RTD Sensor
with Built-in Temperature Transmitter

- RTD Sensor with Built-in Transmitter
- Factory Calibrated
- Compact and Economical
- Easy Installation
- Microprocessor Based Design
- Sanitary Versions Available
- Hermetically Sealed Transmitter
- Field Calibration or Re-span via PC Interface
- Optional Plug-on Display
- Linearized 4-20 mA, 0-5 VDC, 1-5 VDC, or 0-10 VDC Signal Outputs
Description

The TST is an RTD sensor with a built-in transmitter, which is programmable by a computer. The transmitter is hermetically sealed into the potting adaptor of the probe. As such, it is very compact, is vibration resistant, and is one of the most advanced designs available in the market. The TST is ideal for areas with space limitations where traditional head connectors are too large to fit. It is accurate straight out of the box!

The TST comes factory calibrated to a standard measuring range or any customer specified range. The unique transmitter design allows it to be calibrated in the field using a cable and a Windows™ compatible software package. Temperature range, temperature offset, burnout options and other features can be selected without the need for recalibration. Of course, the software also allows for calibration. The ability to calibrate in the field is where the TST leaves the competition behind.

The TST is available in either NPT or Tri-clamp versions. Special finishes for food and the dairy industry are available. The hermetically sealed transmitter and external cables will withstand the harshest of washdowns.

Specifications for Non-Sanitary Models

- Measuring Ranges: -58...400 °F (for other ranges consult factory)
- Maximum Pressure NPT Fitting: 1500 PSIG
- Materials Measuring Probe: 316 Stainless Steel Cable: PVC, PTFE, SS Braid FEP or SS Armored FEP
- Ambient Temperature: -40...158 °F
- Storage Temperature: -50...158 °F
- Output Type
  - RTD: Pt-100, DIN/EN 60751 Class A
  - Current: 4-20 mA, 2-wire Voltage: 0-5, 1-5, or 0-10 VDC, 3-wire
  - Power Requirement Current: 9-30 VDC Loop Powered, Max. Loop Resistance: 50 (\(V_{\text{supply}} - 7\)) Voltage: 12-30 VDC
  - Accuracy: ± 0.1% of Span
  - Zero Drift: ± 0.025% / °F
  - Span Drift: ± 0.025% / °F
  - Electrical Connection: 6 ft. Jacketed Cable, DIN 43650 Hirschmann Plug, M12 Micro-DC 5-pin, or 6 ft. Jacketed Cable with optional 1/2” NPT Conduit Hub
  - Electrical Protection: NEMA 6P
- Specifications for Tri-clamp® Models
  - Measuring Ranges: -58...302 °F
  - Maximum Pressure: 500 PSIG Tube Section
  - Materials Probe: 316 Stainless Steel Cable: PVC, FEP, or Stainless Steel Armored FEP
  - Ambient Temperature: -40...158 °F
  - Storage Temperature: -58...158 °F
  - Input: Pt-100, DIN/EN 60751 Class A
  - Output Type: 4-20 mA, 2-wire 0-5, 1-5, or 0-10 VDC, 3-wire
  - Power Supply: 9-30 VDC for Current Output Versions 12-30 VDC for Voltage Output Versions, Polarity Protected
  - Max. Loop Resistance: [40* (\(V_{\text{supply}} - 7\))] ohms
  - Accuracy: ± 0.1% of Span
  - Zero Drift: ± 0.025% / °F
  - Span Drift: ± 0.025% / °F
  - Sensor Open Current: Upscale 24 mA or Downscale 2.5 mA
  - Warm-Up Time: 30 Seconds
  - Isolation: 500 VDC Input/Output
  - Long-Term Drift: ≤ 0.1% FS/Year
  - Electrical Connection Standard: 6 ft. Jacketed Cable Optional: DIN 43650 Hirschmann Plug, 6 ft. Jacketed Cable with 1/2” NPT Conduit Hub or M12 Micro-DC 5-pin
  - Electrical Protection: NEMA 6P (IP 67)
  - Surface Finish Standard: Polished to #4 Finish per 3A Standard 74-06, 32 micro-inches Max.
  - Pharmaceutical: Polished to Mirror Finish and Passivated, 10 micro-inches Typical

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## RTD Sensor with Built-in Temperature Transmitter Model TST

### Order Details (Example: TST-00 040 PV 06 C)

<table>
<thead>
<tr>
<th>Model</th>
<th>Fitting</th>
<th>Immersion Depth (Dim. &quot;U&quot;)</th>
<th>Electrical Connection</th>
<th>Range</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST-</td>
<td>..00..</td>
<td>Smooth Shank, (1/4&quot; Probe Dia. Only)</td>
<td>..PV.. = 6 ft. PVC-Jacketed (212 °F Max.)</td>
<td>..02.. = 0...120 °F</td>
<td>..NE = No Extension (1&quot; Std)</td>
</tr>
<tr>
<td></td>
<td>..A2..</td>
<td>1/4&quot; NPT, Adj. (Dim. F = 1.5&quot;)</td>
<td>..TF.. = 6 ft. FEP-Jacketed</td>
<td>..04.. = 0...200 °F</td>
<td>..C = 1/2&quot; NPT Conduit Connection</td>
</tr>
<tr>
<td></td>
<td>..A4..</td>
<td>1/2&quot; NPT, Adj. (Dim. F = 1.7&quot;)</td>
<td>..TA.. = 6 ft. 316 SS-Amored FEP</td>
<td>..06.. = 0...300 °F</td>
<td>..EC = Extended Cable Length (Specify Length)</td>
</tr>
<tr>
<td></td>
<td>..F2..</td>
<td>1/4&quot; NPT, Fixed (Dim. F = 1.0&quot;)</td>
<td>..TB.. = 6 ft. 316 SS-Braid FEP</td>
<td>..08.. = 0...400 °F</td>
<td>..V1 = 0-5 VDC Output in Place of the Standard 4-20 mA</td>
</tr>
<tr>
<td></td>
<td>..F4..</td>
<td>1/2&quot; NPT, Fixed (Dim. F = 1.12&quot;)</td>
<td>..H.. = DIN 43650A Hirschmann Plug</td>
<td>..10.. = 32...212 °F</td>
<td>..V2 = 1-5 VDC Output in Place of the standard 4-20 mA</td>
</tr>
<tr>
<td></td>
<td>..T15..</td>
<td>1.5&quot; Hygienic Clamp (16 AMP)</td>
<td>..12.. = -58...392 °F</td>
<td>..18.. = -58...120 °F</td>
<td>..V3 = 0-10 VDC Output in Place of the standard 4-20 mA</td>
</tr>
<tr>
<td></td>
<td>..T2..</td>
<td>2&quot; Hygienic Clamp (16 AMP)</td>
<td>..E.. = Custom Scale (Specify Range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>..T25..</td>
<td>2.5&quot; Hygienic Clamp (16 AMP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>..T3..</td>
<td>3&quot; Hygienic Clamp (16 AMP)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessory Items (Order as Separate Part Numbers)

- **TST-PKIT2** = Field Calibration Kit (Includes: USB Cable, Communication Interface Module, and Windows™ Compatible Software (see below)
- **807.007** = 5-pin Micro-DC connecting cable, 2 meters in length for electrical connection type ..M12..
- **807.007 / 5M** = 5-pin Micro-DC connecting cable, 5 meters in length for electrical connection type ..M12..
- **807.007 / 10M** = 5-pin Micro-DC connecting cable, 10 meters in length for electrical connection type ..M12..

### Description: TST-PKIT2 Field Calibration Kit

The TST Field Calibration Kit allows the user to rescale the output transmitter span as well as perform single point and multipoint field calibration all via a PC USB interface.

**Included in the Kit:**
- Communication Interface Module that allows the TST to be connected to a PC USB Port
- USB Cable
- Windows™ Compatible Software

**Minimum System Requirements:**
- 1 MB of Hard Drive Free Space
- Windows™ XP, 7, or newer
- 1 free USB port

**Connecting the TST:**
- Strip away the shrink tube at the end of the signal cable to expose the programming lines.
- Connect the power, signal, and programming lines to the interface module via the screw terminal according to the diagram below.
- Connect the interface module to the PC’s USB Port

![Diagram of TST with M12 Cable](image-url)

**Signal** | **Cable** | **M12 Extension Cable**
--- | --- | ---
Loop+ | Red | Pin 1 (Brown)
Loop- | Black | Pin 2 (Blue)
Tx (Communication) | White | Pin 3 (Green)
Rx (Communication) | Green | Pin 4 (Black)

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Dimensions

Fitting Option ..00..

Fitting Options ..A2.. and ..A4..

Tri-clamp® Fitting Options

Fitting Options ..F2.. and ..F4..

Optional Plug-on Display Model AUF
see AUF product datasheet for ordering details

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