



# Super Thermometer ST-501

- PRT reference thermometer, resolution of 0.001 °C.
- Replace precision glass thermometers.
- Fully electronic, without mechanical parts.
- Accepts PRT sensors or standard thermocouples.
- Portable and compact (rechargeable battery, charger and carrying case included).
- It has internal memory and serial communication port.
- Accepts CVD, IPTS-68 and ITS-90 coefficients.

The super thermometer ST-501 main purpose is to measure temperature with high accuracy. It uses platinum resistance thermometers sensors and it also accepts standard thermocouples. The digital electronic indicator can be offered complete including the temperature sensor and calibration certificate of the pair. The ST-501 has internal algorithms to calculate the temperature value according to Callendar-Van Dusen (CVD) and ITS-90 among other international temperature tables. For customers that already have one or several RTD's or PRT's sensors with quality enough for being used as standards, it is only necessary to enter its respective coefficients. And for those uncalibrated probes, it is possible to use the standard linearization curves for RTDs and thermocouples.

**Specifications**

Input Ranges	Resolution	Accuracy	Remarks
<b>millivolt</b> 0 to 70 mV	0.0001 mV	± 0.005 % FS	R <sub>input</sub> > 10 MΩ
<b>resistance</b> 0 to 100 Ω	0.0001 Ω	± 0.001 Ω	Excitation
100 to 500 Ω	0.001 Ω	± 0.004 Ω	current 1.0 mA
<b>Pt-100</b> -200 to 850 °C / -328 to 1562 °F	0.001 °C / 0.001 °F	± 0.01 °C / ± 0.02 °F	Excitation current 1.0 mA
<b>Pt-25</b> -200 to 850 °C / -328 to 1562 °F	0.001 °C / 0.001 °F	± 0.01 °C / ± 0.02 °F	Excitation current 1.0 mA
<b>TC-J</b> -210 to 1200 °C / -346 to 2192 °F	0.01 °C / 0.01 °F	± 0.10 °C / ± 0.20 °F	IEC-60584
<b>TC-K</b> -270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	± 0.25 °C / ± 0.50 °F	IEC-60584
-150 to 1370 °C / -238 to 2498 °F	0.01 °C / 0.01 °F	± 0.10 °C / ± 0.20 °F	
<b>TC-T</b> -260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	± 0.30 °C / ± 0.60 °F	IEC-60584
-200 to -75 °C / -328 to -103 °F	0.01 °C / 0.01 °F	± 0.20 °C / ± 0.40 °F	
-75 to 400 °C / -103 to 752 °F	0.01 °C / 0.01 °F	± 0.10 °C / ± 0.20 °F	
<b>TC-B</b> 50 to 250 °C / 122 to 482 °F	0.01 °C / 0.01 °F	± 1.25 °C / ± 2.50 °F	IEC-60584
250 to 500 °C / 482 to 932 °F	0.01 °C / 0.01 °F	± 0.75 °C / ± 1.50 °F	
500 to 1200 °C / 932 to 2192 °F	0.01 °C / 0.01 °F	± 0.50 °C / ± 1.00 °F	
1200 to 1820 °C / 2192 to 3308 °F	0.01 °C / 0.01 °F	± 0.35 °C / ± 0.70 °F	
<b>TC-R</b> -50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	± 0.50 °C / ± 1.00 °F	IEC-60584
300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	± 0.35 °C / ± 0.70 °F	
<b>TC-S</b> -50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	± 0.50 °C / ± 1.00 °F	IEC-60584
300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	± 0.35 °C / ± 0.70 °F	
<b>TC-E</b> -270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	± 0.15 °C / ± 0.30 °F	IEC-60584
-150 to 1000 °C / -238 to 1832 °F	0.01 °C / 0.01 °F	± 0.05 °C / ± 0.10 °F	
<b>TC-N</b> -260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	± 0.50 °C / ± 1.00 °F	IEC-60584
-200 to -20 °C / -328 to -4 °F	0.01 °C / 0.01 °F	± 0.20 °C / ± 0.40 °F	
-20 to 1300 °C / -4 to 2372 °F	0.01 °C / 0.01 °F	± 0.10 °C / ± 0.20 °F	
<b>TC-L</b> -200 to 900 °C / -328 to 1652 °F	0.01 °C / 0.01 °F	± 0.10 °C / ± 0.20 °F	DIN-43710
<b>TC-C</b> 0 to 1500 °C / 32 to 2732 °F	0.01 °C / 0.01 °F	± 0.25 °C / ± 0.50 °F	W5Re / W26Re
1500 to 2320 °C / 2732 to 4208 °F	0.01 °C / 0.01 °F	± 0.35 °C / ± 0.70 °F	W5Re / W26Re

Accuracy values are valid within one year and temperature range from 20 to 26 °C. Outside these limits add 0.001 % FS / °C, taking 23 °C as the reference temperature. For thermocouples with internal cold junction compensation, add a cold junction compensation error of ± 0.1 °C or ± 0.2 °F.

**Dimension:** 56 mm x 144 mm x 72 mm (HxWxD).

**Weight:** 0.6 kg approx.

**Serial Communication:** Modbus® RTU Protocol (RS-232/RS-485).

**Warm-up:** 30 minutes.

**Operating ambient:** 0 to 50 °C.

**Relative Humidity:** 0 to 90 %.

**Warranty:** 1 year, except for rechargeable battery.

**Included Items:** carrying case, support, test leads, manual and battery charger.

**Order Code**

**ST-501 -**



**Temperature Sensor**

1 - Industrial Standard Probe (-200 to 420 °C)

2 - Secondary Standard Probe (-200 to 660 °C)

3 - Secondary Standard Probe (-200 to 480 °C)

**Optional Accessories:**

Temperature Sensors

Description	Order Code	Range	Drift	Accuracy *	Dimensional
Industrial Standard Pt-100 Probe - Straight	04.06.0001-21	-200 to 420 °C	0.035 °C	0.030 °C @ 420 °C	305 mm x Ø 6.35 mm
Industrial Standard Pt-100 Probe - Angular 90°	04.06.0007-21	-200 to 420 °C	0.035 °C	0.030 °C @ 180 °C	140 mm x Ø 6.35 mm
Industrial Standard Pt-100 Probe - Long Angular 90°	04.06.0002-21	-200 to 420 °C	0.035 °C	0.030 °C @ 180 °C	170 mm x Ø 6.35 mm
Secondary Standard Pt-100 Probe	04.06.0004-00	-200 to 480 °C	0.01 °C	0.023 °C @ 420 °C	12" x Ø1/4"
Secondary Standard Pt-100 Probe	04.06.0003-00	-200 to 660 °C	0.03 °C	0.050 °C @ 660 °C	15" x Ø1/4"

\* With ITS-90 coefficients characterization.

Communication Interface - Order Code: 06.02.0001-00