

Increase Thermocouple Accuracy with Improved Thermocouple Design

Thermal Solutions' TRUE SURFACE thermocouple (TST) offers superior accuracy for measuring flat surface temperatures. This compact, highly accurate sensor isolates the thermocouple junction from ambient airflow. The TST typically achieves accuracy and repeatability between 1-2% (ΔT). The TST, with its removable molded cover, fits into corners and other tight locations. TSTs are easy to install with a variety of commonly used screw types. The TST sensor is ideal for many applications including semiconductor chambers, platens, packaging, cleaning and food preparation.

Features and Benefits

- Isothermal measuring junction offers excellent thermal conductivity for the measuring junction
- Molded insulator isolates the isothermal measuring block from ambient airflow
- Compact, universal package fits into corners and other tight locations easily (0.44 in. (11.88 mm) side by 0.24 in. (6.10 mm) high, and the molded insulator is removable for applications where an even smaller package is needed
- Temperature rating of 400°F (200°C) offers superior application flexibility for a wide variety of surfaces

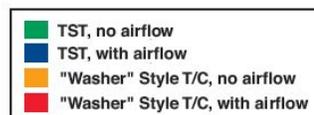
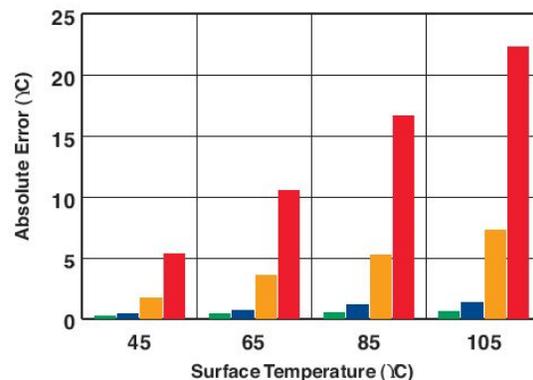
Options

- Ungrounded or grounded junction(s)
- Type J or K calibrations
- Shielded lead wire with drain, either isolated from or connected to the sensor sheath

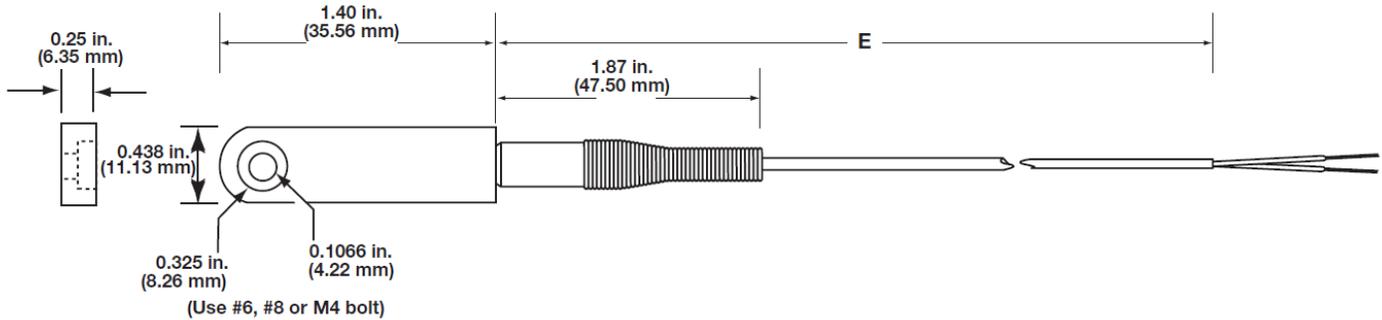


Steady State Temperature Measurement Test

- **Purpose:** To determine and compare the steady state error of the Watlow TST and a common "washer"-style thermocouple at several temperature settings with and without ambient airflow.
- **Test Description:** Each sensor was attached to a brass hot plate and allowed to reach equilibrium before temperature readings were taken. Room temperature air was then blown onto the hot plate and the sensors. Temperature readings were taken after the system reached the new equilibrium point. The test was performed with a 20, 40, 60 and 80°C differential between the hot plate temperature and ambient.
- **Results:** Ambient temperature = 25°C.



Dimensional Drawing



Ordering Information

1 2 3	4	5	6	7	8 9
TST	Lead Wire Const.	Lead Wire Term	Junction Type	Calibration	Lead Length "E"

4 LEAD WIRE CONSTRUCTION
2 = FEP 26 gauge solid 3 = FEP 26 gauge solid with shield and ground, not continuous to sheath (Terminations A, B and C are not available with this lead wire construction)

5 LEAD WIRE TERMINATIONS
A = Standard Male Plug B = Standard Female Jack C = Standard Plug with Mating Connector F = Miniature Male Plug G = Miniature Female Jack H = Miniature Plug with Mating Connector T = Standard, 1.5" Split Leads U = 1.5" Split Leads with Spade Lugs

6 JUNCTION TYPE		
Single	Grounded	Ungrounded
	G	U

7 CALIBRATION		
Standard Limits	J	K
	J	K
Special Limits	3	4

8 - 9 LEAD LENGTH "E"
01 to 99 feet