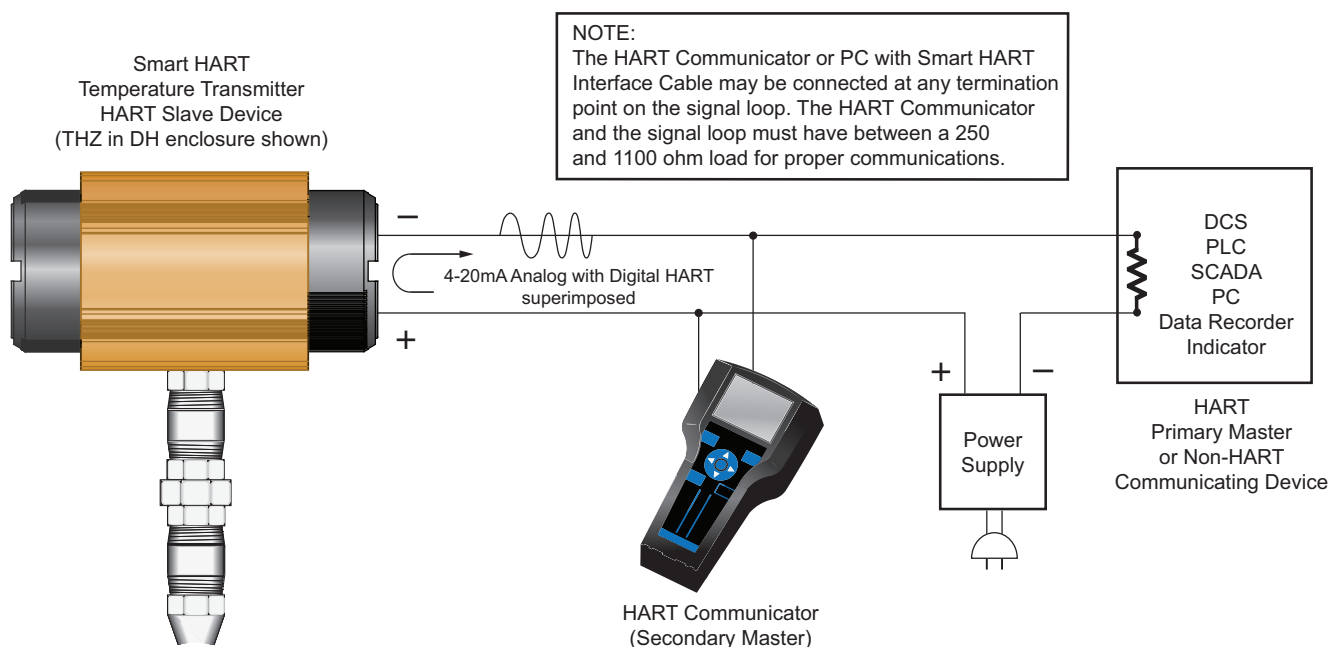
Non-Volatile Memory

If power to the transmitter is lost, the unit resumes normal operation with the parameters you've configured upon reapplication of power.

Point-to-Point Loops Deliver Analog Simplicity with Remote Programmability

In the majority of applications, the THZ is installed on a point-to-point 4-20mA process loop like a regular analog transmitter (Figure 2). A HART Communicator or HART-based system is used to configure and view the transmitter's operating parameters and diagnostic data from any point on the loop.

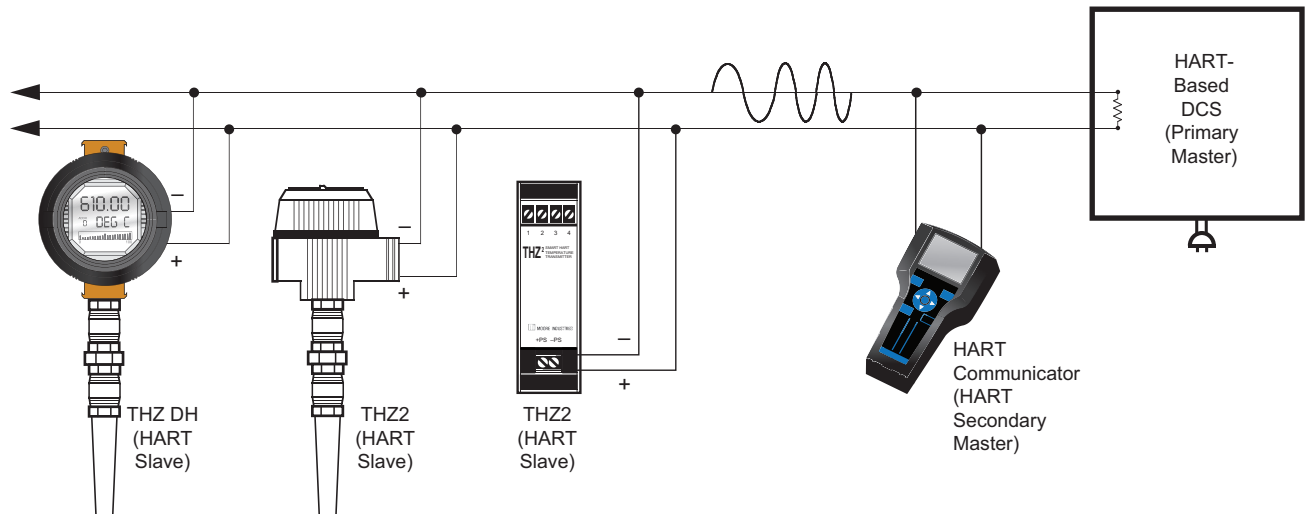
Figure 2. From any point on the 4-20mA loop, you can view, test and change your transmitter's operating parameters.



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Figure 3. Save time and money by networking up to 15 of our smart transmitters onto a single digital data link.



Multidrop Networks Save Wiring Costs

Any combination of up to 15 THZ and other smart transmitters connect in parallel onto a HART digital communication link (Figure 3). This means you can use a single loop, instead of 15 separate loops, to connect multiple transmitters. In a multidrop network, the transmitter's measured process variable is output digitally, so the 4-20mA signal (set to 4mA) is not used.

A HART-based control system uses each transmitter's individual address (1-15) to configure or view the transmitter's data. A HART Communicator can be used in this configuration to access information from, or transmit configuration information to the transmitter from anywhere on the HART loop.

HART Master/Slave Structure

To implement two-way communications between the THZ and the device configuring or receiving its information, the transmitter operates in a HART Master/Slave structure.

The THZ is a Slave (or Slaves in a multidrop network). There can be two Masters per system: a Primary Master and a Secondary Master. In the majority of applications, the Master is a HART Hand-Held Communicator, but it can also be a HART-based control system. Operating in HART's Poll/Response (Normal) Mode, the HART Master polls the THZ two times per second to access the current process variable status, send setup data to the transmitter, or remotely view its identification, configuration and diagnostic data.

THZ Device Description (DD)

Moore Industries' Device Description (DD) is the device-specific programming information that is loaded into a standard HART Communicator (such as the Model 275). It allows access to all of the unit's programming functions except the custom linearization table function. The THZ DD is available on the HART Communication Foundation's October 1999 and later Device Driver Library release. We can update your Model 275 or configure your transmitter at any of our solution centers.

How to Determine if Your HART Communicator Has a THZ Device Driver

To determine if your HART Communicator has the DD, press "1" to select "Offline" and press "1" again to select "New Configuration". Select "Moore Industries" from the list of companies. The "THZ" option will appear if you have the proper DD installed. To update your HART communicator with the latest DD, call our Interface Solution Center nearest you.

Also Programs with the Generic HART DD

Even if your communicator is not up to date, most of the important programming features can be accessed without the THZ DD by using the "Generic" HART DD available on HART Communicators. Or you can order the unit factory-configured by Moore Industries with all of the parameters that are not accessible through the generic DD.

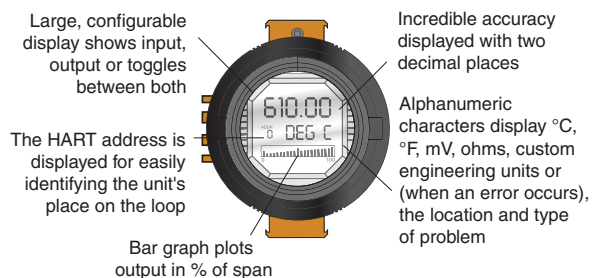
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Easy-to-Read, Customizable Display

THZ DH and WL enclosures come standard with a large display that features easy-to-read alphanumeric characters. Set the display to show input status, output status or toggle between both. They can even be custom-scaled to display an engineering unit of your choice (Figure 4).

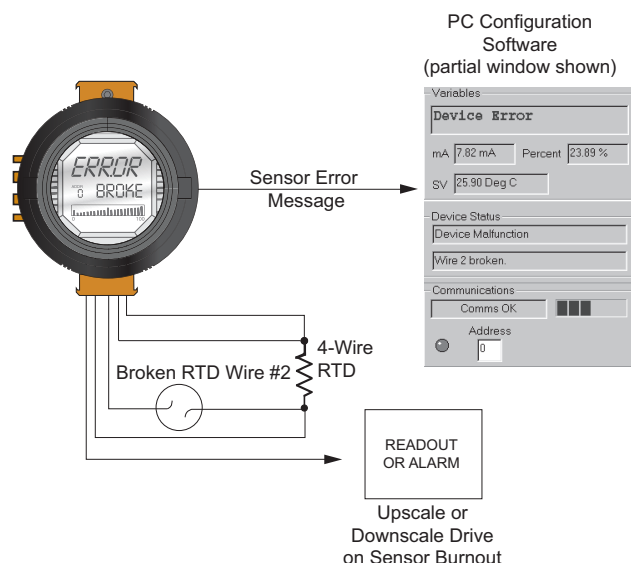
Figure 4. Standard process display shows input, output or toggles intermittently between the two.



Total Sensor Diagnostics

These transmitters perform continuous sensor diagnostics. This patented Moore Industries feature can save you from costly lost production time and hours of troubleshooting. If the sensor breaks or otherwise stops sending a signal during operation, the transmitter sends the output upscale or downscale to warn of trouble, and provides a HART digital error message that can be read by a HART communicator or computer-based system. If the sensor being utilized is a RTD, the THZ instantly displays the type and location of the error.

Figure 5. Total Sensor Diagnostics saves troubleshooting time.



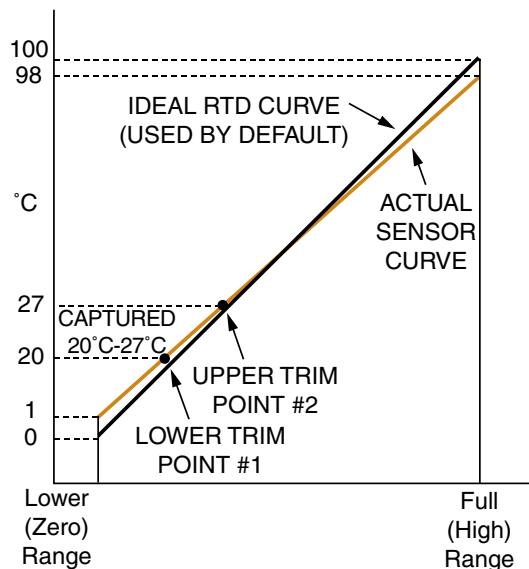
Trims to Respond to Specific Sensor Curve Segments

Most transmitter's zero and span values can be calibrated to measure a specific range within a sensor's overall curve capability. However, for even greater measurement accuracy, our transmitters trim capabilities go much further.

The THZ can be trimmed with two data points within the selected zero and span measurement range. This advantage allows a complete process range to be monitored, while placing measurement emphasis on a specific segment of the range most critical to the process.

In the figure below, the actual sensor curve is used in place of the ideal RTD curve between 20°C and 27°C. This provides incredible precision over a limited portion of span, while measuring the remainder of the span with the THZ's usual outstanding accuracy.

Figure 6. The THZ can be set to measure the segment most critical to the process.



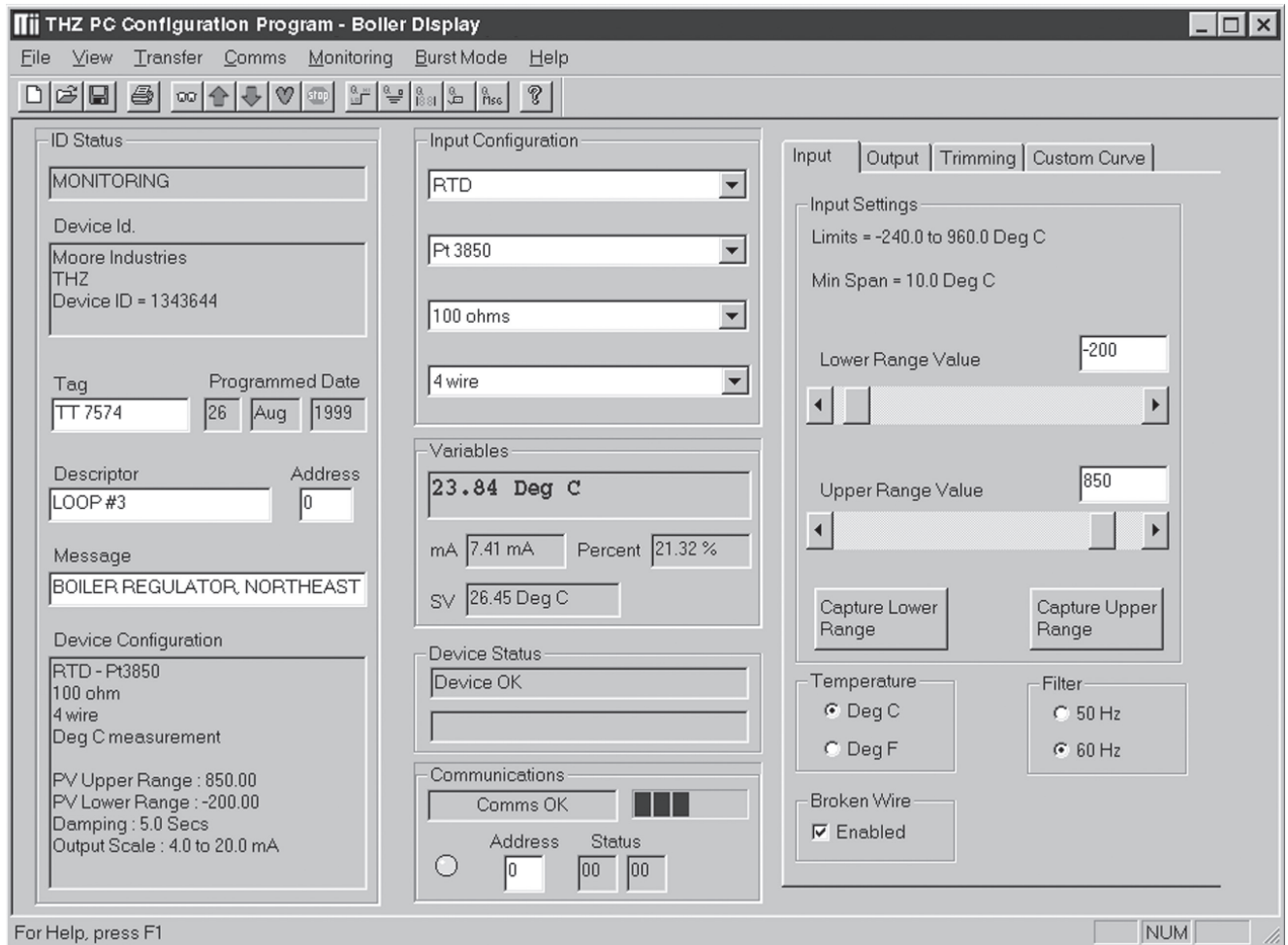
Precise Linearization and RJC

The THZ uses an advanced linearization method to minimize the conformance error. Its Reference (Cold) Junction Compensation techniques produce stable readings even in fluctuating ambient temperature conditions. For non-linear inputs, create custom linearization curves using our PC Configuration Software.

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One Window. One Minute. One Set Up.



Intelligent PC Configuration Software

Our Intelligent PC Configuration software allows you (with the aid of our HART-to-RS232 Smart Interface Cable) to set up all your transmitter's settings from just one window, in about a minute. Once a set up is created, it can be downloaded to multiple transmitters. Just a few of the time saving and performance enhancing features include:

Set Up Safeguards—It is nearly impossible to make incompatible configuration selections.

Transmitter/Configuration Auto Recognition—The program software automatically recognizes the transmitter model and its configuration parameters.

Toolbar for Frequently Used Commands—A conveniently located toolbar provides quick access to often used configuration functions.

Real-Time Process Readout—The process measurement and the communication status between the transmitter and PC is continually shown on the software window.

Precise Digital Output Trimming—This essentially eliminates the impact of measurement errors introduced by inaccurate readout devices.

Selectable Under Range, Over Range and Sensor Failure Values—By setting different default values for each condition, you can distinguish between the failure modes when they occur.

Store and Print Files—The configuration record you've created may be downloaded to any number of transmitters, stored for recordkeeping or printed.

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Specifications

HART Specifications Address Range: 0-15 (1-15 are for multidrop loops) Transmission Speed: 1200 baud Character Format: 1 Start Bit - 8 Data Bits - 1 Odd Parity Bit - 1 Stop Bit	Performance (Continued) Step Response Time: THZ: 600msec maximum, 500msec typical from the time an input is applied to the output reaching 90% of its final value THZ in DH Enclosure: 700msec maximum, 500msec typical from the time input is applied to the output reaching 90% of its final value Ripple: Less than 10mVp-p measured across a 250 ohm load resistor at frequencies up to 120Hz Over-voltage Protection: Input, ±5Vdc peak, maximum; Output, 48Vdc, maximum Digital Input Filter: User-programmable; 50/60Hz Power Supply Effect: ±0.002% of span per 1V change Load Effect: Negligible within specified power limits Load Capability: $\text{Load} = \frac{(V_{dc} - 12)}{0.024}$ Burnout Protection: User-programmable, Upscale to 23.6mA; Downscale to 3.6mA	Performance (Continued) Output Current Limiting: 3.8mA and 21.6mA for input over range; 25mA maximum T/C Input Impedance: 40 Mohm nominal RTD & Ohm Excitation: 250 microamps, ±10% RTD Lead Wire Resistance Maximum: RTD resistance + 2X lead wire resistance should total <4000 ohms; Recommended lead wire resistance for three wire connections, <35 ohm/ wire; 10 ohm copper sensor lead wire resistance should total <5 ohm Sensor Lead Resistance Effect: 2-wire sensors: Error = 1.0 ohm in reading/ohm of lead resis- tance; 3-wire sensors: Error = 1.0 ohm in reading/ ohm of lead of unbalanced resistance; 4-wire sensors: No effect Damping: User set; 0-30 seconds Resolution: Input, 20-bit; Output, 16-bit Supply Range: 12-28V I.S.; 12-42V normal operation
Performance Input Accuracy: See Table 3 Analog Output Accuracy: ±0.015% of span Overall Accuracy: The overall accuracy of the unit is the combined input and output accuracy. It includes the combined effects of linearity, hysteresis, repeatability and adjustment resolution. It does not include ambient temperature effect. For T/C input only, add the Reference Junction Compensation error Reference Junction Compensation: ±0.45°C (±0.81°F) Stability: See Table 1 Isolation: THZ in DH: 500Vrms input- to-output continuous, and will withstand a 500Vac dielectric strength test for one minute without breakdown Response (Rise) Time: 100msec maximum for the output to change from 10% to 90% for an input step change of 0% to 100%		<i>Specifications continued on next page</i>

Table 1. Long-Term Stability Specifications

Stability (% of maximum span)	Input-to-HART Output (Years)			HART-to-Output Output (Years)		
	1	3	5	1	3	5
THZ-DH T/C, mV	0.0084	0.0145	0.019	0.0183	0.032	0.041
THZ-DH RTD, Ohm, Potentiometer	0.013	0.0225	0.029	0.0183	0.032	0.041

$$\text{Overall Error} = \sqrt{(\text{Input-to-HART Error} \times \text{Reading}/100)^2 + (\text{HART-to-Output error})^2}$$

*Consult factory for improved long term drift specifications

Table 2. Ambient Temperature Effect

Input Type	Digital Accuracy per 1°C (1.8°F) change	Analog Accuracy per 1°C (1.8°F) change
THZ in DH		
RTD	0.0015°C	0.001% of span (16mA)
T/C	0.0015°C	0.001% of span (16mA)
Millivolt	0.00025mV	0.001% of span (16mA)
Ohm	0.007 ohms	0.001% of span (16mA)

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Specifications (continued)

Display (THZ [DH], THZ [WL]) THZ in DH and WL Enclosure: Top Row, 18mm (0.5 in) high black digits on a reflective background; Bottom Row, 10mm (0.4 in) high digits on a reflective background; Two-digit HART address indicator; % of Span shown on a bar graph with upper and lower out-of-range indicators Batteries (THZ WirelessHART solution only) Type-D Lithium 4-5 years (19000 mAh lithium batteries, Direct power & switching mode is enabled and set to a burst rate of once every 300 seconds).* Operating & Storage Range: -40°C to +85°C (-40°F to +185°F)	Ambient Temperature and Conditions Relative Humidity: 0-95%, non-condensing Ambient Temperature Effect: See Table 2 Effect on Reference (Cold) Junction Compensation: ±0.005% of input span/°C change of ambient temperature RFI/EMI Immunity: THZ in DH/WL: 30V/m when tested according to SAMA 33.1 abc with 0.5% of span or less error; 10V/m@ 80-1000MHz, 1kHz AM when tested according to IEC 1000-4-3-1995 Startup Time: Performance within specification 8 seconds after power is applied	Ambient Temperature and Conditions (Continued) Noise Rejection: Common mode, 100dB@ 50/60Hz; Normal Mode: 70dB typical at 200mVp-p @50/60Hz Weight THZ in DH Enclosure: 1.75 kg (3 lbs., 14.5 oz) THZ in WL Enclosure without batteries: 2.99 kg (6 lbs., 9.6 oz) THZ in WL Enclosure with batteries: 3.36 kg (7 lbs., 6.4 oz) *Note: If you don't need frequent data sampling, battery life can be extended without affecting the measurement accuracy by increasing the time between bursts which reduces the transmitter power-on time.
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Complete Temperature Assemblies

Free yourself from the hassle of looking around for pieces and parts by ordering a complete assembly.

To complement our high-quality transmitters, we carry complete lines of RTDs, thermocouples, thermowells, connection heads and fittings. Get the quality you need and the options you require with the ease of just one ordering number!

For the best accuracy, have your transmitter and sensor calibrated together in our sensor-matching calibration bath.

See our RTI1 and RTI2 Ready-to-Install Temperature Transmitter Assemblies data sheets for details.

Sensor-to-Transmitter Matching

Our sensor matching process starts by immersing the temperature sensor into stabilized temperature baths in our calibration lab. The transmitter captures two points from the sensor and stores them in non-volatile memory. It then uses them to compensate for deviations between a sensor's stated linearization curve and its actual measurements.

Sensor matching provides you with incredible accuracy at an affordable price. Accuracy varies with the sensor, so contact the factory for information on your sensor type.

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Table 3. Input and Accuracy Table

Input	Type	α^*	Ohms	Conformance Range	Minimum Span	Input Accuracy	Maximum Range	Sensor-to-Transmitter Matching
RTD (2-, 3-, 4-Wire)	Platinum	0.003850	100	-200 to 850°C -328 to 1562°F	10°C (18°F)	$\pm 0.1^\circ\text{C}$ ($\pm 0.18^\circ\text{F}$)	-240 to 960°C -400 to 1760°F	Up to $\pm 0.014^\circ\text{C}$ ($\pm 0.025^\circ\text{F}$) system accuracy*. *High-accuracy measurements are achieved by using a 4-wire, 1000 ohm platinum RTD with a span of 100°F (50°F minimum) calibrated in our sensor-matching calibration bath. See page 5 or contact our factory for additional information.
			200					
			300					
			400					
			500					
			1000					
		0.003902	100	-100 to 650°C -148 to 1202°F			-150 to 720°C -238 to 1328°F	
			200					
			400					
			500					
			1000					
		0.003916	100	-200 to 510°C -328 to 950°F			-240 to 580°C -400 to 1076°F	
	Nickel	0.00672	120	-80 to 320°C -112 to 608°F		-100 to 360°C -148 to 680°F		
	Copper	0.00427	9.035	-50 to 250°C -58 to 482°F		$\pm 0.85^\circ\text{C}$ ($\pm 1.53^\circ\text{F}$)	-65 to 280°C -85 to 536°F	
Ohms	Direct Resistance	n/a	0-4000 ohms	0-4000 ohms	10 ohms	± 0.4 ohms	0-4000 ohms	
	Potentiometer		4000 ohms	0-100%	10%	$\pm 0.1\%$	0-100%	
T/C	J	n/a	n/a	-180 to 760°C -292 to 1400°F	35°C 63°F	$\pm 0.25^\circ\text{C}$ ($\pm 0.45^\circ\text{F}$)	-210 to 770°C -346 to 1418°F	
	K	n/a	n/a	-150 to 1370°C -238 to 2498°F	40°C 72°F	$\pm 0.3^\circ\text{C}$ ($\pm 0.54^\circ\text{F}$)	-270 to 1390°C -454 to 2534°F	
	E	n/a	n/a	-170 to 1000°C -274 to 1832°F	35°C 63°F	$\pm 0.2^\circ\text{C}$ ($\pm 0.36^\circ\text{F}$)	-270 to 1013°C -454 to 1855.4°F	
	T	n/a	n/a	-170 to 400°C -274 to 752°F	35°C 63°F	$\pm 0.25^\circ\text{C}$ ($\pm 0.45^\circ\text{F}$)	-270 to 407°C -454 to 764.6°F	
	R	n/a	n/a	0 to 1760°C 32 to 3200°F	50°C 90°F	$\pm 0.55^\circ\text{C}$ ($\pm 0.99^\circ\text{F}$)	-50 to 1786°C -58 to 3246.8°F	
	S	n/a	n/a	0 to 1760°C 32 to 3200°F	50°C 90°F	$\pm 0.55^\circ\text{C}$ ($\pm 0.99^\circ\text{F}$)	-50 to 1786°C -58 to 3246.8°F	
	B	n/a	n/a	400 to 1820°C 752 to 3308°F	75°C 135°F	$\pm 0.75^\circ\text{C}$ ($\pm 1.35^\circ\text{F}$)	200 to 1836°C 392 to 3336.8°F	
	N	n/a	n/a	-130 to 1300°C -202 to 2372°F	45°C 81°F	$\pm 0.4^\circ\text{C}$ ($\pm 0.72^\circ\text{F}$)	-270 to 1316°C -454 to 2400.8°F	
	C	n/a	n/a	0 to 2300°C 32 to 4172°F	100°C 180°F	$\pm 0.8^\circ\text{C}$ ($\pm 1.44^\circ\text{F}$)	0 to 2338°C 32 to 4240.4°F	
mV	DC	n/a	n/a	-50 to 1000mV	4mV	15 microvolts	-50 to 1000mV	

THZ DH & WL

Smart HART® and *WirelessHART*
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Versatile Housing, Enclosure and Mounting Choices

Model	Features	Page
 THZ in DH Dual Compartment Field-Mount Enclosure with Display	- Field-mount dual compartment enclosure isolates and protects the transmitter's electronics from humidity, moisture and corrosive agents brought in through the conduit entries. - Extra-large display shows process status in selectable engineering units and HART status/error messages. A bar graph shows the output value in percent of span. - Modular transmitter electronics can be easily removed without disturbing the enclosure or sensor assembly.	Page 11
 THZ <i>WirelessHART</i> Temperature Solution THZ in WL Enclosure with BULLET <i>WirelessHART</i> Adapter and Battery Case	- Cost effective battery powered <i>WirelessHART</i> temperature solution by coupling THZ WL to the BULLET <i>WirelessHART</i> adapter*. - Set up with HART Communicator, HART-based system, or PC allows you to check the status, or perform parameter changes on the BULLET or THZ. 4-5 year projected battery life and long term transmitter stability means that you spend less time maintaining your transmitter and keeping it running. - Save money on both power and signal wiring, and even install it in remote locations where power and signal connections are not available. - Set up the transmitter and <i>WirelessHART</i> BULLET adapter quickly and easily with a standard HART communicator or HART based system using Device Descriptors (DD). - Install it almost anywhere or just save money on wiring - the THZ <i>WirelessHART</i> Temperature solution comes in the weatherproof Type 4X WL housing and installs completely wirelessly, equipped with the BULLET <i>WirelessHART</i> adapter and battery case**. Lithium batteries can last up to 4-5 years. *the MACTek BULLET P/N 110100-20M0 needs to be ordered as a separate line item when creating a <i>WirelessHART</i> temperature solution. ** Batteries are not included	Page 12

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Ordering Information

Unit	Input	Output	Power	Options	Housings
THZ Smart HART Tem- perature Trans- mitter With Display	PRG Program- mable with standard HART communica- tor, HART- based control system, or Intelligent PC configuration Software for: RTD 2-, 3-, 4-Wire Platinum, Copper, Nickel Thermo- couple (J, K, E, T, R, S, B, N, C) 0-4000 ohms -50-1000mV (see Table 3 for additional information)	4-20MA Scalable to nar- rower ranges	12-42DC 12-30DC I.S. & N.I. ap- plications	-ISF FM approved Intrinsically-Safe (I.S.) & Non- Incendive (N.I.)* -FMEDA Unit comes with Failure Modes, Effects and Diagnostic Analysis (FMEDA) data for evaluating the instrument for suitability of use in a safety-related application	<u>DH & WL Dual-Compartment Enclosure:</u> DH2NG Explosion-Proof Dual-compartment enclosure with two, 1/2-inch NPT entry ports and a glass cover DH2TG Explosion-Proof Dual-compartment enclosure with two, 3/4-inch NPT entry ports and a glass cover DH2MG Explosion-Proof Dual-compartment enclosure with two, M20 x 1.5 entry ports and a glass cover NC Replacement transmitter module without enclosure WL2NG Weatherproof Dual-compartment enclosure with four-cell battery case and wiring terminal block**, two 1/2-inch NPT entry ports, and a glass cover WL2MG Weatherproof Dual-compartment enclosure with four-cell battery case and wiring terminal block**, two M20 x 1.5 entry ports and a glass cover P suffix indicates enclosure is equipped with 2" pipe-mount hardware kit (DH2NGP) *-ISF only available with DH Dual-Compartment Enclosure **Note: the required four lithium batteries are not included and must be purchased locally. Recommended battery: Type-D 3.6V Lithium Thionyl Chloride (LI-SOCI2); 19.0Ah nominal capacity.

Accessories Available:

Each order comes with one copy of our Configuration Software (Windows® compatible). The HART RS-232 Modem and the HART Communicator must be purchased separately:

750-75E05-01	Interface Solution PC Configuration Software on CD (One copy comes free with each order)
110100-20M0	MACTek BULLET <i>Wireless</i> HART Adapter

To order, specify: Unit / Input / Output / Power / Option [Housing]

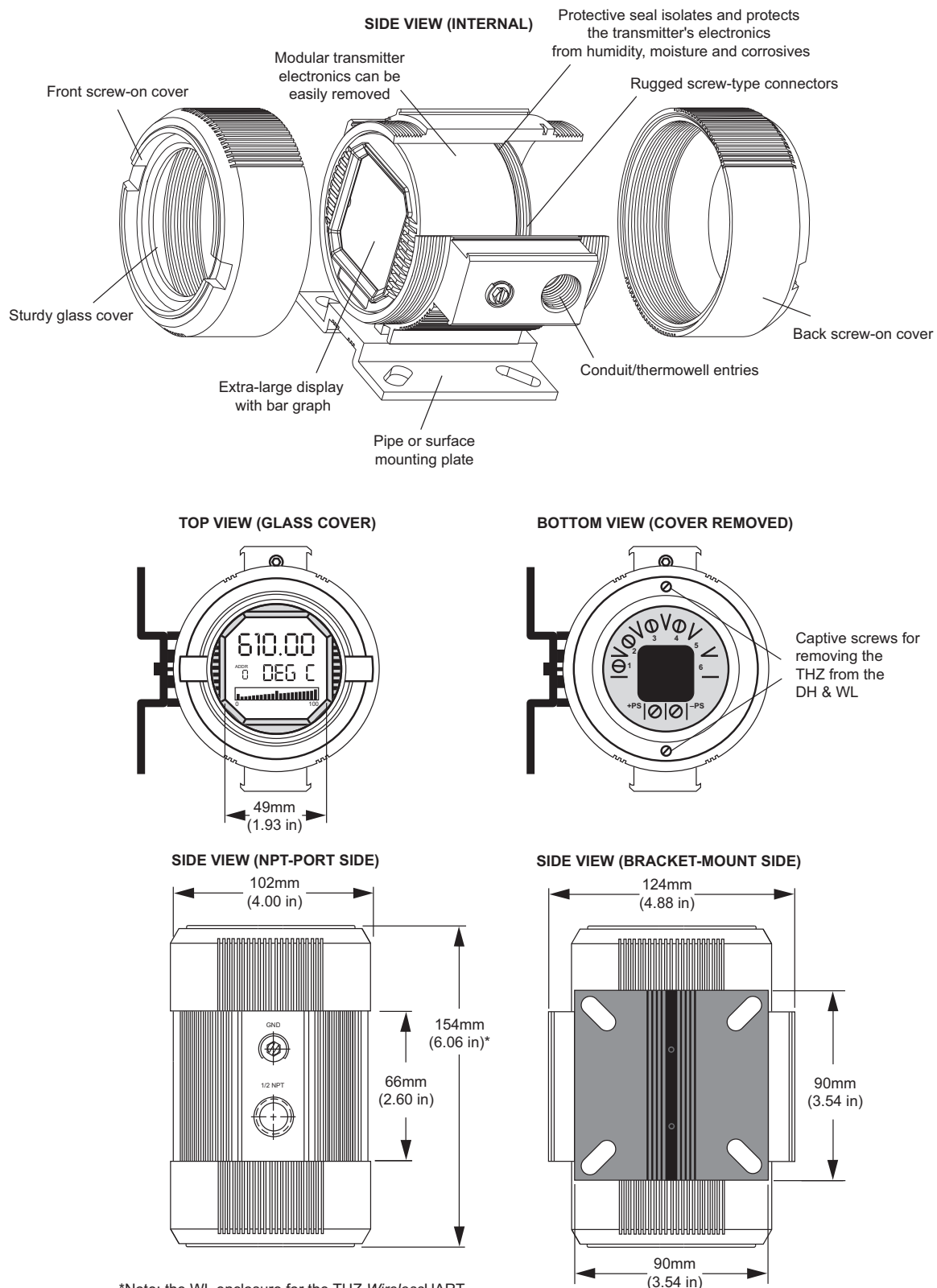
Model Number Example: THZ / PRG / 4-20MA / 12-30DC / -ISF [DH2NGP]

To order the THZ *Wireless*HART Temperature Solution specify: THZ / PRG / 4-20MA / 12-42DC [WL2NG] with
MACTek BULLET P/N 110100-20M0 accessory

THZ DH & WL

Smart HART® and WirelessHART
Temperature Solutions

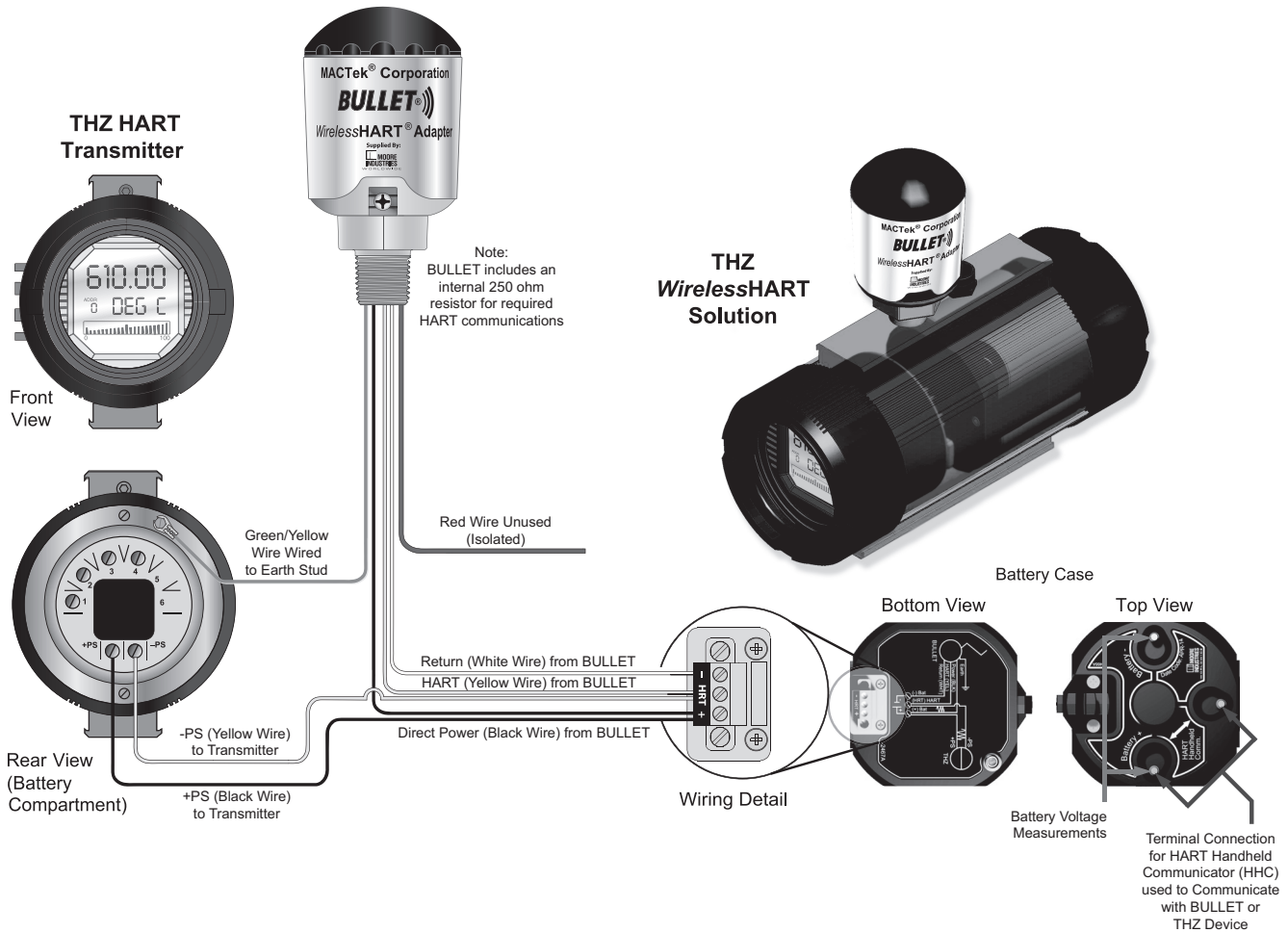
Figure 7. Dimensions for the THZ in DH and WL dual compartment enclosures.



THZ DH & WL

Smart HART® and WirelessHART
Temperature Solutions

Figure 8. Field wiring diagram for the BULLET, battery case and transmitter in the WL weatherproof housing.



Certifications



THZ [DH] 12-42DC Power

FM Approvals (FM Global Group):

Explosion-Proof

Class I, Division 1, Groups A, B, C & D

T6 Ta = +40°C, T5 Ta = +85°C

Dust-ignition Proof

Class II & III, Division 1, Groups E, F & G

T6 Ta = +40°C, T5 Ta = +85°C

Type 4X, IP66



THZ [DH] 12-30DC Power and -ISF Option

FM Approvals (FM Global Group):

Explosion-Proof

Class I, Division 1, Groups A, B, C & D

T6 Ta = +40°C, T5 Ta = +85°C

Dust-Ignition Proof

Class II & III, Division 1, Groups E, F & G

T6 Ta = +40°C, T5 Ta = +85°C

Intrinsically-Safe

Class I, II & III, Division 1, Groups A thru G

T4A Ta = +40°C, T4 Ta = +60°C

Class I, Zone 0, AEx ia IIC T4 Ta = +60°C

Non-Incendive

Class I, Division 2, Groups A, B, C & D

T4A Ta = +40°C, T4 Ta = +60°C

Suitable for use in

Class II & III, Division 2, Groups F & G

T4A Ta = +40°C, T4 Ta = +60°C

Type 4X, IP66



THZ [DH] 12-42DC or 12-30DC Power

CE Conformant:

EMC Directive 2004/108/EC – EN 61326

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