

We're Your One Stop Temp Shop

Why waste valuable time searching around for temperature assembly pieces and parts? Our ready-to-install temperature transmitter assemblies feature:

- Universal TRY & TRX PC-Programmable and THZ² Smart HART[®] Temperature Transmitters
- General location, hazardous area, and explosion-proof connection heads
- Wide variety of RTD and thermocouple sensors
- Spring-loaded fittings allow you to easily separate the sensor and transmitter from the thermowell.
- Industrial-strength stainless steel thermowells, flanges, and fittings in the sizes and configurations you need most.
- Factory Mutual (FM) approved explosion-proof temperature transmitter and connection head combinations.
- Complete NIST-traceable calibration records available from our state-of-the-art "Calibration Suite".

One Ordering Number

Specify your complete temperature transmitter assembly using one simple table and ordering number.

Certifications

TRY & TRX PC-Programmable Temperature Transmitters:



Factory Mutual Research Corporation (FMRC) Global Explosion-Proof[†] – [LH2] (M/N only) Class I, Division 1, Groups A,B,C,D; [LH1]–**NEMA 4X, IP66 Non-Incendive** – [HPP] Class I, Div. 2, Groups A,B,C,D
Dust Ignition-Proof[†] – [LH2] Class II and III, Division 1, Groups E,F,G; T6;



CSA General (Ordinary) Location Non-Incendive – [HPP] Class I, Div. 2, Groups A,B,C,D



CE Conformant, EMC Directive 89/336/EEC EN 50081-2, 1993 and EN 50082-2, 1995

THZ² Smart HART Temperature Transmitter:



Factory Mutual Research Corporation (FMRC) Global Explosion-Proof[†] – [HPP in LH2 M/N] Class I, Division 1, Groups A,B,C,D; Class II and III, Division 1, Groups E,F,G; **NEMA 4X, IP66 Non-Incendive** – [HPP]: Class I, Division 2, Groups A,B,C,D; Suitable for: Class II and III, Division 2, Groups F,G; T6@ 60°C Max. Operating Ambient Temperature



CE Conformant, EMC Directive 89/336/EEC EN 50081-2, 1993 and EN 50082-2, 1995

Optional Approvals: FMRC, CSA, SAA, NEPSI, and KEMA (CENELEC) Intrinsically-Safe approvals are also available. Consult factory for details.

[†] Factory Mutual certifications apply to the temperature transmitter (TRY, TRX, and THZ²) and Connection Head combination. Sensor, Thermowell and Fixed Immersion Sensor assembly components are not included in the certifications. For Group A, seal all conduits within 18".



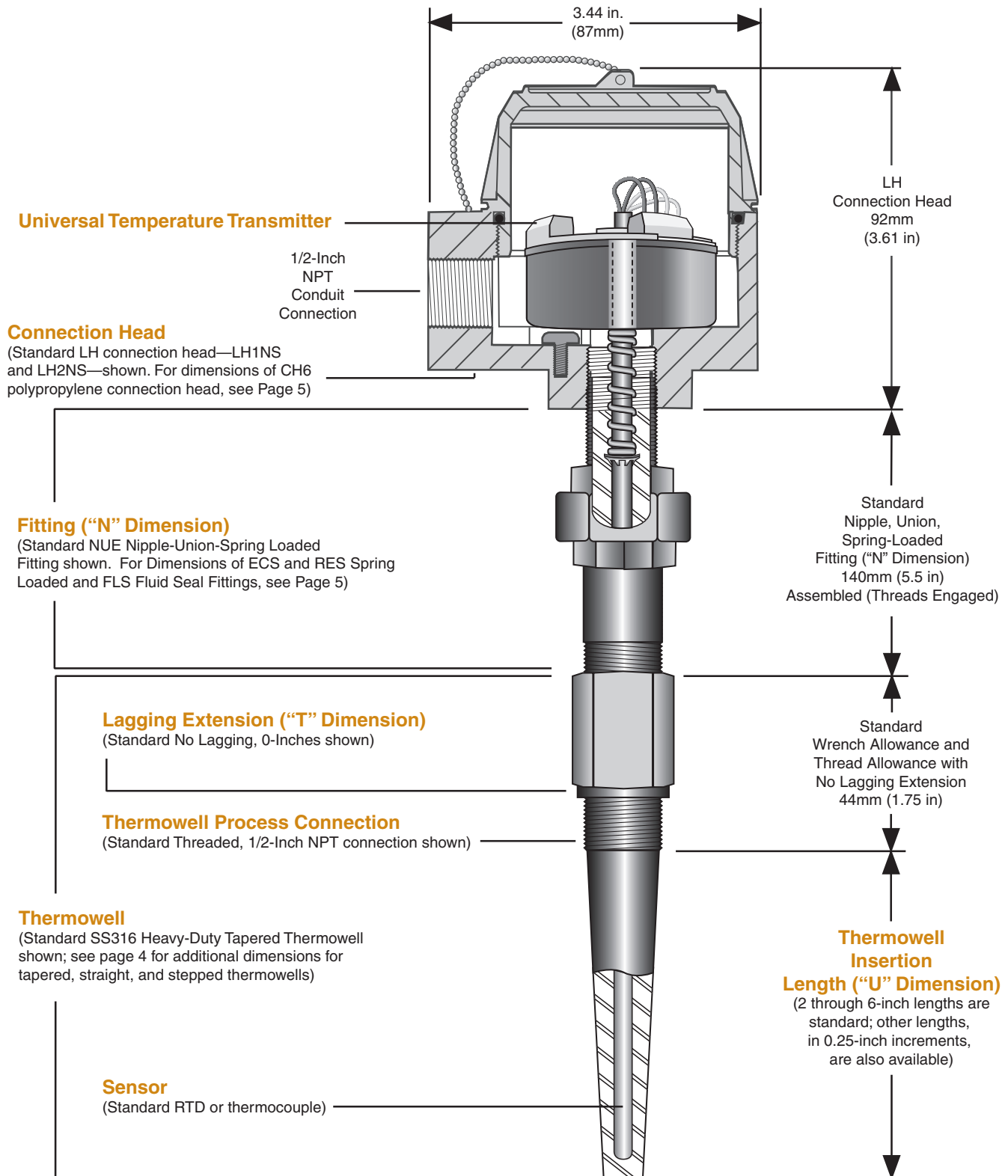
Selection Guide

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RTI 1

Ready-to-Install TRY, TRX & THZ²
Temperature Transmitter Assemblies

Standard Temperature Assemblies with Sensor and Thermowell



Select one from each category to order a Temperature Assembly with Sensor and Thermowell:

Universal Temperature Transmitter (See Page 8, and the TRY/TRX and THZ² Data Sheets for Specifications)

- TRY** Isolated, PC-Programmable Temperature Transmitter (**standard**)
TRX Non-Isolated, PC-Programmable Temperature Transmitter (**standard**)
THZ² Isolated, Smart HART® Temperature Transmitter (**standard**)
WEL 6-position Terminal Block: No Transmitter (**standard**)

Thermowell Type (See Page 4 for Descriptions and Dimensions)

- A** Heavy-Duty Threaded, Tapered Well (**standard**)
B Standard-Duty Threaded, Straight Well (**standard**)
C Standard-Duty Threaded, Stepped Well (**standard**)
S Sanitary Well

Thermowell Process Connection Size (See Page 2)

- P2** Threaded, ½-Inch NPT (**standard**)
P3 Threaded, ¾-Inch NPT (**standard**)
P1 Threaded, 1-Inch NPT
F? Flanged Well, replace "?" with ordering code from Table 1 on Page 5
SW? Welded, replace "?" with size: SW1= 1-inch, SW2 = ½-inch, SW3 = ¾-inch, SW4 = 1¼-inch
D? Sanitary well, replace "?" with cap diameter, 1-Inch, 2-Inch, etc. (consult factory for dimensions)

Thermowell Insertion Length ("U" Dimension) (See Page 2)

- U?** Replace "?" with any Insertion Length in 0.25-Inch increments (**2 through 6-inch lengths are standard**)

Lagging Extension Length ("T" Dimension) (See Page 2)

- T0** No Lagging, 0 Inches (**standard**)
T? Replace "?" with length in 0.25-Inch increments

Thermowell Material

- S304** SS304 (**standard**)
S316 SS316 (**standard**)
CS Carbon Steel (**standard**)
BR Brass (**standard**)

Fitting Type ("N" Dimension) (See Pages 2 and 5 for Descriptions and Dimensions)

- 26 – NUE** Nipple-Union Spring-Loaded Fitting (**standard**)
26 – ECS Spring Loaded Fitting
26 – RES Spring Loaded Fitting (specify when ordering –VTB option)
26 – FLS Fluid Seal Fitting

Sensor Type (See Pages 7 & 8 for Specifications)

- PT14** Platinum RTD; 3- and 4-Wire; 100 ohm; $\alpha=0.00385$ (**standard**)
PT104 Platinum RTD; 3- and 4-Wire; 1000 ohm; $\alpha=0.00385$ (**standard**)
CU4 Copper RTD; 3- and 4-Wire; 10 ohm
N4 Nickel RTD; 3- and 4-Wire; 120 ohm
TCJU J-Type Thermocouple; Ungrounded (**standard**)
TCKU K-Type Thermocouple; Ungrounded (**standard**)
TC?U Replace "?" with other T/C type E, T, R, S, N, B, or C; Ungrounded
 Note: Other RTD types and grounded T/Cs are also available. Consult factory for details.

Options (See Page 7 for Descriptions)

- VTB** High accuracy temp. system calibration with NIST test data report
–VTD Standard factory calibration with NIST test data report
–RM? Remote-Mounted terminal block; replace "?" with connection head type for the terminal block, i.e. **–RMLH1NS**. See Page 7 for details.

Connection Head (See Pages 2 and 5 for Dimensions)

- LH1NS** Aluminum Body with Valox (357U) Cap, NEMA 4X, IP66
LH2NS Aluminum Body with Aluminum Cap, Explosion-Proof
CH6 Polypropylene Body and Cap, NEMA 4

Don't See What You Need?

This bulletin features just a sample of the wide range of temperature assembly choices we offer. Whatever your temperature assembly needs are, our interface solution experts are ready to help!

TRY / C – P2 / U4 – T0 / S304 / – 26 – NUE – PT14 –VTB [LH1NS] (Ordering Number Example)

Thermowell Selection

Figure 1. Heavy-Duty Threaded, Tapered Thermowells (Standard) are convenient to install and replace. Being heavy-duty, they will withstand a high force and high velocity factor from process fluid flow. They are easy to weld or braze for applications which require sealing.

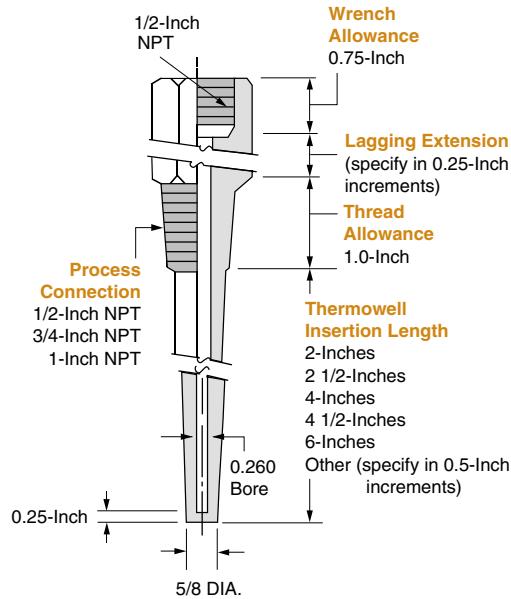


Figure 2. Standard-Duty Threaded, Straight Thermowells (Standard), convenient to install and replace, will withstand a high force and high velocity factor from the process fluid flow, but less than that of the heavy duty well because of lower natural frequency. They are easy to weld or braze for applications which require sealing.

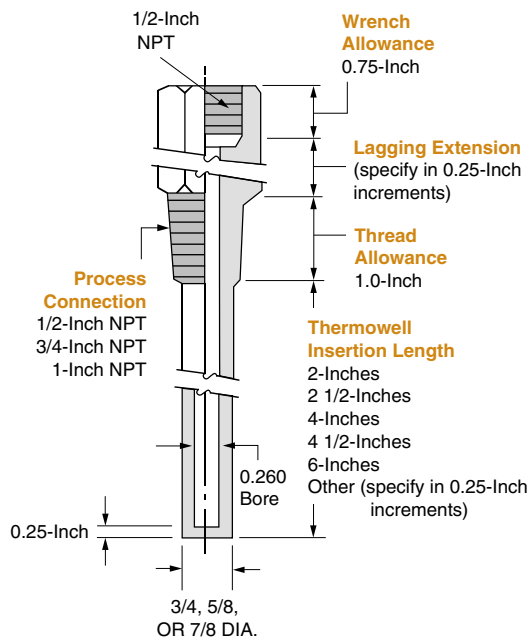


Figure 3. Standard-Duty Threaded, Stepped Thermowells (Standard), also convenient to install and replace, deliver a faster response time than tapered or straight wells, but less strength and capability to withstand high force and high velocity from the process fluid flow. They are easy to weld or braze for applications which require sealing.

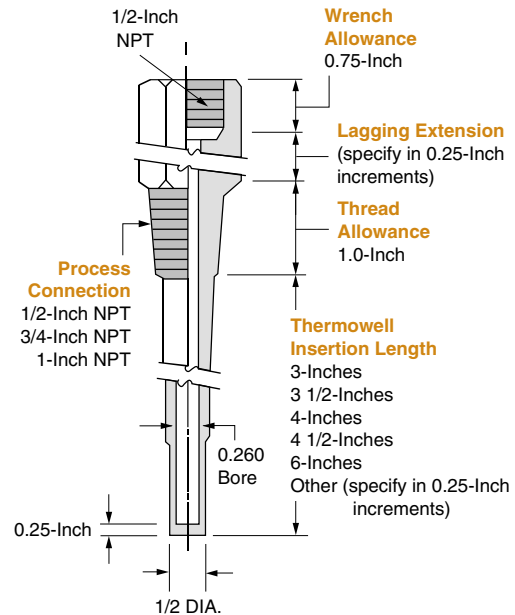


Figure 4. Flanged Thermowells provide easy removal and high pressure resistance (shown with a Straight Thermowell). Tapered and Stepped Thermowell can also be ordered as Flanged Wells. See Table 1 for available process connection flange sizes.

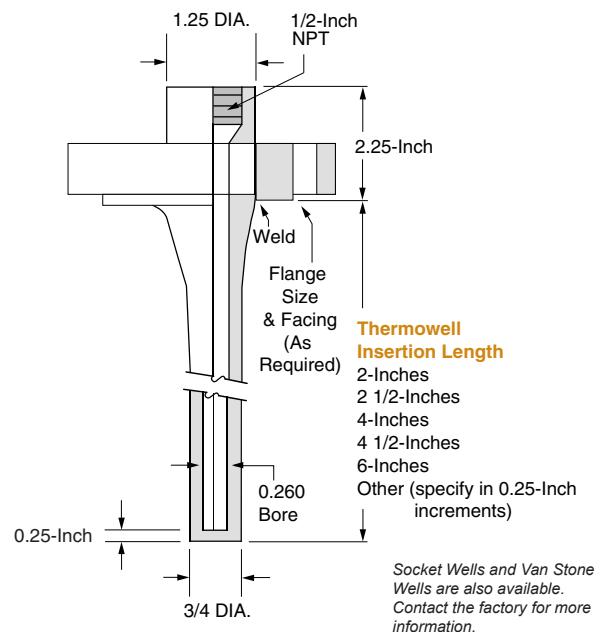


Figure 5. Dimensions for CH6 Polypropylene, NEMA 4 Connection Head.

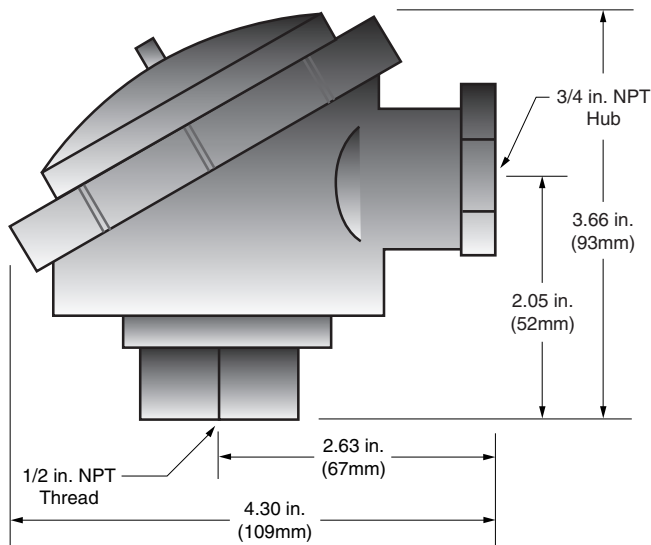


Table 1. Process Connection Flange Sizes.

Ordering Code	Flange Size
F1	1-Inch, 150#, Flat Facing
F2	1-Inch, 150#, Raised Facing
F3	1-Inch, 150#, Ring Type Joint
F4	1 1/2-Inch, 150#, Flat Facing
F5	1 1/2-Inch, 150#, Raised Facing
F6	1 1/2-Inch, 150#, Ring Type Joint
F7	2-Inch, 150#, Flat Facing
F8	2-Inch, 150#, Raised Facing
F9	2-Inch, 150#, Ring Type Joint
F10	1-Inch, 300#, Flat Facing
F11	1-Inch, 300#, Raised Facing
F12	1-Inch, 300#, Ring Type Joint
F13	1 1/2-Inch, 300#, Flat Facing
F14	1 1/2-Inch, 300#, Raised Facing
F15	1 1/2-Inch, 300#, Ring Type Joint
F16	2-Inch, 300#, Flat Facing
F17	2-Inch, 300#, Raised Facing
F18	2-Inch, 300#, Ring Type Joint
F19	1-Inch, 400-600#, Flat Facing
F20	1-Inch, 400-600#, Raised Facing
F21	1-Inch, 400-600#, Ring Type Joint
F22	1 1/2-Inch, 400-600#, Flat Facing
F23	1 1/2-Inch, 400-600#, Raised Facing
F24	1 1/2-Inch, 400-600#, Ring Type Joint
F25	2-Inch, 400-600#, Flat Facing
F26	2-Inch, 400-600#, Raised Facing
F27	2-Inch, 400-600#, Ring Type Joint
F28	1-Inch, 900-1500#, Flat Facing
F29	1-Inch, 900-1500#, Raised Facing
F30	1-Inch, 900-1500#, Ring Type Joint
F31	1 1/2-Inch, 900-1500#, Flat Facing
F32	1 1/2-Inch, 900-1500#, Raised Facing
F33	1 1/2-Inch, 900-1500#, Ring Type Joint
F34	2-Inch, 900-1500#, Flat Facing
F35	2-Inch, 900-1500#, Raised Facing
F36	2-Inch, 900-1500#, Ring Type Joint

Fitting Selection

Figure 6. NUE Nipple, Union, Spring-Loaded Fitting (Standard) combination fitting uses a union to allow easy assembly of the entire system. It can be adjusted as many times as required.

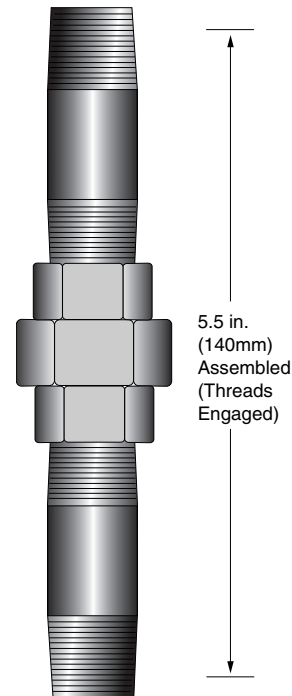


Figure 7. FLS Fluid Seal Fitting is used for transmitter assemblies with thermowells and assemblies with fixed immersion sensors. It prevents fluid leak along the sensor sheath so it's ideal for using heat transfer fluid in the thermowell and for air duct applications. Although the FLS provides adjustment precision, it crimps the sensor sheath, and can therefore be adjusted only once (up to 0.5 inch).

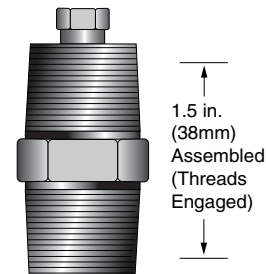
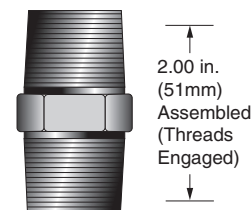


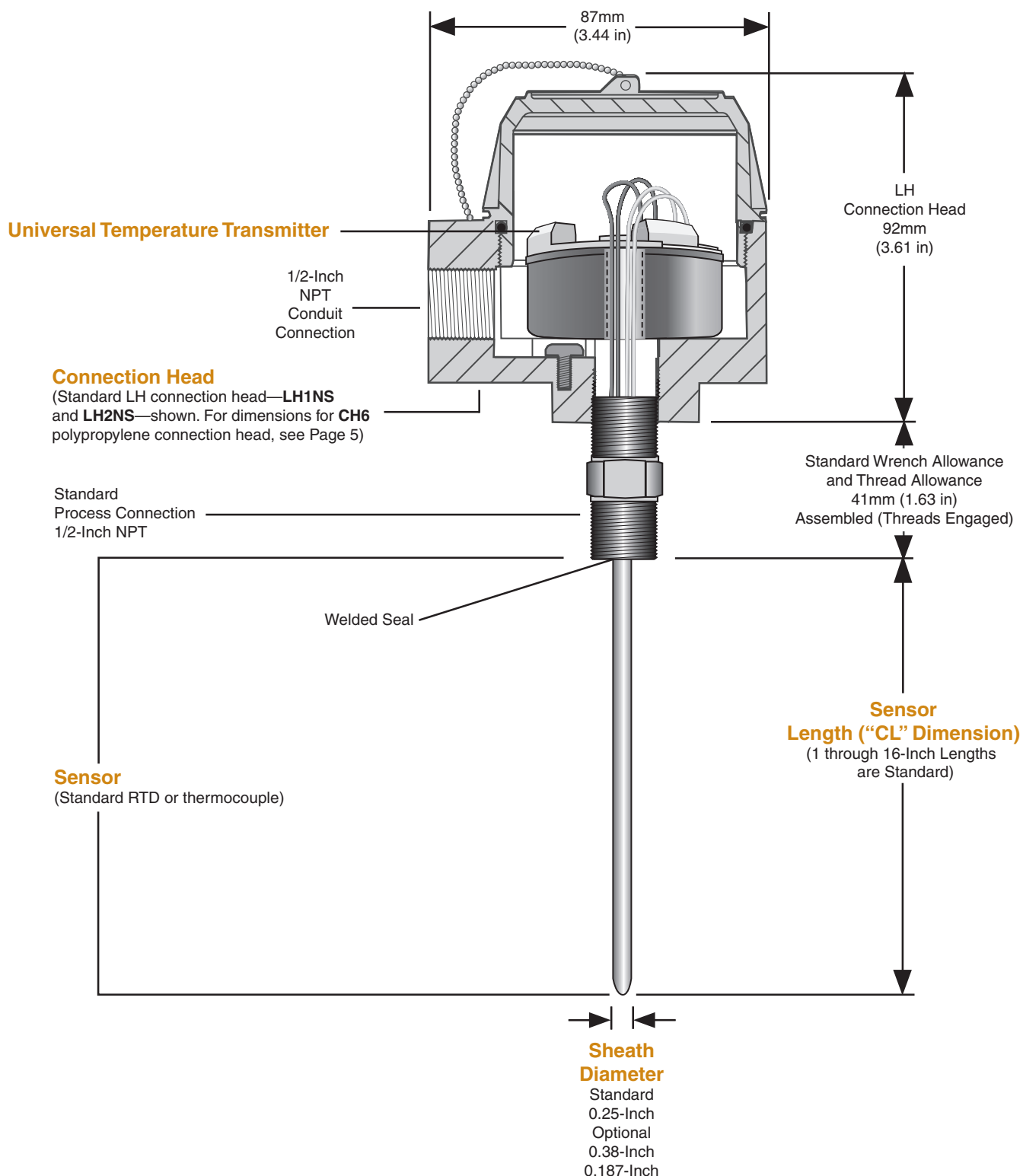
Figure 8. ECS Spring-Loaded Fittings assure a good thermal connection between the sensor and thermowell offering a quick response time.



RTI 1

Ready-to-Install TRY, TRX & THZ²
Temperature Transmitter Assemblies

Standard Temperature Assemblies with Fixed Immersion Sensor



Select one from each category to order a **Temperature Assembly with Fixed Immersion Sensor**:

Universal Temperature Transmitter (See Page 8 and TRY/TRX and THZ² Data Sheets for Specifications)

TRY Isolated, PC-Programmable Temperature Transmitter (**standard**)
TRX Non-Isolated, PC-Programmable Temperature Transmitter (**standard**)
THZ² Smart HART® Temperature Transmitter (**standard**)

Sensor Length ("CL" Dimension) (See Page 6)

CL? Replace "?" with any Sensor Length (e.g., CL2.75, CL6) in 0.25-inch increments (**2 through 16-inch lengths are standard**)

Sensor Sheath Diameter

D18 0.187-Inch Diameter (**standard**)
D25 0.25-Inch Diameter (**standard**)
D38 0.38-Inch Diameter

Sensor Sheath Material

S304 SS304 (**standard**)
S316 SS316 (**standard**)

Sensor Type (See Page 8 for Specifications)

PT1C4 Platinum RTD; for 3- and 4-Wire; 100 ohm; $\alpha=0.00385$ (**standard**)
PT10C4 Platinum RTD; for 3- and 4-Wire; 1000 ohm ; $\alpha=0.00385$ (**standard**)
CUC4 Copper RTD; 2-, 3-, 4-Wire; 10 ohm
NC4 Nickel RTD; 2-, 3-, 4-Wire; 120 ohm
TCCJU J-Type Thermocouple; Ungrounded (**standard**)
TCCKU K-Type Thermocouple; Ungrounded (**standard**)
TCC?U Replace "?" with other T/C type E, T, R, S, N, B, or C
Note: Other RTD types and grounded T/Cs are also available consult the factory for details.

Options (See Page 7 for Descriptions)

-VTB High accuracy temperature system calibration with NIST test data report
-VTD Standard factory calibration with NIST test data report
-RM? Remote-Mounted terminal block; replace "?" with connection head type for the terminal block, i.e. **-RMLH1NS**. See Remote-Mounted Terminal Block below for details.

Connection Head (See Pages 5 and 6 for Dimensions)

LH1NS Aluminum Body with Valox (357U) Cap, NEMA 4X, IP66 locations (**standard**)
LH2NS Aluminum Body with Aluminum Cap, Explosion-Proof locations (**standard**)
CH6 Polypropylene Body and Cap, NEMA 4 (**standard**)

Don't See What You Need?

This bulletin features just a sample of the wide range of temperature assembly choices we offer. Whatever your temperature assembly needs are, our temperature interface solution experts are ready to help!

THZ2 / CL6 / D25 / S316 / -TCCJU -VTB [LH2NS] (**Ordering Number Example**)

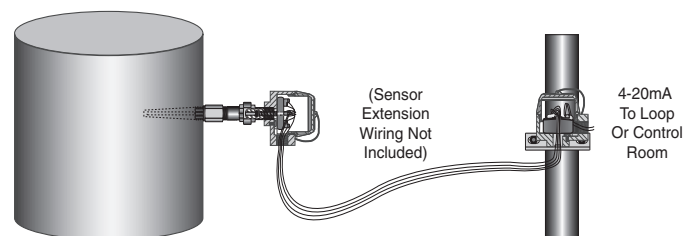
Factory Calibration Available

Sensor-to-Transmitter Trimming—Our state-of-the-art **Calibration Suite** provides exceptional accuracy by immersing the system's sensor in a precision calibration bath, then using the transmitter to "capture" the sensor's true readings. This method effectively compensates for errors caused by inherent sensor inaccuracies. The system is delivered configured, calibrated, and ready for installation. NIST traceable test data is supplied with each system. To order, specify option **-VTB** in the model number.

NIST Traceable Test Report—Moore Industries will configure the temperature transmitter and calibrate zero and span points with customer-supplied values using a precision simulated sensor input. NIST traceable test data indicating actual recorded values is supplied with each instrument. To order, specify option **-VTD** in the model number.

Remote-Mounted Terminal Block

Remove the Display From the Process—Position your sensor in the heart of your process while keeping your transmitter in an easily accessible area with our *Remote Terminal Block* option. Add the **-RM?** option to your temperature assembly and receive two housings: a transmitter in the specified connection head, and a terminal block enclosed in an additional connection head with your selected sensor and fittings attached. Sensor extension wiring (not included) connects the terminal block to the transmitter.



RTI 1

Ready-to-Install TRY, TRX & THZ²
Temperature Transmitter Assemblies

Temperature Transmitter Specifications

TRY & TRX PC-Programmable

Temperature Transmitters

In one minute, from one software window, you can configure our TRY (isolated) and TRX (non-isolated) 2-wire (loop-powered) transmitters to handle nearly every temperature application in your plant. Everything you need for set up (Intelligent Configuration Software and RS-232 cable) are supplied **FREE** with your order.

Programmable parameters include: Input type and range; output range; output damping; sensor trim offset; RJC or no RJC; linearization or no linearization; temperature readout in °C or °F; and upscale or downscale drive on sensor burnout

Basic TRY & TRX Specifications:

Temperature Assemblies Come with Transmitter Model Number:

TRY / PRG / 4-20MA / 10-42DC / [HOUSING CHOICE]

TRX / PRG / 4-20MA / 8-42DC / [HOUSING CHOICE]

Input: See Table 2

Output: 4-20mA output is accurate to within ±0.03% of input span

Power: TRY: 10-42Vdc (loop-powered on output side)

TRX: 8-42Vdc (loop-powered on output side)

RJC Accuracy (T/C inputs only): ±0.45°C

Linearity: 0.1% of span, within rated ranges

Isolation (TRY Only): 1500Vrms input to output to case

RFI/EMI Protection: 20V/m @20-1000MHz

Operating and Storage Range: -40°C to +85°C (-40°F to +185°F)

Ambient Temperature Effect on Accuracy: ±0.015% of span per °C change, maximum (+0.001% of ohm reading for RTD inputs)

Ambient Temperature Effect on RJC (T/C only): ±0.015°C/°C change

For detailed specifications, see the TRY/TRX Data Sheet

Sensor Specifications

Number of Lead Wires (RTDs): All temperature assemblies are supplied with 4-wire RTDs that inherently avoid lead wire resistance imbalances caused by wire corrosion and aging.

Lead Wires: Teflon insulated, hermetically sealed

Sheath Material: Stainless steel 316 (other materials available)

Accuracy: RTD: ±0.12% at 0°C (high accuracy RTDs also available); Consult factory for thermocouple tolerances

Pressure: 12,000 psig (-20 to 100°C, -29 to 37°C) for 0.25" dia.

Response Time: RTD, <5 seconds to 63.2% temperature change; Thermocouple, 4.5 sec. for ungrounded, typical; 2.0 sec. for grounded to 63.2% temperature change

Vibration Limit: 10 G over a frequency range of 10–500Hz

Stability: RTD, 0.2°C after 10,000 hrs. at maximum temperature (1 year, 51 days, 16 hours continuous)

THZ² Smart HART® Temperature Transmitter

The THZ² programs over the 4-20mA wire pair from anywhere on the loop using a standard hand held HART Communicator or our Intelligent Configuration Software (HART to RS-232 Smart Interface cable required).

Programmable parameters include: Input type and range; output range; output damping; sensor trim offset; temperature readout in °C or °F; and upscale or downscale drive on sensor burnout

Basic THZ² Specifications:

Temperature Assemblies Come with Transmitter Model Number:

THZ² / PRG / 4-20MA / 12-42DC / [HOUSING CHOICE]

Input: See Table 2

Output: 4-20mA output is accurate to within ±0.015% of input span

Power: 12-42Vdc (loop-powered on output side)

RJC Accuracy (T/C inputs only): ±0.45°C

Isolation: 500Vrms input to output continuous

RFI/EMI Protection: 10V/m @80-1000MHz

Operating and Storage Range: -40°C to +85°C (-40°F to +185°F)

Ambient Temperature Effect on Accuracy: 0.01% of span per °C change, maximum; 0.003% of span per °C change typical

Ambient Temperature Effect on RJC: ±0.005°C/°C change of ambient temperature

For detailed specifications, see the THZ² Data Sheet

Table 2. TRY, TRX, & THZ² Input Specifications

Input Type	Range	Accuracy
TRY & TRX PC-Programmable Temperature Transmitters		
PT14 Platinum RTD; 3- and 4-Wire; 100 ohm, $\alpha = 0.00385$ (standard)	-200 to +850°C (-328 to +1562°F)	±0.21°C ±0.38°F
PT104 Platinum RTD; 3- and 4-Wire; 1000 ohm, $\alpha = 0.00385$ (standard)	-50 to +500°C (-58 to +932°F)	±0.21°C ±0.38°F
CU4 Copper RTD; 3- and 4-Wire; 10 ohm, $\alpha = 0.00427$ @ 0°C	-50 to +250°C (-58 to +482°F)	±1.2°C ±2.16°F
N4 Nickel RTD; 3- and 4-Wire; 120 ohm, $\alpha = 0.00672$ @ 0°C	-80 to +320°C (-112 to +608°F)	±0.16°C ±0.29°F
TCJU J-Type T/C; Ungrounded (standard)	-180 to +770°C (-292 to +1418°F)	±0.28°C ±0.5°F
TCKU K-Type T/C; Ungrounded (standard)	-150 to +1372°C (-238 to +2502°F)	±0.3°C ±0.54°F
THZ² Smart HART® Temperature Transmitter		
PT14 Platinum RTD; 3- and 4-Wire; 100 ohm, $\alpha = 0.00385$ (standard)	-200 to +850°C (-328 to +1562°F)	±0.1°C ±0.18°F
PT104 Platinum RTD; 3- and 4-Wire; 1000 ohm, $\alpha = 0.00385$ (standard)	-200 to +320°C (-328 to +608°F)	±0.1°C ±0.18°F
N4 Nickel RTD; 3- and 4-Wire; 120 ohm, $\alpha = 0.00618$ @ 0°C	-50 to +250°C (-58 to +482°F)	±0.1°C ±0.18°F
TCJU J-Type T/C; Ungrounded (standard)	-200 to +1000°C (-328 to +1832°F)	±0.25°C ±0.45°F
TCKU K-Type T/C; Ungrounded (standard)	-230 to +1370°C (-382 to +2498°F)	±0.3°C ±0.54°F



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