

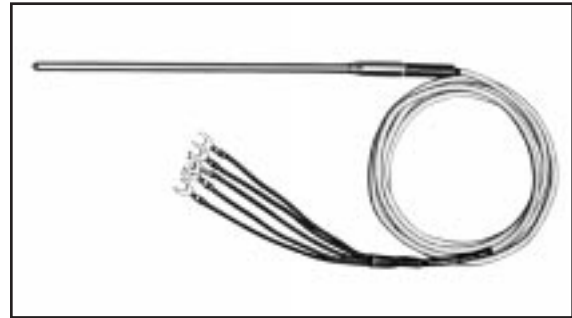


TEMPERATURE STANDARDS: TYPE S /AS /ES

PRECISION, ULTRASTABLE NTC STANDARDS

DESCRIPTION:

Thermometrics temperature standards consist of ultra-stable thermistor probes assembled into thin wall stainless steel housings with shielded extension leads. The thermistors used receive special processing to ensure long term stability. All thermistor temperature standards are ruggedly constructed and are suitable for liquid immersion.



APPLICATIONS:

Thermometrics Thermistor standards are rugged, precision sensors suitable for use as secondary or working temperature standards for all laboratory metrology applications. They generally are not affected by shock and vibration and, consequently, are also suitable for field use. Thermometrics Temperature standards fill the need for low cost temperature standards for general laboratory and hospital use, clinical applications and process temperature measurements. Special versions are available for military and space use. Standards are also available for other temperature ranges in a variety of sizes and enclosures. Our Applications Engineering Staff can assist you with your specific requirements.

DATA:

CONFIGURATION: Temperature standards are enclosed in thin-wall stainless tubes, welded closed at one end. The shielded cable is encapsulated into the tube to provide a solid moisture-proof seal. Full immersion of the metal portion of the standard is permissible. The calibration data is given for an immersion depth of 8" on 9" housings, and 4" on 4 1/2" long housings.

TEMPERATURE RANGE: The Type "S" and Type "AS" are designed for operation over the range of 0°C to 60°C. The Type "ES" is rated for 0°C to 100°C.

STABILITY: The stability of each temperature standard is guaranteed for a period of one year. When properly used, the following stability ratings apply:

- Type "AS" 0.002° C/year
- Type "S" 0.005° C/year
- Type "ES" 0.005° C/year

CALIBRATION: Precision calibration, traceable to the National Institute of Standards and Technology, is provided for all temperature standards. A computer generated table in increments of 0.01°C is furnished with each calibration based on the interpolation formula, $RT = \exp(A_0 + A_1/T + A_2/T^2 + A_3/T^3)$. The constants for the formula are obtained from a polynomial regression performed on the calibration data obtained. Over the range of 0°C to 60°C, calibration is performed at the triple point of water (0.01°C) and 15°C, 25°C, 30°C, 37°C, 50°C, and 60°C. For the range of 0°C to 100°C, calibrations are performed at the triple point of water, 25°C, 30°C, 37°C, 60°C, 80°C, and 100°C. Two-wire calibrations are performed using a wheatstone Bridge calibrated to an accuracy of better than 0.005%. Four-wire calibrations are based on a comparison technique using a ratio bridge having an accuracy of 0.0002%. All resistance measurements are referenced to standard resistors calibrated by NIST. All temperature measurements are made using a standard platinum resistance thermometer which has been calibrated by NIST.

RESISTANCE VS. TEMPERATURE CHARACTERISTIC: The nominal resistance values are shown below:

TYPE	RESISTANCE IN OHMS			
	0°C	25°C	60°C	100°C
"AS" & "S"	14250	5000	1458	-
"AS" & "S"	11400	4000	1166	-
"ES"	28500	10000	2915	925

