



# TC-512-HP

## High Precision Temperature Calibrator for Instrumentation

- ✓ Complies with NADCAP and AMS2750 Heat Treatment standards.
- ✓ Measures and generates mA, mV, V, Ohms, RTD and TC.
- ✓ Simultaneous input and output operation.
- ✓ Callendar-Van Dusen coefficients for Probe input.
- ✓ Isolated input and output.

# Technical Specifications

## Specifications - Inputs

Inputs Ranges	Resolution	Accuracy	Remarks
<b>milivolt</b>	-150 mV to 150 mV	0.0001 mV	$R_{input} > 10 \text{ M}\Omega$
	-500 mV to -150 mV	0.001 mV	auto-ranging
	150 mV to 2450 mV	0.001 mV	
<b>volt</b>	-10 V to 11 V	0.0001 V	$R_{input} > 1 \text{ M}\Omega$
	11 V to 45 V	0.0001 V	
<b>mA</b>	-5 mA to 24.5 mA	0.0001 mA	$R_{input} < 160 \Omega$
<b>resistance</b>	0 to 400 $\Omega$	0.01 $\Omega$	Excitation current 0.85 mA,
	400 to 2500 $\Omega$	0.01 $\Omega$	auto-ranging
<b>Pt-100</b>	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	IEC-60751
<b>Pt-1000</b>	-200 to 400 °C / -328 to 752 °F	0.1 °C / 0.1 °F	IEC-60751
<b>Cu-10</b>	-200 to 260 °C / -328 to 500 °F	0.1 °C / 0.1 °F	MINCO 16-9
<b>Ni-100</b>	-60 to 250 °C / -76 to 482 °F	0.1 °C / 0.1 °F	DIN-43760
<b>probe*</b>	-210 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	IEC-60751
<b>TC-J</b>	-210 to 1200 °C / -346 to 2192 °F	0.01 °C / 0.01 °F	IEC-60584
<b>TC-K</b>	-270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	IEC-60584
	-150 to 1370 °C / -238 to 2498 °F	0.01 °C / 0.01 °F	
<b>TC-T</b>	-260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	IEC-60584
	-200 to -75 °C / -328 to -103 °F	0.01 °C / 0.01 °F	
	-75 to 400 °C / -103 to 752 °F	0.01 °C / 0.01 °F	
<b>TC-B</b>	50 to 250 °C / 122 to 482 °F	0.01 °C / 0.01 °F	IEC-60584
	250 to 500 °C / 482 to 932 °F	0.01 °C / 0.01 °F	
	500 to 1200 °C / 932 to 2192 °F	0.01 °C / 0.01 °F	
	1200 to 1820 °C / 2192 to 3308 °F	0.01 °C / 0.01 °F	
<b>TC-R</b>	-50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	IEC-60584
	300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	
<b>TC-S</b>	-50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	IEC-60584
	300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	
<b>TC-E</b>	-270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	IEC-60584
	-150 to 1000 °C / -238 to 1832 °F	0.01 °C / 0.01 °F	
<b>TC-N</b>	-260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	IEC-60584
	-200 to -20 °C / -328 to -4 °F	0.01 °C / 0.01 °F	
	-20 to 1300 °C / -4 to 2372 °F	0.01 °C / 0.01 °F	
<b>TC-L</b>	-200 to 900 °C / -328 to 1652 °F	0.01 °C / 0.01 °F	DIN-43710
<b>TC-C</b>	0 to 1500 °C / 32 to 2732 °F	0.01 °C / 0.01 °F	W5Re / W26Re
	1500 to 2320 °C / 2732 to 4208 °F	0.01 °C / 0.01 °F	

(\*) Probe is a spare input for a reference RTD in order to use as standard thermometer.  
The accuracy is related to calibrator only.

## Specifications - Output

Output Ranges	Resolution	Accuracy	Remarks
<b>milivolt</b>	-10 mV to 110 mV	0.0001 mV	$R_{output} < 0.3 \Omega$
<b>volt</b>	-0.5 V to 12 V	0.0001 V	$R_{output} < 0.3 \Omega$
<b>mA</b>	0 to 24 mA	0.0001 mA	$R_{maximum} = 700 \Omega$
<b>2-wire transmitter (XTR)</b>	4 to 24 mA	0.0001 mA	$V_{maximum} = 60 \text{ V}$
<b>resistance</b>	0 to 400 $\Omega$	0.01 $\Omega$	For external excitation current of 1.0 mA
	0 to 2500 $\Omega$	0.1 $\Omega$	
<b>Pt-100</b>	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	IEC-60751
<b>Pt-1000</b>	-200 to 400 °C / -328 to 752 °F	0.1 °C / 0.1 °F	IEC-60751
<b>Cu-10</b>	-200 to 260 °C / -328 to 500 °F	0.1 °C / 0.1 °F	MINCO 16-9
<b>Ni-100</b>	-60 to 250 °C / -76 to 482 °F	0.1 °C / 0.1 °F	DIN-43760
<b>TC-J</b>	-210 to 1200 °C / -346 to 2192 °F	0.01 °C / 0.01 °F	IEC-60584
<b>TC-K</b>	-270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	IEC-60584
	-150 to 1370 °C / -238 to 2498 °F	0.01 °C / 0.01 °F	
<b>TC-T</b>	-260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	IEC-60584
	-200 to -75 °C / -328 to -103 °F	0.01 °C / 0.01 °F	
	-75 to 400 °C / -103 to 752 °F	0.01 °C / 0.01 °F	
<b>TC-B</b>	50 to 250 °C / 122 to 482 °F	0.01 °C / 0.01 °F	IEC-60584
	250 to 500 °C / 482 to 932 °F	0.01 °C / 0.01 °F	
	500 to 1200 °C / 932 to 2192 °F	0.01 °C / 0.01 °F	
	1200 to 1820 °C / 2192 to 3308 °F	0.01 °C / 0.01 °F	
<b>TC-R</b>	-50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	IEC-60584
	300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	
<b>TC-S</b>	-50 to 300 °C / -58 to 572 °F	0.01 °C / 0.01 °F	IEC-60584
	300 to 1760 °C / 572 to 3200 °F	0.01 °C / 0.01 °F	
<b>TC-E</b>	-270 to -150 °C / -454 to -238 °F	0.01 °C / 0.01 °F	IEC-60584
	-150 to 1000 °C / -238 to 1832 °F	0.01 °C / 0.01 °F	
<b>TC-N</b>	-260 to -200 °C / -436 to -328 °F	0.01 °C / 0.01 °F	IEC-60584
	-200 to -20 °C / -328 to -4 °F	0.01 °C / 0.01 °F	
	-20 to 1300 °C / -4 to 2372 °F	0.01 °C / 0.01 °F	
<b>TC-L</b>	-200 to 900 °C / -328 to 1652 °F	0.01 °C / 0.01 °F	DIN-43710
<b>TC-C</b>	0 to 1500 °C / 32 to 2732 °F	0.01 °C / 0.01 °F	W5Re / W26Re
	1500 to 2320 °C / 2732 to 4208 °F	0.01 °C / 0.01 °F	

Accuracy values are valid within one year and temperature range of 20 to 26 °C. Outside these limits add 0.001 % FS / °C, taking 23 °C as the reference temperature.  
For thermocouples using the internal cold junction compensation add a cold junction compensation error of  $\pm 0.1 \text{ }^\circ\text{C}$  or  $\pm 0.2 \text{ }^\circ\text{F}$ .

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

**Dimensions:** 91 mm x 233 mm x 64 mm (HxWxD).

**Weight:** 1 kg approx.

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

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

### Optional Accessories:

Cold Junction Compensation Block - Order Code: 06.22.0002-00;  
Temperature Sensors: 1/5 DIN-R Probe - Order Code: 04.06.0001-00;  
1/5 DIN-A Probe - Order Code: 04.06.0007-00;  
1/5 DIN-A-L Probe - Order Code: 04.06.0002-00;  
Communication Interface - Order Code: 06.02.0007-00.