



# Temperature Calibrator

## TCA-820

- Designed for on-field use, it offers all advantages of a documenting calibrator.
- Measures and generates mV, T/C, Ohms and RTD signals, besides measuring mA.
- Output operation simultaneous with mA input.
- Internal regulated 24VDC power supply for 2-wire transmitters.
- Special function for transmitter calibration converts mA into the transmitter input range.
- Square root function for mA input.
- Automatic power off configuration to save battery.
- Small, battery-operated, portable (rechargeable battery, charger and carrying case included).
- Interfaces with Windows-based Calibration Software SCA-850 to provide a true Computer-Aided Calibration System.
- Real-time data acquisition capability when connected to a computer.

TCA-820 temperature calibrator allows the measurement of mA, mV, T/C, Ohms and RTD and the generation of mV, T/C, Ohms and RTD. The generation of any of these signals can be carried out simultaneously with mA measurement, if isolated from each other, making it easier to calibrate and adjust temperature transmitters. Distinguished from regular loop calibrators due to its high-accuracy. RTD or Ohms generation (simulation) is possible for continuous or intermittent excitation current. Allows either ITS-90 or IPTS-68 temperature scale for measuring or generating T/C or RTD. Incorporates the most modern concepts of calibration and adjustment via computer, where data are shared between instrument and computer, improving efficiency in handling information through report and certificate issues, automatic work management, data organization and storage, for an overall coverage of quality procedure requirements, specially those related to ISO-9000. When connected to a computer it can be used for real-time data acquisition.

**Specifications - Input**

	Input Ranges	Resolution	Accuracy	Remarks
millivolt	-150 to 150mV	0.001mV	+ 0.01% FS	R <sub>input</sub> > 10M Ω auto-ranging
	-500 to -150mV	0.01mV	+ 0.02% FS	
	150 to 2450mV	0.01mV	+ 0.02% FS	
mA	-5 to 24.5mA	0.0001 mA	+ 0.02% FS	R <sub>input</sub> < 160 Ω
Resistance	0 to 2500 Ω	0.01 Ω	+ 0.008% FS	Excitation current 0.9mA
Pt-100	-200 to 850° C / -328 to 1562° F	0.01° C / 0.01° F	+ 0.1° C / + 0.2° F	IEC-751
Pt-1000	-200 to 400° C / -328 to 752° F	0.1° C / 0.1° F	+ 0.1° C / + 0.2° F	IEC-751
Cu-10	-200 to 260° C / -328 to 500° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	Minco 16-9
Ni-100	-60 to 250° C / -76 to 482° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	DIN-43760
TC-J	-210 to 1200° C / -346 to 2192° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	IEC-584
TC-K	-270 to -150° C / -454 to -238° F	0.1° C / 0.1° F	+ 0.5° C / + 1.0° F	IEC-584
	-150 to 1370° C / -238 to 2498° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	IEC-584
TC-T	-260 to -200° C / -436 to -328° F	0.1° C / 0.1° F	+ 0.6° C / + 1.2° F	IEC-584
	-200 to -75° C / -328 to -103° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
	-75 to 400° C / -103 to 752° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	IEC-584
TC-B	50 to 250° C / 122 to 482° F	0.1° C / 0.1° F	+ 2.5° C / + 5.0° F	IEC-584
	250 to 500° C / 482 to 932° F	0.1° C / 0.1° F	+ 1.5° C / + 3.0° F	IEC-584
	500 to 1200° C / 932 to 2192° F	0.1° C / 0.1° F	+ 1.0° C / + 2.0° F	IEC-584
	1200 to 1820° C / 2192 to 3308° F	0.1° C / 0.1° F	+ 0.7° C / + 1.4° F	IEC-584
TC-R	-50 to 300° C / -58 to 572° F	0.1° C / 0.1° F	+ 1.0° C / + 2.0° F	IEC-584
	300 to 1760° C / 572 to 3200° F	0.1° C / 0.1° F	+ 0.7° C / + 1.4° F	IEC-584
TC-S	-50 to 300° C / -58 to 572° F	0.1° C / 0.1° F	+ 1.0° C / + 2.0° F	IEC-584
	300 to 1760° C / 572 to 3200° F	0.1° C / 0.1° F	+ 0.7° C / + 1.4° F	IEC-584
TC-E	-270 to -150° C / -454 to -238° F	0.1° C / 0.1° F	+ 0.3° C / + 0.6° F	IEC-584
	-150 to 1000° C / -238 to 1832° F	0.1° C / 0.1° F	+ 0.1° C / + 0.2° F	IEC-584
TC-N	-260 to -200° C / -436 to -328° F	0.1° C / 0.1° F	+ 1.0° C / + 2.0° F	IEC-584
	-200 to -20° C / -328 to -4° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
	-20 to 1300° C / -4 to 2372° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	IEC-584
TC-L	-200 to 900° C / -328 to 1652° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	DIN-43710

**Specifications - Output**

	Output Ranges	Resolution	Accuracy	Remarks
millivolt	-15 to 75mV	0.001mV	+ 0.02% FS	R <sub>output</sub> < 0.3 Ω
Resistance	0 to 2500 Ω	0.01 Ω	+ 0.008% FS	For external excitation current of 1.0mA
Pt-100	-200 to 850° C / -328 to 1562° F	0.01° C / 0.01° F	+ 0.1° C / + 0.2° F	IEC-751
Pt-1000	-200 to 400° C / -328 to 752° F	0.1° C / 0.1° F	+ 0.1° C / + 0.2° F	IEC-751
Cu-10	-200 to 260° C / -328 to 500° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	Minco 16-9
Ni-100	-60 to 250° C / -76 to 482° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	DIN-43760
TC-J	-210 to 1200° C / -346 to 2192° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
TC-K	-270 to -150° C / -454 to -238° F	0.1° C / 0.1° F	+ 1.0° C / + 2.0° F	IEC-584
	-150 to 1370° C / -238 to 2498° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
TC-T	-260 to -200° C / -436 to -328° F	0.1° C / 0.1° F	+ 1.2° C / + 2.4° F	IEC-584
	-200 to -75° C / -328 to -103° F	0.1° C / 0.1° F	+ 0.8° C / + 1.6° F	IEC-584
	-75 to 400° C / -103 to 752° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
TC-B	50 to 250° C / 122 to 482° F	0.1° C / 0.1° F	+ 5.0° C / + 10.0° F	IEC-584
	250 to 500° C / 482 to 932° F	0.1° C / 0.1° F	+ 3.0° C / + 6.0° F	IEC-584
	500 to 1200° C / 932 to 2192° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	IEC-584
	1200 to 1820° C / 2192 to 3308° F	0.1° C / 0.1° F	+ 1.4° C / + 2.8° F	IEC-584
TC-R	-50 to 300° C / -58 to 572° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	IEC-584
	300 to 1760° C / 572 to 3200° F	0.1° C / 0.1° F	+ 1.4° C / + 2.8° F	IEC-584
TC-S	-50 to 300° C / -58 to 572° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	IEC-584
	300 to 1760° C / 572 to 3200° F	0.1° C / 0.1° F	+ 1.4° C / + 2.8° F	IEC-584
TC-E	-270 to -150° C / -454 to -238° F	0.1° C / 0.1° F	+ 0.6° C / + 1.2° F	IEC-584
	-150 to 1000° C / -238 to 1832° F	0.1° C / 0.1° F	+ 0.2° C / + 0.4° F	IEC-584
TC-N	-260 to -200° C / -436 to -328° F	0.1° C / 0.1° F	+ 2.0° C / + 4.0° F	IEC-584
	-200 to -20° C / -328 to -4° F	0.1° C / 0.1° F	+ 0.8° C / + 1.6° F	IEC-584
	-20 to 1300° C / -4 to 2372° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	IEC-584
TC-L	-200 to 900° C / -328 to 1652° F	0.1° C / 0.1° F	+ 0.4° C / + 0.8° F	DIN-43710

Accuracy values are valid within a year at 25°C ambient temperature.  
Thermal stability is 0.001% / °C.

**On-line Communication with Computer**

It operates as a true real-time data acquisition point when connected to a computer via RS-232 / RS-485 serial communication.