TST
INTEGRATED TEMPERATURE TRANSMITTER

KOBOLD

Flow
Pressure
Level
Temperature
measurement
monitoring
control

T2
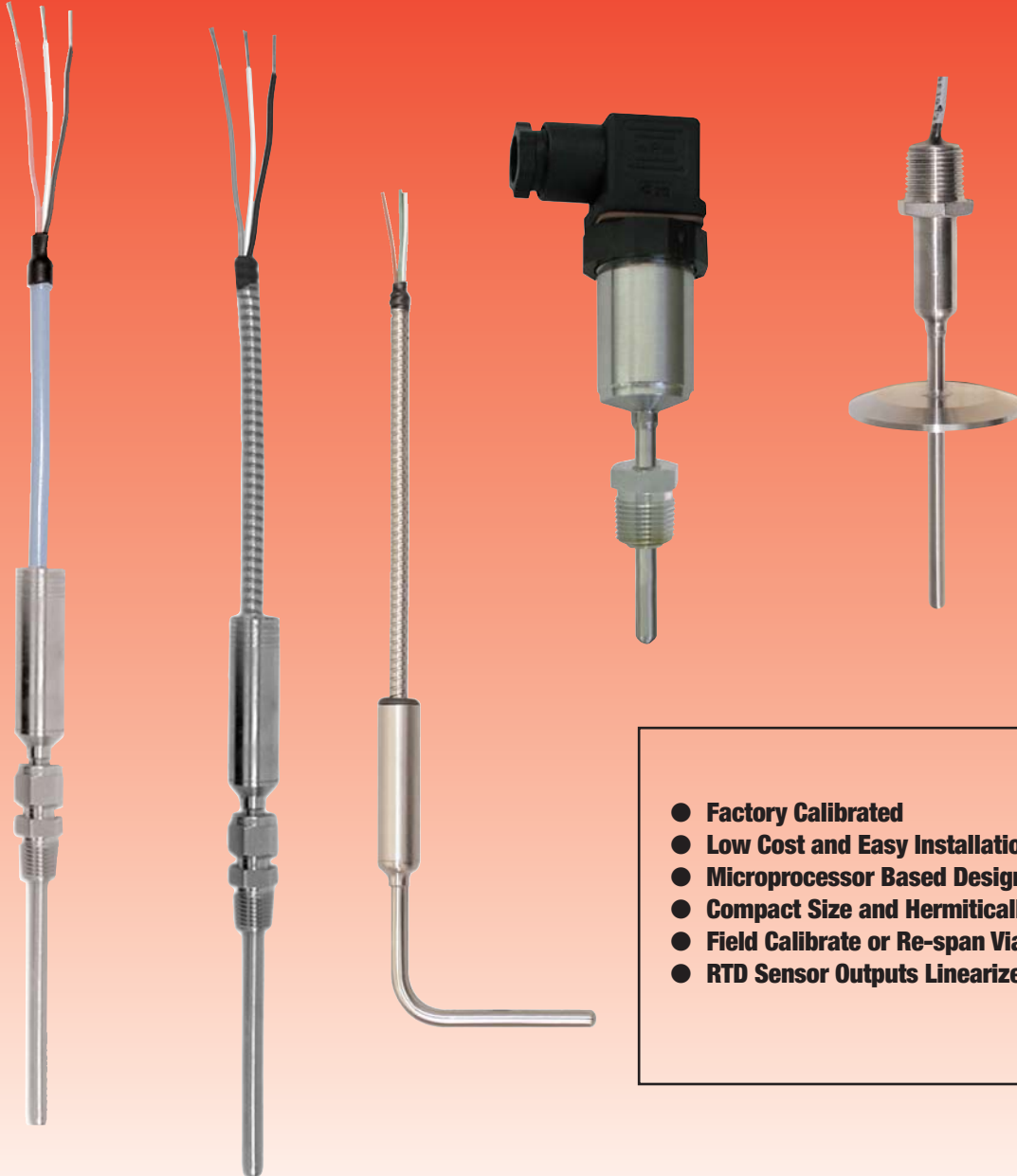
- **Factory Calibrated**
- **Low Cost and Easy Installation**
- **Microprocessor Based Design**
- **Compact Size and Hermitically Sealed**
- **Field Calibrate or Re-span Via PC Interface**
- **RTD Sensor Outputs Linearized 4-20 mA Signal**

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Model:
TST

Features

- 4-20 mA Transmitter Integrated Into Temperature Sensor
- Hermetically Sealed Electronics
- Easily Re-programmable Via PC or Factory Calibrated
- Low Cost and Easy Installation
- Highly Stable and Accurate Microprocessor Based Design

The TST series integrated temperature transmitter is one of the most advanced designs in the market today. The transmitter section is integrated and hermetically sealed into the head of the sensor. For this reason, the TST does not require a separate transmitter housing. The micro-miniature transmitter assembly fits into a low profile socket which is only 2 inches long!

Calibration and Re-calibration

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

Industrial and Sanitary Versions

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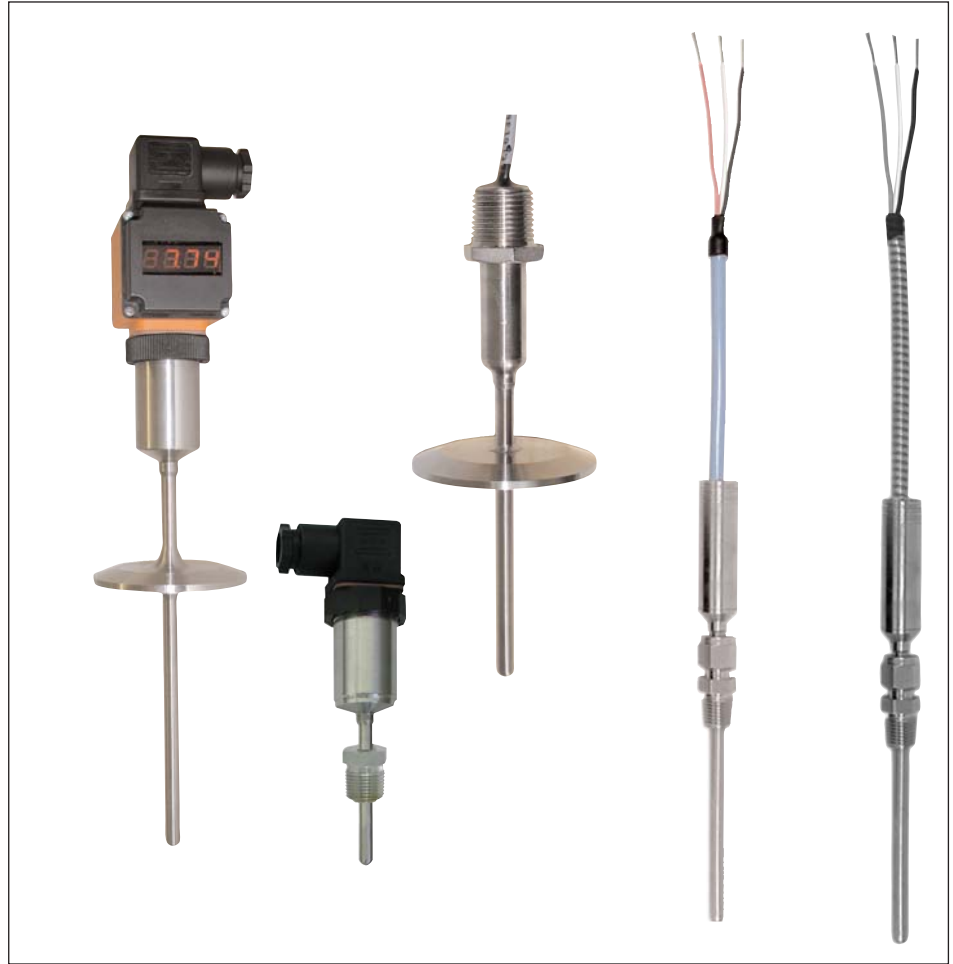
TST Series Integrated Temperature Transmitter

Specifications

Available Measuring
Ranges: –58 to 120°F to 0 to 1100°F

Maximum Pressure
   Threaded Version: 1500 PSIG
   Tri-clamp Version: 500 PSIG

Measuring Probe
Material: 316 stainless steel
Probe Finish: Ra 32 compliant with 3A standard 09-08 #4 finish
Cable Materials: PVC, teflon or stainless steel armored teflon
RTD Type: Pt-100, class B, α=0.00385

Electrical Specifications

Output Type: 4–20 mA 2-wire
Power Requirement: 9-30 VDC loop powered

Max. Loop
Resistance: $50(V_{supply} +10)$

Accuracy: ±0.1% of Span
Zero Drift: ±0.025%/°F
Span Drift: ±0.025%/°F
Ambient
Temperature Range: -40 to 158°F
Electrical Connection
   Standard: 6 ft. jacketed cable
   Optional: DIN 43650, Hirschmann Plug or 6 ft. jacketed cable with 1/2" NPT conduit hub
Electrical Protection: NEMA 6P

Subject to change without prior notice.

**TST** = Integrated Temperature Transmitter

T2

Fitting Style

00 = Smooth Shank

A2 = 1/4" NPT, Adjustable Probe Immersion Depth

A4 = 1/2" NPT, Adjustable Probe Immersion Depth

F2 = 1/4" NPT, Fixed Probe Immersion Depth

F4 = 1/2" NPT, Fixed Probe Immersion Depth

T15 = 1-1/2" Tri-Clamp

T2 = 2" Tri-Clamp

T25 = 2-1/2" Tri-Clamp

T3 = 3" Tri-Clamp

Immersion Depth

Available Immersion Depth (see dimension U)

025 = 2.5"   **120** = 12"

040 = 4"   **180** = 18"

060 = 6"   **240** = 24"

090 = 9"   **EP** = Custom Immersion Depth, Specify Depth When Ordering

"U"   Dimension U
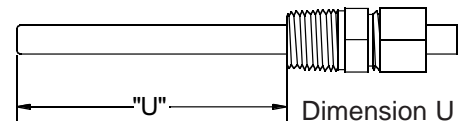
Cable

PV = 6 Foot PVC Jacketed (220°F Max. Process Temperature)

TF = 6 Foot Teflon Jacketed

TA = 6 Foot 316 SS Armored

TB = 6 Foot 316 SS Braided

0 = None (use if specifying option -H below)

Range

Available Measuring Ranges

02 = 0-120°F   **12** = 0-750°F

04 = 0-200°F   **14** = 0-950°F

06 = 0-300°F   **16** = 0-1100°F

08 = 0-400°F   **18** = -58 to 120°F

10 = 0-500°F   **E** = Custom Scaling, Specify Desired Range

Options

C = 1/2" NPT conduit hub

H = DIN 43650 Hirschmann Plug in Place of Cable

EC = Extended cable length, specify length with order

TST - **A4** - **040** - **PV** - **06** - **C**   **Example TST Part Number**

Accessory Item - Field Calibration Kit includes: 9-pin serial cable, 110 VAC Power-pack and Windows™
Compatible Software: Part Number TST-PKIT

Description
The TST field calibration kit allows the user to rescale the TST output transmitter span as well as perform single point and multipoint field calibration, all via a PC serial port (COM Port) interface.

Included in the kit:
* Communication interface module, allows the TST to be connected to a PC COM Port
* Wall-Jack power supply Windows® compatible calibration software
* Operation instruction

Minimum system requirements
* Pentium I or equivalent 300 MHZ or better
* 1 MB hard drive free space Windows 95, 98, NT 4.0 or 2000 operating system
* 1 free serial (COM) port
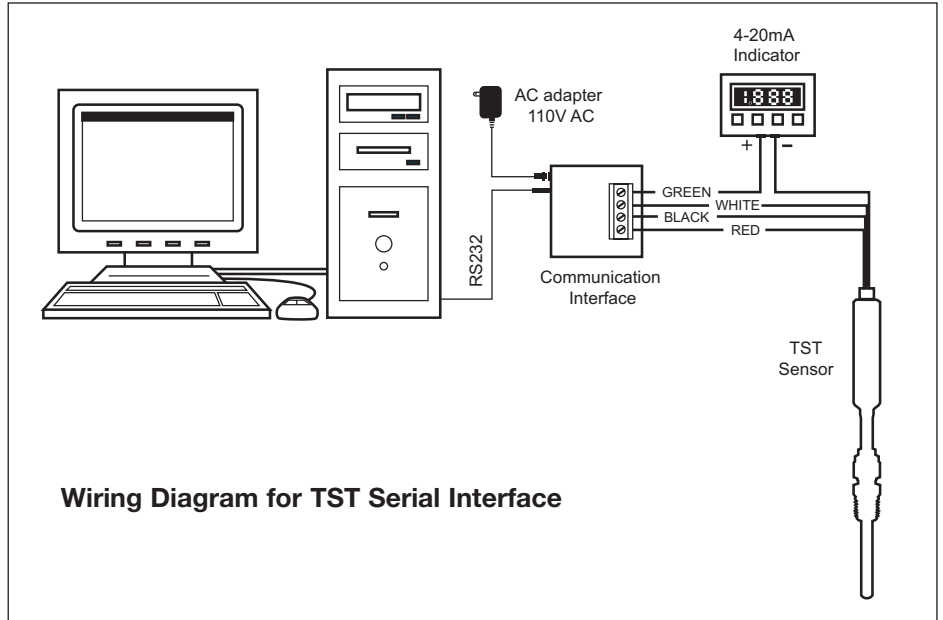
Connecting the TST
1. Strip away the shrink tube at the end of the signal cable to expose the programming lines.

2. Connect the power, signal and programming lines to the interface module via the screw terminal as follow:

      interface   **wire color**

      Terminal 1 = (V+) = RED
      Terminal 2 = (Iout) = BLACK
      Terminal 3 = (Tx) = WHITE
      Terminal 4 = (Rx) = GREEN

3. Connect the interface module to the PC's COM Port via the 9-Pin D-Sub connector

4. Connect the AC adapter to the interface module

Wiring Diagram for TST Serial Interface

Re-scaling Transmitter Span
1. After the TST is connected, launch the TST interface software. If the software. If the software properly detects the TST interface, the message text box will indicate **"TST CONNECTED"**.

2. Click the **PROGRAM** button to access the programming dialog box.

3. To re-scale either pick a pre-programmed range from the **PRESET RANGE** drop-down menu or manually enter a custom range in the TO and **FROM** fields.

4. When the proper range is input, click the **SET** button. The TST is automatically re-scaled to the newly selected range.

Field Re-calibration
The user can perform either a single point or two point calibration in the field. An accurate temperature reference is required to re-calibrate the device.

Single Point Re-calibration
1. Click on the **PROGRAM** button to access the programming window.

2. Immerse the TST into a known temperature reference, preferably at some temperature near mid-scale.

3. Enter this known temperature value into the field in the single point dialog box. Adjust the + and - buttons in the dialog box until the actual output corresponds to the indicated value shown.

Two Point Re-calibration
1. Click on the **PROGRAM** button to access the programming window.

2. Enter in the **FIRST POINT** field the value of the first calibration reference temperature point.

3. Adjust the TST output to this value and click the **READ** button next to the **FIRST POINT** field.

4. Enter in the **SECOND POINT** field the value of the second calibration reference temperature point.

5. Adjust the TST output to this value and click the **READ** button next to the **SECOND POINT** field.

6. Click the **PROCESS** button to update the TST calibration with the new reference values.

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